Forge Ahead with Resilience

砥礪奮進 創迎機遇

機電工程署
EMSD

部門簡介及架構
ORGANISATIONAL PROFILE AND STRUCTURE

機電工程署

機電工程署(機電署)是中華人民共和國香港特別行政區政府轄下提供機電工程服務的部門，下設兩個功能機構，即規管服務及營運服務，後者又稱為機電工程營運基金(營運基金)。機電署一方面致力創造公眾價值，包括透過執法和公眾教育規管機電設施的安全運作，另一方面為政府部門及公營機構提供專業和具成本效益的機電工程服務。

規管服務團隊的職責是保障機電安全和促進能源效益，工作涉及不同的規管和公眾教育範疇，以確保機電、氣體及鐵路安全，同時推廣本港能源效益與機電安全。規管服務團隊除了根據《管制計劃協議》監察電力公司的技術表現及發展計劃，亦就各類安全和環保措施向政府提供專業意見及技術指導。

營運基金竭誠為各政府部門及公營機構提供專業、全面及優質的機電工程服務，範圍涵蓋機電設施的操作、維修保養、工程策劃和顧問服務。此外，我們亦為客戶場地及設施的屋宇裝備和電子系統與設備提供支援服務，包括醫院、學校、紀律部隊設施、運輸設施及公路、港口及海港、機場、政府合署和法院大樓，同時亦涵蓋公眾文娛康樂設施。

規管服務
REGULATORY SERVICES

- 能源效益 Energy Efficiency
- 一般法例 General Legislation
- 電力法例 Electricity Legislation
- 鐵路 Railways
- 氣體標準 Gas Standards
- 行政 Departmental Administration

營運服務
TRADING SERVICES

- 邊境及運輸工程 Boundary Crossing Facilities and Transport
- 保安及車輛工程 Security and Vehicle
- 綜合工程 General Engineering
- 企業服務 Corporate Services
- 衞生工程 Health Sector
- 數碼科技 Digitalisation and Technology
- 市政工程 Municipal Sector
- 財政 Finance

ELECTRICAL AND MECHANICAL SERVICES DEPARTMENT

The Electrical and Mechanical Services Department (EMSD) is a department, which provides electrical and mechanical (E&M) services, under the Government of the Hong Kong Special Administrative Region (HKSAR) of the People's Republic of China. It consists of two functional units, namely, Regulatory Services (RS) and Trading Services, the latter of which is commonly known as the Electrical and Mechanical Services Trading Fund (EMSTF). The EMSD is responsible for creating public value for community betterment, including regulation of electrical and mechanical safe operations through law enforcement and public education, as well as providing professional and cost-effective E&M engineering services for government departments and public bodies.

With an aim to safeguard E&M safety and enhance energy efficiency, the RS team works on various regulatory and public education areas to ensure E&M, gas and railway safety, and at the same time promote energy efficiency and E&M safety in the city. In addition to keeping track of the technical performance and development plans of electricity supply companies in accordance with the Scheme of Control Agreements, the RS team provides professional advice and technical expertise to the Government with different safety and environmental initiatives.

The EMSTF is committed to providing professional, comprehensive and quality E&M engineering services to government departments and public bodies. Our range of services cover operation, maintenance, project management and consultancy on E&M facilities. We also offer support for building services as well as electronic systems and equipment at different client venues and facilities, including hospitals, schools, disciplined services facilities, transport facilities and highways, port and harbour, airport, government offices and law court buildings, alongside public recreational and leisure facilities.

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署長的話
MESSAGE FROM THE DIRECTOR

儘管受到2019冠狀病毒病疫情影響，規管服務和營運服務在2020/21年度依然表現出色。兩者在疫情下均成功轉危為機，為客戶、機電行業和市民大眾創造巨大公眾價值。規管服務繼續致力使機電事故數目維持下降趨勢，同時繼續推進能源效益的工作。

營運服務（即機電工程營運基金）的財務狀況穩健，符合我們的營運原則。年內總收入上升至85.78億港元，收入回報率下降至2.3%。收入上升是由於業務持續增長，而收入回報率下降，則是由於我們為客戶提供多種抗疫增值服務，並招聘了約1 500名臨時員工，務求在疫情下創造就業機會所致。收入回報率下降，讓客戶保留資金為公眾提供服務，也符合我們以低回報率營運的方針。

制度優勢 締造佳績

我們的同事表現優秀，充分發揮了機電工程署（機電署）在經驗、科技和財務三方面的「制度優勢」。

The performance of Regulatory Services and Trading Services was impressive in 2020/21 despite the Coronavirus Disease 2019 (COVID-19). Both successfully turned the crisis into an opportunity and created great public value for client departments, the E&M trade and the public. Regulatory Services continued to keep E&M incidents on a declining trend while pressing ahead with energy efficiency initiatives.

The financial situation of Trading Services, also known as the Electrical and Mechanical Services Trading Fund (EMSTF), was healthy and in line with our operating principles. Total revenue rose to HK$8,578 million and return on revenue (ROR) was reduced to 2.3%. The increased revenue was attributable to sustained business growth, while the drop in ROR was a result of the provision of value-added anti-epidemic services for clients and our hiring of about 1 500 temporary staff to help create jobs amid the epidemic. The drop in ROR is also in line with our operational policy of lowering the financial return so that clients can retain funding for their services to the public.

MAKING A DIFFERENCE WITH SYSTEM INNOVATION

Our colleagues performed well in leveraging the EMSD's "system innovation" in the three aspects of experience, technology and finance.

我們熟悉客戶的場地，配合豐富的經驗，在實際工作中擁有優勢，尤其有助我們將現有設備改裝成抗疫設施，例如將公立醫院的多個普通病房迅速改裝成二線負壓病房；協助設立亞洲國際博覽館社區治療設施；興建北大嶼山醫院香港感染控制中心；以及在短短三日內，為普及社區檢測計劃200多個候選檢測中心的通風系統進行評估工作。

要將疫情的種種挑戰轉化為機遇，不但需要創新思維，更要有創新技術，即創新科技（創科）的支持。我們有幸早於多年前已開始推動和便利創科，一方面藉此提升機電署本身的運作效率，另一方面協助客戶將其機電系統數碼化，務求提高效益和節能。

機電署員工累積了不少創科經驗，加上多年來與機電業合作伙伴的工作關係，使我們都能在極短時間內回應客戶要求，例如為社區疫苗接種中心建立運用物聯網技術的綜合疫苗冷藏櫃監察系統。由於我們的區域數碼監控中心能監察來自各個疫苗接種中心的綜合疫苗冷藏櫃監察系統及其他實時機電數據，因此可為2019冠狀病毒病疫苗接種計劃提供「五星級」設施管理服務。

Our experience and knowledge of client venues have proved particularly valuable in transforming existing facilities for anti-epidemic work, such as promptly converting numerous general wards into second-tier negative pressure wards at public hospitals, helping set up the Community Treatment Facilities at AsiaWorld-Expo and the North Lantau Hospital Hong Kong Infection Control Centre (NLHHKICC), and assessing the ventilation systems of over 200 potential venues for the Universal Community Testing Programme in only three days.

Taking on the challenges of the epidemic and turning them into opportunities required not only an innovative mindset but also technological innovation, i.e., the support and facilitation of innovation and technology (I&T). We are fortunate in having made an early start some years ago in promoting and facilitating the I&T solutions to enhance our own operations and digitise clients' E&M systems for greater efficiency and energy saving.

The I&T experience accumulated in our staff members, coupled with their working relation with the E&M trade, have enabled them to satisfy client needs at very short notice. These included setting up for the Community Vaccination Centres (CVCs) an integrated Fridge Monitoring System (iFMS) using Internet of Things (IoT) technology. Our Regional Digital Control Centre (RDCC) which monitors the iFMS and other real-time E&M data from the CVCs has enabled "five-star" facility management services for the COVID-19 Vaccination Programme.

署長的話
MESSAGE FROM THE DIRECTOR

另一例子是，我們為2021年年初農曆新年的年花銷售活動，僅僅花了兩星期時間，動員約160名同事和多個承辦商，便成功利用物聯網和其他技術，建立人流量監察系統，滿足客戶和相關部門不斷變化的服務需求。假如我們沒有在思維和組織架構方面的創新優勢，以及強大的創科根基和多年來與供應商建立的聯繫，這些抗疫項目根本無法實現。

這些優勢同樣適用於規管服務。規管服務充分運用其豐富經驗及對受規管機構的深入了解，協助他們在疫情下維持主要的公共服務。我們確保電力公司、石油/氣體供應商、升降機及自動梯承辦商和鐵路營運商，制訂完善的業務延續計劃和各種抗疫措施。我們迅速為機電工程人員推出投遞箱和線上平台等工具，方便他們辦理註冊續牌、進行預約、辦理各種申請和參加持續專業發展和培訓。我們也致力確保車輛維修工場、電業/氣體/升降機及自動梯行業的註冊承辦商/工程人員/合資格人士，獲納入防疫抗疫基金的一次性現金補助計劃，以紓緩業界在疫情下的財政壓力。

至於營運基金方面，疫情突顯了我們具備穩健財政和靈活架構的重要性，兩者讓我們能為客戶承辦時間緊迫而技術難度高的任務，農曆新年年花銷售點項目正是一例。該項目體現了我們的信念，就是必要時定會善用我們的財政資源和靈活優勢，為客戶提供支援。

事實上，營運基金收入回報率下降也應以這個正面角度去理解。我們響應公務員事務局的創造職位計劃，招聘了約1 500名臨時員工，協助部門進行各種宣傳、資產數碼化及加強環境衞生的工作，以配合政府在疫情期間創造更多就業機會的措施。我們很高興能夠略盡綿力，在疫情危機中創造公眾價值，造福社羣。

推動創科　建立智慧政府和智慧城市

就機電署的創科工作及我們作為政府「創新促成者」的角色，已着墨不少。疫情至今，已引發社會各界對創科方案的龐大需求，我們希望這新常態能激起雪球效應，進一步推動香港的創科發展。

這新常態亦為政府帶來良好契機，運用創科方案精簡工作程序，以迎合商界及市民不斷上升的期望；政府亦可藉此良機以身作則，推動私營機構加快其創科發展。我們各項智慧創科措施的定位，是必須能提升規管服務和營運服務的表現，並為公眾創造價值。

Another example was setting up crowd control systems using IoT and other technologies at the sale event of the Chinese New Year flowers in early 2021 within only two weeks, mobilising over 160 colleagues and many contractors to satisfy the highly dynamic needs of the clients and relevant departments. This and other anti-epidemic projects would not have been possible without the necessary mindset and organisational innovation, together with our strong I&T foundation and connections with suppliers built up over the years.

These advantages also apply to Regulatory Services which leveraged its experience and understanding of the regulatees to help them maintain essential services to the public. We made sure that power utilities, oil/gas companies, lift and escalator contractors and railway operators put in place sound Business Continuity Plans and anti-virus measures; and we promptly rolled out tools like drop boxes and online platforms for E&M workers for registration renewals, bookings, applications as well as continuing professional development and training. We also ensured that vehicle maintenance workshops, registered contractors/workers/competent persons for electrical/gas/lift and escalator sectors were covered by the Anti-epidemic Fund for one-off cash subsidies to ease their financial pressure under the epidemic.

For the EMSTF, the epidemic has underscored the importance of its healthy financial situation and organisational agility, which enabled us to take on urgent and technically challenging tasks for clients. The work done for the Chinese New Year flower sale points, for example, illustrated our belief that we must leverage our financial resources and flexibility to support clients when necessary.

Indeed, the drop in the EMSTF's ROR should be also seen in this positive light. To support the Job Creation Scheme under the Civil Service Bureau, we hired about 1 500 temporary staff to enhance publicity, support E&M asset digitisation and step up environmental hygiene work in support of the Government's initiative to create more jobs in the epidemic. We were glad to help in these small ways and create public value for community betterment in a crisis.

I&T FOR SMART GOVERNMENT AND SMART CITY

Much has been written about the EMSD's I&T work and our role as the Government's Innovation Facilitator. Now that the epidemic has triggered enormous demand for I&T solutions in all walks of life, we hope this new normal will kick-start a snowball effect of further I&T development in Hong Kong.

The new normal is also an excellent opportunity for the Government to use I&T to streamline its work processes to meet rising expectations from businesses and the public, and to lead by example so that the private sector will expedite its own I&T efforts. The positioning of our I&T smart initiatives is that they must enhance the performance of our Regulatory Services and Trading Services and create value for the public.

為配合《行政長官2020年施政報告》中推動「智慧政府」的倡議，包括精明規管計劃，以及運用創科提高效率的精簡政府服務計劃，規管服務一直致力發展新的解決方案，例如應用於我們職權範圍內所管轄的全部45項牌照服務的電子提交、電子繳費和電子牌照服務等，務求這些工具方便使用並且安全可靠。規管服務也善用政府科技統籌(整體撥款)項目下撥款，開展部門本身的創科項目，例如使用光纖監察和人工智能技術，以提高升降機及自動梯安全，日後更會與業界分享相關技術。

事實上，機電署負責推展《香港智慧城市藍圖2.0》(《藍圖2.0》)所提出的多項措施，包括加強遠足人士安全、智能洗手間、防控鼠患、「建築信息模擬 — 資產管理」、政府的物聯網網絡(政府物聯通)、「機電創科網上平台」、非收費錶停車場的實時空置泊車資訊等。這些措施都是我們為香港發展成智慧政府領導的智慧城市所直接作出的貢獻。

以智能洗手間為例，我們當初在機電署總部設立及測試該洗手間，引起不少發展商注意。至今市面部分商場已設有智能洗手間，除了監測廁格佔用情況，還可監察消耗品和其他環境參數，例如室內空氣質素等。這例子說明，我們的試驗計劃一旦引起業界和市民的興趣，相關的物業管理行業會迅速把其發展成智能設施管理方案，推而廣之。我們為《藍圖2.0》推出的其他項目，也極有可能獲私營機構採納，未來作大規模應用發展。

另一創科發展途徑，是我們協助客戶度身訂製專屬創科方案，最佳例子是我們與懲教署合作開發並屢獲獎項的智慧監獄方案，而香港首個智慧監獄大潭峽懲教所，也將於2021年稍後正式啓用，是智慧監獄項目的一個里程碑。

我們也欣然報告，機電署的創科項目在2021年日內瓦國際發明展共贏得四項金獎和四項銀獎。我們的八項參賽作品全是同事自發參賽，實在令人鼓舞，可說是我們努力深化部門創科文化的成果。就創科方面，我們也成立了創科督導委員會，以由下而上及由上而下的雙向方式，在機電署內推動創科。

In line with the Chief Executive's 2020 Policy Address initiative to promote Smart Government including the Be the Smart Regulator Programme, and the Streamlining of Government Services Programme which aims to use I&T to raise efficiency, Regulatory Services have been working on new solutions such as e-submission, e-payment and e-licence for all 45 licences under our purview. The aim is to make these tools user-friendly but highly secure. Regulatory Services also initiated its own I&T projects with the Government's TechConnect (Block Vote) funding, such as using optical fibre monitoring and artificial intelligence (AI) technologies to boost lift and escalator safety, for sharing with the trade in due course.

Indeed, the EMSD has taken up several initiatives put forward in the Smart City Blueprint for Hong Kong 2.0 (Blueprint 2.0), namely hiker safety, smart toilet, rodent control management, Building Information Modelling-Asset Management (BIM-AM), the Government-Wide Internet of Things Network (GWIN), the E&M InnoPortal, real-time parking vacancy information for non-metered car parks, etc. These are our direct contribution to Hong Kong's moves towards becoming a smart city with a smart government.

Take the smart toilet as an example. The trial toilets first set up in the EMSD Headquarters caught the attention of many developers. Smart toilets are now in use in some shopping centres to monitor consumables and other environmental parameters like indoor air quality, in addition to toilet occupancy. This example shows that once our trial has triggered interest from the trade and the public, it can evolve quickly into an intelligent facility management solution in the hands of the property management sector. Some of our other projects launched for the Blueprint 2.0 also stand a good chance of being adopted by the private sector on a major scale in the future.

Another route is for us to help clients tailor their unique I&T solutions. A notable example is the award-winning Smart Prison solutions which we jointly developed with the Correctional Services Department. The initiative will achieve a milestone when Hong Kong's first Smart Prison, Tai Tam Gap Correctional Institution, is officially launched later in 2021.

We are also delighted to report that the I&T projects of the EMSD won four gold and four silver medals at the International Exhibition of Inventions of Geneva 2021. The fact that all our eight entries were submitted by colleagues on a voluntary basis is all the more heartening as we strive to deepen our I&T culture. In this regard, we have set up a Steering Committee on I&T, which uses both bottom-up and top-down approaches to promote I&T within the EMSD.

署長的話
MESSAGE FROM THE DIRECTOR

深化區域合作

在疫情下，我們在線上繼續與中國內地（內地）及海外合作伙伴進行交流活動，包括與粵港澳大灣區（大灣區）的廣州市技師學院等機構舉辦聯合培訓課程，以至通過我們的「機電創科網上平台」進行創科合作。我們的目標是進一步深化與現有伙伴的合作，例如在2020年12月與我們簽署新的合作備忘錄的廣州市人力資源和社會保障局；以及積極於大灣區物色更多新伙伴，拓展合作網絡的深度和廣度。

我們與亞太區經濟合作組織（亞太經合組織）的合作在2021年再創新高，機電署的代表再次獲提名出任能源效益及節能專家小組的主席。2020年年底，我們還在2019冠狀病毒病疫情期間主辦了能源效益及節能專家小組和能源數據及分析專家小組的首次聯合會議及研討會。我們在亞太經合組織的工作，突顯了香港作為「推動者」和「促成者」的角色，目的是加強區域合作，以實現亞太經合組織地區減少能源強度的目標。

值得一提的是，我們已經就七個亞太經合組織成員城市在減少能源強度方面的優秀表現完成研究，這也是香港首個由亞太經合組織撥款資助的項目。我們很榮幸於2021年3月，主辦了名為「減少區內都市化城市能源強度」的相關線上研討會。我們隨後將籌辦第二個由亞太經合組織資助的項目，內容是如何建立重新校驗能力。

機電署於2020年10月與新加坡能源市場管理局簽訂了諒解備忘錄，加強雙方在能源安全事宜的合作。承着機電署創科項目在日內瓦國際發明展的成績和勢頭，另一項新發展是我們將於2021年稍後展開一項國際人工智能大賽的跨地域活動。這項目由廣東省科學技術協會和機電工程署合辦，中國科學技術協會港澳台辦公室和香港特別行政區政府創新及科技局為指導單位，活動會聚焦人工智能在屋宇裝備業界的發展和應用。

除了論壇和工作坊之外，我們還會舉辦線上人工智能比賽，參賽者須開發一個人工智能模型，以預測一幢商業大樓的冷卻需求負荷。我們很高興能與內地合作，攜手舉辦這項國際盛事。

DEEPENING REGIONAL CO-OPERATION

Exchanges with counterparts of the Mainland of China (Mainland) and overseas have continued online during the epidemic, ranging from joint training programmes with entities such as the Guangzhou Technician College in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) to I&T collaboration via our E&M InnoPortal. Our aim is to further deepen the co-operation with existing partners, such as the Guangzhou Municipal Human Resources and Social Security Bureau with which we signed a new Memorandum of Understanding in December 2020, and to identify new partners in the GBA to extend the depth and breadth of our co-operation network.

Our work with the Asia-Pacific Economic Cooperation (APEC) reached new heights in 2021 when the EMSD's representative was re-elected to serve another term as the Chairman of the Expert Group on Energy Efficiency and Conservation (EGEE&C). In late 2020, we also organised the first-ever joint EGEE&C and Expert Group on Energy Data and Analysis (EGEDA) meeting and workshops amidst the COVID-19 epidemic. Our effort in the APEC highlights Hong Kong's role as a "promoter" and "facilitator" to strengthen regional co-operation in achieving the energy intensity reduction goal in the APEC region.

It is worth mentioning that we have completed a study on the outstanding performance of energy intensity reduction in seven APEC member cities, which is also Hong Kong's first-ever APEC-funded project. We were honoured to host the related online workshop titled "Energy Intensity Reduction in the APEC Regions' Urbanised Cities" in March 2021. This would be followed by our second APEC-funded project on capacity building for retro-commissioning.

The EMSD signed a Memorandum of Understanding with the Energy Market Authority of Singapore in October 2020 to collaborate on energy safety issues. Another new development was the organisation of a cross-regional international AI competition which will be kicked off later in 2021, riding on the momentum and success of our I&T projects in the International Exhibition of Inventions of Geneva. Jointly organised by the Guangdong Provincial Association for Science and Technology and the EMSD, with the Office of Hong Kong, Macao and Taiwan Affairs of the China Association for Science and Technology and the Innovation and Technology Bureau of the Hong Kong Special Administrative Region Government as advisors, the competition will focus on AI development and applications in the building services industry.

Apart from conferences and workshops, there will be an online AI Competition where participants will develop an AI model to predict the cooling demand of a commercial building. We are delighted to be jointly organising this global competition with the Mainland.

組織擴展

營運基金表現持續穩定，而規管服務也不斷擴展工作範疇，例如加強舊式升降機安全和落實建設區域供冷系統。事實上，我們的同事判斷力極佳，且技術精湛，把資源調配至有最大潛力提升機電安全和能源效益的新項目上。

以舊式升降機安全為例，我們在幾年前已率先展開工作，出版和推廣一套優化現有升降機的指引。由於我們採取主動並大力推廣，鼓勵了部分業主進行優化工作，成果漸取得公眾支持，逐漸做出勢頭，並獲政府投入新資源。當年我們走出的第一步，現已成為政府的「優化升降機資助計劃」，大受升降機擁有人歡迎。我們更成立了一個新部別，與市區重建局合作實施「優化升降機資助計劃」。

同樣，我們自2000年以來在區域供冷系統方面的先導工作也取得成果。由我們設計、建造和營運的啟德發展區區域供冷系統逐漸成形，並證明了其在節能和可持續發展方面的價值。事實上，區域供冷系統將成為洪水橋/廈村、古洞北和東涌新市鎮擴展（東）等新發展區的基建設施，我們也開設了一個新部別，專門負責區域供冷系統的工作。

其他能源效益工作也如預期般有所增長，例如最近就獨立式空調機、抽濕機及慳電膽的能源效益評級第二度提升級別標準（於2020年12月開始），以及「綠色校園2.0」計劃及其下的「採電學社」項目都廣受學校和學生歡迎。「強制性能源效益標籤計劃」（強制性標籤計劃）是另一增長範疇。強制性標籤計劃第四階段建議把發光二極管燈、氣體煮食爐和住宅式即熱氣體熱水爐納入強制性標籤計劃，預計每年可額外節省約1.58億度用電量，相當於每年減少排放75 000公噸二氧化碳。第四階段暫定於2023年實施，屆時納入強制性標籤計劃規管的全部11類產品，將佔全港住宅總能耗約八成，遠高於目前約五成水平。這也是首次把家用氣體爐具納入強制性標籤計劃，標誌着另一里程碑。

獎項及榮譽

年內，機電署同事奪得多個獎項和嘉許，成績令人鼓舞。有關獎項包括2020年申訴專員嘉許獎、2021年行政長官公共服務獎狀、2020年公務員事務局局長嘉許狀，以及第26屆公德地盤嘉許計劃下的多個獎項。部門上下逾2 000名同事傾力參與抗疫工作，也獲得政務司司長嘉獎。

ORGANISATIONAL GROWTH

As the EMSTF continued its steady performance, the Regulatory Services has also grown to take on an expanding portfolio such as aged lift safety and District Cooling Systems (DCSs). Indeed, our colleagues have shown good judgment and skills in deploying resources to new initiatives that pose the greatest potential for enhancing E&M safety and energy efficiency.

Take, for instance, aged lift safety where we took the first steps some years ago to publish and promote a set of Guidelines for Modernising Existing Lifts. Our proactive effort encouraged some owners to take action, and the results gradually gained momentum and public support which in turn attracted new resources from the Government. The initiative eventually became the Government's Lift Modernisation Subsidy Scheme (LIMSS), which is much welcomed by lift owners. We have set up a new Division to work with the Urban Renewal Authority on the implementation of the LIMSS.

By the same token, our pioneering work on the DCSs ever since the 2000s has yielded results as the DCS in Kai Tak Development – which we designed, built and operate – gradually took shape and proved its value in energy saving and sustainability. Indeed, the DCSs will be part of the infrastructure in new development areas such as Hung Shui Kiu/Ha Tsuen, Kwu Tung North and Tung Chung New Town Extension (East), and we have set up a new Division dedicated to DCS work.

Growth in other energy efficiency work was also expected, such as the recent second upgrading of energy efficiency standards for single package type room air-conditioners, dehumidifiers and compact fluorescent lamps (commencement in December 2020), and Green Schools 2.0 with its Solar Harvest scheme which were highly popular with schools and students. The Mandatory Energy Efficiency Labelling Scheme (MEELS) is another growth area. The proposed fourth phase of the MEELS, which covers Light Emitting Diode lamps, gas cookers and gas water heaters, would bring an additional annual energy saving of about 158 million kWh, which is equivalent to a reduction of 75 000 tonnes of carbon emissions. When the fourth phase is launched, tentatively scheduled for 2023, a total of 11 products under the MEELS will account for about 80% of the total energy consumption in the residential sector, up from the current about 50%. This will also be the first time that the MEELS covers domestic gas appliances, marking another milestone.

AWARDS AND ACCOLADES

The list of awards and recognition our colleagues received during the year was impressive. These included the Ombudsman's Awards 2020, the Chief Executive's Commendation for Government/Public Service in 2021, the Secretary for Civil Service's Commendation Award 2020 and awards under the 26th Considerate Contractors Site Award Scheme. Over 2 000 colleagues also received commendations from the Chief Secretary for Administration for their contribution in fighting COVID-19.

署長的話
MESSAGE FROM THE DIRECTOR

在科技方面，我們的創科項目在日內瓦國際發明展贏得八個獎項，而部門團隊的創新項目也榮獲多個建築信息模擬獎項，以及香港工程師學會創意獎2021。

2021年2月，我們向美國能源工程師協會提交有關機電署「採電學社」項目的參賽文案，介紹計劃如何提升新一代的可再生能源意識，贏得該會2021年亞太區年度創新能源項目獎。這是我們近年第三度贏得美國能源工程師協會的獎項，足證部門的工作在國際舞台上獲得讚譽。

專利是社會對我們創科工作的另一種認同。作為業界先驅，我們積極應用建築信息模擬等新技術，並已獲得相關專利，以幫助客戶優化公共服務。自2013年起，我們與多個機構合作，成功獲得約20項專利，並將與業界和公眾分享，造福社會。

來年展望

政府正努力爭取於2050年前實現碳中和，因此減碳將會是我們2021/22年度的工作重點。減碳對機電署並非新事物，多年來，我們一直協助客戶落實各種節能和可再生能源項目，同時致力於本港推廣能源效益和節能。我們已準備就緒，隨時進一步支援政府的減碳工作。

人才是我們的最大資產，因此我們非常重視招聘和培訓工作。營運基金的兩個技術員培訓計劃均縮短了一年，由2021年夏季學年起推行，為業界引入生力軍。對於現職員工，在瞬息萬變的世界中，終身學習和擴闊視野至關重要。我們將繼續提供持續學習的機會，並善用我們的大灣區和國際合作網絡，協助同事拓闊眼界和見識。

年內，我們的員工協助客戶執行不同的抗疫工作，亦與其他政府部門聯手進行各項相關工作，例如於龍琛路體育館的社區疫苗接種中心當值，在油麻地等「受限區域」協助進行強制2019冠狀病毒病檢測，以及就興建北大嶼山醫院香港感染控制中心提供技術支援，表現英勇，堅毅不拔。我們的員工還在緊迫的時間內為指定檢疫酒店、安老院舍、健身中心及餐廳等場所進行檢查，以確保通風設計和設施符合感染控制要求。事實上，我們不單擔任規管者及提供機電服務，更會照顧社區的需要。

On the technology front, apart from the eight medals won at the International Exhibition of Inventions of Geneva for our I&T projects, our teams also won multiple BIM awards as well as the Hong Kong Institution of Engineers Innovation Award 2021 for their innovative projects.

The submission we made to the Association of Energy Engineers (AEE) in February 2021 on how our Solar Harvest scheme cultivated renewable energy awareness in the new generation won the AEE's Asia Pacific Rim Region Innovative Energy Project of the Year Award 2021. This is our third AEE award in recent years, a major recognition of our work on the international stage.

Patents are another form of recognition of our I&T work. As pioneers in the application of new technologies such as BIM, we have obtained patents to help clients enhance their public services. Working jointly with many organisations, we have since 2013 successfully obtained around 20 patents, which will be shared with the trade and the public for the community's benefits.

PROSPECTS NEXT YEAR

As the Government strives to achieve carbon neutrality before 2050, decarbonisation will be our focus in 2021/22. This is not new to the EMSD, as we have been helping clients implement energy-saving and renewable energy projects while promoting energy efficiency and conservation in Hong Kong for years. We stand ready to further support the Government's decarbonisation work.

Human capital is our greatest asset and we attach much importance to recruitment and training. The EMSTF's two Technician Training Schemes are shortened by one year, with effect from the 2021 summer intake, to help attract young talent. For existing staff, life-long learning and broadening of the horizons are important in a fast-changing world. We shall continue to provide continuous learning opportunities and leverage our GBA and international collaboration network to give colleagues broad exposure.

During the year, our staff showed great courage and resilience in assisting in clients' anti-epidemic work and the joint tasks with various government departments, such as manning the CVC at Lung Sum Avenue Sports Centre, assisting in the compulsory COVID-19 testing in "restricted areas" like Yau Ma Tei and providing technical support in the construction of the NLHHKICC. Our staff also conducted inspections of designated quarantine hotels, residential care homes for the elderly, fitness centres, restaurants, etc. within a tight schedule to ensure the ventilation design and facilities fulfil the infection control requirements. Not only do we serve as a regulator and provide E&M services, but we also cater to community needs.

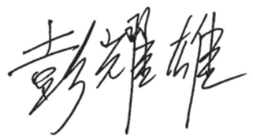
我們也會繼續開展創科工作。規管服務會繼續研發運用區塊鏈技術的「升降機及自動梯數碼工作日誌」系統；以及於2022年年中推出各種電子牌照簽發程序。鐵路科會繼續監察建造中的沙中綫安全事宜，尤其是紅磡站至金鐘站的新路段的工程。我們也會繼續就港鐵各鐵路綫的資產管理系統和安全管理系統進行全面和直接審核，並協助鐵路營運商深化其安全文化，以提升鐵路安全。

我們最近就不同類別的機電資產出版了八份優良操作和維修作業守則及手冊。日後，我們會繼續領導機電同業，推動優良作業方法。我們現正開發網站，供業界人士上載經審查的資訊和影片，鼓勵同業互相分享學習優良作業方法。此外，機電署已獲得ISO 37001反賄賂管理體系認證，成為首個取得這項認證的政府部門。誠信是我們的其中一項核心價值，我們會提供所有必要的支援和培訓，維持廉潔的環境。

衷心致謝

疫情改變了世界，也讓我們洞悉如何應對未來挑戰。我們衷心感謝營運基金的客戶於過去一年的信任和合作，也感激同事的努力和優秀服務。各決策局和政府部門全力支持我們的規管工作，我們亦深表謝意。

各專業團體、商會和業界伙伴、學術界、培訓和研究機構、非政府組織，以及所有內地與海外合作伙伴，積極支持我們的工作，我們謹此由衷致意。我們也感謝市民、傳媒、立法會議員和其他意見領袖的監察和意見。我們相信，憑藉全體員工、客戶和持份者的支持，機電工程署定能繼續為社會創造巨大價值。



彭耀雄
機電工程署署長
機電工程營運基金總經理

Our I&T work will continue too. Regulatory Services will further its work to develop a blockchain-based Digital Log-book System for Lifts and Escalators, and roll out various e-licensing procedures by mid-2022. The Railways Branch will continue to oversee railway safety matters related to construction of the Shatin to Central Link, in particular the new section from Hung Hom station to Admiralty station. We shall keep up the momentum of our Comprehensive and Direct Assessments on the Asset Management Systems and Safety Management Systems for the MTR Corporation Limited's railway lines and help the railway operator cultivate a stronger safety culture for enhancing railway safety.

We shall continue to lead the E&M trade and promote best practices, further to our recent publication of eight operation and maintenance best practices booklets and handbooks on different categories of E&M assets. To encourage the trade to share their best practices, we are developing a website for practitioners to share their materials and videos, subject to prior vetting. The EMSD has also obtained the ISO 37001 Anti-bribery Management Systems Certification, making us the first government department to attain this certification. Integrity is one of our core values, and we shall provide all necessary support and training to maintain a corruption-free environment.

GRATITUDE AND APPRECIATION

The pandemic has transformed the world and given us insights into how to manage the challenges ahead. We sincerely thank all EMSTF clients for their trust and partnership in the past year, and our colleagues for their commitment and excellent services. We also owe the various policy bureaux and government departments a big thank-you for their support in our regulatory work.

We are grateful to the professional bodies, trade associations and partners, academics, training and research institutions, non-governmental organisations, and our Mainland and overseas partners for their enthusiasm and support. We also thank members of the public, the media, Legislative Councillors and other opinion leaders for their vigilance and input. With the support from our staff, clients and stakeholders, we are confident that the EMSD will continue to deliver great values to the community.

Pang Yiu-hung
Director of Electrical and Mechanical Services
General Manager, Electrical and Mechanical Services Trading Fund

我們的管理層
OUR MANAGEMENT

* 薛永恒太平紳士出任機電工程署署長至2020年4月21日
Mr Sit Wing-hang, Alfred, JP was Director of Electrical and Mechanical Services up to 21 April 2020

* 黃奕進先生出任助理署長/電力及能源效益至2020年6月22日
Mr Vy Ek-chin was Assistant Director/Electricity and Energy Efficiency up to 22 June 2020

* 潘國英太平紳士出任助理署長/氣體及一般法例至2021年2月25日
Mr Poon Kwok-ying, Raymond, JP was Assistant Director/Gas and General Legislation up to 25 February 2021

* 朱雅琦女士自2021年1月4日出任署理高級庫務會計師/會計服務
Ms Chu Nga-ki acting up Senior Treasury Accountant/Financial Services with effective from 4 January 2021

* 王錫章太平紳士出任助理署長/1至2020年7月21日
Mr Wong Sek-cheung, JP was Assistant Director/1 up to 21 July 2020

* 李碧雲女士出任總庫務會計師/財政管理至2021年1月12日
Ms Li Pik-wan, Clara was Chief Treasury Accountant/Financial Management up to 12 January 2021

署長 DIRECTOR

1 彭耀雄太平紳士
Mr Pang Yiu-hung, JP
機電工程署署長
Director of Electrical and Mechanical Services

2 潘國英太平紳士
Mr Poon Kwok-ying, Raymond, JP
副署長/規管服務
Deputy Director/Regulatory Services

3 張遠芳太平紳士
Mr Cheung Yuen-fong, JP
副署長/營運服務
Deputy Director/Trading Services

4 陳秋發太平紳士
Mr Chan Chau-fat, JP
助理署長/鐵路
Assistant Director/Railways

5 朱祺明先生
Mr Chu Kei-ming, Barry
助理署長/電力及能源效益
Assistant Director/Electricity and Energy Efficiency

6 周厚強先生
Mr Chow Hau-keung, Vincent
署理助長署長/氣體及一般法例
Assistant Director/Gas and General Legislation (Acting)

7 陳嘉聰先生
Mr Chan Ka-chung
署理助理署長/1
Assistant Director/1 (Acting)

8 黃偉光先生
Mr Wong Wai-kwong
助理署長/2
Assistant Director/2

9 陳志偉太平紳士
Mr Chan Chi-wai, Richard, JP
助理署長/3
Assistant Director/3

10 李慧儀女士
Ms Lee Wai-yee, Cindy
總庫務會計師/
財政管理
Chief Treasury Accountant/Financial Management

11 朱雅琦女士
Ms Chu Nga-ki
署理高級庫務會計師/會計服務
Senior Treasury Accountant/Financial Services (Acting)

12 劉志偉先生
Mr Lau Chi-wai, Wilfred
員工關係主任
Staff Relations Officer

13 袁秀明女士
Ms Yuen Sau-ming, Anna
主任秘書
Departmental Secretary

規管服務業務概覽

REGULATORY SERVICES ACHIEVEMENTS OVERVIEW

抱負 VISION

我們的抱負，是要成為促使香港在機電安全及善用能源方面，都達到世界首要都會水平的政府機構。

Our vision is to be the government agency that makes Hong Kong a top-ranking city in E&M safety and in the utilisation of energy.

使命 MISSION

我們的使命，是確保機電及能源科技均以安全、可靠、經濟及環保的方式得以善用，並藉此促進社會的安全及提升生活質素。

Our mission is to enhance the safety and the quality of life of our community by ensuring that E&M and energy technologies are harnessed in a safe, reliable, economical and environment-friendly manner.

信念 VALUES

專業才能 EXPERTISE
誠信 INTEGRITY
可靠 RELIABILITY
承擔 COMMITMENT

高層管理人員
SENIOR MANAGEMENT

1 **彭耀雄太平紳士**
Mr Pang Yiu-hung, JP
機電工程署署長
Director of Electrical and Mechanical Services

2 **潘國英太平紳士**
Mr Poon Kwok-ying, Raymond, JP
副署長 / 規管服務
Deputy Director/Regulatory Services

3 **陳秋發太平紳士**
Mr Chan Chau-fat, JP
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Assistant Director/Railways

4 **朱祺明先生**
Mr Chu Kei-ming, Barry
助理署長 / 電力及能源效益
Assistant Director/Electricity and Energy Efficiency

5 **周厚強先生**
Mr Chow Hau-keung, Vincent
署理助理署長 / 氣體及一般法例
Assistant Director/Gas and General Legislation (Acting)

6 **朱雅琦女士**
Ms Chu Nga-ki
署理高級庫務會計師 / 會計服務
Senior Treasury Accountant/Financial Services (Acting)

7 **袁秀明女士**
Ms Yuen Sau-ming, Anna
主任秘書
Departmental Secretary

* 薛永恒太平紳士出任機電工程署署長至2020年4月21日
Mr Sit Wing-hang, Alfred, JP was Director of Electrical and Mechanical Services up to 21 April 2020.

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Mr Vy Ek-chin was Assistant Director/Electricity and Energy Efficiency up to 22 June 2020.

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Ms Chu Nga-ki acting up Senior Treasury Accountant/Financial Services with effective from 4 January 2021.

潘國英太平紳士
Mr Poon Kwok-ying, Raymond, JP

副署長 / 規管服務
Deputy Director / Regulatory Services

服務回顧
OPERATIONS REVIEW

儘管去年仍受2019冠狀病毒病疫情影響，規管服務繼續全力推進機電安全和能源效益規管工作，並達到政府訂定的所有目標和指標。2020年涉及電力、氣體、升降機及自動梯以及鐵路的事故也持續減少，再次證明我們多管齊下及以風險為本的公眾教育、巡查和執法方針確有成效。

Despite another year haunted by the COVID-19 epidemic, the Regulatory Services forged ahead with its work as the regulator of E&M safety and energy efficiency while meeting all targets and indicators set by the Government. The year 2020 also saw continual decline in the number of electrical, gas, lift and escalator and railway incidents. This reaffirms the effectiveness of our multi-pronged, risk-based approach to public education, inspection and law enforcement.

年度工作亮點

除了擔當規管者的角色，我們還負責推廣和促進提升市民生活質素的新措施，這方面的工作開闢了全新的發展領域，例如鼓勵受規管的機構運用創新科技(創科)。我們成功申請政府的科技統籌(整體撥款)項目下撥款，為升降機及自動梯行業研發應用區塊鏈技術的數碼化工作日誌，以取代原有的紙本記錄，惠及業界和公眾，便是一例。

我們並把規管服務的日常操作數碼化，以加快部門本身的創科轉型，以及配合政府的「精明規管」措施，有關數碼化操作包括為業界提供各種流動應用程式、網上持續專業進修課程、數碼表格和電子牌照等工具。

HIGHLIGHTS OF THE YEAR

Beyond being a regulator, our role to promote and facilitate new initiatives to improve people's living has opened up new horizons too, such as facilitating regulatees to use innovation and technology (I&T). An example was our successful bidding of funds from the TechConnect Block Vote to develop a blockchain-based Digital Log-book for the lift and escalator trade to replace paper records, greatly benefiting the trade and the public.

We also expedited our own I&T transformation by digitalising Regulatory Services operations, including employing various mobile apps, online Continuing Professional Development (CPD) courses, digital forms and e-licensing tools for the trade, all in line with the Government's Be the Smart Regulator initiative.

年內另一成就是深化了我們取自傳統中醫智慧的「治未病」文化。每當發現個別範疇有潛在機電安全風險，我們便迅速採取相應的緩解措施，例如進行全港宣傳活動，鼓勵市民更換沒有「GU」標誌的舊式家用氣體爐具；到訪所有餐廳食肆，找出氣體裝置較高風險的食肆，鼓勵其進行「快速檢測」和更換老化的氣體部件；與非政府機構及承辦商合作，為全港數千個劏房戶進行電力安全宣傳家訪及巡查，檢查其固定電力裝置是否安全等。

在鐵路安全方面，我們督導港鐵有限公司(港鐵)作出特別安排，延長屯馬綫全綫非服務時間測試，相關車站於2021年5月2日早上，延遲約兩小時開始正常車務服務。當天的測試是為屯馬綫全綫開通作出的其中一項最後準備，測試旨在模擬屯馬綫全綫開通首日於繁忙和非繁忙時段的運行情況，有助屯馬綫於2021年6月全綫順利開通。同時，我們繼續推行「優化升降機資助計劃」，以預防舊式升降機發生事故，並推出「自動梯安全網絡預測警報系統」等創科項目，協助業界提升自動梯安全。總體而言，我們的同事在減低及消除風險方面更積極主動，更能防患於未然。

Another achievement in the year was deepening our culture of "curing diseases before they arise", a concept borrowed from the Chinese medicine. Upon identifying potential E&M safety risks in specific areas, we took prompt mitigating measures. These included a territory-wide publicity campaign to encourage households still using aged domestic gas appliances without the GU mark to replace them with models bearing the GU mark; visiting all restaurants and identifying those with gas installations of higher risks to carry out "Quick Checks" and replacement of aged gas parts; working with non-governmental organisations (NGOs) and contractors to conduct electrical safety promotion visits and inspections to thousands of sub-divided units across the territory to check the safety of their fixed electrical installations.

On railway safety, we steered the MTR Corporation Limited (MTRCL) to make an extraordinary arrangement to enable an extended non-traffic hours testing of the full Tuen Ma Line (TML), with around two hours of delayed opening of normal services of relevant stations on the morning of 2 May 2021. Being part of the final preparation for the full TML commissioning, the testing was carried out to simulate the Day-1 running of the full TML under peak and non-peak hours, leading to the smooth full line opening in June 2021. Meanwhile, we pressed ahead with the Lift Modernisation Subsidy Scheme (LIMSS) to pre-empt aged lift incidents and rolled out I&T projects such as the Web-based Predictive Faults Alarm System of Escalators to help the trade enhance escalator safety. Overall, our colleagues are becoming more proactive and effective in nipping risk factors in the bud.

由於預期電動車會日漸普及，新能源汽車也會陸續推出，我們必須確保全港超過18 000輛石油氣的士和4 600輛公共小巴能享用持續可靠的燃氣供應，其中的關鍵工作是續批12個專用石油氣加氣站（專用氣站）的合約，相關的現有合約將由2021年至2023年陸續屆滿。我們悉力與各持份者進行協調和籌備公開招標的工作，全部專用氣站的新合約終在2021年5月順利批出。目前本港的專用氣站網絡對社區低碳排放和良好空氣質素十分重要。

While it is anticipated that electric vehicles will be popularised and new energy vehicles will also be launched, we have to ensure a continual and reliable fuel supply for over 18 000 LPG taxis and 4 600 public light buses. A key step was the renewal of contracts for the supply of auto-LPG at the 12 Dedicated LPG Filling Station (DFS), while the contracts would be expired progressively from 2021 to 2023. We worked vigorously in the tender preparation and co-ordination with stakeholders, rendering all the new contracts being awarded smoothly in May 2021. The DFS network in our territory has been pivotal at the time being for the low carbon emission and good air quality for our community.

另外，我們的能源效益團隊繼續以身作則，為各政府場地開展節能、使用可再生能源和重新校驗的工作，也為社區開展綠色校園2.0計劃的「採電學社」和「智能慳電」等推廣節能活動。除此以外，機電署的代表更再次獲選，出任亞太區經濟合作組織（亞太經合組織）能源效益及節能專家小組主席，可說創造了歷史。該小組與能源數據及分析專家小組，在2020年11月以視像會議方式在香港舉行了首次虛擬會議和研討會。

In addition, our energy efficiency team continued to lead by example via its energy saving, renewable energy use and retro-commissioning work for government premises as well as energy efficiency initiatives like the Solar Harvest and Energy Smart under Green Schools 2.0 for the community. EMSD made history, too, as our representative was re-elected to serve another term as Chairman of the Expert Group on Energy Efficiency and Conservation (EGEE&C) under the Asia-Pacific Economic Cooperation (APEC). The EGEE&C and the Expert Group on Energy Data and Analysis (EGEDA) held their first-ever virtual meeting and workshops in Hong Kong via video conferencing in November 2020.

香港亦很榮幸於2021年3月，舉辦亞太經合組織有關減少區內都市化城市能源強度的線上研討會。這是香港首個由亞太經合組織撥款資助項目的一部分，由機電署能源效益事務處負責，項目旨在分析亞太經合組織成員城市在減少能源強度方面的突出表現，並定下最佳節能作業方法。我們也提交了另一提案，研究組織成員如何建立重新校驗的能力，期望也獲亞太經合組織撥款資助。

Hong Kong was also honoured to host in March 2021 the online APEC Workshop on Energy Intensity Reduction in the APEC Regions' Urbanised Cities, which was part of Hong Kong's first-ever APEC-funded project undertaken by our Energy Efficiency Office to analyse the outstanding energy intensity reduction performance of seven APEC member cities and crystalize best energy-saving practices. We are hopeful that another proposal on retro-commissioning capacity building will be our next APEC- funded project.

抗疫工作

2019冠狀病毒病疫情擾亂了正常的經濟活動，但政府和業界迅速應變。疫情下，線上會議、網上進行牌照續期和持續專業進修課程，以及運用用創科平台舉行虛擬活動等已成為常態。線上模式更提高了我們各種持續專業進修課程的出席率，廣受業界歡迎。預料這類「低碳」活動模式，即使疫情過後仍會繼續。

ANTI-EPIDEMIC WORK

The COVID-19 epidemic has disrupted normal economic activities, but the Government and the trades were quick to adapt. Meetings, registration renewals and CPD courses conducted online as well as I&T-enabled virtual events have become the norm. The online mode has in fact boosted CPD attendance rates and is welcomed by the trade, and these "low-carbon" modes will likely stay even after the epidemic.

由於疫情令海外專家無法來港，我們物色了一位本地纜車專家，經考核後成為認可檢測員，並在我們嚴格監督下，於2020年5月及時為昂坪360系統進行年檢。

We have also identified a local ropeway expert to become an approved surveyor to conduct in time the annual examination of Ngong Ping 360 in May 2020, under our close supervision, as overseas experts could not travel to Hong Kong due to the epidemic.

事實上，我們非常重視幫助業界在疫情下維持無間斷服務。自2020年初疫情爆發以來，我們分別會見了氣體和電力公司、港鐵公司、香港機場管理局（關於旅客捷運系統服務）、香港電車、山頂纜車以及升降機及自動梯行業的受規管機構，以審視其業務延續計劃。另外，為紓緩機電從業員在疫情下的財政壓力，我們建議將機電業納入政府「防疫抗疫基金」的一次性現金補貼計劃。機電署更主動為電業工程人員及承辦商的註冊申請或續牌費用安排部分退款，寬減收費。

Indeed, it is our focus to help the trade maintain service continuity under the epidemic. From the onset of the epidemic in early 2020, we met with regulatees including the gas and power companies, MTRCL, Airport Authority Hong Kong (for automated people mover services), Hong Kong Tramways, Peak Tram and the lift and escalator trade to review their Business Continuity Plans. To help E&M practitioners suffering from financial hardship caused by the epidemic, we proposed to include E&M trades in the Government's Anti-epidemic Fund for the one-off cash subsidy. We also provided partial refund of the application or renewal fees for registration as electrical workers and contractors.

事實證明我們的努力卓見成效。年內，機電署規管的行業在疫情下都能向市民提供正常服務。我們有信心，即使疫情未能在短期內減退，規管服務和業界都已做好準備，繼續為市民服務。

With the efforts paid, our regulated trades succeeded in maintaining normal services to the public during the year. We are confident that both Regulatory Services and the trades stand ready to serve the public well even if the epidemic does not ease shortly.

「新常態」下的精明規管及區域合作

SMART REGULATOR AND REGIONAL CO-OPERATION UNDER "NEW NORMAL"

疫情催生了「新常態」，政府和企業在會議、培訓和提供服務等各方面均更多採用線上工具和創科方案，回應公眾對政府更利民便民的期望。此外，為配合行政長官2020年施政報告中推動「智慧政府」的倡議，包括「精明規管」及「精簡政府服務」計劃，機電署負責的所有45個牌照於2022年年中均可於網上申請。我們正積極為各項機電安全和能源效益的牌照申請、審批和續期，籌備推出電子牌照、電子遞交和電子繳費等工具。

The epidemic has given rise to a "new normal" where the Government and businesses have embraced more online tools and I&T solutions for meetings, training and the delivery of services to meet rising public expectations for greater convenience. Further, in support of the Chief Executive's 2020 Policy Address initiative to promote Smart Government, including the Be the Smart Regulator and Streamlining of Government Services Programmes, we have been preparing e-licence, e-submission and e-payment tools for various E&M safety and energy efficiency licence applications, approvals and renewals, to facilitate online application for all 45 EMSD's licences by mid-2022.

我們亦分別於2021年7月及10月利用「機電行業通」業界流動應用程式，為註冊電業工程人員辦理註冊續期及新註冊手續，日後會在「機電行業通」加入更多類似功能。部分電子處理功能已整合到政府的「智方便」數碼服務平台上。

We also made use of the E&M Trade App to e-process registration renewals and new registration for Registered Electrical Workers in July 2021 and October 2021 respectively, and more similar functions will be added to the app. Some e-processing functions are integrated into the Government's iAM Smart digital services platform.

新常態加快了人工智能和大數據分析等技術在其他規管和執法工作中進一步應用，例如用於分析鐵路事故趨勢的人工智能數據庫分析系統，以及用於預防鐵路事故的視頻分析等。我們的電力安全團隊正在開發具有機器學習功能的人工智能系統來分析航拍鳥瞰圖片，以偵測村屋及建築物屋頂的太陽能發電裝置。若發現有未註冊的裝置，我們會與業主跟進，要求他們辦理註冊手續。

The new normal has accelerated further use of technologies like artificial intelligence (AI) and big data analytics for other regulatory and enforcement work, such as an AI database analytics system for analysing railway incident trends and video analytics for the prevention of railway incidents. Our electricity safety team has been developing an AI system with machine learning function to analyse aerial photos for detecting unregistered rooftop solar photovoltaic installations on village houses and buildings. If such installations without registration are detected, we can follow up with the owners for registration.

新常態也影響了我們與中國內地（內地）的互動，因此會議和事故報告改以網上平台進行。儘管面對面互訪活動難以安排，我們與內地單位依然合作無間。年內我們與杭州海關展開合作，從源頭堵截未獲批准的家用氣體爐具經跨境電商平台直接售賣至香港，進一步深化與中國海關總署的合作關係。

The new normal also impacted our interactions with the Mainland of China (Mainland), and we moved to online platforms for meetings and incident reporting. Though face-to-face visits were difficult, co-operation remained strong. Indeed, co-operation with the General Administration of Customs of the People's Republic of China deepened further as we started to work with Hangzhou Customs to monitor and prevent the sale of non-approved gas products via e-commerce platforms directly into Hong Kong in the year.

我們還建立了新的伙伴關係。機電署於 2020 年 10 月與新加坡能源市場管理局簽署了諒解備忘錄，在能源安全問題上合作。另外，我們與廣東省、廣州市和深圳市規管燃氣安全的對口單位已作初步接觸，探討在粵港澳大灣區的合作機會。

New partnerships were forged too. We signed a Memorandum of Understanding with the Energy Market Authority of Singapore in October 2020 to collaborate on energy safety issues; and made initial contacts with the gas safety regulators in Guangdong Province as well as Guangzhou and Shenzhen municipalities to explore collaboration in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA).

預防事故：創科和其他工具

創科可以優化我們預防事故的工作和深化「治未病」文化。規管服務各部別在運用創科方案以加強檢查和其他預防措施方面，也取得良好進展，例如人工智能光纖傳感梳齒板項目，梳齒板的設計經過改良，並以全新物料製作，以避免細小硬物卡進自動梯造成「炒梯」事故，項目更榮獲日內瓦國際發明展金獎。此外，我們也利用科技統籌（整體撥款）項目下的撥款，主動研發人工智能監測自動梯事故預防系統，以減少因乘客攜帶大型行李或嬰兒車而釀成自動梯事故。該系統已在一個港鐵站進行測試。

另一個預防事故項目，是對本港舊式升降機的結構和效能進行研究調查，以風險為本的方法，抽樣研究由不同註冊升降機承辦商負責維修保養的不同品牌舊式升降機。我們檢測了57部機齡達30至50年的升降機，結果顯示大多數機件的結構依然完整，唯獨在一些機件發現定期檢查時較難發現的銹漬和磨損等維修保養不足的迹象。我們已將測試結果告知承辦商，以便即時作出跟進。該項研究調查為日後加強全港 40 000多部舊式升降機安全的措施，提供了良好的參考範本。

INCIDENT PREVENTION: I&T AND OTHER TOOLS

I&T can boost our incident prevention work and the culture of "curing diseases before they arise". All Divisions made good progress in using I&T solutions to step up inspections and other preventive measures, such as the Artificial Intelligent Nylon Optical Fibre Sensing Escalator Combs project, which features redesigned escalator combs made with a different material to avoid step dislocations due to small objects trapped, won the Gold Medal at the International Exhibition of Inventions of Geneva. Meanwhile, an "AI Based Accident Prevention System for Escalators" which we developed with TechConnect Block Vote funding to reduce escalator incidents caused by passengers carrying bulky baggage or baby prams, is under trial at a MTR station.

Another preventive project was a survey on the structural integrity of aged lifts in Hong Kong, using a risk-based approach to select aged lifts of different brands maintained by different Registered Lift Contractors (RCs). A total of 57 lifts aged 30 to 50 years were surveyed, with results showing that while their structural integrity was generally in order, there were maintenance shortcomings like rust stains and wear and tear in parts not easily noticed during routine inspections. The results were shared with the RCs for prompt action. The survey provides a good template for future initiatives to enhance safety of the over 40 000 aged lifts in Hong Kong.

組織發展

至於部門內部，我們在 2021 年年初根據創科、國際環境和流行病等領域的新發展，完善了規管服務的策略方向，以進一步加強各項工作。按照新的策略方向，我們會繼續充分利用創新科技，通過與業界有效聯繫合作，為公眾帶來裨益和便利。另一重點是積極融入大灣區和國家發展。

年內規管服務也有所擴展，開設了新部別以處理新工作，例如落實「優化升降機資助計劃」和新的區域供冷系統項目。最新的發展是政府建議成立鐵路署，將機電署鐵路科和路政署的鐵路拓展處整合，以進一步提升鐵路長遠發展的營運效率和安全成效。我們已經成立了一個協調委員會，開始籌備工作，籌劃有關成立鐵路署的建議，提交立法會審議。

ORGANISATIONAL DEVELOPMENTS

Internally, in early 2021, having regard to the new developments in areas such as I&T, international situation and the epidemic, we refined the Regulatory Services strategic directions (SDs) which will further enhance our work. Under the new SDs, we stay committed to leveraging technology and innovation to bring benefits and convenience to the public via effective engagement with the trade. Another focus is proactive integration into the GBA and national development.

Regulatory Services have been expanded with new Divisions to handle new work such as implementing the LIMSS and new District Cooling System projects. The latest development during the year was the Government's proposal to establish the Railways Department which will integrate our Railways Branch and the Railway Development Office of the Highways Department, to further improve the operational efficiency and effectiveness of long-term railway development and safety. We have already formed a co-ordination committee to begin preparatory work as the proposal is being planned for Legislative Council review.

來年重點

來年重點之一是深化我們的事故預防策略和措施，方法之一是由下而上培養我們所有同事的能力，使部門在評估風險方面更警覺和主動。同時，我們會進行長遠規劃，以配合政府的願景和措施，例如香港在2050年前實現碳中和的目標。

我們一直緊貼全球減碳和零碳議題的發展，隨時準備加入跨部門碳中和工作小組和其他督導委員會，為製訂相關政策和計劃分享我們的知識和技術。這方面的工作不僅本署能源效益事務處會參與，還需要所有其他部別的投入和貢獻，例如氣體標準事務處的同事，最近加入了碳中和專責小組。這是一個由環境局成立的跨部門研究小組，旨在探討利用氫氣作為燃料的議題，而內地在這領域的工作正迅速發展，令人鼓舞。我們相信，在 2022/23 年之後，政府在碳中和方面的工作會取得重大進展。

同時，我們將繼續通過社交媒體等各種渠道，與業界和市民接觸聯繫。隨着疫情緩和，我們計劃為學生和青少年舉辦更多面對面的活動。此外，與業界在創科和研究方面的合作會是另一重點，而運用區塊鏈技術的升降機及自動梯數碼化工作日誌等新項目，也令人雀躍。

我們希望藉此機會表揚所有員工竭誠服務，表現卓越。我們並感謝各決策局、政府部門、受規管機構、業界友好、學者、專業團體、非政府組織、培訓機構和市民大眾的鼎力支持。面對疫情，在內地、亞太及其他地區的合作伙伴仍繼續慷慨分享經驗，我們亦由衷致謝。

有賴各持份者鼎力支持，規管服務期望來年與各方繼續合作，獲得豐碩成果。

潘國英
機電工程署副署長／規管服務

PRIORITIES NEXT YEAR

A priority is to deepen our incident prevention strategy and initiatives. One option is to cultivate all our colleagues so that the organisation is more vigilant and proactive in assessing risks with a bottom-up approach. At the same time, we shall conduct long-term planning to help achieve the Government's vision and initiatives, such as the goal to achieve carbon neutrality in Hong Kong before 2050.

We have been keeping abreast with the global development on decarbonisation and zero carbon issues, and stand ready to join the inter-departmental carbon neutrality working groups, and other steering committees if required, to share our knowledge and technical knowhow in formulating the respective policies and plans. This requires the contribution of not only our Energy Efficiency Office but all other Divisions, such as our colleagues of the Gas Standards Office who have recently joined the Carbon Neutrality Taskforce, an inter-departmental study team established by the Environment Bureau to explore the topic of hydrogen as fuel, an area which the Mainland is making fast and encouraging progress. We believe there will be important progress in 2022/23 onwards to shape up the Government's dedication on carbon neutrality.

Meanwhile, we shall continue our trade and public engagement via multiple channels like social media. As the epidemic eases, we plan to organise more face-to-face activities for students and youths. I&T and research collaboration with the trade is another priority, and new projects such as the blockchain-based Digital Log-book for lifts and escalators are truly exciting.

We would like to take this opportunity to thank all our staff for their excellent service. Our appreciation goes to the policy bureaux and other government departments, our regulatees, trade partners, the academia, professional bodies, NGOs, training institutions and the public for their great support. Our co-operation partners in the Mainland, Asia Pacific and other regions have continued to share their experience despite the epidemic, for which we are sincerely grateful.

With support from our stakeholders, the Regulatory Services look forward to another year of fruitful collaboration.

Raymond Poon Kwok-ying
Deputy Director/Regulatory Services, EMSD

年度亮點
HIGHLIGHTS OF THE YEAR

推出《電力(線路)規例工作守則》2020年版
LAUNCHING 2020 EDITION OF THE CODE OF PRACTICE FOR THE ELECTRICITY (WIRING) REGULATIONS

經過一年半的檢討和修訂，新版《電力(線路)規例工作守則》已於2020年12月出版，並將於2021年12月31日全面實施。為求與時並進，滿足不斷轉變的社會需要，《工作守則》2020年版增添了新內容，例如建議為住宿處所內的固定電力裝置安裝電弧故障檢測裝置；規定村屋的固定電力裝置必須加裝漏電斷路器；以及就電動車的充電設施加入新要求等。我們更為註冊電業承辦商和註冊電業工程人員舉辦了多場線上研討會及其他宣傳活動，讓業界了解新版《工作守則》的內容。

After a year and a half of review and revision, the new edition of the Code of Practice for the Electricity (Wiring) Regulations (CoP) was published in December 2020 and will be fully implemented on 31 December 2021. To keep abreast with the latest development and to meet evolving community needs, the 2020 edition of the CoP includes new measures such as the recommendation for adoption of arc fault detection devices in premises with sleeping accommodation, the required installation of residual current devices for fixed electrical installations in village houses, as well as the new requirements on charging facilities for electric vehicles, among others. We have also organised a number of online seminars and other promotional activities for Registered Electrical Contractors and Registered Electrical Workers to enable the industry to understand the new edition of the CoP.

推全方位宣傳「GU」標誌家用氣體爐具
MULTI-PRONGED PUBLICITY CAMPAIGN FOR DOMESTIC GAS APPLIANCES BEARING GU MARK

為鼓勵市民更換老化及沒有「GU」標誌的舊式家用氣體爐具，我們推出全方位公眾宣傳教育活動，包括在社交媒體進行推廣，並在各公共交通工具上進行戶外廣告宣傳。「GU」標誌法例於2003年正式生效，規定所有供應和售賣以供在香港使用的家用氣體爐具必須附有「GU」標誌。換言之，如市民家中仍使用未有「GU」標誌的家用氣體爐具，機齡可能已超過17年，其安全保障及可靠性都成疑，應盡早考慮更換。我們與業界協作，主動聯絡仍使用「超齡」氣體爐具的用戶，鼓勵及建議他們適時將舊式氣體爐具更換為附有「GU」標誌的新型號。

To encourage the public to replace aged domestic gas appliances that do not bear a GU mark, a multi-pronged publicity campaign, including social media promotion and outdoor advertising on various public transports, was rolled out. The legislation relating to the GU mark, enacted in 2003, stipulates that all domestic gas appliances to be supplied and sold for use in Hong Kong shall bear a GU mark. In other words, domestic gas appliances without a GU mark might have been in use for more than 17 years, their safety and reliability might have been compromised, and owners should consider early replacement. We collaborated with the trade to reach out to users of aged gas appliances, encouraging them to replace their aged appliances with new models bearing a GU mark.

數碼化工作日誌提升升降機及自動梯的安全
DIGITAL LOG-BOOK FOR ENHANCED LIFT AND ESCALATOR SAFETY

為了協助升降機及自動梯維修保養業加快營運數碼化，我們運用科技統籌(整體撥款)項目下撥款，開始研發應用區塊鏈技術的升降機及自動梯數碼化工作日誌，以取代紙本工作日誌。數碼化工作日誌不單利便升降機及自動梯工程師及工程人員，便捷地記錄升降機及自動梯所有工作細節並上載至雲端，更運用大數據分析及實時數據，方便擁有人和物業管理公司隨時監察所管理的升降機及自動梯的狀態與表現。由於使用區塊鏈技術，記錄難以被篡改，有助確保工作日誌內容的真確性。我們會繼續與業界及物業管理公司緊密聯繫，確保這創新方案能讓他們受惠。

To help the lift and escalator maintenance trade accelerate the digitisation of operations, we made use of the funding under the TechConnect (Block Vote) to start developing a blockchain-based Digital Log-book for lifts and escalators to replace paper log-books. The Digital Log-book not only allows lift and escalator engineers and workers to easily record and upload all work details to the cloud, but also helps owners and property management companies keep track of the condition and performance of their lifts and escalators with the use of big data analytics and real-time data. Using blockchain technology also means that records are immutable, ensuring the authenticity of entries. We shall continue to work closely with the trade and property management companies to ensure that they will benefit from the innovation.

籌備沙中綫過海段：東鐵綫混合車隊及新信號系統啓用
GETTING READY FOR SHATIN TO CENTRAL LINK CROSS HARBOUR SECTION : EAST RAIL LINE MIXED FLEET OPERATIONS AND NEW SIGNALLING SYSTEM COMMISSIONED

港鐵沙田至中環綫(沙中綫)的籌備工作於2021年2月6日進入新里程，沙中綫所需的新九卡列車和東鐵綫的新信號系統於當日同步啓用。新九卡列車與現有的十二卡列車隨即組成混合車隊運行，俗稱「混跑」。沙中綫將東鐵綫由紅磡站延伸過海至金鐘，但由於過海段及港島段地底空間的限制，東鐵綫沿用的十二卡列車必須在沙中綫全綫開通前逐步以九卡列車取代。至於新信號系統，會令行車更暢順，並容讓東鐵綫將來加密班次，兩者對沙中綫都很重要。我們會持續監察兩者的運作情況，確保沙中綫能如期順利開通。

On 6 February 2021, the preparatory work on the MTR Shatin to Central Link (SCL) reached a milestone, as the new 9-car trains and new signalling system for the East Rail Line (EAL) required for the SCL were commissioned on that day. The existing 12-car trains and the new 9-car trains then operate together on the EAL under the mixed fleet operations. With the SCL extending the EAL from Hung Hom Station across the harbour to Admiralty, the 12-car trains will progressively be replaced by the 9-car trains to overcome the space constraints of the SCL's underground tracks on the cross-harbour and Hong Kong Island sections. The new signalling system also facilitates smoother operations and supports more frequent train services on the EAL, which are vital to the SCL. We will continue to monitor their operations to ensure the smooth commissioning of the SCL as scheduled.

區域合作、能源守則檢討及區域供冷系統邁向新里程
MILESTONES IN REGIONAL CO-OPERATION, ENERGY CODES REVIEW AND DISTRICT COOLING SYSTEM

機電署於2020年10月與新加坡能源市場管理局簽訂諒解備忘錄，通過創新和合作共同提升能源安全和應變能力，是我們致力拓闊區域合作的里程碑。在建築物能源效益方面，我們每三年一次，為《建築物能源效益守則》及《能源審核守則》進行的檢討和修訂。新一輪工作已於2020年年底展開，並將於2021年年底完成及正式推出，確保新的守則能與時並進，以配合科技和國際能源效益標準的最新發展。年內，啟德發展區現有的區域供冷系統亦邁進新里程，經過約十年施工並克服重重困難後，系統的環形冷凍水管道終於在2021年年初合攏。所累積的寶貴經驗可供其他區域供冷系統日後借鑒。

The EMSD signed a Memorandum of Understanding in October 2020 with the Energy Market Authority of Singapore to work towards greater energy safety and resilience through innovation and co-operation, marking a milestone in our efforts to broaden our regional collaborations. On building energy efficiency, the triennial review of the Building Energy Code and the Energy Audit Code began in late 2020 and would be completed for implementation by end-2021 to ensure that the updated codes are in line with prevailing technology and international energy efficiency standards. Another milestone was the completion of the ring circuit of chilled water pipework in the existing District Cooling System (DCS) at Kai Tak Development in early 2021, after nearly a decade of work with numerous obstacles overcame. The experience will be valuable to future DCS projects.

重要數字
KEY FIGURES

電業工程人員 ELECTRICAL WORKERS

註冊電業工程人員 REGISTERED ELECTRICAL WORKERS

2019	2020
80 445 名 NOS.	81 268 名 NOS.

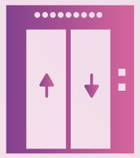
電業承辦商 ELECTRICAL CONTRACTORS

註冊電業承辦商 REGISTERED ELECTRICAL CONTRACTORS

2019	2020
13 445 間 NOS.	14 568 間 NOS.

升降機及自動梯 LIFTS AND ESCALATORS

升降機 LIFTS



2019	2020
69 543 部 NOS.	70 322 部 NOS.

自動梯 ESCALATORS

2019	2020
9 934 部 NOS.	10 067 部 NOS.

燃氣供應 GAS SUPPLY

氣體喉管網路總長 TOTAL LENGTH OF GAS PIPE NETWORK

2019	2020
3 676 公里 KM	3 705 公里 KM

車輛維修技工 VEHICLE MECHANICS

註冊車輛維修技工 REGISTERED VEHICLE MECHANICS

2019	2020
8 801 名 NOS.	8 056 名 NOS.

車輛維修工場 VEHICLE MAINTENANCE WORKSHOPS

註冊車輛維修工場 REGISTERED VEHICLE MAINTENANCE WORKSHOPS

2019	2020
2 051 間 NOS.	2 052 間 NOS.

鐵路 RAILWAY

鐵路年度載客量 RAILWAY ANNUAL PATRONAGE

2019	2020
1 862 百萬 MILLION	1 280 百萬 MILLION

保障公眾安全
PROTECTING PUBLIC SAFETY

電力安全

電力事故進一步減少

電力事故一般與固定電力裝置、家用電氣產品及第三者損壞供電電纜有關。機電署多年來大力推動宣傳教育和進行規管工作，過去三年，本港電力事故數字持續下降，由2018年的115宗，跌至2019年107宗，再於2020年下降至97宗。2020年，與家用電氣產品相關的電力事故數字為36宗，創十年新低。

ELECTRICAL SAFETY

Electrical Incidents Declined Further

Electrical incidents are often related to fixed electrical installations, household electrical products and electricity supply lines damaged by third parties. Following ongoing promotion, education and regulatory efforts throughout the years, the number of electrical incidents has been on a downward trend over the past three years, falling from 115 cases in 2018 to 107 cases in 2019 and further to 97 cases in 2020. In 2020, the number of electrical incidents related to household electrical products fell to a 10-year low of 36 cases.

過去三年本港電力事故宗數
Number of Electrical Incidents over The Past Three Years

115 宗 case (2018)　107 宗 case (2019)　**97 宗 case (2020)**

《電力(線路)規例工作守則》檢討及修訂完成

《電力(線路)規例工作守則》為註冊電業承辦商及註冊電業工程人員提供設計、操作、維修固定電力裝置各方面的技術指引。年內，我們根據修訂時間表，與來自政府、業界及學術界代表組成的20人工作小組，商討修訂細節及技術詳情。疫情期間，工作小組仍持續進行相關工作。我們致力加快完成工作守則的檢討及修訂工作，務求與時並進，配合社會發展需要，以及為業界提供便利。以往的檢討及修訂工作平均需時約兩年半，是次更新在短短一年半內已經完成，進度更為理想。新版《電力(線路)規例工作守則》已於2020年12月正式出版並上載至機電署網站。工作守則設有一年寬限期，將於2021年12月31日全面實施。

Review and Revision of the Code of Practice for the Electricity (Wiring) Regulations Completed

The Code of Practice for the Electricity (Wiring) Regulations (CoP) provides technical guidelines on the design, operation and maintenance of fixed electrical installations for registered electrical contractors (RECs) and registered electrical workers (REWs). During the year, the EMSD worked with the working group comprising 20 representatives from the Government, the trade and academia to deliberate on the revision and technical details, uninterrupted by the epidemic. We endeavoured to expedite the review and revision of the CoP, so as to keep abreast of the times to meet the development needs of the community and facilitate the trade's operation. The review and revision work was completed within just one year and a half, progressing more efficiently as compared to previous review and revision works which normally took about two and a half years. The new edition of the CoP was published and uploaded to the EMSD website in December 2020. Following a one-year grace period, it will take effect on 31 December 2021.

機電署與來自政府、業界及學術界代表組成的20人工作小組，商討修訂《電力(線路)規例工作守則》的細節及技術詳情。

The EMSD worked with the working group comprising 20 representatives from the Government, the trade and academia to deliberate on the revision and technical details of the CoP.

新版工作守則出版後
Following the Publication of The Latest Edition of The CoP

舉行了 Organised a Total of **9** 次
業界技術研討會 Industry Technology Seminars

約 Attended by about **2 300** 名
業界代表及註冊電業工程人員出席 trade representatives and REWs

《電力(線路)規例工作守則》2020年版的新增內容，包括建議為住宿處所內的固定電力裝置安裝電弧故障檢測裝置，以作為預防電弧故障而發生火警的額外保護；加入假天花內工作的預防措施，以及規定村屋的固定電力裝置必須加裝電流式漏電斷路器等。新版工作守則與時並進，加入了有關USB插座和可再生能源發電系統的規定，以及電動車輛充電設施和組裝合成建築法項目的相關電力線路要求。

新版工作守則出版後，我們安排了一連串宣傳教育活動。截至2021年3月，我們共舉行了九次業界技術研討會，介紹新版工作守則的內容，共吸引了約2 300名業界代表及註冊電業工程人員出席。我們亦編製了主要修訂摘要及多個核對表，並在《電力快訊》介紹修訂詳情，務使業界充分掌握修訂內容。

The 2020 edition of the CoP included the recommendation of installing arc fault detection devices (AFDDs) for the fixed electrical installations at premises with sleeping accommodation as a means of providing additional protection against fire caused by arc faults, the precautions for work inside false ceilings, and the requirement of installing residual current devices (RCD) for fixed electrical installations at village houses. Being up-to-date, the latest edition of the CoP incorporated the regulations on USB outlets, renewable energy power systems, as well as the requirements for the electrical wiring of charging facilities for electric vehicles and Modular Integrated Construction (MiC) projects.

Following the publication of the latest edition of the CoP, we held a series of promotional and educational activities. As at March 2021, we organised a total of nine industry technology seminars, which were attended by a total of about 2 300 trade representatives and REWs. We also compiled the Summary of Major Revisions and a number of checklists. Moreover, we introduced the revision details in Electricity News, so as to enable the trade to fully understand the updated content.

保障公眾安全
PROTECTING PUBLIC SAFETY

為加強向公眾傳遞電力安全訊息
To Step Up the Electrical Safety Public Education Work

在全港18區進行約
Conduct about
2 700 次 Visits
探訪
across The 18 Districts of Hong Kong

推行目標為本的電力安全宣傳教育

在電力安全的公眾宣傳及教育工作方面，我們以「劏房」單位住戶及村屋住戶作為年內的重點宣傳對象。2020年年中，有「劏房」單位不幸發生漏電的致命事故。我們迅速與香港社會服務聯會(社聯)合作，聯同其下的相關社福組織，加強向「劏房」單位的業主和住戶傳遞電力安全訊息。我們亦委派了註冊電業承辦商在全港18區進行約2 700次探訪，向住戶派發「電力安全核對項目表」，以便住戶檢查其單位的固定電力裝置是否符合相關安全標準。此外，我們在2020年11月初推出了專門為「劏房」單位業主及住戶而設的電力安全網頁，務求提高他們的電力安全意識。

Rolling out Target-oriented Electrical Safety Public Education Campaigns

Residents of sub-divided units (SDUs) and village houses were the key targets of our electrical safety public education campaigns during the year. Following an unfortunate and fatal electrocution incident occurred in an SDU in mid-2020, we took immediate action by collaborating with the Hong Kong Council of Social Service (HKCSS) and its associated welfare organisations to step up the electrical safety public education work targeting SDU residents. We also appointed RECs to conduct about 2 700 visits across the 18 districts of Hong Kong to distribute the Electrical Safety Checklist for residents to check if their fixed electrical installations complied with the relevant safety standards. In early November 2020, we launched a dedicated webpage for SDU owners and residents to raise their electrical safety awareness.

我們與香港社會服務聯會合作，加強向劏房單位業主和住客宣傳電力安全信息，又委派註冊電業承辦商在全港進行約2 700次探訪，向住戶派發「電力安全核對項目表」，方便住戶檢查其單位的固定電力裝置是否符合安全標準。

We worked with the Hong Kong Council of Social Services to step up electricity safety education targeting owners and residents of sub-divided units; and appointed Registered Electrical Contractors to make about 2 700 visits to households throughout Hong Kong to distribute the Electrical Safety Checklist for residents to check if their fixed electrical installations complied with safety standards.

與此同時，我們繼續往年的工作，聘請承辦商走訪村屋。鑑於安裝太陽能發電設施以參與上網電價計劃的村屋數字日增，我們加強對村屋住戶的宣傳工作，提醒他們在上網電價計劃下的太陽能發電設施必須向署方註冊，以及必須為村屋的固定電力裝置加裝和測試漏電斷路器，以提升電力安全。年內，我們的承辦商在新界共進行約38 000次村屋探訪，大大提升了宣傳教育的成效。

At the same time, we continued to engage contractors to visit village houses. In view of the increasing number of village houses with solar photovoltaic (PV) systems installed to join the Feed-in Tariff (FiT) Scheme, we strengthened the promotion work for village house residents to remind them that the solar systems under the FiT Scheme must be registered with EMSD, and the fixed electrical installations in village houses must have RCDs installed and tested in order to enhance electrical safety. During the year, our contractors made about 38 000 visits in the New Territories and greatly enhanced the effectiveness of our public education work.

繼續加強對村屋住戶的宣傳工作
Continue to Strengthen the Promotion Work for Village House Residents

2020年村屋探訪次數
No. of visits to village houses in 2020
約 About **38 000**

調節工作模式　在疫情期間維持服務

為應對疫情和配合社交距離措施及在家工作等安排，我們落實多項措施，務求與規管對象和業界保持溝通和維持服務效率，例如我們向兩家電力公司確認其緊急應變計劃及安排，以確保香港的電力供應免受疫情影響。

為便利業界，我們亦透過機電署網頁及「機電行業通」流動應用程式向他們提供更多資訊及服務，例如2020年10月1日至2021年9月30日期間，政府因應疫情為業界推出豁免或寬減註冊或註冊續期費三分之一的安排。如註冊電業工程人員及註冊電業承辦商的註冊於上述寬免期前已生效，倘符合相關條件，亦可申請退款。我們利用機電行業通，協助政府宣傳上述安排。2020年11月至2021年3月期間，我們共處理約20 000宗通過「機電行業通」提出的退款申請。

Maintaining Services with Adjusted Work Arrangements during the Epidemic

To tie in with social distancing and work-from-home arrangements during the epidemic, we implemented multiple measures to maintain communication and service efficiency for our regulatees and the trade. For instance, we ascertained that the two power companies had their respective contingency plans ready to be put in place, so as to ensure that the power supply would not be interrupted due to the epidemic.

The EMSD website and the "E&M Trade App" were used to provide more information and services to facilitate the trade. For instance, the Government launched the initiative of waiving or reducing by one-third the registration or renewal fees for the trade from 1 October 2020 to 30 September 2021 having regard to the epidemic. RECs and REWs with their registration in effect before the specified period may also apply for refunds subject to meeting certain conditions. We used the "E&M Trade App" to promote the above arrangements. From November 2020 to March 2021, we processed a total of about 20 000 applications for refund submitted via the "E&M Trade App".

保障公眾安全
PROTECTING PUBLIC SAFETY

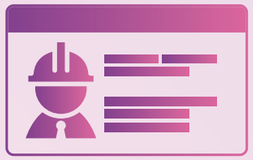
為方便註冊電業工程人員在疫情期間持續進修，我們在短時間內建立了線上持續進修訓練平台，並上載了培訓材料和練習，讓從業員在線上完成培訓，以便為註冊續期。有關線上平台於2020年2月推出，其鏈接亦已於同年11月加入「機電行業通」，方便註冊電業工程人員進入持續進修訓練平台。截至年底，在38 051名註冊電業工程人員中，約86%(即32 759人)透過線上平台完成持續進修訓練，反應踴躍。另外，我們於2021年1月1日為原本只有兩個必修單元(法例及安全規定和技術知識)的持續進修計劃加入單元三，讓業界自行進修，以提升註冊電業工程人員的自學能力及培養自學習慣。

To facilitate REWs' Continuing Professional Development (CPD) training during the epidemic, we developed an online CPD training platform within a short period for REWs to complete CPD training online with the uploaded materials and exercises. The online CPD training platform was launched in February 2020 and the link to the platform was added to the "E&M Trade App" in November of the same year to further facilitate access to the platform. The platform was well-received by the trade. As at the end of the year, among the 35 051 REWs, about 86% (i.e. 32 759 REWs) had used the online platform to fulfil their CPD requirements. On 1 January 2021, we introduced Module 3 to the CPD Scheme to complement the two compulsory modules of Legislative and Safety Requirements and Technical Knowledge for the trade to study on a voluntary basis, with the aim of enhancing and developing REWs' self-learning ability and habit.

我們更於2021年1月加設網上預約登記系統，讓業界預約機電署總部的註冊及許可證辦事處櫃位服務，以便管理人流，減低2019冠狀病毒病的傳播風險。我們亦利用「機電行業通」發出有關服務時間的通告，以及為業界提供部門最新資訊。「機電行業通」具備多項功能，疫情期間共約40 000名電業從業員下載此流動應用程式。雖然註冊電業工程人員的平均年齡達50歲或以上，但亦無阻他們運用科技，享受機電行業通帶來的方便。

To facilitate queuing management and reduce the risk of the spread of COVID-19, an online booking system was launched in January 2021 for the trade to make appointments for counter services at the Registration and Permit Office (RPO) of the EMSD Headquarters. We also made use of the "E&M Trade App" to issue notices about service hours and provide the EMSD latest information for the trade. During the epidemic, a total of about 40 000 REWs downloaded the multi-functional "E&M Trade App" , indicating that REWs enjoy the convenience brought by new technology with the "E&M Trade App" despite their average age of 50 or above.

透過「機電行業通」流動應用程式提供多種資訊及服務
"E&M Trade App" was Used to Provide Various Information and Services



約
About
40 000 名
REWs
電業從業員於疫情期間下載此流動應用程式
downloaded the app during the epidemic

在業界溝通方面，我們於2021年1月26日舉行了年度電力規例研討會，並由以往的實地研討會改為線上直播，參與人數逾800人。我們在疫情期間亦安排了其他線上會議及溝通環節，務求與業界保持聯繫。

On trade communication, we moved the Annual Technical Seminar online this year. Held on 26 January 2021, the seminar attracted over 800 participants. In order to stay connected with the trade during the epidemic, we had also arranged other online meetings and discussion sessions.

在其他需要面對面接觸的服務和工作方面，我們也推出了利民的新猷。2021年3月，我們在機電署總部的註冊及許可證辦事處裝設取號排隊系統，優化輪候安排，並設置投遞箱，方便業界遞交申請。雖然部分學生培訓活動(如香港專業教育學院工程學科的工作實習及工業專題學生習作計劃)因疫情而必須暫停，但其他項目(如專上學生暑期實習計劃、職業訓練計劃，以及工程科大學生影子工作計劃)仍如常進行。

Facilitating measures were also introduced for face-to-face services and work. For example, a queuing system was introduced at the RPO at the EMSD Headquarters in March 2021 to improve the queuing arrangement and a drop box was set up for the trade to submit applications. While certain attachment training activities, such as the IVE Engineering's Industrial Attachment & Industry-Based Student Project Scheme, had to be suspended due to the epidemic, other activities, such as the Post-Secondary Student Summer Internship Programme, vocational training programme and job shadowing programme for university students of engineering-related disciplines, were unaffected.

疫情下，為了向業界和公眾提供必要的服務而同時維持社交距離，我們為機電署總部的註冊及許可證辦事處改善了輪候安排，包括圖中的自助取籌服務站。
To maintain social distancing while ensuring the continuity of essential services under the epidemic to the trade and public, we improved the queuing arrangement at the Registration and Permits Office at the EMSD Headquarters, including the Self-service Tag Issuing Kiosk as seen in the photo.

促進專業水平和認可

機電署舉辦每兩年一度的「傑出註冊電業工程人員選舉」及「表現優異註冊電業承辦商比賽」，以推廣行業典範，推動工作安全文化，並持續提升電業工程人員的技術水平。2019年的賽事完滿結束後，我們邀請有關得獎者拍攝影片，分享工作心得。有關短片已於2020年11月上載至YouTube，與業界和公眾分享。

Promoting Professional Standards and Recognition

The EMSD's biennial "Outstanding Registered Electrical Worker Awards Scheme" and "Outstanding Registered Electrical Contractors Competition" aimed to promote work safe culture and enhance the technical standards of electrical workers. After the conclusion of the 2019 events, we produced promotional videos with the winners on their best practices. The videos were uploaded to YouTube for sharing with the trade and the public in November 2020.

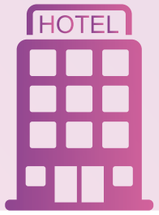
我們亦致力促請各行各業，必須聘請註冊電業承辦商進行電力工程。例如年內，我們推出外展計劃，探訪了900多個私人屋苑的物業管理公司和業主立案法團，以提升公眾的電力安全意識，以及促請他們須聘請註冊電業承辦商進行電力工程。

We also dedicated our efforts to urge various sectors that RECs must be engaged for carrying out electrical works. For example, we introduced an outreach programme during the year and have visited the property management companies and owners' corporations of more than 900 private residential estates to raise public awareness of electrical safety, and to urge them that RECs must be engaged for carrying out electrical work.

機電署每兩年舉辦一次「傑出註冊電業承辦商選舉」及「傑出註冊電業工程人員選舉」，以推動業界工作安全文化及提升電業工程人員水平。圖中分別為2019年選舉的金獎得主(上)和銀獎得主(下)。
Winners of the Gold Award (top) and Silver Award (bottom) of the 2019 "Outstanding Registered Electrical Contractor Awards Scheme" and "Outstanding Registered Electrical Worker Awards Scheme". The Scheme is the EMSD's biennial event to promote the work safety culture and raise the technical standards of electrical workers in Hong Kong.

保障公眾安全
PROTECTING PUBLIC SAFETY

以增進營運者對電力安全及相關法定要求的了解
To Enhance the Operators' Understanding of Electrical Safety and Relevant Statutory Requirements



向
Posted advice and promotional materials to
more than **2 000** 多間
酒店及賓館郵寄建議和宣傳物品
hotels and guesthouses

酒店業也是我們推廣的對象。年內，我們與香港酒店業協會合作，於2021年2月安排與其酒店工程師委員會的成員舉行視像會議，分享新版《電力(線路)規例工作守則》和《電氣產品(安全)規例》中與酒店息息相關的項目，包括為住宿處所加設電弧故障檢測裝置的建議、裝設USB插座須注意的安全規定，以及向客人提供電氣產品時的安全須知等。其後，我們向2 000多間酒店及賓館郵寄有關電力安全的建議和宣傳物品，以增進營運者對電力安全及相關法定要求的了解。

The hotel industry was also our target for promotion. During the year, we collaborated with the Hong Kong Hotels Association to hold video conferencing with members of its Hotel Engineers Committee in February 2021 to share with them items in the new version of the Code of Practice for the Electricity (Wiring) Regulations and the Electrical Products (Safety) Regulation which were closely related to hotels, such as the recommendation for adoption of arc fault detection devices at accommodation premises, safety requirements on installation of USB outlets and safety tips for providing electrical appliances to guests. Afterwards, we posted advice and promotional materials on electrical safety to more than 2 000 hotels and guesthouses to enhance the operators' understanding of electrical safety and relevant statutory requirements.

我們亦與電氣產品業界合作推行了新一輪宣傳活動，包括經由業界組織向其會員派發有關家用電氣產品安全的宣傳物品，並於相關零售店內展示，使顧客能更了解家用電氣產品的安全資訊。

We also collaborated with the electrical product trade members on a new round of promotional activities, including distributing promotional materials relating to the safety of household electrical products via trade organisations to their members and displaying these materials at relevant retail outlets to enhance customers' understanding of safety information on household electrical products.

全方位提升電力安全公眾教育

年內，我們加強教育和宣傳工作，並製作生動有趣的宣傳物品以傳播電力安全信息。例如在2021年2月，我們推出全新電視宣傳短片，加強推廣大廈內固定電力裝置必須定期檢查、測試及領取證明書的法定要求。我們亦製作了兩套動畫，分別關於固定電力裝置的定期檢查、測試及領取證明書，以及選購充電器的安全須知。這兩套動畫已先後上載至機電署網站及社交媒體平台。此外，我們在2020年12月至2021年1月的四個星期內，亦通過各種宣傳渠道(包括港鐵列車、電台資訊節目等)，向特定的目標對象廣泛宣傳電力安全信息。

Holistic Enhancement of Public Education on Electrical Safety

During the year, we strengthened educational and promotional work, and produced compelling promotional materials to impart electrical safety messages. For example, we launched a new TV Announcements in the Public Interest (API) on TV in February 2021 to emphasise the statutory requirements of conducting periodic inspection, testing and certification (PITC) for fixed electrical installations in buildings. Two animations on PITC for fixed electrical installations and safety tips for purchasing chargers respectively were also produced. They were uploaded to the EMSD website as well as social media platforms. In the four weeks between December 2020 and January 2021, we widely disseminated electrical safety messages via various publicity means (including MTR trains, informational programmes on radio channels, etc.) to specific target audience.

年內我們製作了生動有趣的全新宣傳物品，以透過公眾教育，宣傳電力安全信息，例如透過這兩套新的宣傳短片，推廣有關「家用電氣產品的安全須知」。
New promotional materials with compelling messages on electrical safety were produced for engagement with target audience, such as these new promotional video clips on "safety tips in using household electrical products".

於機電署網站新增電力安全相關專頁。
Setting up new dedicated webpages on electricity safety subject in the EMSD website.

我們善用機電署網站，新增電力安全相關專頁。例如我們在2020年8月推出了「電氣產品安全角」專頁，為公眾提供詳盡的家用電氣產品安全須知，以及為業界提供相關指南和核對表。我們又於2020年11月設立「分間單位電力安全」專頁，為分間單位擁有人和住戶提供有關固定電力裝置擁有人責任的資訊，以及電力安全須知。此外，我們在2021年3月上載「電力資訊站」專頁優化版，除加入更豐富的電力安全內容外，亦改良了設計便利市民透過流動裝置瀏覽。

Making good use of the EMSD website, we set up new dedicated webpages on electricity safety subject. For example, we launched a dedicated webpage "Electrical Products Safety Corner" in August 2020 to provide comprehensive safety tips on household electrical products to the public and relevant guidance notes and checklists for the trade. We also set up a dedicated webpage "Sub-divided Unit Electrical Safety" in November 2020, providing information on the responsibilities of the owners of fixed electrical installations, as well as electrical safety tips for owners and tenants of sub-divided units. Besides, we uploaded the enhanced version of the dedicated webpage "Electricity Information Corner" in March 2021, with enriched electrical safety content and improved design to facilitate browsing via mobile devices.

我們亦加強進行戶外宣傳。在2020年12月至2021年1月期間，我們除了在巴士站播放有關電力安全的宣傳短片，亦製作海報呼籲參與上網電價計劃的太陽能發電系統擁有人，須把其安裝的設施向機電署註冊。同時，我們安排在80架巴士車身張貼「定期做好五年檢　電力裝置免危險」，以及「認請安全規格　精明選購充電器」兩款廣告，巴士穿梭香港各區，以加強宣揚電力安全信息。

Outdoor promotions were also strengthened. From December 2020 to January 2021, not only electrical safety APIs were broadcasted at bus stops, posters urging owners of solar PV systems participating in the FiT Scheme to register their installations with the EMSD were also produced. Two advertisements on "Ensure the Safety of your Electrical Installations Conduct Periodic Inspection Every Five Years" and "Recognise Safety Requirements Make Smart Choice for Chargers" were placed on 80 buses plying routes across all districts of Hong Kong to step up dissemination of electrical safety messages.

加強進行戶外宣傳，包括在80輛穿梭全港各區的巴士車身，張貼顯示「認請安全規格　精明選購充電器」的廣告(左)；又於電視及其他渠道播放電力安全信息廣告(右)。
Outdoor promotions were strengthened, including placing advertisement "Recognise Safety Requirements　Make Smart Choice for Chargers" on 80 buses plying routes across all districts of Hong Kong (left). Advertisements on electrical safety (right) were also broadcast on TV and other channels.

保障公眾安全
PROTECTING PUBLIC SAFETY

維持與國內及區域組織的合作

至於與中國內地（內地）合作方面，疫情無阻中港兩地機構溝通交流。《機電產品安全及能源效益合作安排》下的電氣產品工作小組及跨境電商工作小組分別於2020年12月就供港家用電氣產品的安全須知及相關法定要求等事宜舉行線上分享會，以便加深成員對有關事宜的認識。此外，這兩個工作小組亦一直保持緊密合作，按既定機制通報懷疑不合規格的機電產品及作出跟進調查，以及透過交換工作報告就有關事宜保持緊密溝通。

就區域合作方面，繼2020年9月及2021年2月參加亞太區經濟合作組織電氣及電子儀器聯合規管顧問委員會的線上會議後，我們會繼續探索以其他可行形式參與亞太區內的相關活動，務求緊貼區內經濟體系對電氣產品安全規管的要求。

來年展望

為繼續推動太陽能發電裝置的註冊，我們正研發人工智能系統，利用地政總署提供的香港鳥瞰圖片進行機器學習，自動偵測村屋及其他建築物屋頂的太陽能發電裝置，並對比此類裝置的註冊資料。若發現有未註冊的裝置，我們會聯絡裝置的擁有人，敦促其盡早註冊。有關系統測試的表現理想，預計可於2022年首季正式投入運作。

Maintaining Mainland and Regional Collaboration

As for collaboration with the Mainland of China (Mainland), communication and exchanges with the Mainland counterparts continued despite the epidemic. The Electrical Products Working Group and Cross-border E-commerce Working Group, set up under the Co-operation Arrangement on Electrical and Mechanical Products Safety and Energy Efficiency, held online sharing sessions in December 2020 about matters such as safety tips and relevant statutory requirements for household electrical products imported into Hong Kong, to deepen the members' understanding of the matters concerned. The two working groups also maintained close co-operation to notify each other about suspected non-compliant E&M products in accordance with the established mechanism and to conduct follow-up investigations, and kept close communication on the matters concerned by exchanging work reports.

As part of our regional collaboration, after attending the online meetings of APEC Joint Regulatory Advisory Committee on Electrical and Electronic Equipment in September 2020 and February 2021, we continued to explore other feasible means of taking part in relevant activities in the Asia Pacific region to keep abreast of the development of regulatory requirements on the safety of electrical products among APEC economies.

The Year Ahead

To continue the promotion of registration of solar PV installations, we are developing an artificial intelligence (AI) system which makes use of aerial photos of Hong Kong provided by the Lands Department to conduct machine learning, in order to autonomously detect solar PV installations on the rooftops of village houses and other buildings, and to compare the registration information of these installations. When the system identifies unregistered installations, we would contact the installations' owners to urge them to register as early as possible. The system performed well in trials and will come into operation in the first quarter of 2022.

我們亦正與科創公司合作研發人工智能及數據分析系統，用於在本地及跨境電商平台搜尋不安全或不符合規格的家用電氣產品，以及在相關國際規管機構的網站搜尋有關不安全家用電氣產品的資訊。此工具能協助我們監察相關不安全產品有否在本港供應，從而讓我們更有效地採取相應規管措施。搜尋器將於2021年第三季進行測試，並計劃於2022年首季正式投入運作。

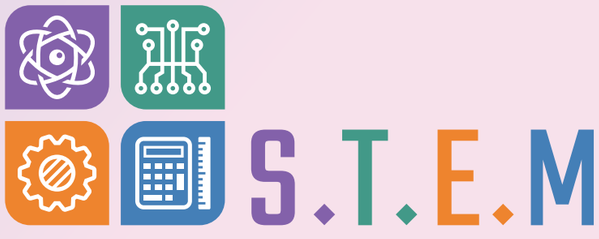
為配合智慧政府發展，我們將研究為電力法例及規管服務電腦運作系統升級至EORS IV。我們亦會在2021年5月，為註冊電業工程人員持續進修計劃推出流動應用程式版，以進一步方便業界隨時使用流動電話完成培訓和進行續期。我們亦會繼續發展處理註冊申請的電子平台。

在公眾教育和宣傳方面，我們將製作有關電力安全的STEM（即科學、科技、工程及數學）教材，向年輕人推廣電力安全。此外，我們亦會加強在社交媒體平台宣傳，以配合時代發展。

We are also collaborating with a technology startup to develop an AI and data analytics system for searching unsafe or non-compliant household electrical products put up for sale on local or cross-border e-commerce platforms, as well as searching information about unsafe products posted on international regulatory organisations' websites. The tool could help us monitor whether such unsafe products are available for sale in Hong Kong so that we can implement relevant regulatory measures more effectively. The search engine will be put on trial in the third quarter of 2021 and come into operation in the first quarter of 2022.

To tie in with the development of a "Smart Government", we are looking into upgrading computer operating systems of the Electricity Legislation and Regulatory Services to EORS IV. In May 2021, we will also introduce a mobile application version for the Continuing Professional Development Scheme for Registered Electrical Workers (REWs) so as to further facilitate REWs' participation in training and renewal of registration anytime via mobile phones. We will also continue to develop electronic platforms for processing registration applications.

For public education and promotion, we will produce STEM (i.e. science, technology, engineering and mathematics) education materials for promotion of electrical safety to young people. Besides, we will strengthen promotion on social media platforms to tie in with prevailing trends.



保障公眾安全
PROTECTING PUBLIC SAFETY

當仁不讓 參與突擊抗疫行動
Volunteering Readily to Participate in Anti-epidemic Ambush Operation

2021年1月23日，政府首度引用《預防及控制疾病(對若干人士強制檢測)規例》，在油麻地及佐敦劃出「指定區域」，有關區域內的居民須在兩天內在現場接受2019冠狀病毒病強制檢測。電力法例部高級電氣督察鄧偉雄先生雖然未知行動詳情，亦勇於響應署方發出的招募，參與這次史無前例的抗疫行動。

On 23 January 2021, the Government exercised the power under the Prevention and Control of Disease (Compulsory Testing for Certain Persons) Regulation for the first time and delineated "specified areas" in Yau Ma Tei and Jordan where residents were required to undertake compulsory COVID-19 testing on-site within two days. Mr Tang Wai-hung, Senior Electrical Inspector of the Electricity Legislation Division, responded readily to the EMSD's call for volunteers for the unprecedented anti-epidemic initiative, even before knowing the operation details.

其實，在此行動之前，當政府在2020年9月推行普及社區檢測計劃時，鄧先生亦已響應部門的呼籲，參與支援有關計劃，到堅尼地城一個社區檢測中心擔任副站長。在當值的十天期間，他每日朝八晚八帶領團隊工作，負責接待公眾、編製更表、管理物資、補充資源和支援醫護人員等職務，務使中心運作暢順，以及讓市民於最短時間內完成檢測，盡量減低對他們日常生活的影響。他完全認同若要抗疫成功，人人有責，大家都要盡一己之力。

在「指定區域」檢測行動期間，義工須在星期六和星期日分早晚兩更工作，在指定的地點當值，協助解答居民的查詢、管理排隊秩序、解釋檢測過程、支援民政事務處運送包裝和分發物資等。鄧先生於日間在指定區域兩個檢測點的分流路口當值，引導居民到正確的檢測位置。

由於事出突然，行動期間居民難免會有怨言，埋怨物資供應不足和指示不清晰；亦有居民要求進出「受限區域」。鄧先生說：「我在當值期間，有一名90歲長者要求回到其在受限區域內的店鋪，處理事情後離開。我耐心地向他解釋，如他進入受限區域，便須停留在區內直至行動完結為止。至於居民對物資供應的投訴，我們向市民解釋，表示必須有序地先平均分配有限物資，若市民稍後需要補充，隨後可再提出要求。」

In fact, prior to this operation, Mr Tang had also responded to the EMSD's call to support the Universal Community Testing Programme launched by the Government of Hong Kong in September 2020. He was deployed at a community testing centre in Kennedy Town as a deputy supervisor. During the 10-day operation, he led his team to work from 8 a.m. to 8 p.m., responsible for administrative duties such as public reception, rostering, resources management and replenishment, provision of assistance to medical staff, etc. His mission was to keep the centre running smoothly and make sure that the public could complete the tests as speedily as possible to minimise disruption to their daily life. He totally agreed that the full commitment of everyone was essential for combating the epidemic successfully.

During testing operation for the "specified areas", the volunteers had to work on day or night shift on Saturday and Sunday, and stood guard at assigned locations to answer residents' enquiries, manage queues, explain the test processes, support the District Office in packing and distributing supplies, etc. Mr Tang stationed at the triage point of two testing locations within the specified areas during the day time to guide residents to the right testing locations.

As it was an impromptu operation, residents inevitably aired grievances about inadequate supplies and unclear instructions. Some of them also demanded for entering or leaving the "restricted areas". "When I was on duty, a 90-year-old elderly resident requested to return to his shop within the restricted area to take care of something and then leave. I explained to him patiently that once he entered the restricted area, he would have to stay till the end of the operation. Regarding residents' complaints about the supplies, we explained to them that the supplies had to be distributed evenly in an orderly manner first, and residents could request for refills later if necessary," he said.

前線人員往往首當其衝，承受市民的不滿。身為高級電氣督察，鄧先生的日常職務包括帶領團隊面對公眾、處理投訴、巡查和解釋電力法例要求等。根據其工作經驗，他知道細心聆聽市民的訴求和作出相應回應，實為重要。當他們冷靜下來之後，自然會了解行動的真正目的和作用。

在行動中，他亦盡力為其他同事解決問題，例如協助民政事務處的同事找來電池燈於晚上作照明之用。此外，他及其團隊被派往不同區域，須到無升降機的舊樓內，逐層尋找無人應門的單位及張貼強制檢測告示。有關工作在數小時內完成，充分展現出色團隊合作精神。

抗疫工作必然有風險和辛酸，例如穿上個人防護裝備後如廁都有一定的不便。雖然如此，鄧先生跟其他公務員義工一樣，本着能屈能伸、當仁不讓的精神，盡心為香港的抗疫工作默默地付出。他和其他機電署義工這次行動貢獻良多，除了得到部門嘉許，亦獲得民政事務處同事的讚賞及感謝。

Frontline staff often bear the brunt of citizens' displeasure. As a senior electrical inspector, Mr Tang's usual duties include leading the team to face the public, deal with complaints, conduct inspections and explain electricity regulatory requirements, etc. Based on his job experience, he knows it is important to listen to the demands of the public carefully and respond accordingly. When they have calmed down, they will naturally understand the true purpose and effect of the operation.

During the operation, he also strived to help other colleagues solve problems, such as assisting colleagues in the District Office team to find battery lights for lighting at night. Besides, he and his team were assigned to different areas where they had to walk up and down the floors in old buildings that have no lifts to find the flats with nobody answering the door and affixed compulsory testing notices. The task was completed within a few hours, fully demonstrating excellent teamwork.

Anti-epidemic duties have inherent trials and tribulations, such as the difficulty of going to toilet while donning full personal protection gear. Still, Mr Tang, like his fellow civil servant volunteers in the operation, was adaptive and keen to contribute to Hong Kong's anti-epidemic efforts without complaint. He and other volunteers of the EMSD were not only commended by the Department for their significant contributions to the operation, but also received appreciation and gratitude from District Office colleagues.

保障公眾安全
PROTECTING PUBLIC SAFETY

氣體安全

氣體事故持續減少

雖然受疫情影響，但我們於年內繼續加強氣體安全的公眾宣傳教育，並與註冊氣體供應公司攜手加強定期安全檢查工作，亦繼續向工地工友宣傳施工期間保障地底氣體喉管安全。我們多管齊下，成效理想，氣體事故數字由2019年的187宗，減至2020年的179宗，為歷年新低。

為車輛維修工場迅速處理「防疫抗疫基金」補貼申請

2019冠狀病毒病疫情為香港帶來前所未有的挑戰，政府因應市民和社會的需要，推出「防疫抗疫基金」。在第二輪「防疫抗疫基金」的車輛維修工場資助計劃下，每間合資格車輛維修工場獲發一筆過50,000港元的非實報實銷補貼，協助應對因2019冠狀病毒病疫情所帶來的經營壓力。計劃於2020年7月中開始接受申請，共接獲3 134宗申請，當中2 879宗獲批，共發放約1.44億港元補貼。車輛維修註冊組在2020年11月中迅速完成所有審批工作，歷時僅四個月，成功幫助業界在艱難時期取得緊急補貼，以解燃眉之急。

全方位宣傳「GU」標誌家用氣體爐具

本年度的另一個工作重點是加強公眾宣傳教育，鼓勵市民更換老化及沒有「GU」標誌的舊款家用氣體爐具。由2003年起，法例規定所有供應和售賣供香港使用的住宅式氣體爐具必須附有「GU」標誌，以資識別。換言之，在立法前完成安裝而沒有「GU」標誌的氣體爐具，其機齡或已超過17年。參考國家及海外的相關標準或指引，家用氣體爐具的平均使用期限為15年。「超齡」的老化爐具不但缺乏維修零件，其安全保障及可靠性亦成疑。有見及此，我們在本年度加強公眾教育工作，在線上線下全方位進行宣傳，並與業界協作，主動聯絡仍在使用這類「超齡」氣體爐具的用戶，鼓勵他們適時將舊款的氣體爐具更換為附有「GU」標誌、更安全及更節能的新型號爐具。在全方位的宣傳推廣及業界積極推動下，我們相信這類老化及沒有「GU」標誌爐具的使用數量會持續減少。

GAS SAFETY

Gas Incidents on Continuous Decline

Despite the epidemic, we continued during the year to step up our public education work on gas safety, enhance the regular safety inspection (RSI) work jointly with registered gas supply companies (RGSCs) and remind construction site workers not to damage underground gas pipes during construction. Our multi-pronged approach achieved positive results, with the number of gas incidents dropped from 187 cases in 2019 to a record low of 179 cases in 2020.

Speedy Processing of Application for Subsidies of the Anti-epidemic Fund for Vehicle Maintenance Workshops

In response to the unprecedented challenges posed by the COVID-19 epidemic, the Government introduced the Anti-epidemic Fund (AEF) to cater for the needs of the public and the community. Under the subsidy scheme for vehicle maintenance workshops (VMWs) of the second round of the AEF, a one-off non-accountable subsidy of HK$50,000 would be granted to each eligible VMW to assist them in coping with the operating pressure under the COVID-19 epidemic. Application for the subsidy scheme was open in mid-July 2020. A total of 3 134 applications were received and among them, 2 879 applications were approved, involving a total of about HK$144 million of subsidy. The Vehicle Maintenance Registration Unit swiftly completed the processing work within just four months by mid-November 2020, providing the trade with the much needed financial assistance to tide over the difficult time.

Multi-pronged Public Education Campaign for Domestic Gas Appliances Bearing GU Mark

Another major focus of the year was the enhanced public education and promotion work to encourage the public to replace aged domestic gas appliances that do not bear a GU mark. From 2003 onwards, the legislation requires that all models of domestic gas appliances to be supplied and sold for use in Hong Kong shall bear a GU mark as identification. In other words, domestic gas appliances without a GU mark installed before the relevant legislation came into effect might have been in use for more than 17 years. With reference to national and overseas standards or guidelines, the average life expectancy of domestic gas appliances is 15 years. "Overage" domestic gas appliances lack spare parts for maintenance and may bring safety and reliability concern. In view of this, we stepped up our public education work with a comprehensive approach involving online and offline promotion and collaborated with the trade to reach out to "overage" gas appliance users to encourage them to replace aged appliances with newer, safer and more energy-efficient models bearing a GU mark. Following extensive promotion and with the support of the trade, we believe that the number of aged gas appliances without a GU mark which are still in use will continue to decrease.

推行快速檢查計劃提升氣體安全　惠及飲食業界

在食肆氣體安全方面，我們一直致力鼓勵持牌食肆委託註冊氣體工程承辦商為有關氣體裝置進行定期安全檢查。近年，我們委託專業調查公司開展全港食肆問卷調查計劃，務求掌握全港持牌食肆及設有餐廳的會所的氣體裝置數據，並透過外展宣傳推廣氣體安全。自2019年年底計劃開始以來，我們的承辦商走訪全港持牌食肆及設有餐廳的會所，成功收集超過15 000家受訪食肆及相關會所的氣體使用數據。

Enhancing Gas Safety through "Quick Checks" of Gas Installations for the Benefit of the Catering Industry

On the gas safety of food premises, we have been committed to encouraging licenced food premises to engage Registered Gas Contractors (RGCs) to conduct regular safety inspections for their gas installations. In recent years, we engaged a professional research company to conduct a territory-wide survey programme to get a full picture of the gas utilisation situation of all licensed food premises and clubhouse restaurants in Hong Kong and promote gas safety through outreach visits. Since the launch of the programme in end-2019, the contractor had visited the licensed food premises and clubhouse restaurants across the territory and collected data on gas utilisation from over 15 000 food premises and clubhouse restaurants.

我們委託專業調查公司開展全港持牌食肆及設有餐廳的會所的氣體裝置數據，並透過外展宣傳推廣氣體安全。有關調查成功收集了約15 000家食肆及會所餐廳的氣體使用數據，以作分析及跟進，例如進行快速檢查。

We engaged a professional research company to conduct a territory-wide survey of the gas utilisation situation of all licensed food premises and clubhouse restaurants in Hong Kong and promote gas safety through outreach visits. Data on gas utilisation from about 15 000 food premises and clubhouse restaurants were collected for analysis and follow-up action such as Quick Checks.

根據調查所得，我們篩選出366家使用瓶裝石油氣並符合特定情況的食肆作重點跟進。我們安排註冊氣體供應公司主動接觸相關食肆，以進行快速檢查，確保氣體裝置狀態良好。雖然疫情對計劃有所影響，但截至2021年3月，已成功完成123間食肆的快速檢查。有關食肆樂意配合安排，並按建議適時更換老化的氣體用具和配件。另外，我們與香港中華煤氣有限公司於九龍城區推行先導計劃，根據調查結果篩選出區內使用煤氣及老化氣體裝置的食肆，向他們推廣氣體安全檢查。在取得同意後，我們安排煤氣公司進行「快速檢查」。我們會檢討先導計劃的成效，以期把計劃擴展至本港其他地區。

Based on the survey results, we identified 366 food premises that were using cylinder LPG and met specific conditions for follow-up actions. Subsequently, RGSCs would approach the identified food premises to conduct quick checks to ensure their gas installations were in good condition. Despite the obstacles posed by the epidemic, we have conducted quick checks for a total of 123 food premises as at March 2021. The food premises were willing to co-operate with the arrangements and adopt the recommendation of replacing aged gas appliances and parts in a timely manner. Other than that, we introduced a pilot scheme in Kowloon City District in collaboration with the Hong Kong and China Gas Company Limited (HKCG) to promote gas safety inspection to targeted food premises using aged gas appliances based on the survey results. The HKCG also conducted quick checks with their consent. We will review the effectiveness of the pilot scheme, with the aim of extending the scheme to other districts in Hong Kong.

保障公眾安全
PROTECTING PUBLIC SAFETY

藉此計劃，我們建立了相當完整的資料庫，記錄本港食肆的氣體使用狀況，包括氣體類別、氣體裝置使用年期及定期安全檢查紀錄等資料，方便日後按照風險為本的方針與有需要的食肆協調及就氣體安全檢查作跟進。我們亦會繼續與食物環境衞生署協調，根據食肆牌照續期申請的資料更新資料庫，以配合年檢和快速檢測的推廣工作，提升食肆氣體安全。

With this programme, we established a comprehensive database of gas utilisation situation of the food premises in Hong Kong, covering the types of gas used, age of gas installations, RSI records, etc. Under the risk-based approach, the relevant information can be used to facilitate future co-ordination and following up on gas safety inspections for food premises as necessary. We will also continue to co-ordinate with the Food and Environmental Hygiene Department to update our database with reference to the food premises' licence renewal information, so as to tie in with our promotion of annual inspection and quick checks to improve the gas safety of food premises.

計劃進行期間，我們同時加強向食肆氣體安全宣傳。除了向食肆郵寄宣傳信件外，亦安排督察進行外展探訪，傳遞氣體安全訊息，以及派發相關宣傳單張及宣傳品。

In the course of implementing the programme, we also enhanced our gas safety promotion by sending promotional letters to food premises and arranging inspectors to conduct outreach promotion to disseminate gas safety messages with leaflets and promotional materials.

與業界攜手合作　提升定期安全檢查成效

在家居氣體安全檢查方面，我們自2015年開始與香港房屋委員會（房委會）、香港房屋協會（房協）及註冊氣體供應公司合作，在多個公共屋邨推廣定期安全檢查，向五年內未有進行氣體裝置檢測的「長期沒接受安全檢查服務」公共屋邨氣體用戶，主動提供入屋檢查服務，務求提升檢測率及家居氣體安全。有關計劃成效顯著，整體入屋檢查率高達99%以上。

Enhancing Effectiveness of Regular Safety Inspection through Trade Collaboration

On household gas safety, we have been collaborating with the Hong Kong Housing Authority (HKHA), the Hong Kong Housing Society (HKHS) and registered gas supply companies since 2015 to promote RSI and offer inspection services to "long-time-no-service" (LTNS) households in public housing estates, i.e. those who have not had their gas installations inspected for five years, so as to improve the RSI coverage rate and enhance household gas safety. The results of our ongoing efforts have been encouraging as the overall RSI coverage rate has reached over 99%.

2020年，我們選定在房委會及房協轄下71個屋邨中合共7 509戶煤氣用戶，以及21個屋邨中合共386戶管道式石油氣用戶，安排註冊氣體供應公司及註冊氣體承辦商主動聯絡戶主，勸諭他們進行定期安全檢查。雖然受疫情影響，但整體入屋檢查率仍達99%以上。鑑於計劃成效理想，我們於年內將計劃進一步擴展至使用管道式石油氣的私人屋苑，在9個屋苑內選定640戶「長期沒接受安全檢查服務」的用戶，向他們推廣定期安全檢查，數量約佔全港同類用戶的3.8%。年內，整體管道式石油氣的入屋檢查率提升至97.8%。

In 2020, we collaborated with RGSCs and RGCs to proactively approach targeted LTNS households in public housing estates, including 7 509 households in 71 estates under HKHA and HKHS using town gas, and 386 households in 21 estates using piped LPG, to urge them to arrange RSI. Despite the epidemic, the overall RSI coverage rate was above 99%. Given the effectiveness of the programme, we extended it during the year to private housing estates using piped LPG. A total of 640 LTNS households in 9 estates, representing about 3.8% of this type of households in Hong Kong, were identified for RSI promotion. During the year, the overall RSI coverage rate for households using piped LPG rose to 97.8%.

此外，我們促請註冊氣體供應公司在進行定期安全檢查期間，鼓勵及建議用戶將在有關法例生效前安裝而沒有「GU」標誌的舊款氣體爐具，更換為附有「GU」標誌的新型號爐具。

We also urged RGSCs to, during the course of RSI, encourage and recommend the relevant households to replace aged gas appliances without a GU mark installed before the relevant legislation came into effect with newer models bearing a GU mark.

批出專用石油氣加氣站新合約　維持石油氣加氣網絡穩定

現時，全港共有70個石油氣加氣站，為超過18 000輛的士及4 600輛小巴提供車用石油氣加氣服務。當中，12個專用石油氣加氣站的銷量約佔全港車用石油氣總銷量的65%，是石油氣加氣網絡的重要一環。由於該12個專用氣站的合約將於2021年至2023年分批屆滿，機電署在2020年12月就12份專用石油氣加氣站的合約公開招標，並於2021年5月成功批出所有新合約，維持石油氣加氣網絡穩定，惠及的士及小巴業界。

Awarding New Contracts of Dedicated LPG Filling Stations to Maintain Stability of the LPG Filling Network

Currently, there are a total of 70 LPG filling stations which provide LPG filling service for more than 18 000 taxis and 4 600 light buses in Hong Kong. Among the 70 LPG filling stations, 12 are Dedicated LPG Filling Stations (DFSs) and the sales volume of which accounts for about 65% of the total auto-LPG sales volume over the territory, demonstrating their importance in the LPG filling network. The existing contracts of the 12 DFSs will expire in phases from 2021 to 2023. In December 2020, the EMSD conducted an open tender exercise for the 12 DFSs and the new contracts were awarded in May 2021, with a view to maintaining the stability of the LPG filling network and benefiting the taxi and light bus trades.

機電署於2021年5月與香港蜆殼有限公司（上圖）及中石化（香港）石油控股有限公司（下圖）簽訂新的專用石油氣加氣站合約，維持石油氣加氣網絡穩定，惠及的士及小巴業界。

In May 2021, the EMSD signed the new DFSs contracts with Shell Hong Kong Limited (upper photo) and Sinopec (Hong Kong) Petroleum Holding Company Limited (bottom photo), with a view to maintaining the stability of the LPG filling network and benefiting the taxi and light bus trades.

疫情期間加快審批工作　液化天然氣供應時間表不受影響

由2020年開始，香港首個海上液化天然氣接收站工程項目如火如荼，當中海底天然氣輸氣管道鋪設工程、海上接收站打樁工程，以及發電廠內天然氣設備加建工程相繼展開。我們積極配合工程進度，加快處理「應具報氣體裝置」的審批工作，致力減低疫情對工程進度的影響。我們預期海上液化天然氣接收站項目於2022年落成後，本港兩家電力公司會進一步增加天然氣的使用量，提升天然氣在整體發電燃料組合中的比例，從而減少碳排放。

Expediting Approval Process during the Epidemic to Meet the Schedule of Liquefied Natural Gas Supply

Hong Kong's first offshore liquefied natural gas (LNG) terminal project has been going full steam ahead since 2020, with the commencement of the construction works of the subsea pipelines, the piling works of the terminal and addition works of LNG facilities in the power station. We proactively facilitated the progress of the project and expedited the approval process of notifiable gas installations (NGIs) to minimise delays caused by the epidemic. It is expected that following the completion of the offshore LNG terminal project in 2022, the two power supply companies in Hong Kong will further increase the usage of natural gas and boost its share in the overall fuel mix for power generation in order to reduce carbon emissions.

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PROTECTING PUBLIC SAFETY

疫情期間多措並舉　維持規管及溝通工作

疫情無礙我們日常的規管工作。我們於本年度按照計劃到車輛維修工場共進行逾6 000次氣體安全巡查。我們也一直與註冊氣體供應公司保持緊密聯繫，密切關注其抗疫管理措施、人力資源調配、零部件供應等情況，並檢視了其業務延續計劃及緊急應變方案，確保氣體供應不受疫情影響。

Maintaining Regulatory Work and Communication During the Epidemic

Our regulatory work was unaffected by the epidemic. During the year, we conducted over 6 000 gas safety inspections at vehicle maintenance workshops as planned. We also maintained close communication with RGSCs regarding their anti-epidemic management measures, manpower deployment and spare parts supply, and examined their business continuity plans and contingency plans to ensure that gas supply would not be interrupted due to the epidemic.

圖為我們的同事巡查石油氣車輛維修工場的情況。疫情下，機電署堅持按照計劃完成每年逾6 000次氣體安全巡查。

The photos show EMSD staff making gas safety inspections at vehicle maintenance workshops. We conducted over 6 000 gas safety inspections at vehicle maintenance workshops during the year as planned, even under the epidemic.

我們亦支援政府的公共衞生控制工作，例如當政府需要將未入伙的駿洋邨用作檢疫中心時，我們配合有關安排，監督煤氣公司檢查檢疫單位的氣體供應設施，確保受檢疫人士可安全使用氣體爐具。

We also supported the Government's public health control work. For example, we facilitated the relevant arrangements when the then unoccupied Chun Yeung Estate was to be used as a quarantine centre by monitoring the HKCG's inspections of all gas supply facilities in the quarantine units, in a bid to ensure that the confinees could use gas appliances safely.

我們亦作出適切安排，以維持各項主要服務，例如維持各類氣體業界的註冊及許可證申請、處理市民查詢，以及跟進氣體安全個案，避免延誤各項公眾服務。

We also made appropriate arrangements to continue to provide all essential services, such as processing the registration and permit applications of the gas trade, handling public enquiries and following up on cases in relation to gas safety, in order to avoid delays in public services.

疫情期間，我們設立網上平台與業界維持溝通，並於2020年12月推出「石油氣瓶車驗車預約系統」，方便石油氣瓶車車主為其車輛預約進行年檢。在疫情下，我們迅速推出該系統，加強對業界的支援，深受業界歡迎。網上預約的模式亦方便我們比對申請人的資料，簡化行政程序及預約過程。我們會繼續使用此系統，方便業界。

During the epidemic, we established online platforms to maintain communication with the trade. In December 2020, we launched the LPG Cylinder Wagon Examination Booking System for vehicle owners of LPG cylinder wagons to make appointments for annual examination. The quick introduction of the system in the epidemic enhanced our support for the trade and was much welcomed by them. The online reservation mode also facilitated cross-checking of applicants' information, simplified administration procedures and streamlined the booking process. The system will be kept in place for the convenience of the trade.

在疫情下，我們將部分定期舉辦的業界及公眾研討會改以線上視像模式舉行。年內，我們為業界、其他政府部門的人員、物業管理公司及公眾人士舉辦十場線上研討會。日後，我們會繼續採用視像及現場混合模式舉辦研討會，並會利用社交媒體及網絡平台推廣氣體安全。

A number of regular trade and public seminars were held online in the epidemic. During the year, we held ten webinars for the trades, officers of other government departments, property management companies and members of the public. In the future, we will continue to adopt a mixed mode of online and on-site seminars and leverage social media and internet platforms to promote gas safety.

線上研討會模式進一步鼓勵車輛維修技工持續進修，自我增值。2020年，我們舉辦了多場線上持續進修講座，吸引逾2 000名車輛維修技工參與。講座設有互動問答環節，共提供約6 000小時的持續專業進修時數，約佔業界每年所需的總持續進修時數一成。部分線上講座的參與人數更高達750人，較以往的現場講座模式高出數倍，可見線上培訓活動深受業界歡迎。

The webinar mode also further encouraged vehicle mechanics to upskill themselves with continuing professional development (CPD). In 2020, we held a number of online CPD seminars with interactive Q&A sessions. The events were attended by more than 2 000 practitioners and about 6 000 CPD hours have been granted, accounting for about 10% of the annual CPD requirements for the entire trade. Certain CPD seminars were attended by as much as 750 people, several times higher than the attendance of previous on-site seminars, indicating that online training events were well received by the trade.

視像會議也讓我們的「應具報氣體裝置」審批工作不受疫情影響。在團隊的共同努力下，我們於2021年3月為有機資源回收中心第二期的生物氣儲氣鼓及相關氣體裝置發出建造批准。項目現正進行施工，預計於2022/23年度落成啓用。我們預計該設施每天可接收和處理約300公噸已作源頭分類的有機廢物。使用回收中心有助減少有機廢物被棄置於堆填區，可緩解餐廚垃圾問題，同時產生可供發電的生物氣及堆肥產品。

The online meetings ensured uninterrupted approval work for NGIs during the epidemic. With team effort, the construction approval for the biogas gasholders and associated gas installations under Organic Resources Recovery Centre Phase 2 (O·PARK2) was granted in March 2021. Currently under construction, the project is expected to be commissioned in 2022/23. The facilities can receive and process about 300 tonnes of sorted organic waste daily. It helps minimise disposal of organic waste in landfills, alleviates the burden of kitchen waste disposal, produces biogas for power generation and facilitates composting.

我們善用視像會議，讓審批「應具報氣體裝置」的工作不受疫情影響。我們如期於2021年3月為有機資源中心第二期的生物氣體儲氣鼓及相關氣體裝置發出建造批准。

With online meetings, our approval work for notifiable gas installations went ahead uninterrupted by the epidemic. The construction approval for the biogas gasholders and associated gas installations of the Organic Resources Recovery Centre Phase 2 (O·PARK2) was granted in March 2021 as scheduled.

此外，我們於年內完成《石油氣車輛燃料系統維修優良作業指引》的草擬工作，指引涵蓋維修石油氣車輛燃料系統的基本要求及最佳做法，務求進一步改善及優化石油氣車輛燃料系統的維修及保養工作，並提升業界的專業水平。有關指引已於2021年年初上載至機電署網站。

During the year, we completed the Best Practices for Maintenance of Fuel System of Liquefied Petroleum Gas Vehicles, which covers the basic requirements and best practices for maintaining the fuel systems of LPG vehicles, so as to further improve and enhance the quality of the repair and maintenance work of fuel systems of LPG vehicles and raise the professionalism of the trade. The handbook was uploaded to the EMSD website in early 2021.

機電署於2021年初出版了《石油氣車輛燃料系統維修優良作業指引》，務求進一步改善及優化石油氣車輛燃料系統的維修及保養工作，並提升業界的專業水平。

The EMSD published the Best Practices for Maintenance of Fuel System of Liquefied Petroleum Gas Vehicles in early 2021, so as to further improve and enhance the quality of the repair and maintenance work of fuel systems of LPG vehicles and raise the professionalism of the trade.

保障公眾安全
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善用科技　優化氣體安全工作

年內，我們繼續善用創新科技提升氣體安全規管工作的效率，便利業界和市民。

舉例而言，繼2019年12月在機電署流動應用程式E&M Connect推出新功能讓市民尋找鄰近石油氣分銷商後，我們於2020年11月在此流動應用程式加入「掃證快」功能，市民只需拍攝註冊氣體裝置技工的註冊證，便能即時獲得技工的資料。我們已向業界、氣體爐具進口商/供應商、銷售店舖及物業管理公司派發宣傳單張，鼓勵市民使用這項新功能。

我們持續為氣體安全規管工作引進創新科技，例如在E&M Connect流動程式加入「掃證快」功能，市民只需把氣體裝置技工的註冊證拍下，便能即時取得該技工的資料，十分方便。

Continuing to adopt innovative technology in our gas safety regulatory work, we added the "Scan Fast" feature to our "E&M Connect" mobile app, so that users may instantly obtain the information of a registered gas installer by capturing the image of his registration card, offering great convenience to the public.

該流動應用程式可提供瓶裝石油氣分銷商的位置之餘，亦會顯示他們在「瓶裝石油氣分銷商安全表現評級計劃」中的評級，方便公眾選擇安全表現良好的分銷商。2020年，五家供應全港瓶裝石油氣的註冊氣體供應公司轄下全部163間分銷商均參與評級，其中55間分銷商獲評金級，而銀級及銅級分銷商則分別有21間及87間。

為配合善用創新科技並簡化作業流程的政策，我們於年內將氣體標準事務處的內部操作系統全面升級，為相關牌照申請全面電子化做好準備。

Optimising Gas Safety with the Use of Technology

During the year, we continued to leverage innovative technology to enhance the efficiency of our gas safety regulatory work for the convenience of the trade and the public.

For example, following the launch of the new function in the "E&M Connect" mobile app in December 2019 for the public to search for LPG cylinder distributors in the vicinity, we introduced "Scan Fast", another in-app feature, to allow users to obtain the information of a registered gas installer (RGI) instantly just by capturing the image of his registration card. To encourage the public to use this new feature, we distributed promotional leaflets to the trade, gas appliances importers/suppliers and outlets as well as property management companies.

In addition to showing the locations of LPG distributors, the mobile app also displays the ratings of distributors under the LPG Cylinder Distributor Safety Performance Recognition Scheme to help the public select a distributor with good safety performance records. In 2020, all 163 LPG cylinder distributors under the five RGSCs across the territory participated in the scheme. Among them, 55 distributors attained the gold rating, while 21 and 87 received silver and bronze ratings respectively.

In line with the policy of adopting innovative technology and simplifying work processes, we upgraded the internal operating system of the Gas Standards Office during the year, in preparation for the complete digitisation of relevant license applications.

此外，我們為符合資格保養及維修石油氣車輛燃料系統的第六類勝任人士（CP6）推出「CP6簡易續證四部曲」網上平台，大大改善證書及證明卡續證流程，並將續證所需重溫的課程改為線上進行。第六類勝任人士可隨時登入「CP6簡易續證四部曲」網頁，重溫更換石油氣缸的步驟及安全措施，在正確回答相關題目後，即完成續證。全新的網上續證平台除了方便業界外，亦有助我們提升工作效率。

在實地巡查建築物外牆的氣體喉管時，有關人員或需進入附近的住宅單位，從單位窗口進行目測，甚至搭建棚架進行檢查。為方便遠距離檢查建築物外牆的氣體喉管，我們在年內添置了激光甲烷檢測儀。檢測儀可裝置在腳架上，從100至200米的距離對喉管進行檢測，偵測氣體喉管有沒有出現洩漏，方便就懷疑外牆氣體喉管氣體洩漏的通報進行檢測。

為了更容易巡查建築物外牆的氣體喉管，我們添置了一個激光甲烷檢測儀，能在200米距離內檢測氣體喉管。這遠距離檢測方案，對檢測懷疑外牆氣體喉管漏氣的通報，最派得上用場。

To make inspection of external gas pipes of buildings easier, we acquired a laser methane detector which can accurately detect leakage from gas pipes at a distance of 200 metres. This remote inspection device has been most useful in inspections regarding reported cases of suspected gas leakage from external gas pipes.

疫情期間延續跨境合作　維持與內地及區域組織聯繫

雖然跨境交流活動因疫情發展而暫停，但我們與內地及區域組織保持溝通。我們一方面繼續聯同天津海關對從內地輸港的家用氣體爐具進行認證及審批，另一方面在年內展開與杭州海關的合作，從源頭堵截未獲批准的家用氣體爐具經跨境電商平台供港。

Cross-border Collaboration with Mainland and Regional Counterparts Continued During the Epidemic

While cross-border exchange events were suspended during the year due to the epidemic, we maintained communication with the Mainland and regional counterparts. During the year, we continued the collaboration with Tianjin Customs to certify and regulate domestic gas appliance supplied to Hong Kong, and commenced the collaboration with Hangzhou Customs to intercept at source the supply of non-approved domestic gas appliances to Hong Kong via cross-border e-commerce platforms.

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區域合作方面，我們積極與廣東省、廣州市和深圳市規管氣體安全的對口單位探索合作機會，進一步促進大灣區的氣體安全協作交流。另外，我們與新加坡能源市場管理局在2021年5月11日舉辦線上工作坊，就液化天然氣的發展進行交流，並邀請了本港兩家電力公司介紹海上液化天然氣接收站項目的進展及挑戰。

On regional collaboration, we worked with the gas safety regulatory authorities of Guangdong Province, Guangzhou and Shenzhen to explore collaboration and exchange opportunities to enhance gas safety in the Greater Bay Area. During the online workshop with the Energy Market Authority of Singapore held on 11 May 2021, we shared insights on the development of LNG, and invited the two local power companies to shed light on the progress and challenges of the offshore LNG terminal project.

普及易燃雪種安全知識　防患於未「燃」

R32雪種較為環保，但由於這類雪種為輕度易燃，安裝使用R32雪種的冷氣機時必須遵守製造商規定的最小房間面積和安裝高度。除了進行廣泛宣傳及教育外，我們亦作出協調，與供應商共同為超過1 700名冷氣技術員提供該類冷氣機的安裝和維修保養培訓，並與職業訓練局和香港空調及冷凍商會合辦培訓課程，向業界大力宣揚輕度易燃雪種的安全知識。

Enhancing Safety Awareness of Flammable Refrigerant as Precaution

R32 refrigerant is environmental friendly yet mildly flammable. When installing air-conditioners using R32 refrigerant, the requirements on minimum room area and installation height as specified by the manufacturers must be complied with. In addition to carrying out extensive public education and promotion work, we co-ordinated with suppliers to provide training on the installation and maintenance of such air-conditioners for over 1 700 air-conditioning technicians. We also introduced training courses in collaboration with the Vocational Training Council and the Hong Kong Air Conditioning and Refrigeration Association to widely promote safety knowledge about mildly flammable refrigerant to the trade.

2020/21年度，我們更多走一步，在發展項目的設計階段，參與審視使用R32雪種家用冷氣機的建築設計規劃。在六個審視項目中，發展商因應我們提出的安全建議改善設計，共同為雪種安全出一分力。

In 2020/21, we went the extra mile by taking part in evaluating the building design plans of rooms fitted with air-conditioners using R32 refrigerant at the design stage of a development project. We were delighted that the developers adopted our safety advice to improve the designs for six projects we reviewed, enhancing refrigerant safety together.

我們除了參與審視使用R32雪種家用冷氣機的發展項目的設計，亦會抽樣查核有關冷氣機的安裝是否符合安全要求。

Apart from taking part in evaluating the design of R32 household air-conditioners in development projects, we also conducted random inspections on the concerned air-conditioners in order to verify whether the installations complied with the safety requirements.

展望來年　五大重點工作

重點一：在推動氣體安全檢查方面，我們會承接過去一年以持牌食肆為目標的定期安全檢測工作，繼續敦促註冊氣體供應公司為優先名單上的持牌食肆進行快速安全檢查。我們亦會繼續與註冊氣體供應公司合作，向房委會和房協的屋邨以及私人屋苑的「長期沒接受安全檢查服務」家居氣體用戶推廣定期安全檢查，鼓勵有關用戶讓註冊氣體供應公司進行定期安全檢查。

Five Key Focuses for the Year Ahead

Our first focus for the coming year, in relation to promoting gas safety inspection, is to follow on the efforts of last year and continue to conduct RSI for licensed food premises. We will continue to task RGSCs to carry out quick checks for the restaurants on the priority list. We will also continue to collaborate with RGSCs to promote RSI to LTNS households in public housing estates under HKHA and HKHS as well as private estates, and encourage the relevant gas users to allow RGSCs to conduct RSI.

重點二：在加強公眾宣傳教育方面，我們計劃在2021年加強有關「GU」標誌家用氣體爐具及氣體安全的社區推廣工作。除了在公共交通工具包括巴士、港鐵及電車等登載廣告外，我們亦會在流行的社交媒體平台及線上頻道播放多語字幕宣傳短片，加強不同用戶對「GU」標誌的認識及氣體安全意識。我們亦會就使用R32輕度易燃雪種的冷氣機製作網上廣告和多語單張，以擴大接觸面。

Our second focus is to enhance public education and promotion. In 2021, we plan to step up our community promotion work to enhance understanding and awareness of the GU Mark and gas safety. Besides advertising on public transportation, such as buses, MTR and trams, we will make use of popular social media platforms and online channels to screen APIs with multi-lingual subtitles to enhance the awareness of different users on the GU Mark and gas safety. We will also produce online advertisements and multi-lingual leaflets on air-conditioners using R32 flammable refrigerant to extend the reach of our publicity efforts.

重點三：我們亦會繼續善用創新科技工具，提升氣體安全的規管成效。2021年，我們成功取得創科局撥款，研發用以檢查煤氣和石油氣喉管安全的數據分析系統。系統利用不同建築物的事故數據，以大數據分析氣體洩漏的成因和事故機率，從而找出高危因素，作為持續監測的基礎，務求提升住宅樓宇外牆的氣體喉管安全。此外，我們會與專用石油氣加氣站的營運商協商，開發網上平台，方便營運商提交維修及保養紀錄。我們亦會積極配合部門行政電子化的政策，陸續為各項氣體相關牌照申請加入電子化提交申請、支付款項和簽發牌照等服務，務求便利界業。

Our third focus is to continue to utilise innovative tools to enhance the efficacy of our gas safety regulatory work. In 2021, we have obtained funding from the Innovation and Technology Bureau to develop a data analytics system to review the safety of town gas and LPG pipes. The system will look into the data of historical incidents occurred in different buildings and use big data analytics to find the causes and probability of gas incidents, so as to identify the high-risk factors to support ongoing monitoring, in a bid to enhance the safety of external gas pipes on buildings. Furthermore, we will develop an online platform in collaboration with DFS operators for repair and maintenance record submission. In line with the department's policy of administration digitisation, we will progressively enable e-submission, e-payment and issuance of e-licenses for various gas-related applications for the convenience of the trade.

我們亦會繼續與廣東省科學院合作，共同研發人工智能機械人，以超聲波探測模組和數據分析等技術檢測石油氣缸車的氣缸內部情況。

Moreover, we will continue to work with the Guangdong Academy of Sciences to co-develop an intelligent robot equipped with ultrasonic inspection modules and data analytics function to inspect the inner shell condition of LPG road tankers.

為方便業界和公眾，我們亦會在網站及流動應用程式加入更多功能，包括讓註冊氣體供應公司線上提交維修紀錄和機電署巡查報告，為業界提供每月車用石油氣價格對比和石油氣品質樣本檢測結果的分析報告，讓石油氣車輛燃料系統維修工場於網上申請工場識別標誌，提供全港2 000多間註冊車輛維修工場位置、路線指示及工場基本資料的功能。我們亦已建立車輛維修工場數據庫，預料可於2022年年初推出。

More functions to facilitate the trade and the public will be added to the EMSD website and our mobile app, including online submission of maintenance record and EMSD inspection reports for RGSCs, monthly comparison of auto-LPG prices and test results of LPG quality, online application for the identification label for LPG vehicle fuel tank system maintenance workshop, and indication of locations, routes and basic information of over 2 000 registered vehicle maintenance workshops across the territory. We have also established a database of vehicle maintenance workshops, which is expected to be introduced in early 2022.

重點四：在內地及國際合作方面，我們與杭州海關合作，由源頭堵截未獲批准的氣體爐具經跨境電商平台輸港的規管合作模式初見成效。我們會繼續積極與大灣區和國際的對口單位開拓有關規管氣體安全的交流和合作機會。

Our fourth focus is on mainland and international co-operation. Our joint regulatory control with Hangzhou Customs to intercept at source the supply of non-approved gas appliances to Hong Kong via cross-border e-commerce platforms has achieved encouraging preliminary results. We will continue to work with relevant authorities in the Greater Bay Area and overseas countries to explore co-operation and exchange opportunities on gas safety regulatory work.

重點五：氣體標準事務處及車輛維修註冊組將積極參與政府的《香港電動車普及化路線圖》、《香港清新空氣藍圖2035》及《香港氣候行動藍圖2050》行動計劃，共同爭取於2050年前實現碳中和。

As for our fifth focus, the Gas Standards Office and Vehicle Maintenance Registration Unit will actively participate in the action plans of the Hong Kong Roadmap on Popularisation of Electric Vehicles, Clean Air Plan for Hong Kong 2035 and Hong Kong's Climate Action Plan 2050 initiated by the Government, in a bid to achieve carbon neutrality before 2050 with joint efforts.

保障公眾安全
PROTECTING PUBLIC SAFETY

當仁不讓 引入新智能檢測工具 優化氣體喉管監察和安全水平
Introducing Smart Inspection Tools to Enhance Gas Pipe Monitoring and Safety Level

氣體標準事務處工程師梁淑茵女士及其團隊，積極引入激光甲烷檢測儀，以優化現行檢測氣體喉管洩漏的工作，體現在疫情下借助創新科技工具，優化監察氣體喉管狀況和安全水平的工作。

Ms Leung Shuk-yan, an engineer of Gas Standards Office (GasSO) and her team brought in a laser methane detector to enhance existing inspection of gas pipe leakage, showcasing how innovation and technology (I&T) tools can enhance the monitoring of gas pipe condition and safety level amid the epidemic.

現時香港約有17 000幢住宅大廈使用煤氣，共裝設約70 000多條煤氣立管。為這些室外立管進行氣體洩漏檢測是一項非常艱巨的任務。以往的應對方法是從煤氣喉管附近的住宅單位取道，或從窗口伸出檢測儀進行近距離檢測。若遇到天井或難以到達的位置，甚至要搭棚處理。

為提升煤氣喉管的監察和安全水平，機電署於2020年10月引入激光甲烷檢測儀，並優化裝置的設備，加入三腳架穩定儀器，配置長距離鏡頭，以遙距目測煤氣喉管狀況。

梁女士解釋說:「香港大廈密集，以往我們的督察要為室外煤氣立管進行洩漏檢測有一定的困難及限制。現在連我也可以輕易地使用這部只有手電筒大小的激光甲烷檢測儀，有需要時遠距離為室外煤氣喉管進行洩漏檢測。在疫情期間，能減少進入大廈單位的需要，利便市民的同時，更能提升氣體安全規管工作的效率。引入檢測儀後，我們無需與戶主預約進入單位，省時方便，可快速進行氣體事故調查工作，第一時間確認現場氣體喉管的安全狀況。」

About 17 000 residential buildings in Hong Kong are using town gas, with about 70 000 town gas risers installed. It is an enormous task to inspect these outdoor gas pipes for leaks. The usual practice in the past was to get near a gas pipe via a nearby residential unit, or extend inspection tools out of a window to check the targeted spot. For stairwells or hard-to-reach locations, scaffoldings might even be necessary to get the job done.

To enhance gas pipe monitoring and safety, the EMSD acquired a laser methane detector in October 2020. The device was augmented with a tripod for stabilisation, and a long-range camera lens for conducting remote visual examination of town gas pipes.

Ms Leung explained, "Due to the high density of buildings in Hong Kong, checking the gas leakage of outdoor town gas risers presented challenges and limitations for our inspectors in the past. Now, even I can easily handle this laser methane detector, which is about the size of a torch, to remotely check the gas leakage of outdoor gas pipes when required. Using the equipment reduces the need to access the gas pipes via residential units during the epidemic, which is both beneficial and convenient to the public and conducive to improving the efficiency of the gas safety regulatory work. After adopting the equipment, our team can quickly conduct gas incident investigations and ascertain the on-site safety condition of gas pipes instantly, without having to spend time to go through the hassle of making appointments with the occupants for access to the premises."

氣體標準事務處團隊一向積極推動運用創新科技，並鼓勵業界共同利用智能科技工具優化氣體安全工作。梁女士說:「我們與香港中華煤氣有限公司(煤氣公司)在科技應用上保持緊密的聯繫和協作，並於2021年4月與煤氣公司成立創新及科技工作小組，通過舉行定期會議，並配合日常交流，互相分享使用創新科技的經驗及資訊，利用創新科技監察氣體設施的安全運作，以提升氣體安全水平。」

機電署作為香港的氣體安全監督，致力運用我們的專業知識為公眾保障氣體安全。梁女士說:「自2015年加入機電署參與氣體安全的規管及宣傳工作以來，通過日常工作深刻體會到機電署如何發揮其專業及促成者的角色，推廣氣體安全。我們會與業界與時並進，攜手運用最新的智能科技，提升香港的氣體安全水平。未來，我們亦會繼續研究運用創新科技工具，例如採用大數據分析及地理信息系統，作為持續監測大廈氣體喉管安全狀況的基礎。」

The GasSO team has always been proactive in adopting I&T and encouraging the trade to leverage smart tools to enhance gas safety. Ms Leung remarked, "We maintain close communication and collaboration with The Hong Kong and China Gas Company Limited (HKCG) on the adoption of I&T. In April 2021, we set up an I&T Working Group with HKCG and have regular meetings on top of daily communication to share experience and information on I&T application, so that we can continue to leverage advanced tools to monitor the safe operation of gas facilities with a view to enhancing the gas safety level."

As the Gas Authority of Hong Kong, the EMSD is committed to safeguarding the gas safety of the public by applying its professional knowledge. "Since joining the EMSD in 2015 and participating in gas safety regulatory and public promotion work, I have experienced through my daily duties how the EMSD fulfilled our role as the facilitator in promotion of gas safety. Together with the trade, we will keep up with the times and adopt the latest smart technology to enhance Hong Kong's gas safety level. We will continue to explore the application of I&T tools in the coming years, for example, the big data analytics and geographic information system, with a view to supporting the continuous monitoring of the safety condition of the gas pipes in buildings," she said.

保障公眾安全
PROTECTING PUBLIC SAFETY

不辭勞苦 為車輛維修業界安排抗疫資助
Arranging Anti-epidemic Subsidies for Vehicle Maintenance Trade with Full Dedication

疫情期間市民減少出行，用車量銳減，導致車輛維修業界亦大受影響，收入大減三至五成。機電署車輛維修註冊組（註冊組）察覺業界受到疫情嚴重影響，馬上向運輸及房屋局提交報告反映業界困境。最後，車輛維修工場獲納入為防疫抗疫基金支援的行業之一。註冊組亦極速地在四個月內完成相關申請的審批工作並發放資助。註冊組的工程師邱芝瑩女士是該計劃的骨幹成員之一。

As car usage fell drastically when fewer people went out during the epidemic, the vehicle maintenance trade of Hong Kong suffered from a 30 to 50% drop in income. Keenly aware of how the trade was affected by the epidemic, the Vehicle Maintenance Registration Unit (VMRU) of the EMSD immediately put together a report to the Transport and Housing Bureau, reflecting the hardship the industry was facing. When the vehicle maintenance workshops were eventually included in the Anti-epidemic Fund (AEF) support scheme, the VMRU swung into action, completing the application and approval processes, as well as granting the subsidies within four months. Ms Yau Chi Ying, Vanessa, a VMRU engineer, was a key member of the working team.

邱女士表示，註冊組負責車輛維修技工自願註冊計劃和車輛維修工場自願註冊計劃的推廣、日常管理和運作，每年平均處理大約4 000宗註冊申請。眼見業界在疫情初期要艱苦經營，署長與註冊組成員於是主動為業界爭取防疫抗疫基金資助。成功爭取把車輛維修工場納入防疫抗疫基金2.0的資助計劃後，全組上下20位工作人員隨即與時間競賽，即使期間註冊組同事需按政府規定在家工作，依然日以繼夜為業界處理申請。

她憶述，當時估計香港約有2 800間車輛維修工場，當中約2 050間為註冊車輛維修工場，所以註冊組最初預計會收到2 700份申請，而最終申請數目多達3 134份，其中約有1 550份申請來自未有在計劃下註冊的工場。因此就該批工場需要多做資料核實和資格審查的工作，以確認該類申請者是否具備相關的申請條件。

「為未註冊的工場進行確認和審批的工作相當繁複，例如，填寫地址的方式五花八門，很多工場位於新界偏遠的棕地，在同一地段可能有多個商業登記，我們要花很多功夫調查和核實，確保沒有重複的申請。」她說。

由於車輛維修業界普遍不採用以電子方式提交申請，註冊計劃一直配合業界沿用紙本申請。「為方便處理防疫抗疫基金申請，加上考慮到新型冠狀病毒病的傳播風險和在家工作的局限性，我們決定由零開始建立一個全新的網上系統，以接受資助申請，並在機電行業通流動應用程式加入申請功能。我們慶幸獲得營運基金資訊科技策略支援分部同事的積極協助，讓我們能在短時間內招標，並安排承辦商在一個月內建立系統。」她詳述。

系統以簡單為原則。申請人只需提交工場的名稱、位置及商業登記資料等。系統附有拍攝功能，方便申請人以拍照方式提交相關申請文件和工場照片以資證明。「我們亦在短時間內製作了一段視頻，解釋每個申請步驟和需要提交的文件。在家工作期間，更要為一些家中沒有電腦設備的同事安排電腦及通訊設施。我們又設立了多條熱線處理查詢。在計劃推出初期，同事們每日需處理超過100項查詢。」邱女士說。

至2020年8月底公務員恢復正常上班之後，註冊組的督察便立即開始前往各申請資助的工場進行核實工作。為加快核實申請資格，註冊組要從其他組別借調督察，增加人手，其間，進行了600多次的工場實地查察。結果成功地在短短四個月內處理所有申請，最終有2 879間合資格的車輛維修工場獲發50,000港元防疫抗疫基金資助，合共向行業發放了1.44億港元。

處理發放資助工作之後，邱女士和同事們還須為暫放一旁的恆常工作追回進度。不過，註冊組在今次行動中亦有意外收穫，除了加強與業界的溝通外，一些未有註冊的技工和工場亦主動辦理註冊申請手續，而兩個註冊計劃的電子化工作亦建立了基礎。邱女士尤其慶幸，在業界極需要扶持的時候，註冊組能夠為他們提供支援。這次行動顯示，註冊組除了處理註冊事宜外，亦與業界並肩，共同抗逆。

Ms Yau remarked that the VMRU was in charge of the promotion, daily management and operation of the Voluntary Registration Scheme for Vehicle Mechanics (VRSVM) and the Voluntary Registration Scheme for Vehicle Maintenance Workshops (VRSVMW). The unit processes about 4 000 registration applications on average each year. Seeing that the vehicle maintenance trade was facing a hard time, the Director and VMRU advocated for the inclusion of the trade under the AEF and succeeded in getting the Vehicle Maintenance Workshops (VMWs) covered in the AEF 2.0. The 20 colleagues in the VMRU immediately raced against time to process the applications round the clock despite having to work from home according to the Government's directive.

She recalled that based on the estimates of 2 800 VMWs in Hong Kong, about 2 050 of them are registered, the team originally expected that about 2 700 applications would be received. However, it ended up receiving 3 134 applications, of which about 1 550 were from non-registered workshops. Verification and assessments had to be conducted for those applications to ascertain if they were eligible for the AEF subsidy.

"Confirmation and approval of non-registered VMWs were rather complicated. For example, the addresses provided came in a wide array of formats, and many workshops were located in remote brownfields in the New Territories. A single location could have a number of business registrations. We had to undergo a lot of investigation and verification to ensure that there were no duplicated submissions," she said.

As digital application was not commonly used in the vehicle maintenance trade, the VMRU had been using paper submission for the registration schemes to suit the trade. "To facilitate the AEF applications and taking into account the risk of COVID-19 infections and work-from-home limitations, we decided to build an online application system from scratch. We also added an application function in the E&M Trade App. We were fortunate to have enlisted the help from colleagues of the Trading Fund's Information Technology Strategic Support Sub-division, so that we could issue a tender within a short time and lined up a contractor to build the system within a month," she explained.

The system was made as simple as possible. Applicants were only required to provide their workshop's name, location and business registration information, etc. A photo-taking function was included so that applicants could submit the relevant documents and workshop photos as evidence. "We quickly produced a video to explain the application and submission procedures step by step. We also arranged computers and communication facilities for colleagues who had no digital equipment at home during the work-from-home period. A few hotlines were set up to handle enquiries. When the programme was launched initially, our colleagues had to deal with more than 100 enquiries each day," Ms Yau said.

By the end of August 2020, when civil servants resumed working in the office, the VMRU's inspectors immediately started visiting the applicant workshops for eligibility verification. The VMRU even had to enlist inspectors from other sub-divisions, and 600-plus site visits were conducted. In the end, the unit managed to complete the process within four months. A total of 2 879 eligible VMWs were approved for the AEF subsidy of HK$50,000 and a total subsidy of HK$144 million was disbursed to the trade under this initiative.

After attending to the AEF processing work, Ms Yau and her colleagues still had to catch up with the work that had been set aside. Yet, they were pleased that the exercise had brought unexpected benefits. Other than enhanced communication with the trade, many previously unregistered vehicle mechanics and VMWs took the initiative to join the registration schemes, while the groundwork for digitisation of both schemes was laid. Ms Yau is delighted that the VMRU offered help to the trade when it was most needed. The initiative also showed that the VMRU was not only about registration but also standing with the trade to ride out challenges.

保障公眾安全
PROTECTING PUBLIC SAFETY

機械安全

升降機及自動梯事故維持低水平

雖然疫情對巡查工作進度有一定影響，我們在2020/21年度執行逾28 000次巡查，以保障升降機及自動梯安全。2020年的升降機及自動梯事故總數共1 754宗，維持在低水平，較2019年的2 138宗減少18%。

MECHANICAL SAFETY

The Number of Lift and Escalator Incidents Kept Low

Although the epidemic has a certain impact on the progress of inspection work, we conducted over 28 000 inspections in 2020/21 to ensure lift and escalator safety. The number of lift and escalator incidents in 2020 remained at a low level of 1 754 cases, representing an 18% decrease from 2 138 cases in 2019.

堅持巡查工作，以保障升降機及自動梯安全
Continue inspection work to ensure lift and escalator safety

2020/21年度執行逾 **28 000** 次巡查
Conducted over **28 000** inspections in 2020/21

2020年的升降機及自動梯事故總數共 **1 754** 宗
The number of lift and escalator incidents in 2020 **1 754** cases

全港共有約70 000部升降機運作，其中約41 000部機齡超過20年，而約45 000部未安裝最新的安全保護裝置。香港每年有約1 000多部新升降機投入運作，並有約2 000部升降機需進行主要改動或優化工程。機電署目前正採取短期及中期措施，以提升這些舊式升降機的安全水平。短期措施規定尚未安裝防止機廂不正常移動裝置、防止機廂向上超速運行裝置或雙重制動系統的升降機，每年須進行不少於兩次特別保養。機電署的督察會進行巡查，監察這類保養工作。

Hong Kong has about 70 000 lifts in operation, about 41 000 of them are older than 20 years and about 45 000 of them are not equipped with the latest safety devices. Every year, more than 1 000 new lifts are put into operation and about 2 000 lifts have to undergo major modification or modernisation works. The EMSD is now adopting short-term and medium-term measures to enhance the safety of these aged lifts. Short-term measures require lifts that have not been installed with unintended car movement protection devices, ascending car overspeed protection devices or double braking systems to undergo at least two rounds of special maintenance per year. Our inspectors monitor this type of maintenance work through inspections.

優化升降機資助計劃第二輪申請完結

發展局、機電署及市區重建局(市建局)自2018年起攜手推出優化升降機資助計劃(該計劃)。該計劃撥款45億港元，為合資格的私人住宅或綜合用途樓宇業主提供財務資助及技術支援，以鼓勵其優化舊式升降機，是提升舊式升降機安全的中期措施。在2019年的第一輪申請，約1 400部合資格的升降機獲計劃批出資助。第二輪申請於2020年1月展開。由於疫情關係，截止日期由原來2020年6月30日延遲至2020年9月30日。此外，手續亦作簡化，容許業主立案法團先遞交申請，待疫情緩和可進行業主大會後才補交相關文件。在第二輪申請審核完成後，有多3 700部升降機獲計劃批出資助，另有3 100部列入候補名單。這些升降機的優化工程將於未來數年分階段展開。

Lift Modernisation Subsidy Scheme Phase 2 Application Completed

The Development Bureau, the EMSD and the Urban Renewal Authority (URA) have been joining forces to implement the Lift Modernisation Subsidy Scheme (LIMSS) since 2018. Under the HK$4.5 billion scheme, financial subsidy and technical support are provided to eligible owners of private residential or composite buildings to encourage them to modernise aged lifts, as a medium measure to enhance the safety of aged lifts. In the first-round application in 2019, subsidies were approved for about 1 400 eligible lifts under the LIMSS. The second-round application was launched in January 2020. Due to the epidemic, its closing date was extended from 30 June 2020 to 30 September 2020. Besides, the procedures were also simplified to allow owners' corporations to first submit an application and provide relevant documents afterwards when the epidemic allowed the corporations to hold meetings. Following the completion of evaluation of the second-round applications, subsidies were approved for an additional 3 700 lifts under the LIMSS and 3 100 lifts were put on the waiting list. The modernisation works of these lifts will be carried out in stages over the next few years.

機電署調派了團隊到市區重建局，就優化升降機資助計劃的執行工作提供全面的專業技術支援。圖為團隊進行工作，包括制訂計劃的細節、擬備標準招標文件及審核申請等。
The EMSD's team, seconded to the Urban Renewal Authority to provide comprehensive professional technical support for the implementation of the Lift Modernisation Subsidy Scheme (LIMSS). The photos show the team conducting work, which includes drawing up details of the scheme, drafting standard tender documents and vetting applications.

為推展這項前所未有的計劃，我們繼續調派專業隊伍到市建局，提供全面的專業技術支援。我們的支援包括制訂計劃的細節、擬備標準招標文件及指引、監督顧問及審核申請等。經一番努力後，申請及推展工作在疫情下順利進行。相關標準招標文件及指引已上載至市建局樓宇復修平台，以供業主管理委員會參考及使用，而計劃的申請人已陸續進行優化工程及收到資助。

To implement the unprecedented scheme, our professional team continued its secondment in the URA to provide comprehensive professional technical support. Our support includes drawing up details of the LIMSS, drafting standard tender documents and guidelines, supervising consultants and vetting applications. Our efforts contributed to the smooth progress of the application and implementation during the epidemic. The standard tender documents and guidelines have been uploaded to the URA's Building Rehabilitation Platform for reference and adoption by owners' management committees. The approved applicants have progressively commenced modernisation works and received the subsidies under the LIMSS.

推出升降機結構完整性研究

為更深入檢測機齡達數十年的升降機的主要負重機件的性能和狀況，我們在年內主動聘請顧問，為更換曳引機進行優化的舊式升降機進行結構完整性研究。顧問實地檢查舊式升降機的結構部件，並檢取部分機件到實驗室進行無損檢測，以深入評估升降機機件的結構狀況。我們檢測了57部機齡由30至50年的升降機，檢測結果顯示，有關升降機的結構完整，但保養方面做得不足，例如在一些隱蔽或不容易接觸的部件發現鐵銹迹。我們與業界分享研究結果，並促請業界日後加強檢查及採取相應預防措施。

Introduction of Structural Integrity Study

In order to inspect closely the integrity of major load-bearing components of lifts that have been in use for decades, we took the initiative to engage a consultant during the year to conduct a structural integrity study on aged lifts undergoing traction machine replacement for modernisation. On-site examination of structural components and non-destructive testing of components of sampled lifts in the laboratory were conducted to closely evaluate structural integrity. A total of 57 lifts aged from 30 to 50 years were inspected in the exercise. Results showed that the structural integrity of the inspected lifts was in order, but there were signs of shortcomings in maintenance, such as rust stains found in parts that were hidden or not easily accessible. We shared the study results with the trade and urged practitioners to enhance future examinations and implement preventive measures accordingly.

推行電子註冊便利業界和公眾

為配合規管服務推動行政工作電子化的策略方針，我們於2019/20年度獲行政工作電腦化委員會批出1 450萬港元撥款，以提升機電署的網上註冊服務，把一般法例部所執行四條法例有關的44款政府表格電子化，讓業界及公眾能透過網上填寫及提交表格，並使用「智方便」作數碼簽署。截至2021年3月30日，我們已推出表格LE11申請准許繼續使用及操作升降機的許可證及表格AR4遊戲機准用證兩份電子表格供業界使用。其餘電子表格將分階段在2021/22年度內推出使用，而本署亦正為簽發電子牌照作準備。

Implementation of Digital Registration for Greater Convenience of the Trade and the Public

To tie in with the Regulatory Services' policy directive in promoting administration digitisation, we were granted a funding of HK$14.5 million from the Administrative Computer Projects Committee in 2019/20 to enhance the EMSD's Web-based Registration System (WBRS), and would convert 44 government forms related to four ordinances administered by the General Legislation Division (GLD) to e-forms, so that the trade and the public can use e-filling and e-submission functions and digitally sign documents via the iAM Smart application. As at 30 March 2021, two e-forms – Form LE11 Application for a Use Permit Permitting a Lift to Continue to be Used and Operated and Form AR4 Use Permit for Amusement Rides – were introduced for use by the trade. The other e-forms will be introduced progressively for use in 2021/22. Preparation for e-licensing is also underway.

保障公眾安全
PROTECTING PUBLIC SAFETY

為機械化泊車系統申請擔當統籌角色

《行政長官2018年施政報告》提出引入機械化泊車系統以解決香港泊車問題。為實施有關措施，我們已在2020年6月出版《設置機械化泊車系統的指引》，闡述申請安裝此類系統的程序、須考慮的因素等，讓業界及業主就安裝這類設施作參考。運輸署正協調六個機械化泊車系統先導項目，我們已提供技術意見和價值管理審核，以便推展這些項目。此外，我們亦為兩個大型泊車系統提供技術建議、設計審批及牌照申請支援，其中包括香港國際機場第三條跑道計劃的泊車系統，共提供5 800個車位，將會是全球規模最大的泊車系統。有關項目第一期預計於2022年完成，整個項目則預計於2024年投入服務。另一項目是在將軍澳工業邨先進製造業中心的泊車系統，該系統擬採用自動導向車運送及停泊車輛。

Acting as the Single Point of Contact for Mechanised Vehicle Parking System Applications

Mechanised Vehicle Parking System (MVPS) was identified in The Chief Executive's 2018 Policy Address as a means to resolve Hong Kong's parking problem. To implement the initiative, we published the Guideline for Implementing Mechanised Vehicle Parking Systems in June 2020. The document states the application procedures for installing the MVPS, factors for consideration, etc., providing reference on the installation of the MVPS for the trade and owners. We have subsequently offered technical advice and value management reviews to facilitate six MVPS pilot projects being co-ordinated by the Transport Department. We have also provided technical advice, design review and licence application support for two major MVPSs. One of them is the MVPS of the third runway project in the Hong Kong International Airport. With 5 800 parking spaces, it will be the world's largest MVPS. The first phase of the project is slated for 2022 and the entire system will come into operation in 2024. The other project is the MVPS at the Advanced Manufacturing Centre in the Tseung Kwan O Industrial Estate. It will make use of automated guided vehicles to transfer and park cars.

行政長官提出引入機械化泊車系統，以解決香港泊車位不足的問題。機電署於2020年6月出版了《設置機械化泊車系統的指引》，讓業界及業主就安裝這類系統作參考。

To implement the Chief Executive's initiative to deploy Mechanised Vehicle Parking System as a means to solve Hong Kong's parking space shortage problem, the EMSD published the Guideline for Implementing Mechanised Parking Systems in June 2020 to provide reference on the installation of such systems for the trade and owners.

為簡化申請程序，以及在規劃階段確定有關申請符合所有主要技術要求，機電署主動提出擔當處理各項泊車系統許可證申請的統籌角色，包括統籌須由消防處批核的事宜，務求推動泊車系統盡快在香港落實應用。

To simplify the application process and ascertain at the design stage that all major technical requirements are met, the EMSD has taken the initiative to serve as the single point of contact for the processing of various MVPS permit applications, including co-ordinating matters that require approval by the Fire Services Department, in a bid to speed up MVPS commissioning in Hong Kong.

光纖傳感自動梯梳齒板榮獲國際科技大獎

在創新科技方面，我們今年的努力獲得充分肯定。機電署於兩年前取得科技統籌(整體撥款)的撥款，與一間本地大學、一家初創公司及業界共同研發利用光纖光柵傳感技術，以及人工智能雲端分析技術，實時監測升降機及自動梯運作的安全及穩定性。期後創新科技局更再度撥款，將智能自動梯實時監測系統安裝於八條自動梯作為期兩年的實地測試。經過兩年研發及測試，有關系統已初步完成，並取得短期專利。有關項目中的智能光纖傳感自動梯梳齒板更榮獲著名獎項日內瓦國際發明展2021年度金獎。

Winning an International Technology Award with the Optical Fibre Sensing Escalator Combs

In the respect of innovation and technology, our endeavour won a heavyweight recognition this year. Using the funding obtained under the TechConnect (Block Vote) two years ago, the EMSD in collaboration with a local university, a tech start-up and the trade has started to develop the use of Optical Fibre Bragg Grating Sensing Technology and AI cloud analytics for real-time monitoring of the safety and stability of lifts and escalators in operation. The Innovation and Technology Bureau has later on further funded the pilot trial implementation of the intelligent escalator real-time monitoring system at eight nos. of escalators for two years. After two years of research and development (R&D) and testing the system has taken shape and obtained a short-term patent. The Artificial Intelligent Nylon Optical Fibre Sensing Escalator Combs of the project won the prestigious Gold Medal at the International Exhibition of Inventions of Geneva 2021.

有關系統已安裝於四個場所共八條自動梯進行實地測試，即分別在金鐘道政府合署、旺角朗豪坊、屯門兆麟政府綜合大樓及中環至半山室外行人通道的兩部自動梯上安裝系統。有關系統透過光纖傳感及人工智能雲端技術收集大數據而進行機器學習和分析，實時監測自動梯的運行狀況。當運行中的自動梯出現異常情況時，系統便會透過流動應用程式自動發出預警，提醒設施負責人安排註冊承辦商進行預防性維修。經過六個月運作，有關系統表現理想，並收集到大量數據，以不斷提升數據分析的準確度。日後，我們會向業界及自動梯負責人大力推廣有關系統，並鼓勵他們以創新科技提升自動梯安全。

The system has been installed at a total of eight escalators at four venues for on-site testing, with two at the Queensway Government Offices, Langham Place in Mongkok, Tuen Mun Siu Lun Government Complex and the Central-Mid-Levels Escalator and Walkway System respectively. The system collects big data through optical fibre sensing and AI cloud analytics for machine learning and analysis, while monitoring the real-time operation of escalators. Once abnormality is found in escalator operation, an alert will be automatically issued through a mobile application to remind the facility owner to arrange for preventive maintenance by a registered contractor. After six months of operation, the system has proven effective and collected a large body of information for continuously improving the accuracy of data analytics. In the future, we will promote the system to the trade and owners of escalators and encourage them to enhance the safety of escalators with innovation and technology.

機電署與一間本地大學、一家初創公司及業界共同研發了智能自動梯實時監測系統，透過應用光纖傳感及人工智能雲端分析技術實時監測自動梯的運作安全及穩定性。同事正根據流動應用程式上所顯示的結果，檢視運行異常的部件。這項目中的智能光纖傳感自動梯梳齒板，更榮獲著名的日內瓦國際發明展2021年度的金獎(下)。

The EMSD in collaboration with a local university, a tech start-up and the trade, developed an intelligent escalator real-time monitoring system which makes use of optical fibre sensing and AI cloud analytics for real-time monitoring of the safety and stability of escalators in operation. Colleagues are inspecting the parts which are operating abnormally according to the results displayed on the mobile app. The Artificial Intelligent Nylon Optical Fibre Sensing Escalator Combs of the project also won a Gold Medal at the prestigious International Exhibition of Inventions of Geneva 2021 (bottom).

靈活變通安排機動遊戲機及昂坪360的巡查

雖然疫情肆虐，我們在2020年一直維持主要服務，包括機動遊戲機保養的巡查及處理申請。雖然香港迪士尼樂園及海洋公園等主題公園因應公共衞生措施而暫停開放，所有場內遊戲機亦暫停運作，然而我們仍然保持警惕，繼續進行巡查，以確保機動遊戲機有妥善的保養和檢查。此外，我們亦繼續處理機動遊戲營運機構的牌照申請。在2020年12月，我們為K11人文購物藝術館的香港樂高探索中心兩個機動遊戲機裝置，如期完成設計審批和處理有關遊戲機的使用及操作許可證申請。

Flexible Arrangements for Inspection of Amusement Rides and Ngong Ping 360

Despite the epidemic, we maintained essential services throughout 2020, including the inspection of amusement rides' maintenance and processing of applications. Though theme parks such as Hong Kong Disneyland and Ocean Park had closed temporarily due to public health control measures, and the operation of their amusements rides were suspended, we stayed vigilant and continued our inspection to ensure that the rides were properly maintained and checked. We also continued processing licensing applications of amusement ride operators. In December 2020, we completed the design approvals and processed the use permit applications for two amusement rides of the LEGOLAND Discovery Centre at K11 MUSEA as scheduled.

雖然疫情持續，我們一直維持主要服務，包括機動遊戲機保養的巡查及處理各種申請。圖為機電署人員巡查K11人文購物藝術館的香港樂高探索中心兩個機動遊戲機裝置。

Despite the epidemic, we maintained essential services including the inspection of amusement rides' maintenance and processing of applications. The photos show our team inspecting the two amusements rides of the LEGOLAND Discovery Centre at K11 MUSEA.

保障公眾安全
PROTECTING PUBLIC SAFETY

昂坪360架空纜車的年檢以往均由海外檢測員進行。由於疫情肆虐，海外檢測員未能於2020/21年度來港為昂坪360進行年檢。當接獲本地專家申請成為檢測員，我們便迅速為有關本地專家進行資歷考核及簽發認可證明書，因此趕及為昂坪360提供一位合適人選於2020年5月進行年檢。由於疫情持續，海洋公園架空纜車在2020/21年度的年檢亦由該檢測員進行。在2021年，昂坪360需要更換部分牽引纜和進行導軌纜移纜工程，此兩項工程均須由海外專家協助進行。然而，根據公共衞生規定，有關專家來港後須接受21日隔離檢疫，因而對工作造成不便。因此，我們積極協助昂坪360與衞生部門協調，靈活處理海外專家的隔離檢疫安排，在確保遵守嚴格社交距離措施的情況下，讓海外專家來港後可隨即進行昂坪360的工程。有關工作在短時間內順利及安全地完成。

The annual examination of the aerial ropeways of Ngong Ping 360 was usually conducted by an overseas surveyor. Due to the epidemic, overseas surveyors could not travel to Hong Kong to carry out the annual examination in 2020/21. When we received a local specialist's application to be the surveyor, we promptly completed the qualification evaluation and issued a licence, in time for Ngong Ping 360 to have a qualified person to conduct its annual examination in May 2020. As the epidemic continued, the annual examination of the aerial ropeways of Ocean Park in 2020/21 was also conducted by the same licensed surveyor. In 2021, Ngong Ping 360 had to replace some parts of the haul rope and shift the track ropes, both works had to be conducted with the assistance of overseas experts. However, according to public health requirements, the experts had to complete a 21-day quarantine after arriving in Hong Kong, which would cause inconvenience to the project. Therefore, we actively assisted Ngong Ping 360 in co-ordinating with other departments and bureaux to allow flexibility in the quarantine arrangement of the overseas experts, enabling them to immediately carry out work on Ngong Ping 360 on arrival, subject to stringent social distancing measures. The work was completed smoothly and safely within a short time.

昂坪360團隊正為系統更換部分牽引纜和進行導軌纜移纜工程，兩項工程均須由海外專家協助進行。機電署協助昂坪360與衞生部門協調，靈活處理海外專家的隔離檢疫安排，並確保其嚴守社交距離措施。有關工作終於在短時間內安全及順利完成。

The Ngong Ping 360 team was replacing parts of the haul rope and shifting the track ropes. Both works had to be conducted with the assistance of overseas experts. The EMSD helped Ngong Ping 360 in co-ordinating with other departments and bureaux to allow flexibility in quarantine arrangement of the overseas experts while making sure that stringent social distancing measures were observed. The work was completed safely and smoothly within a short time.

抗疫應變措施確保服務穩定及業界安全

疫情初期，我們迅速接觸41家註冊承辦商，提醒他們須制訂應變計劃及落實個人防護措施，避免疫情拖慢維修工作的進度。

我們亦主動為業界統籌特定羣組2019冠狀病毒病檢測。事緣在2020年6月至8月第三波疫情期間，有個別升降機及自動梯註冊工程人員從不同源頭感染病毒，引起業界關注。我們立即提出建議，為升降機及自動梯工程人員安排特定羣組病毒檢測。有關建議在2020年8月中獲接納並實施。在一個星期內，我們委託一所檢測機構向41家註冊承辦商派發逾7 000個樣本瓶，檢測參與率達39%，而所有樣本的檢測結果均為陰性。我們成為首個利用政府資訊科技總監辦公室電子平台安排特定羣組檢測計劃的政府部門。更重要的是，透過這次特定羣組檢測計劃安排，我們與業界建立良好溝通，並確保升降機及自動梯行業的服務在疫情期間不受影響。

Anti-epidemic Response Ensured Service Stability and Safety of the Trade

At the onset of the epidemic, we promptly contacted 41 registered contractors, reminding them to have contingency plans and personal protection measures in place to avoid slowing down of maintenance work during the epidemic.

We also took the initiative to co-ordinate COVID-19 Testing for Targeted Groups for the trade. During the third wave of the epidemic from June to August 2020, individual lift and escalator registered workers contracted the virus from different sources and caused concern in the trade. We immediately suggested that Targeted Group Testing should be arranged for lift and escalator workers. The proposal was approved and implemented in mid-August 2020. Within one week, we engaged a test contractor to distribute 7 000 test kits to the 41 registered contractors. The participation rate was 39% and all the samples were tested negative. We became the first government department to arrange the testing with the Targeted Group Testing Scheme (TGTS) IT platform introduced by the Office of the Government Chief Information Officer. More importantly, through the TGTS exercise, we established good communication with the trade and ensured that the lift and escalator trades' services remained unaffected during the epidemic.

持續加速電子化進程利惠業界

利用科技盡量取代人手和提升營運效率已成為常態。在2020/21年度，我們這類工作的進度理想。我們建立了建築物升降機數據庫，連接至機電署網站的網上註冊服務，並可經由「智方便」應用程式為表格進行數碼簽署。我們於2020年4月推出電子平台把升降機及自動梯的交接檢驗記錄數碼化，方便註冊承辦商交接升降機及自動梯的維修工作時翻查資料記錄。有關平台亦提供網上預先填寫表格功能，以便註冊承辦商提交資料，便利整合及儲存升降機及自動梯的數據。我們亦在年內引入人工智能光學文字辨識技術，該技術能自動掃描和閱讀表格LE27及LE29硬複本上的手寫資料。我們會繼續開發有關技術的數據分析功能。

我們亦推出全新的電子檢測預約平台，讓業界在進行升降機主要更改後，在網上與機電署預約檢測時段以處理其復用證申請。有關系統協助業界更有效地安排工作，以便在完成升降機優化工程後更快取得復用證。在電子平台推出後，超過六成復用證檢測預約在網上提交。在2020/21年度，雖然申請復用證的數目較上年度增加約19%，但等候檢測時間則由以往八或九日縮短至三日。

推動培訓以增加升降機及自動梯行業的人手

機電署一直致力促進行業的持續健康發展，與業界和相關培訓機構維持緊密合作，通過宣傳及鼓勵措施吸引新血入行。我們亦為業內人士和有志入行的人士開發培訓及提供持續專業進修。在2019年年底，我們與職業訓練局(職訓局)及業界聯手成立工作小組，籌辦「電梯大師」培訓課程，以為業內從業員提供明確的晉升階梯。有關課程為期兩年，資歷將達到資歷架構的第五級別(QF5)，即相等於學士學位資格。有關課程的籌備工作在2020/21年度進入成熟階段。職訓局已委任顧問編製課程，預期於2022年首季開始招生。

全港共有45 000部升降機未完成優化工程，按短期規管措施須每年進行兩次特別保養。因此優化升降機工程需要大量技術人員配合。我們正與建造業議會合作，把升降機行業納入「中級技工合作培訓計劃」，務求吸引新血入行。參加者會先在香港建造學院參加12日培訓，然後派駐升降機工程公司進行五個半月在職培訓，期間學員和僱主均可獲發津貼。我們的目標是在2020年至2026年間每年新增60名升降機一般技工參與升降機優化工程。在2020/21年度，通過有關計劃成功吸引71名一般技工入行。

Accelerating Digitisation for the Trade's Benefit

Using technology to replace manual labour as far as possible and enhance operational efficiency has become a new norm. In 2020/21, our work in this respect made notable progress. We have established a database of lifts in buildings, which is linked to the registration services provided at the website of the EMSD and supporting digital signing of forms via the iAM Smart application. In April 2021, we rolled out an e-platform to digitise the take-over examination reports of lifts and escalators, which facilitates record review when registered contractors hand over the maintenance work of lifts and escalators. The platform also provides pre-filled forms online to facilitate submission of information by registered contractors, thus easing the consolidation and storage of data of lifts and escalators. During the year, we also adopted AI Optical Character Recognition technology that can automatically scan and read hand-written information on the hard copies of Forms LE27 and LE29. We will continue to develop the data analytics function of the technology.

We also launched a new e-platform the Inspection Booking System, which allows the trade to reserve inspection time-slots with the EMSD online for processing their applications for resumption permits after conducting major alterations on lifts. The system helps the trade arrange their work more efficiently so that they can obtain resumption permits more quickly after completing lift modernisation works. Following the roll-out of the e-platform, more than 60% of the inspection bookings were made online. In 2020/21, while the number of applications for resumption permits increased by about 19% over last year, the waiting time for inspection was also shortened from eight or nine days to three days.

Promoting Training to Boost Manpower Supply in Lift and Escalator Trades

Dedicated to promoting the healthy development of the trades, the EMSD has been working closely with the trades and relevant training organisations to attract fresh blood into the trades through promotion and incentives. We also develop training courses and provide continuing professional development for trade practitioners and people interested in joining the trades. In late 2019, we formed a working group with the Vocational Training Council (VTC) and the trades to organise the "Lift Master" course, aiming at providing a career advancement track for trade practitioners. The two-year programme will be at Level 5 (QF5) under the Hong Kong Qualifications Framework, i.e. equivalent to a bachelor's degree. Preparation for the programme was at an advanced stage in 2020/21. The VTC has appointed consultants to plan the curriculum, with admission slated for the first quarter of 2022.

About 45 000 lifts in Hong Kong have not yet had modernisation works completed, and have to comply with the short-term regulatory requirements of conducting special maintenance twice a year. This has generated substantial demand for technical workers for conducting lift modernisation works. We are working with the Construction Industry Council (CIC) to incorporate the lift trade in the Intermediate Tradesman Collaborative Training Scheme (ITCTS) in order to attract fresh blood into the trade. Participants will take part in a 12-day training at the Hong Kong Institute of Construction before being posted to lift engineering companies for a 5.5-month on-the-job training. During the training, both the trainee and the employer will be granted subsidies. Our goal is to bring 60 general mechanics into the lift trade every year between 2020 and 2026 to take part in lift modernisation works. In 2020/21, 71 general mechanics joined the trade through the ITCTS.

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PROTECTING PUBLIC SAFETY

升降機及自動梯業即使在疫情下仍持續面對人手短缺。我們與職業訓練局和業界合作，推出300多個升降機及自動梯行業的培訓機會，以吸引更多技工入行。

To attract more mechanics into the lift and escalator trade which continued to face manpower shortage during the epidemic, we collaborated with the Vocational Training Council and the trade to provide more than 300 training opportunities in the lift and escalator sector.

疫情期間，多個行業出現大規模失業，而升降機及自動梯業則持續面對人手短缺。我們與職訓局和業界合作，在年內提供超過300個升降機及自動梯業的培訓機會，以吸引更多技工入行。

為提升培訓的效果，我們早前與職訓局及電梯業協會合作，推出升降機虛擬實境安全培訓工具，提供九個不同場景模組，讓學員透過虛擬實境技術學習升降機維修保養工作的安全程序和工作竅門。有關系統自2019年3月推出以來，已有約30個業界機構用以為其僱員提供培訓。此外，有關系統成為首個獲得機電署認可的持續培訓虛擬實境訓練課程，並獲頒「第19屆香港職業安全健康大獎」的「職安健改善項目大獎金獎」，以及在「2020香港資訊及通訊科技獎」中獲頒發「商業方案（商業及公營機構）優異證書」。

During the epidemic, the unemployment rate was high in a number of industries, while the lift and escalator trades continued to face manpower shortage. We collaborated with the VTC and the trades to provide more than 300 training opportunities in the lift and escalator trades during the year to attract more mechanics into the field.

To enhance training efficacy, we collaborated earlier with the VTC and the Lift and Escalator Contractors Association to introduce the Virtual Reality-based Lift Maintenance Simulator (VRLMS), which comprised 9 modules of different settings to help trainees learn the safety procedures and tips for lift maintenance through VR technology. Since the introduction of the VRLMS in March 2019, about 30 trade organisations had used it to provide training for their employees. Besides, it became the first EMSD-endorsed VR training programme for continuing professional development, and was awarded the Gold Award of the OSH Enhancement Program Award in the 19th Hong Kong Occupational Safety and Health Award, as well as the Smart Business (Solution for Business and Public Sector Enterprise) Certificate of Merit in the Hong Kong ICT Awards 2020.

提升機械安全意識

機電署自2009年6月推出「承辦商表現評級」制度，以協助升降機及自動梯擁有人或其物業管理公司揀選合適的註冊承辦商，為其升降機及自動梯進行維修保養。我們亦不時檢討及改善「承辦商表現評級」制度，以確保升降機安全。最近一次檢討於2020年9月完成，加入了職安健內容，令評級機制更完善。經優化的評級機制於2020年12月生效，用以反映升降機及自動梯承辦商的表現水平。有關評級每季更新一次，顯示各承辦商在過去一年的表現，為公眾揀選承辦商提供一個客觀指標。

Enhancing Awareness of Mechanical Safety

The Contractors' Performance Rating (CPR) System introduced since June 2009 by the EMSD was intended to help lift and escalator owners or their property management companies to choose appropriate registered contractors for lift and escalator maintenance and repair services. The CPR System is reviewed and improved on an ongoing basis to ensure lift safety. In the latest review completed in September 2020, occupational safety and health content was added to make the rating mechanism more comprehensive. The revamped rating mechanism was effective in December 2020 to indicate the performance rating of lift and escalator contactors. The rating is updated every quarter, showing all the contractors' performance in the past year. It serves as an objective yardstick to help the public choose a contractor.

為配合機電署的宣傳及公眾教育策略，我們於2020年4月推出經改良的優質升降機服務認可計劃，鼓勵升降機擁有人優化其升降機，以及提升升降機的維修及安全水平。合資格申請者包括業主、業主立案法團及物業管理公司等，可申請評核其升降機的服務水平，從而獲得認可。

來年任務

疫情促使各類工作轉為數碼化，市民及業界亦更習慣利用數碼工具處理日常生活大小事。我們現正全力研發應用區塊鏈技術的升降機及自動梯數碼化工作日誌（工作日誌），以取代原有的紙本工作日誌。升降機及自動梯工程師及工程人員可使用工作日誌，輕鬆地記錄和上載升降機或自動梯所有工作細節到雲端伺服器。利用大數據分析實時數據，不但能讓擁有人和物業管理公司可隨時隨地查閱其管理的升降機及自動梯的狀態和表現，而註冊承辦商亦能更有效地管理升降機及自動梯的保養工作。由於工作日誌使用區塊鏈技術，記錄不能隨意修改，而經修改後亦會留有痕迹，因此有助確保工作日誌內容的真確性。經過諮詢，業界和物業管理公司對工作日誌的意念均表示歡迎。工作日誌的開發工作可於一至兩年內完成。我們會繼續與業界和物業管理公司緊密合作，務求令工作日誌方便各方使用。

為提升舊式升降機的安全，我們會繼續強制特別保養作為短期措施、加快推展優化升降機計劃作為中期措施，以及研究其他長遠措施。就此，我們已委託顧問對十個海外及內地地區進行研究，當中包括研究各地的升降機標準和優化升降機措施，以及探討各類鼓勵優化升降機的方法，例如提供資助作為誘因等。我們會諮詢業界和持份者的意見，務求達到共識，為保障舊式升降機安全制訂長遠優化策略。

在公眾教育和宣傳方面，我們在2021年4月推出新的電視宣傳短片，由機電署新吉祥物擔任主角，帶出安全使用升降機的提示。

在對外工作方面，我們會繼續與廣東省特種設備檢測研究院保持溝通，以交流工作資料，並共同研究現有升降機安全評估等工作。第71屆國際纜車監管機構會議計劃在2022年於香港舉行，我們會因應疫情發展為主辦有關會議作準備。

To tie in with the promotion and public education strategy of the EMSD, the improved Quality Lift Service Recognition Scheme was rolled out in April 2020 to encourage lift owners to modernise their lifts and enhance maintenance and safety for lifts. Eligible applicants include owners, owners' corporations and property management companies, etc. They can apply to have their lift services evaluated to gain recognition.

The Tasks Ahead

The epidemic has accelerated digitisation in various fields. The public and the trade are increasingly accustomed to using digital tools to manage various aspects of life. We are going full steam ahead to develop a blockchain-based Digital Log-book (Log-book) for lifts and escalators to replace paperbound log-books. The Log-book allows lift and escalator engineers and workers to easily record and upload all the work details of a lift and escalator to cloud servers. Big data analytics of real-time data can help owners and property management companies keep track of the condition and performance of the lifts and escalators under their management. Registered contractors can also efficiently manage the maintenance work of their lift and escalator. As the Log-book uses blockchain technology, its record is immutable and all modifications will be traceable, thus ensuring the authenticity of its entries. The trade and property management companies were receptive to the Log-book idea in our consultation. The development of the Log-book will be completed in one to two years. We will continue to work closely with the trade and property management companies to ensure that the Log-book is easy to use for various parties.

To enhance the safety of aged lifts, we will continue the short-term measure of mandating special maintenance, expedite the medium-term measures of lift modernisation, and explore other long-term approaches. To this end, we have engaged a consultant to study the lift standards and lift modernisation practices of 10 overseas and mainland regions, as well as exploring their different means to encourage lift modernisation, such as using subsidies as incentives, etc. The views of the trade and stakeholders will be consulted in order to reach a consensus on the long-term optimisation strategy for ensuring the safety of aged lifts.

For public education and promotion, we will introduce new TV Announcements in the Public Interest (APIs) in April 2021, featuring the new EMSD mascots to impart tips for the safe use of lifts.

Externally, we will maintain communication with the Guangdong Institute of Special Equipment Inspection and Research to exchange work information, and jointly study on the evaluation of the safety of existing lifts, etc. The 71st Meeting of the International Organisation of Ropeway Supervising Authorities is planned to be held in Hong Kong in 2022. We will prepare for hosting the meeting subject to the development of the epidemic situation.

保障公眾安全
PROTECTING PUBLIC SAFETY

落實人性化規管措施 保障機械化泊車系統運作安全
Implementing Humanised Regulatory Measures to Ensure Operational Safety of Mechanised Vehicle Parking Systems

為紓緩泊車位短缺的情況，政府積極推動機械化泊車系統(泊車系統)。機電工程署為配合相關政策，於2020年6月出版《設置機械化泊車系統的指引》(《指引》)，詳述設置泊車系統時的考慮因素，以及在設計、安裝、操作和維修保養方面的規管措施，協助項目倡議者推展泊車系統。

To mitigate the shortage of parking spaces, the Government proactively promotes the implementation of Mechanised Vehicle Parking Systems (MVPSs). In line with the policy, the EMSD published the Guideline for Implementing Mechanised Vehicle Parking Systems (Guideline) in June 2020, detailing considerations for implementation of MVPSs and the regulatory measures in relation to the design, installation, operation and maintenance of MVPSs, in a bid to facilitate project proponents to implement MVPSs.

一般法例部(一)工程師張文晉先生於2019年年底加入機電署後，一直負責統籌有關規管和便利泊車系統發展的工作。

機械式泊車系統受《升降機及自動梯條例》(第618章)(《條例》)規管。《指引》列出五類較常見的泊車系統種類，分別為垂直升降及橫向滑動系統、塔式升降機系統、旋轉式轉盤系統、拼合堆疊系統以及圓形豎井系統。由於泊車系統設計種類繁多，《指引》不能盡錄有關設計要求，因此，我們說明規管原則，例如指定設計應以歐盟標準EN 14010為基礎，並指出常見風險及緩減風險的措施，給予業界研究裝設不同泊車系統的空間。

《指引》出版後，張先生和其團隊向運輸處及各廠商和承辦商，就本港各區六個籌備中的泊車系統先導計劃及其他私營泊車系統項目，說明規管原則和提供技術意見。各方對機電署的積極態度均表示讚賞。

與其中一名承辦商討論後，張先生發現數年前部分商業建築物引入一款可上下及左右移動的兩層拼合堆疊泊車系統，但有關負責人沒有為系統申請准用證。張先生就此向律政司徵詢法律意見，其後獲回覆指這類泊車系統亦受《條例》規管。

Mr Mentor Cheung, an engineer of the General Legislation Division 1, has been co-ordinating the MVPS regulatory and facilitation work since he joined the EMSD in late 2019.

MVPSs are regulated under the Lifts and Escalators Ordinance (Cap. 618) (Ordinance). Five types of MVPSs that are more common, namely Vertical Lifting and Horizontal Sliding System, Tower Lifting System, Rotary Carousel System, Puzzle Stacking System and Circular Shaft Lifting System, are included in the Guideline. Due to the large variety of design types of MVPSs, an exhaustive list of relevant design requirements is not available. Instead, we provided in the Guideline the regulatory principles. For example, the Guideline specified that the EN14010 standard should be used as the design basis, and suggested the common risks and measures to mitigate the relevant risks, allowing flexibility for the trade to explore the implementation of different MVPSs.

Following the publication of the Guideline, Mr Cheung and his team explained to the Transport Department, various manufacturers and contractors the regulatory principles and provided to them technical advices in relation to six MVPS pilot projects and other privately-owned parking systems currently under preparation across the territory. The EMSD's proactive approach was applauded by all parties concerned.

After discussing with one of the contractors, Mr Cheung found that a type of two-tier Puzzle Stacking Parking System that could move horizontally and vertically had been implemented at some commercial buildings a few years ago, but the responsible persons had not applied for use permits. Mr Cheung sought legal advice from the Department of Justice (DOJ), which subsequently clarified that such systems were also subject to the regulation of the Ordinance.

張先生說：「我們為負責人和承辦商制訂全面方案，以把這類泊車系統規範化。確認有關承辦商的能力符合相關條件後，我們建議他們申請成為註冊升降機承辦商，以合法地為泊車系統進行工程。在接獲律政司回覆後，我們指示有關負責人暫停這類泊車系統的機械操作，同時我們採用人性化的方式處理事件，准許使用系統的下層泊車位，以盡量減少對使用者和負責人的影響。我們亦為承辦商提供技術建議，並迅速安排檢查，以盡早簽發准用證，讓該類泊車系統盡快恢復運作。事實上，這類泊車系統大致安全，但須加裝緊急煞停按鈕等必要的安全裝置，才符合現時的安全標準。」全港約有60個同類型泊車系統，而在我們展開上述工作期間，每個系統中約有10個車位須暫時停用。張先生和他的團隊協力積極跟進，現時已有超過30個同類型泊車系統獲簽發准用證並恢復運作。

張先生表示：「香港地少車多，利用創新科技開發機械化泊車系統，可善用停車場的空間。我們提供政策支援及技術監督，以確保這類系統安全，同時促進把新科技引入本港。能為這方面的發展出一分力，我感到非常自豪。」

"We put together a comprehensive plan for the responsible persons and contractors in order to regularise these systems. After confirming that the contractors possessed the requisite capabilities, we advise them to apply to become registered lift contractors to legally perform works on the MVPSs. Following the DOJ's clarification, we directed the responsible persons to suspend the operation of their systems and handled the cases in a humane way by allowing the lower level of these systems to be used for parking, in order to reduce the impact on the users and responsible persons. We also provided technical advice to the contractors and promptly arranged for inspections to expedite the issuance of use permits for the resumption of these systems as early as possible. In fact, this type of system was safe in general, but necessary safety devices such as emergency stop buttons should be installed to meet the prevailing safety standards," Mr Cheung said. For the some 60 MVPSs of the same type implemented across the territory, about 10 parking spaces of each system were suspended during the above exercise. With the concerted efforts of Mr Cheung and his team, over 30 MVPSs concerned have been issued with use permit and resumed operation.

"MVPSs using innovative technologies can help maximise parking capacity and address the intense demand for parking spaces in Hong Kong. Through providing policy support and technical monitoring, we strive to ensure the safety of such systems and promote the introduction of new technological solutions. I'm proud to have the chance to contribute in this respect," he said.

保障公眾安全
PROTECTING PUBLIC SAFETY

挺身而出 五度參與抗疫行動
Stepping Forward for Five Anti-epidemic Missions

2020年疫情來襲，抗疫工作一浪接一浪，政府需要不時從各部門借調人手，執行一些無先例可循的抗疫任務。每次出現這類任務，一般法例部總技術主任伍偉良先生都會挺身而出，面對抗疫的種種挑戰，即使是摸着石頭過河，依然能靠歷練將指派的任務處理得頭頭是道，為業界、市民和機電署的同事帶來一點方便。

To counter the COVID-19 in 2020, anti-epidemic measures were rolled out one after another. Civil servants from different departments were mobilised to execute these unprecedented missions. Mr Ng Wai-leung, Chief Technical Officer of the General Legislation Division (GLD), invariably stepped forward to join in, applying his experiences to get the job done in face of the challenges of the epidemic, one step at a time through uncharted waters, to bring convenience to the trade, the general public and EMSD colleagues.

自2020年開始，伍先生已參與五次與抗疫有關的任務。第一次是在2020年8月為升降機及自動梯行業從業員特定羣組安排2019冠狀病毒病檢測。極速完成招標工作及與業界溝通後，向業界從業員派發約7 100個檢測套裝，為經常要到不同地區進行維修保養升降機及自動梯的業界從業員，提供便捷的免費病毒檢測服務。

Mr Ng has taken part in five anti-epidemic missions since early 2020. The first one in August 2020 was co-ordinating a COVID-19 Testing for Targeted Groups for the lift and escalator trade. After a quick tender exercise and communicating with the trade, 7 100 test kits were distributed to trade practitioners, offering convenient and free testing service for the trade workmen whose jobs involve going around different districts to maintain and repair lifts and escalators.

第二次是2021年1月23及24日政府首次在佐敦劃定「指定區域」，在一個周末內為指定區域的人士安排進行強制檢測。他說：「身為公務員，這次行動身先士卒，帶領一般法例部的15位同事分成兩組，分別在星期六和星期日參與行動。」這次有來自16個政府部門共約3 000名公務員參與行動，積極配合民政事務總署(民政總署)執行各項工作，包括派發物資、進行街道巡邏、人流管制及上樓張貼告示等。「當時曾有不良於行的長者，難以下樓到大廈大堂領取物資，我們就按照民政總署同事的指示把物資送上門。」大家總結了是次行動的經驗，為日後同類行動提供有價值的參考。

The second mission, on 23-24 January 2021, was the first-ever compulsory COVID testing in the "specified areas" of Jordan over a weekend. "As a civil servant, I was ready to serve on the frontline, leading 15 GLD colleagues in two groups to support the mission on Saturday and Sunday," he said. About 3 000 civil servants from 16 government departments took part in the action to support the Home Affairs Department (HAD) in supplies distribution, patrolling, traffic control and sticking notices on different floors of the buildings in the area. "There were seniors with mobility difficulties who couldn't come down to the common areas of the buildings to collect supplies. So we delivered the supplies to them according to HAD colleagues' direction," he said. The experience from the mission was valuable reference for similar actions down the road.

第三次任務是支援社區疫苗接種中心的運作。自2021年3月開始，機電署共52位同事分成兩組一同管理上水龍琛路體育館疫苗接種中心的運作，兩組同事每日輪流在該接種中心當值12.5小時，為預約接種的市民登記；核實預約、身分及所選擇接種的疫苗類別等資料；以及管理排隊秩序，務求縮短市民在室外日曬雨淋的排隊時間，並為醫護團隊安排補充針管、手套等消耗品供應等。伍先生在接種中心擔任助理中心主任，協助統籌中心的運作以及與醫護團隊溝通。在4月當值期間，他需要由柴灣住所長途跋涉到上水，高峰期更連續三日每日當值12.5小時。直至5月政府落實聘用旅遊業從業員接手接種中心的工作後，伍先生及其團隊才功成身退。他表示：「今次任務除了協助抗疫，亦有一個意外收穫，就是有來自不同組別的同事到接種中心工作，其間認識了一些其他部別的同事，大家關係更密切，有助促進日後工作上的合作。」

The third mission was operating a Community Vaccination Centre (CVC). From March 2021, 52 EMSD colleagues formed two teams to manage the CVC at the Lung Sum Avenue Sports Centre in Sheung Shui. They took turns to cover a 12.5-hour shift to support registration; verification of appointments, identification and vaccine type; as well as managing queues so that the public did not have to wait too long outdoors exposed to the weather. The teams also arranged for refilling medical consumable supplies such as injection needles and gloves. As the assistant director of the centre, Mr Ng co-ordinated its operation and communicated with the medical team. When he was on duty in April, he had to travel a long way from his Chai Wan home to Sheung Shui. At one stretch, he was on duty for 12.5 hours daily three days in a row. It was only in May, when the Government started deploying tourism industry practitioners to take over the CVC duties, that the mission of Mr Ng and his team was finally completed. "An unexpected bonus from this anti-epidemic mission was getting to know colleagues from different EMSD Divisions serving at the same CVC. It will help us work together more smoothly in the future," he said.

第四項抗疫任務是在5月下旬統籌為未接種疫苗的機電署特定組別的政府僱員，進行每兩星期一次病毒檢測。部門於指定日期在九龍灣總部、港島及新界的指定地點以「朝桁晚拆」方式設立臨時檢測中心，由承辦商在現場為同事進行鼻咽拭子檢測。「一些在前線工作的同事，為各公共醫療衞生場所、檢疫中心及救護車提供操作、維修或保養服務；或進行與公眾有頻繁接觸的工作，包括執行機電安全等工作，都面對一定的健康風險。早期參與的抗疫工作旨在協助市民，而今次的行動則為同事帶來方便，可減少同事在社區檢測中心登記及輪候的時間，當然義不容辭參與。」

In the fourth mission in late May 2021, he co-ordinated a bi-weekly COVID-19 testing for EMSD staff who were in the targeted group of civil servants who had not yet been vaccinated. Temporary testing centres were set up in designated sites at the EMSD's Kowloon Bay headquarters and specified locations on Hong Kong Island and in the New Territories. At the centres, contractors would perform nasopharyngeal swabs on EMSD colleagues. "Some of our frontline colleagues face a certain degree of health risks in the line of duty, such as providing operational, maintenance and repair support for public medical facilities, quarantine centres and ambulances, or interacting frequently with the public on duties like enforcing E&M safety. Our earlier missions aimed at helping the general public. This one was about helping colleagues so they didn't have to register and wait at the Community Testing Centres. Hence, I was most eager to contribute."

接着第五項與抗疫有關的任務是於6月中在九龍灣總部為所有機電署同事和合約承辦商僱員及其家屬，統籌及安排接種疫苗外展計劃。團隊經問卷收集意見後，替有意在同一天接種同一類別疫苗的人士登記，並聯絡公務員事務局預留有關醫護人員，為部門同事及其家屬接種疫苗。

The fifth mission was arranging outreach vaccination for EMSD colleagues and contractors, as well as their family members at EMSD's Kowloon Bay headquarters in mid-June. After collating feedback through a questionnaire, the team registered those opting to be vaccinated on the same day with the same type of vaccine. This was followed by liaising with the Civil Service Bureau to reserve medical personnel for the outreach vaccination exercise for EMSD colleagues and their families.

「抗疫工作富挑戰性而且非常有意義。作為公務員或一名普通市民的身分，能參與抗疫工作實在榮幸。希望疫情盡快完結，好讓社會及香港人的生活能早日重回正常。」伍先生說。

"Anti-epidemic work is full of challenges, yet very meaningful. As a civil servant, or even as a citizen, it's an honour to take part in such work. I hope the epidemic will be over as soon as possible so that the community and all the citizens can resume their normal life," he said.

保障公眾安全
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鐵路安全

鐵路事故數字平穩下降

受疫情影響，市民於2020年減少出行，港鐵總載客量因而大幅減少，由2019年約17.4億人次，減少至2020年約13億人次，跌幅為27.5%。

由於港鐵載客量下降，同期的鐵路事故數字亦相應減少。2020年共錄得749宗鐵路事故，較2019年的1 361宗減少近45%。

東鐵綫起動混合車隊　啓用新信號系統

疫情無礙鐵路科繼續推展鐵路安全的規管工作。2021年2月6日，連接東鐵綫及建造中的沙田至中環綫（沙中綫）「南北走廊」紅磡至金鐘過海段的籌備工作進入新里程。新綫所需的新九卡列車和新信號系統於當日同步啓用。新九卡列車與現有十二卡列車組成混合車隊，同時於東鐵綫運行（即「混跑」）。沙中綫橫跨多區，延伸東鐵綫紅磡站至金鐘。在沙中綫全綫開通前，東鐵綫沿用的十二卡列車需逐步以韓國製的九卡列車取代。為準備新車種投入服務，鐵路科在過去一年致力監督港鐵公司測試新車種。現時，港鐵公司已安排12列新九卡列車於東鐵綫服務。

RAILWAY SAFETY

Railway Incidents on Steady Decline

In 2020, the reduction in journeys of the public due to the epidemic contributed to the significant decline in the patronage of MTR services, with the figures falling from about 1.74 billion in 2019 to about 1.3 billion in 2020, representing a decrease of 27.5%.

Railway incidents also dropped by about 45% due to the decline in patronage of MTR services in the same period, falling from 1 361 cases in 2019 to 749 cases in 2020.

Mixed Fleet Operations and New Signalling System Commissioned for East Rail Line

The Railways Branch (RB)'s regulatory work on railway safety continued despite the epidemic. On 6 February 2021, the preparatory work on the North South Corridor (NSC) Hung Hom to Admiralty cross harbour section which connects the East Rail Line (EAL) and the Shatin to Central Link (SCL) currently under construction marked an important milestone, as the new 9-car trains and new signalling system required for the SCL were commissioned on that day. The new 9-car trains and the existing 12-car trains then operate together on the EAL under the mixed fleet operations (MFO). The SCL covers various districts and accomplishes the extension of the EAL from Hung Hom station to Admiralty. All the existing 12-car trains used on the EAL have to be replaced progressively by the 9-car trains produced in Korea before the full commissioning of the SCL. To prepare for the commissioning of the new trains, the RB has been committed to monitoring the new train testing conducted by the MTR Corporation Limited (MTRCL) in the past year. Currently, a total of 12 9-car trains have been commissioned on the EAL.

為了籌備沙中綫的全面開通，新綫所需的新九卡列車和新信號系統均於2021年2月6日同步啓用。而新九卡列車與現有的十二卡列車則組成的混合車隊，也由同日起於東鐵綫運行。圖為機電署同事進行巡查工作。

To prepare for the full opening of the Shatin to Central Link (SCL), the new 9-car trains and new signalling system required for the SCL was commissioned on 6 February 2021. The new 9-car trains and the existing 12-car trains also started operating together on the East Rail Line under the mixed fleet operations on that day. The photos show our colleagues conducting inspections.

為配合「混跑」安排，東鐵綫的舊信號系統亦於實施混合車隊安排當日切換至更先進的「通訊為本列車控制」信號系統。新系統以無線方式連接車載設備與軌旁設備，令行車更暢順。長遠而言，新系統更可讓東鐵綫加密班次，為沙中綫全綫開通做好準備。切換至新信號系統前，鐵路科審批大量文件，並到現場嚴密監察各種測試，確保系統穩定、安全及可靠。日後，「通訊為本列車控制」信號系統將用於其他港鐵重鐵路綫。鐵路科會繼續進行緊密監察，務使鐵路服務在更換信號系統後維持安全暢順。

安裝實時監察系統　提升輕鐵安全

年內，另一重大鐵路舉措是在輕鐵列車安裝實時軌道動態性能監察系統。2020年8月29日，因輕鐵某路段道岔尖軌側面磨耗導致軌距偏闊，一列輕鐵列車偏離路軌。為進一步提升輕鐵安全，港鐵公司根據調查委員會的建議，在兩列輕鐵列車上安裝實時軌道動態性能監察系統。首列配備該監察系統的輕鐵列車已於2021年3月底投入運作，另一列列車則於2021年6月開始服務。

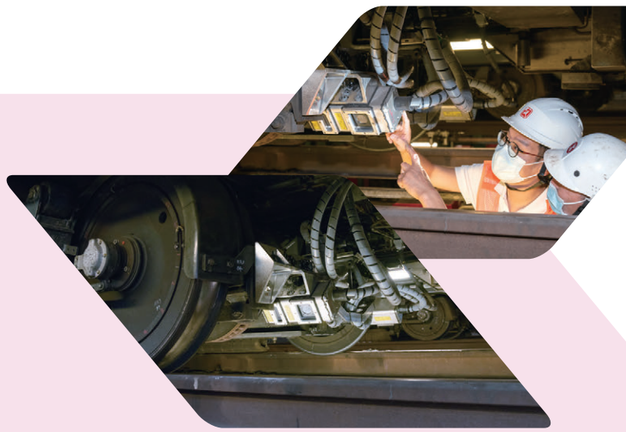
監察系統可在列車行駛期間持續實時監察路軌狀況（包括軌距及震動），將收集所得的數據進行分析研究，監測主要軌道參數的變化趨勢，長遠有助港鐵公司更有效地適時跟進維修工作，提升輕鐵的安全。鐵路科會持續監督港鐵公司將監察系統應用於其他鐵路綫，即在2021年內為迪士尼綫、屯馬綫、東涌綫及機場快綫安裝系統，並於翌年為其餘鐵路綫完成安裝。

To support the MFO, the EAL's old signalling system was replaced by the more advanced "Communications Based Train Control" (CBTC) Signalling System when the MFO came into operation. The new system supports wireless communications between trainborne and trackside signalling equipment, enabling smoother operations and in the long run enhanced capacity to support more frequent train services on the EAL, in preparation for the full commissioning of the SCL. Before switching to the new signalling system, the RB processed a large volume of documents and prudently monitored on-site safety tests to confirm the stability, safety and reliability of the system. In the future, the CBTC system will be extended to other MTR heavy rail lines, and the RB will continue to monitor them closely to ensure safe and smooth railway services after switching to the new system.

Enhancing Safety of Light Rail with Real-time Monitoring System

Another major railway initiative implemented during the year was the real-time Dynamic Track Gauge Monitoring System (DTGMS) on the Light Rail Vehicles (LRVs). Subsequent to the Light Rail derailment incident occurred on 29 August 2020 due to localised gauge widening arising from side-worn switch blade, the MTRCL installed on two LRVs the DTGMS in accordance with the recommendations of the Investigation Panel to enhance the safety of the Light Rail. The first LRV installed with the DTGMS was put into operation in late March 2021 and the second one was launched in June 2021.

The DTGMS continuously monitors in real-time the condition of the track, including the track gauge and vibration, and detects changes in the main track parameter trends with a data analytics tool. In the long run, this will enable the MTRCL to arrange maintenance works in a more effective and timely manner to enhance the safety of the Light Rail. The RB will continue to monitor the implementation of the DTGMS on other railway lines, starting with the Disneyland Resort Line, Tuen Ma Line (TML), Tung Chung Line and Airport Express Line in 2021, and the remaining railway lines in the following year.



我們同事正檢測一套安裝於輕鐵列車的實時軌道動態性能監察系統。該系統是輕鐵2020年一宗事故後的改善安全建議之一，功能是於列車行駛期間，實時監察路軌狀況及主要軌道參數的變化趨勢，令維修保養工作更有成效。

Our colleagues testing the real-time Dynamic Track Gauge Monitoring System (DTGMS) on the Light Rail Vehicles, which was installed as part of the safety enhancement recommendations after a Light Rail incident in 2020. The DTGMS monitors in real time the track condition and detects changes in the main track parameter trends for more effective maintenance works.

保障公眾安全
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為了更全面加強監管鐵路系統安全，我們由2019年起，就港鐵的12條鐵路綫的資產管理系統進行全面和直接審核，計劃以五年周期逐一審核每條鐵路綫。圖為我們的同事正進行全面和直接審核工作。

As part of a more holistic approach to enhance the safety monitoring of the railway systems, we have been conducting Comprehensive and Direct Assessment (C&DA) on the MTRCL since 2019, covering the Asset Management Systems of the 12 railway lines which will be reviewed one by one in a five-year cycle. The photos show our colleagues conducting a C&DA exercise.

持續推進鐵路系統全面和直接審核

為加強監管鐵路系統的安全運作，鐵路科自2019年7月起推行全面和直接審核，計劃在五年周期內逐一審核港鐵12條鐵路綫的資產管理系統，包括各鐵路綫的軌道、列車、配電和信號系統，以及其安全管理系統；亦會因應緊急情況或事故，優先為特定路綫進行特別審核。我們會將審核結果交予港鐵公司管理層，以作跟進，並透過雙方的定期會議審視港鐵公司的改善工作進度。

因應已完成審核的結果，鐵路科向港鐵公司提出多項主要建議，包括：(i)改善維修保養方法，調撥資源適時更換或提升老化的資產，並處理滯後的維修保養工作；(ii)提升內部管治，以加強監察維修保養工作的安排和進度；(iii)增加資源投放，特別是調配人手維修保養重要安全設備；以及(iv)利用新科技並採用實時監測工具，進行運作監測及預測性維護，例如採用實時軌道動態性能監察系統監測軌距。港鐵公司已按照建議逐步落實改善工作。

Comprehensive and Direct Audits of Railway Systems Continued

To strengthen the monitoring of the safe operation of the railway systems, the RB has been conducting Comprehensive and Direct Assessment (C&DA) on the MTRCL since July 2019. Under the C&DA, the Asset Management Systems of the 12 railway lines, covering the permanent way, rolling stock, power distribution and signalling systems, as well as the Safety Management Systems are to be reviewed one by one in a five-year cycle. Special Audits of designated railway lines are also given priority based on emergencies or occurrence of incidents. The audit results are to be given to the MTRCL's management team for follow-up action, and the progress of the MTRCL's improvement work will be reviewed during the regular meetings between the two parties.

Based on the results of the completed audits, the RB has given various major recommendations to the MTRCL, including: (i) enhancing the maintenance methodology, deploying resources to replace/upgrade ageing assets in time, and clearing deferred maintenance tasks; (ii) enhancing internal governance to step up monitoring of the maintenance work and work progress; (iii) strengthening resource allocation, especially on the deployment of manpower to the maintenance of safety critical equipment; and (iv) leveraging new technologies and adopting real-time monitoring tools for operation condition monitoring and predictive maintenance, such as adopting the DTGMS to monitor the track gauge. The MTRCL has been implementing in phases the improvement work in accordance with the recommendations.

我們也會因應緊急情況或事故，優先為特定鐵路綫進行特別審核，審核結果會交給港鐵公司管理層以作跟進，機電署與港鐵公司會共同審視改善工作的成效。圖為港鐵路軌改善工程進行中。

Special audits of designated railway lines are also carried out as a priority based on emergencies or occurrence of incidents. Audits results are then given to the MTRCL management for follow-up action and the results will be jointly reviewed with the EMSD. The photo shows railway track improvement works in progress.

機電署也負責規管香港國際機場的旅客捷運系統的安全事宜，包括三跑系統一條長2.6公里的新旅客捷運綫，新綫預期於2024年完成。圖為我們的同事正就新旅客捷運綫工程進行巡查。

The EMSD is also responsible for regulating the safety of the Automated People Mover (APM) system at the Hong Kong International Airport, including the new 2.6 km APM of the Three-Runway System project, expected to be completed in 2024. The photos show our colleagues inspecting the new APM works.

機場三跑旅客捷運系統進入新發展階段

鐵路科負責規管香港國際機場的旅客捷運系統。機場的三跑道系統項目包括建造一條長2.6公里的新旅客捷運綫，以連接旅客捷運轉車站(即二號客運大樓)及新建的三跑道客運大樓。該系統的第一期工程涉及搬遷現有車廠及提升相關電力系統和信號系統，工程已於2020年10月順利完成。整個三跑旅客捷運系統工程預計將於2024年第三季分階段竣工，其間鐵路科將繼續就捷運系統工程執行安全規管工作。

整合多項措施　提升疫情期間的運作安全和效率

疫情期間，鐵路科跟隨政府政策，實施在家工作安排，但繼續維持多項服務，包括鐵路改動/新項目工程的安全審批及其他安全巡查工作。鐵路科亦加快推動審批工作電子化，讓員工於在家工作期間維持審批進度。

與此同時，鐵路科亦落實多項提升工作效率的措施，包括混合使用實地或視像會議，與受規管機構保持聯繫。疫情期間，鐵路科除了為同事提供個人保護裝備外，亦把轄下人員分成兩隊，安排於不同的樓層工作，以在出現員工懷疑/確診感染2019冠狀病毒病個案時進行補替及維持必要服務。鐵路科亦審視受規管機構備的業務延續計劃，確保其零部件供應充足，可維持服務。

高鐵方面，雖然廣深港高速鐵路(高鐵)香港段因疫情期間的境外人員往來限制而暫停服務，但鐵路科繼續維持恆常的高鐵規管工作。鐵路科亦與國家鐵路局達成安排，讓港鐵公司的高鐵列車司機在網上完成續牌手續，無須內地電話號碼接收確認短訊核實。

Automated People Mover System for Three-Runway System Project Entered a New Development Phase

The Automated People Mover (APM) system of the Hong Kong International Airport comes under the RB's regulatory regime. The construction of a new 2.6 km APM, which connects the new APM interchange station (i.e. Terminal 2) and the new passenger building, is part of the Hong Kong International Airport's Three-Runway System project. Phase 1 of the APM development, which involved relocation of the existing system depot and enhancement of related power and signalling systems, was completed in October 2020. The APM development of the three-runway system is expected to be completed in stages starting from the third quarter of 2024. The RB will continue the safety regulatory work of the APM development.

Consolidated Measures to Ensure Safe and Efficient Operation during the Epidemic

Following the Government's work-from-home (WFH) arrangement during the epidemic, the RB still maintained the provision of various services, including the safety approval of railway modification/new works and other safety inspections. The RB also expedited the digitisation of vetting work to enable colleagues to continue such work during the WFH period.

Meanwhile, the RB implemented various measures to upkeep office efficiency, including the use of both face-to-face and virtual meetings to maintain communication with the regulatees. Apart from providing personal protection equipment (PPE) to the colleagues, the RB split its staff into two teams to work on different floors so that they could complement each other and maintain the provision of necessary services in case of any confirmed/suspected case of COVID-19 among the staff. The RB also conducted audits on regulatees' business continuity plans to ensure an adequate level of essential parts for maintaining services.

Despite the suspension of services of the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong High Speed Rail (HSR) due to the restriction on cross-border flow of people during the epidemic, the RB's regulatory work on the HSR services was uninterrupted. The RB also made arrangements with the National Railway Administration (NRA) to facilitate the MTRCL HSR train drivers' online renewal of licenses without providing mainland telephone numbers to receive SMS verification code.

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機電署與港鐵公司定期分享創科方案的最新資訊，例如實時軌道動態性監察系統，港鐵公司也已於東鐵綫和輕鐵列車安裝該系統，並計劃兩年內為所有鐵路安裝。港鐵公司也更新了輕鐵列車上的綜合車速及位置監督系統的功能。

The EMSD regularly shares with the MTRCL the latest innovation and technology tools to promote safety, such as the DTGMS which has been adopted on the East Rail Line and Light Rail and will be adopted on all railway lines within two years. Additional functions of the Integrated Speed and Position Monitoring System have also been installed on Light Rail Vehicles.

引領業界應用新創科方案　提升安全及營運效率

創科工具有助提升鐵路安全，因此鐵路科與港鐵公司定期分享創科工具的最新資訊，並協助配對初創企業的合適創科方案，提升安全及營運效率。年內，最具代表性的舉措是在東鐵綫和輕鐵列車安裝由一所澳洲大學研發的實時軌道動態性能監察系統，監察系統可在列車行駛期間持續實時監察路軌軌距狀況，將收集的數據進行分析研究，並偵測軌道參數的變化趨勢，長遠有助港鐵公司更有效地適時跟進維修工作，提升鐵路安全。港鐵公司計劃在兩年內為所有鐵路綫安裝此系統。此外，港鐵公司進一步更新了在輕鐵列車上安裝的綜合車速及位置監督系統（iSPS）的功能。系統除了量度運行中的列車之間的距離和位置以防止超速外，亦能在即將發生追撞時或在交叉路口列車之間的距離過於接近時發出警報。鐵路科亦計劃建議同受鐵路科規管的香港電車有限公司應用類似系統。

Leading the Industry to Adopt Innovation and Technology to Enhance Safety and Operational Efficiency

Since innovation and technology (I&T) tools are conducive to enhancing railway safety, the RB regularly shares with the MTRCL latest information about I&T tools and facilitates the matching of suitable I&T solutions of tech start-ups to enhance safety and operational efficiency. One of the most notable projects implemented during the year was the adoption of the DTGMS, developed by an Australian university, on the EAL and the Light Rail. The system continuously monitors in real-time the condition of the track gauge, and detects changes in the main track parameter trends with a data analytics tool. In the long run, this will enable the MTRCL to arrange maintenance works in a more effective and timely manner to enhance railway safety. The MTRCL plans to adopt the system for all railway lines within two years. Besides, the MTRCL included additional functions on the Integrated Speed and Position Monitoring System (iSPS) installed on LRVs. In addition to measuring the distances between LRVs in operation and their locations to avoid speeding, the system can also issue warnings before rear-end collisions occur or when the LRVs are getting too close at junctions. Meanwhile, the RB recommended that Hong Kong Tramways, also our regulatee, adopt a similar system.

鐵路科獲創新及科技局「科技統籌（整體撥款）」的撥款，推行先導計劃，在港鐵彩虹站入閘處安裝光學雷達物體偵測系統。當偵測到攜帶大型行李、大型物件、嬰兒車或單車的乘客準備使用扶手梯時，系統會即時發出相關的多媒體信息，並通報站內職員以提供協助，保障乘客安全。此系統不會攝錄乘客的容貌，可保障公眾私隱。系統能透過收集大數據，協助港鐵公司更有效地優化日後的安全營運策略。

Funded by the TechConnect (Block Vote) of Innovation and Technology Bureau (ITB), the RB carried out a pilot project on an object detection system using Light Detection And Ranging (LiDAR) technology at the entrance gates of Choi Hung station. When passengers carrying bulky luggage, oversized items, baby carriages or bicycles intending to use the escalators are detected, the system will broadcast relevant multimedia messages and alert station staff to offer assistance in order to enhance passenger safety. To protect the privacy of the public, the system will not capture facial images. The big data collected by the system would enable the MTRCL to optimise its future safe operational strategies in a more effective manner.

由鐵路科發起的一個先導計劃正進行測試。項目在港鐵彩虹站入閘處試行，運用光學雷達技術設計物體偵測系統，旨在提升乘客安全。當偵測到攜帶大型行李、大型物件、嬰兒車或單車的乘客準備使用自動梯時，系統會即時發出多媒體信息，並通報站內職員以提供協助。

A pilot project initiated by the Railways Branch, an object detection system using Light Detection And Ranging (LiDAR) technology, is being trialled at the MTR Choi Hung station to enhance passenger safety. When passengers carrying bulky luggage, oversized items, baby carriages or bicycles intending to use the escalators are detected, the system will broadcast multimedia messages and alert station staff to offer assistance.

鐵路科另一先導計劃是在機場旅客捷運列車安裝便攜式攝錄機，試用智能影像分析科技，於人手駕駛列車時實時偵測司機不適當行為（疲倦或注意力不集中）、超速、前面路軌上的障礙物、紅燈信號等，向司機發出警示以避免發生意外。

另一舉措是在港鐵車站內運行的送貨車上裝設信標系統，以偵測送貨車的速度。當有關系統偵測到送貨車超速或太接近周圍物體時會發出警示，以避免碰撞到車站內的乘客和職員。信標系統在九龍灣站測試成功後，已安裝於油麻地站，並將會推展至另外十個港鐵車站。自去年安裝有關系統後，與車站內送貨車有關的事故數目由每年一至兩宗降至零宗。

Another pilot project of the RB was the trial adoption of portable device using AI video analytics technology on APM trains for real-time detection of driver's improper behaviour (fatigue or inattention), speeding, foreign objects on the track ahead, red-light signals, etc. and issuance of corresponding alerts to drivers during manual driving operation to prevent accidents.

Another initiative was the installation of the iBeacon system on delivery vehicles used at MTR stations to monitor their speed. When it detects that vehicles are speeding or getting too close to any objects, it will sound an alarm to avoid collision with passengers or staff at the stations. Following a successful trial at Kowloon Bay Station, the system has been installed at Yau Ma Tei Station and will be rolled out to 10 other MTR stations. Since the introduction of the iBeacon last year, the number of incidents related to in-station delivery vehicles was reduced from one or two per year to zero.

鐵路科另一先導計劃是在機場旅客捷運列車安裝便攜式攝錄機，試用智能影像分析科技，於人手駕駛列車時實時偵測司機不適當行為（疲倦或注意力不集中）、超速、前面路軌上的障礙物、紅燈信號等，向司機發出警示以避免發生意外。圖為機電署同事巡查維修保養的情況。

Another pilot project of the RB was the trial adoption of portable device using AI video analytics technology on APM trains for real-time detection of driver's improper behaviour (fatigue or inattention), speeding, foreign objects on the track ahead, red-light signals, etc. and issuance of corresponding alerts to drivers during manual driving operation to prevent accidents. The photo shows our inspection of the maintenance work.

年內，鐵路科亦從科技統籌（整體撥款）獲得撥款，用以測試一個分析港鐵公司所提交延後維修工作申請記錄的智慧數據分析系統。有關系統旨在預測積壓情況作為港鐵公司在維修工作滯後程度的指標，以預防過量積壓維修工作。

During the year, the RB also obtained funding of the TechConnect (block vote) to conduct a trial on a smart data analytics system for analysing the records of the MTRCL's applications for delayed maintenance work. The system aims at predicting the status of backlog, which serves as an indicator of the degree of lagging in the MTRCL's maintenance work to avoid an excessive backlog of maintenance work.

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年內，機電署為規管服務推出聊天機械人。鐵路科在項目上擔任統籌角色，從規管服務各部別收集數以百計問題和答案綜合成資料庫，以解答業界和公眾的一般查詢，範疇包括能源效益、鐵路、升降機及自動梯、電力和氣體安全。聊天機械人系統採用本地研發的人工智能技術，能回應英文、中文或中英文夾雜的書面提問。聊天機械人的對答準確，表現令人滿意，獲得業界高度評價。

The EMSD Chatbot was launched for Regulatory Services during the year. The RB assumed the role of departmental co-ordinator for setting up a databank with hundreds of Q&As collected from various divisions of Regulatory Services for answering general enquiries from the trades and public in respect of areas including energy efficiency, railways, lifts and escalators, electricity and gas safety. The Chatbot system, powered by AI technology developed locally, is capable of comprehending written questions in English, Chinese or a mix of English and Chinese. The trades rate the Chatbot highly for its accuracy and satisfactory answers to the questions.

促成國家鐵路局成為國際鐵路安全議會核心小組成員

在國際事務方面，鐵路科作為國際鐵路安全議會（議會）核心小組成員之一，促成國家鐵路局加入成為議會核心小組成員。多年來，國家鐵路局一直以一般成員身分積極參與議會會議，以及在議會活動發表多篇論文，對議會事務熱誠投入。2020年10月，鐵路科建議議會核心小組邀請國家鐵路局成為議會核心小組成員，並於議會周年大會中得到核心小組支持。國家鐵路局於12月成功加入成為議會核心小組成員。

Facilitating the National Railway Administration's Membership to the Core Group of International Railway Safety Council

On the international facet, the RB, as a member of the Core Group of the International Railway Safety Council (IRSC), facilitated the membership of the NRA in the IRSC Core Group. For many years, the NRA has been actively participating as an ordinary member in various activities of the IRSC and presented numerous papers in IRSC events with great enthusiasm. The RB proposed to and received support from the IRSC Core Group in the annual meeting in October 2020. The NRA successfully joined the IRSC Core Group as a member in December 2020.

作為議會核心小組成員，國家鐵路局可透過參與議會核心小組活動，對國際鐵路發展（例如發展模式、新科技及鐵路安全等多項鐵路議題）作出更大貢獻，從而對國際鐵路發展發揮更大影響力。國家鐵路局日後更可透過舉辦議會年度會議，向議會成員推廣中國的鐵路發展成就。

As a member of the IRSC Core Group, the NRA can, through taking part in IRSC activities, contribute more substantially to international railway development (e.g. various railway issues such as development models, innovation, railway safety, etc.), thus exerting greater influence on international railway development. By hosting future IRSC annual meetings and conferences, the NRA can also promote China's achievement in railway development to IRSC members.

鐵路科促成國家鐵路局加入國際鐵路安全議會（議會）核心小組
The RB facilitated the membership of the NRA in the IRSC Core Group

國家鐵路局於2020年12月成功加入成為議會核心小組成員。
The NRA successfully joined the IRSC Core Group as a member in December 2020.

政府為加強對鐵路規劃及項目推展的監管，並優化鐵路安全規管，建議成立鐵路署
The Government proposed the establishment of Railways Department to strengthen supervision of railway planning and project delivery as well as regulation of railway safety

建議的鐵路署會採用「工程項目安全檢討」程序，從項目周期最初階段，對鐵路項目的安全性進行系統性評估。
The proposed Railways Department will adopt the Project Safety Review (PSR) process to provide a structured assessment of the safety aspects of railway projects.

未來展望

政府於2021年2月5日向立法會鐵路事宜小組委員會介紹成立鐵路署的建議，該建議旨在加強政府對鐵路規劃及項目推展的監管，並優化鐵路安全規管。通過合併路政署鐵路拓展處和機電署鐵路科，建議的鐵路署將匯集政府內有關鐵路的專門人員及技術，並整合不同工程領域的專業支援，從而產生協同效應。鐵路署將提供更具針對性的培訓及知識管理資源，強化政府內鐵路專才的專業發展。

未來，建議的鐵路署會採用「工程項目安全檢討」程序，從項目周期最初階段，對鐵路項目的安全性進行系統性評估，全方位覆蓋工程項目的各個範疇，確保與鐵路安全關鍵系統有關的記錄妥善備存，令長遠鐵路運作安全得到保障。鐵路署亦會把全面和直接審核的範圍擴展至屋宇裝備系統，例如鐵路站供電系統、空調系統、升降機、自動梯、淡水冷卻塔等。我們亦會關注重複出現的故障，以及港鐵公司人員及其承辦商人員的能力。

為保障現有鐵路項目的長遠安全，鐵路科自2020年11月已為指定鐵路項目（包括屯馬綫項目及東鐵綫信號系統更新項目）試行「工程項目安全檢討」程序。就沙中綫項目紅磡站附近的分綫工程，鐵路科亦派員按「工程項目安全檢討」的要求進行實地監察。

The Year Ahead

The Government briefed the Subcommittee on Matters Relating to Railways of the Legislative Council on 5 February 2021 about the proposal of establishing the Railways Department to strengthen supervision of railway planning and project delivery as well as regulation of railway safety. By amalgamating the Railway Development Office of the Highways Department and the Railways Branch of the EMSD, the proposed Railways Department will bring about synergy effects by pooling together the Government's railway expertise and integrating specialist support in different engineering fields. The professional development of railway experts in the Government will also benefit from more targeted training and knowledge management resources in the Railways Department.

In the future, the proposed Railways Department will adopt the Project Safety Review (PSR) process to provide a structured assessment of the safety aspects of railway projects from the very beginning of the project life cycle, covering the full spectrum of engineering fields, to ensure that the critical safety-related records are in place and long-term operational safety issues are safeguarded. The Railways Department will also extend the C&DA to cover building services systems such as station power supply systems, air-conditioning systems, lifts, escalators, fresh water cooling towers, etc. Attention will also be paid to repeated faults and the competence of MTRCL staff and their contractor staff.

To safeguard the long-term safety of ongoing railway projects, the RB has been conducting a trial implementation of the PSR process since November 2020 for selected railway projects including the TML project and the signalling upgrading project of the EAL. Our staff have also conducted on-site inspection of the bifurcation works near Hung Hom Station for the SCL Project according to the requirements of the PSR.

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來年另一項重點工作是為整條屯馬綫進行測試，為其在2021年6月全綫通車做好準備。屯馬綫由西鐵綫和屯馬綫一期合併而成，全長超過50公里和共有27個車站。全程行車時間為73分鐘，是全港最長的鐵路綫。

由於為此長度的鐵路綫進行全綫測試前所未有並需要充足時間，港鐵公司需要在一段非行車時間測試時段之後，把翌日出車時間延遲數小時，以確保所有測試得以完成。鐵路科會監察測試過程及進度，以確保準時完成測試程序，務求盡量減少對市民造成不便。有關測試包括一系列常規測試程序一般不會涵蓋的可靠性測試，包括模擬首日開通時的列車運行、測試繁忙時段/非繁忙時段的列車運行及各項車務運作（從車廠/側綫發車、收車等）；模擬測試各種故障和突發事故（例如列車故障、列車自動監控系統故障等）的演練。

為配合東鐵綫及沙中綫的未來發展，鐵路科會繼續監察新車測試，為全數37列九卡列車在東鐵綫投入服務作準備。在實行「混跑」安排前，東鐵綫共有31列十二卡列車運作，其中26列已達中期翻新階段，而五列已於實施「混跑」安排後調配至屯馬綫。其餘中期翻新的列車將陸續退役，以新的九卡列車全數取代。

Another major focus for the year ahead is the testing of the entire TML in preparation for its full commissioning in June 2021. The TML is a merger of the West Rail Line and the TML Phase 1, spanning a distance of more than 50 km and covering 27 stations. The TML is the longest railway line in Hong Kong, with an end-to-end journey time of 73 minutes.

As testing of the full length of such a long railway line is unprecedented and requires ample time, the MTRCL needs to defer the start of train service by a couple of hours in the mornings following the non-traffic hours test sessions, to ensure that all the tests are completed. The RB will monitor the process and progress of the tests to ensure that the testing procedures are completed on time and keep any inconvenience to the public to a minimum. The testing will include a series of service reliability tests that are usually not covered in regular test schedules, including simulating day-1 operation, testing train movement and various train operation matters during peak and non-peak hours (including train movements to/from depots and sidings, etc.), drills for handling of incidents and unforeseen events (e.g. train faults, faults of automatic train supervision systems, etc.).

To tie in with the progress of the EAL and the SCL, the RB will continue to monitor the testing of new trains in preparation for the commissioning of a total of 37 sets of 9-car trains for the EAL. Prior to the MFO, the EAL had 31 sets of 12-car trains in operation, 26 of these sets have reached the mid-life refurbishment stage, and five of them have been redeployed to the TML since the MFO was introduced. The remainder will be decommissioned and replaced by the new 9-car trains progressively.

監察新車測試是我們的工作之一，包括為投入東鐵綫「混跑」安排的全數37列九卡新列車，進行測試監察。這也是我們為籌備沙中綫全面開通的工作之一。

Monitoring the testing of new trains is part of our work, including testing the new trains in preparation for the commissioning of a total of 37 sets of 9-car trains for the East Rail Line for the mixed fleet operation. The work was part of the preparations for the full opening of the Shatin to Central Link.

在全面和直接審核方面，鐵路科將繼續由三個審核小組對每條鐵路和有關安全系統進行審核，每三個月完成一個系統的審核工作。期間將隨時因應突發情況或事故，先為所牽涉的系統進行特別審核。目標是在五年周期內完成12條港鐵綫合共60個鐵路及安全系統的全面和直接審核。

在推動科技應用方面，鐵路科會繼續監察港鐵公司於2019年在輕鐵列車上安裝的綜合車速及位置監督系統（iSPS）。有關警報系統偵測列車的位置、速度和列車距離並提供警報，以防止超速和列車碰撞事故發生。

For the C&DA, the RB will continue to have three audit teams to conduct the audit of each railway and the safety systems concerned at the pace of three months per system. Special audits will be conducted for the systems in priority owing to emergencies or incidents. The target is to complete the C&DA of all 60 railway and safety systems of the 12 railway lines in the five-year cycle.

For the promotion of application of technology, the RB will continue to monitor the performance of the iSPS installed on the LRVs by the MTRCL in 2019. This alert system detects vehicle positions, speed and inter-vehicle distance, and provides alerts to prevent speeding and avoid collisions.

機電署推動港鐵公司運用更多科技以加強鐵路安全，也監察其科技方案的成效。圖為機電署員工檢測輕鐵列車上的綜合速度和位置監督系統。系統能發出示警，防止列車超速和發生列車碰撞事故。

The EMSD encourages the MTRCL to use more technology to enhance railway safety, and monitors the performance of its technological applications. The photo shows our staff monitoring the performance of the Integrated Speed and Position Monitoring System on the Light Rail Vehicles, which provides alerts to prevent speeding and avoid collisions.

此外，港鐵公司已為輕鐵購入40列輕鐵新車。首十列新車會加入現有車隊以增加班次，而其餘30列新車將取代老化的列車。新列車會先完成檢驗才付運來港。其中六列新車已於2021年5月投入服務，而其餘的新車將按生產、裝嵌和測試時間表，在未來兩至三年陸續送交香港安排投入服務。

山頂纜車的全面優化工程於2021年6月28日進入最後階段，纜車服務在當日起暫停6個月，以便更換所有拖曳系統、控制系統、纜索和路軌，以及翻新上下站以容納全新更大載客量的纜車。優化工程的第二和最後階段預計需時約六個月，即在2021年年底完成。可運載210人的全新纜車將取代載客量僅120人的現有纜車。鐵路科會繼續監察優化工程，以確保為市民提供更安全和更優質的纜車服務。

Besides, the MTRCL has acquired 40 new LRVs for the Light Rail. The first 10 vehicles will be included into the fleet to strengthen the Light Rail services and the remaining 30 vehicles will replace ageing vehicles. Inspection of the new vehicles will be completed before they are shipped to Hong Kong. Six of the new vehicles had been commissioned in May 2021, and the others will be delivered to Hong Kong for commissioning over the next two to three years according to the production, assembling and testing schedules.

The comprehensive upgrading project of the Peak Tram entered the final stage on 28 June 2021, and since then the service was suspended for six months for the replacement of all haulage, controls, ropes and track rails, and the refurbishment of the upper and lower termini to accommodate the new tram cars of greater capacity. The second and final stages of the upgrading project are expected to take approximately six months and be completed by the end of 2021. New trams with a capacity for 210 passengers will replace the existing trams that carry only 120 passengers. The RB will continue to monitor the upgrading project to ensure safer and enhanced tram services for the public.

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善用科技 保障港鐵自動梯使用者安全
Protecting the Safety of MTR Escalator Users with Technology

近年，涉及乘客的鐵路事故中，部分與不當使用自動梯有關，例如攜帶大型物件、坐輪椅或推着嬰兒車使用自動梯。有見及此，鐵路科主動物色科技方案供香港鐵路有限公司(港鐵公司)採用，以免發生同類事故。鐵路科工程師區穎詩女士負責規管鐵路屋宇裝備，在促成落實有關方案擔當關鍵角色。

In recent years, certain railway incidents involving passengers were attributed to improper use of escalators, such as travelling on escalators while carrying bulky items, or using wheelchairs or prams. To prevent such accidents, the Railways Branch (RB) sourced a technological solution for adoption by the MTR Corporation Limited (MTRCL). Ms Au Wing-sze, Yolanda, the RB's engineer responsible for railway building services, was a key facilitator of the initiative.

區女士表示，鐵路科於2019/20年度獲批科技統籌(整體撥款)項目下的撥款50萬港元進行有關項目。項目於2020年6月招標後，7月落實承辦商，並與港鐵公司達成協議，選定在彩虹站進行實地測試。彩虹站並非最繁忙的車站，可避免影響車站使用者，而且資料顯示，該站有不少乘客攜帶大型物件、單車或嬰兒車等。

在考慮技術方案時，區女士及其團隊曾就視頻分析、雷達、熱能探測攝錄機及光學雷達物體偵測等技術進行比較。有鑑於視頻分析涉及私隱問題，物體重疊時雷達影像會不夠準確，熱能探測又不能偵測沒有溫度的物體，而光學雷達物體偵測技術既能滿足全部技術要求，亦不會記錄容貌影像，避免引起私隱問題。故此，小組最終選用光學雷達物體偵測方案。

光學雷達物體偵測解決方案只需在天花安裝一個體積與閉路電視攝影機相若的獨立裝置，實時探測物體的三維點雲數據，便可準確偵測物體的體積和類別，甚至偵測人體的步速及步行路徑，以識別是否需要車站職員到場協助。另外，如有人攜帶過長的物件或金屬氣球進入車站範圍，裝置亦可立即察覺並通知車站職員阻止他們乘車。

Ms Au said that the RB received a HK$500,000 TechConnect (Block Vote) funding for the project in 2019/20. Following a tender in June 2020, the project's contractor was confirmed in July, and an agreement was secured with the MTRCL to trial the solution at Choi Hung Station. The station was chosen as it was not the busiest stations, and inconvenience to passengers could be minimised. Data also showed that the station had a fair share of passengers carrying bulky items, bicycles or prams.

When evaluating technological solutions, Ms Au and the team had compared options like video analytics, radar, thermal imaging camera or Light Detection And Ranging (LiDAR) technologies. Considering that video analytics might raise privacy concerns, data collected by the radar might not be accurate when the objects overlapped, and thermal imaging could not detect things with no temperature, the team went for the LiDAR as it fulfilled all technical requirements and would not capture facial images which might present privacy issues.

The LiDAR solution involves installing a stand-alone device about the size of a CCTV camera on the ceiling. It can map three-dimensional point cloud of an object in real-time to accurately determine its size and type, and even a person's walking pace and path to identify if help is required from the station staff. If the device detects a person entering the station carrying lengthy objects or metallic balloons, station staff will be immediately alerted to stop them from boarding trains.

當裝置偵測到攜帶大型物件或推着嬰兒車的人士入閘，便會發出廣播及投射特定的多媒體信息到目標人士前面的地面，提醒有關人士使用升降機。若目標人士不理會信息繼續走向自動梯，系統會在自動梯附近再次作出廣播，確保有關人士及附近的乘客都接收到安全使用自動梯的信息。

區女士指出：「該技術方案還可提供豐富的多維度數據，作其他營運用途，例如可收集人流數據，顯示哪個時段會有較多乘客攜帶大型物件，為制訂車站安全教育推廣策略提供參考數據，較以往單憑參考意外數據，可採取更積極主動的方式進行安全推廣。」

她亦指出：「方案更可用於設有自動梯的政府建築物，以便加強教育市民安全使用自動梯。由此可見，一個從保障鐵路乘客安全角度出發的創新方案，由機電署提出採用後，可衍生多種應用模式，讓社會不同層面受惠。」

When the LiDAR device detects people entering the turnstiles with bulky objects or prams, it will broadcast and project a specific multi-media message to the ground in front of the targeted people to remind them to use the lifts. If the message is ignored and the targeted persons head towards the escalators, the system will repeat the broadcast near the escalators, making sure those persons and passengers nearby get the message about safe use of escalators.

"The solution can also provide robust multi-dimensional data, such as human traffic flow, to support other operational functions. For example, it can show the time period in which there will be more people carrying bulky items. The data can be used as references for formulating safety promotion strategies. It's much more proactive than the previous practice of devising safety campaigns based on incident numbers alone," Ms Au said.

She also remarked, "The solution can also be used at government buildings with escalators, for facilitating public education about safe use of escalators. It goes to show that an innovative solution initiated by the EMSD for railway passenger safety can deliver spin-off applications that benefit all walks of life."

推廣能源效益及節能
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「強制性能源效益標籤計劃」第四階段諮詢完結

「強制性能源效益標籤計劃」（強制性標籤計劃）分階段進行。在強制性標籤計劃第三階段全面實施後，共有八類家用電氣產品受規管，它們合共佔全港住宅每年用電量約七成。我們持續檢討強制性標籤計劃的涵蓋範圍，於2020年檢討並提升了獨立式空調機（窗口機）、抽濕機和慳電膽的能效要求。新標準已於2020年12月31日起生效，並在12個月寬限期後，於2021年12月31日起全面實施。

我們其後就強制性標籤計劃第四階段展開諮詢，建議把發光二極管(LED)燈、氣體煮食爐和住宅式即熱氣體熱水爐三類產品納入強制性標籤計劃。這是首度把氣體爐具納入強制性標籤計劃，標誌着節能的新篇章。為期三個月的公眾諮詢已完結。

強制性標籤計劃第三階段於2019年年底全面實施後，整個強制性標籤計劃每年可協助消費者節省約6.25億度電，相當於每年減少排放約440 000公噸二氧化碳。為獨立式空調機（窗口機）、抽濕機及慳電膽全面實施新能源效益評級標準後，我們預計全港每年將進一步節省約3億度用電量，相當於每年減少排放210 000公噸二氧化碳。在強制性標籤計劃第四階段實施後，預計全港每年再節省約1.58億度用電量，相當於每年減少排放約75 000公噸二氧化碳。

CONSULTATION ON THE FOURTH PHASE OF THE MANDATORY ENERGY EFFICIENCY LABELLING SCHEME COMPLETED

The Mandatory Energy Efficiency Labelling Scheme (MEELS) is implemented in phases. After the full implementation of the third phase of the MEELS, a total of eight types of household electrical products have come under regulatory control. These products collectively account for about 70% of the annual electricity consumption of Hong Kong's residential sector. As we continued to review the coverage of the MEELS, we upgraded the energy efficiency requirements for three types of products, namely single package type room air-conditioners, dehumidifiers and compact fluorescent lamps in 2020. The new standards have been effective since 31 December 2020 and will be implemented fully on 31 December 2021 after a 12-month grace period.

A consultation on the fourth phase of the MEELS was subsequently launched, envisaging the inclusion of Light-Emitting Diode (LED) lamps, gas cookers and domestic gas instantaneous water heaters into the MEELS. It is the first time that gas appliances are included in the MEELS, marking a new chapter in energy conservation. The three-month public consultation had been completed.

After the full implementation of the third phase of the MEELS in end-2019, the entire MEELS helps consumers reduce a total of 625 million kWh of electricity consumption a year, which is equivalent to an annual reduction of 440 000 tonnes of carbon dioxide emissions. After the full implementation of the new energy efficiency grading standards for single package type room air-conditioners, dehumidifiers and compact fluorescent lamps, we estimate that there will be a further energy saving of 300 million kWh a year, representing a reduction of 210 000 tonnes of carbon emissions. Subsequent to the full implementation of the fourth phase of the MEELS, an additional energy saving of 158 million kWh a year is anticipated for the city, which is equivalent to a reduction of 75 000 tonnes of carbon emissions.

檢討《建築物能源效益守則》及《能源審核守則》

我們每三年一次，為根據《建築物能源效益條例》而制訂的《建築物能源效益守則》及《能源審核守則》進行檢討。我們於2020年展開新一輪修訂工作，並於2021年5月初諮詢技術專責小組及各工作小組，其成員為有關持份者，包括專業團體、業界組織、學術界和相關政府部門等。

BUILDING ENERGY CODE AND ENERGY AUDIT CODE UNDER REVIEW

Every three years, we review the Building Energy Code (BEC) and the Energy Audit Code (EAC) pertaining to the Buildings Energy Efficiency Ordinance. The latest round of revision began in 2020. A consultation was held in early May 2021 with the technical taskforce and various working groups, composed of stakeholders from professional institutions, trade associations, academia and relevant government departments, etc.

負責檢討《建築物能源效益守則》及《能源審核守則》的技術專責小組，於2021年5月與業界及其他持份者舉行線上會議。該兩份守則每三年檢討一次，最新一輪的修訂工作已於2020年展開，預料修訂版將於2021年年底前出版。

Online meeting of the technical taskforce responsible for reviewing the Building Energy Code (BEC) and the Energy Audit Code (EAC) with the trade and other stakeholders, held in May 2021. Reviewed every three years, the BEC and the EAC began the latest round of revisions in 2020. The revised codes will be published before end-2021.

我們參考相關技術及國際普遍應用能源效益評級標準的最新發展，對有關守則進行修訂，並確保有關守則與時並進，同時也推動香港於2050年之前達到實現碳中和的目標。經修訂的守則將於2021年年底前出版。

構建綠色校園

環境局牽頭推動「綠色校園2.0」計劃，一方面資助學校善用各式合適的環保科技，另一方面培育學生的低碳生活意識，在校園推動環保學習。在「綠色校園2.0」五個環節中，機電署負責統籌和支援「採電學社」和「智能慳電」兩個項目。為了推行這兩項目，機電署於2019/20年度及2020/21年度成立了兩個新的分部（共有14位同事），專門負責有關工作。

為期五年的「採電學社」計劃自2019年3月推出以來，大受歡迎。透過有關計劃，機電署向合資格的非官立和非牟利中小學和幼稚園，以及接受社會福利署經常津助的非政府福利機構提供資助和一站式服務，在其處所安裝小型太陽能發電系統，讓他們參加本地兩間電力公司推行的上網電價計劃。機電署負責安裝有關系統，而相關開支全數由有關計劃支付。受惠學校和機構所得的上網電價收入，可用於太陽能發電系統裝置的保養維修、以及加強環保教育及相關服務。有關計劃亦能讓學生近距離了解可再生能源的效益。

我們的目標是在2020/21年度內為135間學校及非政府福利機構安裝太陽能發電系統，現時進度良好。新一輪申請於2021年1月開始，截至4月為止已收到超過190份申請。

為配合有關計劃，我們與其他政府部門合作，為學生及年輕人編製了一套「採電學社」STEM（即科學、科技、工程及數學）小學教材套件。有關教材套件提供與可再生能源有關的教材和活動，以豐富小學教育課程內容，提高學生對可再生能源的興趣和認識，以及推廣低碳生活，以應對氣候變化。

The codes were revised with reference to the latest development in related technology and widely adopted international energy efficiency standards. We also ensure that the codes keep abreast of the times while contributing to Hong Kong's goal of achieving carbon neutrality before 2050. The revised codes will be published before end-2021.

FACILITATING GREEN SCHOOLS

The Green Schools 2.0 initiative spearheaded by the Environment Bureau (ENB) promotes sustainability learning in schools by providing subsidies for schools to make good use of various green technologies and instilling an awareness of low-carbon living into students. In the five aspects of the Green Schools 2.0 initiative, the EMSD co-ordinates and supports the Solar Harvest and the Energy Smart schemes. Two new sub-divisions with 14 colleagues had been set up in 2019/20 and 2020/2021 to take charge of the work concerned for the two programmes.

The five-year Solar Harvest scheme has been well received since its launch in March 2019. Through the scheme, the EMSD provides funding and one-stop support for eligible non-government and non-profit-making primary and secondary schools and kindergartens, as well as welfare non-governmental organisations (NGOs) which are receiving recurrent subventions from the Social Welfare Department, to set up small-scale solar energy generation systems on their premises for joining the Feed-in Tariff (FiT) Scheme operated by the two local power companies. The EMSD takes charge of the installation of the systems, and the cost is fully covered by the scheme. Beneficiary schools and organisations can use the FiT revenue for maintenance of the solar energy generation system installation and reinforce environmental education and related services. The scheme can also let students learn about the benefits of renewable energy from a close range.

Good progress was made towards the goal of installing solar energy generation systems for 135 schools and welfare NGOs in 2020/21. A new round of application commenced in January 2021, and more than 190 applications had been received up to April 2021.

To tie in with the scheme, we have produced a primary-level Solar Harvest STEM (i.e. science, technology, engineering and mathematics) education kit for students and young people, in collaboration with other government departments. The education kits will provide teaching materials and activities about renewable energy to enrich primary school curricula, stimulate students' interest in and understanding of renewable energy, and promote a low-carbon lifestyle to counter the impact of climate change.

推廣能源效益及節能
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「智能慳電」計劃旨在支援和資助合資格的非官立及非牟利的中小學在校內安裝節能系統和採用創新方案。我們支援學校更換具能源效益的變頻式冷氣機、LED燈及安裝可供持續檢查耗電量和能源效益的實時能源監察系統。有關計劃除協助中小學改善能源管理外，同時建立正面和綠色校園文化，以及增強學生的環境保護意識。

The Energy Smart Scheme is intended to support and subsidise the installation of energy-saving systems and adoption of innovative solutions in eligible non-government and non-profit-making primary and secondary schools. Our support covers replacement of energy-efficient inverter type air-conditioners, LED lighting and installation of real-time energy monitoring systems that support ongoing energy consumption and efficiency review. In addition to helping schools manage energy consumption, the scheme also serves to cultivate a positive and green school culture and reinforce students' environmental awareness.

圖為參加了「智能慳電」計劃的學校內，各種由該計劃支援和資助的節能系統及創新方案。機電署負責支援學校更換具能源效益的變頻式冷氣機、發光二極管(LED)燈、及安裝可持續監察耗電量和能源效益的實時能源效益監察系統，讓學校能更有效管理耗能量。

Photos of various energy-saving systems and innovative solutions in a school, all supported and subsidised by the Energy Smart Scheme. The EMSD's support covers the replacement of energy-efficient inverter type air-conditioners, LED lighting and installation of real-time energy monitoring systems for better energy consumption management.

在2020/21年度，學校因應新冠疫情需要停課，雖然期間我們未能進入校舍動工，但我們仍設法為25間學校進行了安裝工作。我們的目標是在2021/22年度內為65間學校安裝相關系統。

In 2020/21, despite class suspension due to the epidemic, during which schools were not accessible for carrying out related work, we still managed to conduct installation works in 25 schools. The goal was to help 65 schools install the relevant systems in 2021/22.

區域供冷系統發展精益求精

區域供冷系統能夠有效節省樓宇空調系統的用電量，藉此減少二氧化碳排放量。近年來，新發展區(例如啟德發展區、洪水橋/廈村新發展區、古洞北新發展區及東涌新市鎮擴展(東)的規模龐大，預期對供冷量產生的需求會大增。

立法會財務委員會已於2021年批准東涌新市鎮擴展(東)及古洞北的區域供冷系統的撥款。東涌新市鎮擴展(東)區域供冷系統工程將於2021年下半年動工，而相關項目的管道鋪設工程會納入土木工程拓展署所批出的有關合約內；至於古洞北的管道鋪設工程合約，機電署已於2021年第一季動工。

STRIVING FOR EXCELLENCE IN THE DEVELOPMENT OF DISTRICT COOLING SYSTEMS

District Cooling Systems (DCSs) can help reduce the energy consumption of air-conditioning systems in buildings, thus reducing carbon emissions. In recent years, new large-scale development areas such as Kai Tak Development, Hung Shui Kiu/Ha Tsuen New Development Area, Kwu Tung North and Tung Chung New Town Extension (East), are expected to generate substantially greater demand for cooling capacity.

The Legislative Council's Finance Committee approved in 2021 the funding for developing DCSs for Tung Chung New Town Extension (East) and Kwu Tung North. Works for the former is set to begin in the second half of 2021. The pipe laying works of the DCS of the project will be included in the contract issued by the Civil Engineering and Development Department, while the works contract for the pipe laying for Kwu Tung North was commenced in 2021 Q1.

機電署的區域供冷系統屢獲本地及國際獎項，更獲C40城市氣候領導聯盟的刊物《城市100》選為積極應對氣候變化的行動方案之一，表彰為啓發其他城市的榜樣。我們運用大數據分析等科技，為製冷機組設置了專門的監控系統，以進一步優化其運作效果，從而達到減碳目標。

Our DCS project has won awards locally and internationally, and was selected and featured by C40 Cities Climate Leadership Group in its publication, ***Cities100***, as one of the solutions for climate actions which actively tackles climate change and sets a good example to inspire other cities. We use technologies such as big data analytics, to set up dedicated monitoring systems for chiller units to further optimise their operation performance and achieve the goal of decarbonisation.

年內，我們與英國土木工程師學會合作，率先為機電署人員提供了新工程合約4之下的「定期服務合約服務經理認證」及「設計、建造及營造」合約擴展培訓課程。新工程合約是致力推動工程合約雙方建立互助互信夥伴關係的嶄新合約模式，有助各方控制風險、減少糾紛、改善成本、減低延誤機會和創造雙贏。新工程合約4亦涵蓋業界的最新趨勢和需要。

During the year, we collaborated with the UK Institution of Civil Engineers to be among the first to deliver two training courses for EMSD staff. The two courses were TSC Services Manager Accreditation and DBO (Development, Building and Operation) Contract Extension under the New Engineering Contract 4 (NEC4). NEC is a new contracting form that promotes collaborative partnership between contracting parties for building up mutual trust, and helps all parties control risk, minimise disputes, improve costing, reduce chance of delay and create win-win partnerships. NEC4 also covers the latest trends and needs of the trade.

東涌新市鎮擴展(東)及古洞北的區域供冷系統，採用了新工程合約4之下的全新「設計、建造及營造」合約模式，有助提升整體施工質素。東涌新市鎮擴展(東)的區域供冷系統預計將於2034年完成，而古洞北則預計於2040年完工。

The DCS projects for Tung Chung New Town Extension (East) and Kwu Tung North have adopted the new DBO contract template under NEC4, which will help improve the overall quality of works. The DCS in Tung Chung New Town Extension (East) is expected to be completed in 2034, while the one in Kwu Tung North is slated for 2040.

啟德發展區新增的區域供冷系統工程於2020年12月開展，預計整個區域供冷系統將於2028年完工。另外，現有的區域供冷系統的環狀管道於2021年初完成安裝，標誌着有關系統工程展開十年後的一個里程碑。我們在建造啟德發展區區域供冷系統的過程中克服了不少困難，例如在現有地底管道和電纜下面鋪設冷卻水管道，為未來的有關項目積累了寶貴經驗，將為節能和減排作出貢獻。

The work for an additional DCS in Kai Tak Development began in December 2020, and the entire DCS for the district is expected to be completed by 2028. Meanwhile, the existing DCS Ring Circuit Pipework was completed in 2021, marking a milestone after a decade of works on the system. We have overcome numerous obstacles in the development of the DCS in Kai Tak, such as laying cooling water pipes beneath existing underground pipes and cables. We have gained valuable experience for the future projects concerned, which will contribute to energy saving and emission reduction.

為了慶祝啟德區域供冷系統的環形管道完成，我們於2021年4月舉行管道合龍典禮，也是這供冷系統工程展開十年，並克服無數技術困難後的一個里程碑。

We held a ceremony in April 2021 to mark the completion of the Kai Tak Development District Cooling System Ring Circuit Pipework, marking a milestone after a decade of works on the system after overcoming numerous technical obstacles.

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便利市民使用可再生能源

近年來，兩間本地電力公司的上網電價計劃為本港推廣可再生能源的工作加添動力。我們也推出了新的《太陽能發電系統設計、操作及維修手冊》及《太陽能熱水系統設計、操作及維修手冊》，便利市民參與上網電價計劃。截至2021年9月，已接獲逾17 000份參加上網電價計劃的申請，並已透過上網電價計劃熱線處理逾2 500個有關參加上網電價計劃的查詢。

此外，我們在2020年6月把2019年模範太陽能發電系統安裝選舉結果上載至香港可再生能源網，與業界分享安裝最佳做法，以提升安裝工作質素。

FACILITATING PUBLIC ADOPTION OF RENEWABLE ENERGY

Following the introduction of the FiT Scheme by the two local power companies in recent years to add impetus to the promotion of adoption of renewable energy in Hong Kong, we have issued a new set of Handbook on Design, Operation and Maintenance of Solar Photovoltaic Systems and Handbook on Design, Operation and Maintenance of Solar Water Heating Systems to facilitate participation in the FiT Scheme. As at September 2021, more than 17 000 applications for joining the FiT Scheme had been received, and more than 2 500 enquiries about joining the FiT Scheme had been handled by the FiT Scheme Hotline.

Moreover, we uploaded the results of Solar Photovoltaic System Installation Role Model Election 2019 to the EMSD HK RE Net in June 2020 to share the best practices for installation with the trade to promote quality work.

重新校驗發掘節能潛力

建築物的能源效益可能因為多個因素而未能達至預期水平，而重新校驗可識別建築物節能潛力。自2019年至今，我們已為約150幢政府建築物開展重新校驗工作。我們的目標是改善相關政府建築物的能源效益及持續推廣重新校驗。

EXPLORING ENERGY-SAVING POTENTIAL THROUGH RETRO-COMMISSIONING

The energy efficiency of a building might be below the expected level due to multiple factors, and retro-commissioning (RCx) can identify potential energy saving in a building. Since 2019, we have commence RCx for about 150 government buildings. Our goals are to improve the energy efficiency of government buildings and maintain ongoing promotion of RCx.

我們的同事運用重新校驗的方法，為現行建築物找出節能的機會和潛力。自2019年至今，我們已為約150幢政府建築物開展重新校驗工作，以改善能源效益，並持續向業界推廣重新校驗。

Our colleagues applying retro-commissioning (RCx) methods to identify potential energy-saving opportunities in an existing building. Since 2019, we have commenced RCx for about 150 government buildings to improve their energy efficiency and continued to promote RCx in the trades.

我們的重新校驗資源中心網站提供豐富的重新校驗資訊，讓業界從業員和建築物擁有人在進行「樓宇驗身」時可作為參考，以節約能源和減少電費開支。

The website of our Retro-Commissioning Resources Centre provides rich information on RCx to trade practitioners and building owners for reference in conducting "buildings' health check" to save energy and reduce expenses on electricity.

優化淡水冷卻塔的使用

商業建築物的耗電量佔香港總用電量超過六成，而空調系統又佔香港總用電量約三成。在機電署及其他政府部門的支援下，多幢本地非住宅建築物及其他建築物採用了以蒸發式冷卻運作的水冷式空調系統。

OPTIMISING THE USAGE OF FRESH WATER COOLING TOWERS

Commercial buildings account for more than 60% of Hong Kong's total electricity consumption, and about 30% of the total electricity consumption is attributed to air-conditioning systems. With the support of the EMSD and other government departments, a number of non-residential buildings and buildings of other types have adopted water-cooled air-conditioning systems (WACS) that are operated by evaporative cooling.

我們在2021年推出了新版本的《預防退伍軍人病工作守則》，以防止因淡水冷卻塔管理不當而引發退伍軍人病。淡水冷卻塔也屬機電署規管範疇。

We issued a new edition of the Code of Practice for Prevention of Legionnaires' Disease (LD) in 2021 to prevent the incidence of LD caused by mismanagement of fresh water cooling towers (FWCTs). FWCTs are also under our regulatory purview.

為了預防淡水冷卻塔管理不當而引發的退伍軍人病，我們在本年推出了新版本的《預防退伍軍人病工作守則》，並透過網站及新聞公報定期公布檢測的淡水冷卻塔水樣本數目，以及水樣本內退伍軍人桿菌總濃度超過上限值的淡水冷卻塔所在的建築物地點。我們希望與傳媒、公眾和持份者保持溝通，盡量減少退伍軍人病感染。

To prevent Legionnaires' Disease caused by mismanagement of fresh water cooling towers (FWCTs), we issued a new edition of the Code of Practice for Prevention of Legionnaires' Disease during the year. We also announce regularly via the website and press releases the number of tested water samples in the FWCTs and the location of the buildings where the FWCTs were tested with total legionella count at or above the upper threshold. We hope to maintain communication with the media, the public and stakeholders to minimise the incidence of infection of Legionnaires' Disease.

對內外持份者加強支援和溝通

疫情對建造業造成巨大衝擊，工人不時必須停工，而承辦商可能面對設備延誤交付和資金緊絀的情況。自疫情爆發以來，機電署特別注重準時交付費用予承辦商，務求協助業界渡過難關。

由於啟德區域供冷系統逐步投入服務，我們計劃在年內逐步推出電子化服務，供公共和私營機構申請使用淡水冷卻塔和區域供冷系統，目標在2022年中完成。

為了推廣可再生能源，我們自2018年起舉辦及參與了93場講座和簡介會，接觸了12 000位參加者，當中包括在2020年為鄉議局及區議會分別舉辦了6場及4場線上講座。我們會繼續向社會各界進行推廣工作。

STRENGTHENING SUPPORT AND COMMUNICATION WITH INTERNAL AND EXTERNAL STAKEHOLDERS

The epidemic has dealt a major blow to the construction industry. Workers had to stop working from time to time, and contractors might face delayed delivery of facilities and tight cash flow. Since the onset of the epidemic, the EMSD has paid special attention to making payment to contractors on time to help the trade get through the difficult time.

As the DSC in Kai Tak Development is being commissioned, we plan to launch an electronic service progressively during the year for public and private organisations to apply for using the FWCTs and the DCS. It is targeted to be completed in mid-2022.

To promote renewable energy, we have held and participated in 93 seminars and briefings since 2018, connecting with 12 000 participants. In 2020, six and four webinars were held for Heung Yee Kuk and the District Councils respectively. We will continue such promotion in the community.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

政府已定下新的「綠色能源目標」，務求在2020/21年度至2024/25年度的五年內，把政府整體能源表現改善6%。為了支援有關目標，我們在2020年7月及8月舉辦兩場線上講座，以促進政府內部溝通，有來自逾50個決策局和部門約280位名代表參與。政府各部門正積極透過各項措施推動能源管理，以提升能源表現。

The Government has set a new "Green Energy Target" of improving its overall energy performance by 6% within five years from 2020/21 to 2024/25. To support the goal, we facilitated internal communication within the Government by holding two webinars in July and August 2020. About 280 representatives from more than 50 policy bureaux and departments participated. Various government departments strive to promote energy management through various measures to enhance energy performance.

促進創科應用

我們一直透過「機電創科網上平台」推動有關能源效益的環保創科解決方案，現有31個項目進行試驗。為推動與能源效益有關的創新科技發展，我們計劃每年推行約十個環保創新項目。

PROMOTING ADOPTION OF INNOVATION AND TECHNOLOGY

We have been promoting green innovative solutions for energy efficiency through the E&M InnoPortal, and currently 31 projects are being trialled. In order to foster the development of innovation and technology related to energy efficiency, we plan to carry out 10 green innovative projects in this aspect every year.

向各界推廣能源效益及安全

年內，我們舉辦了多項活動，深受公眾歡迎，成功達到推廣節能和可持續發展的目標。

我們與香港照明學會、香港室內設計協會、明愛白英奇專業學校、香港知專設計學院、香港理工大學及香港高等教育科技學院聯合舉辦了LED燈具設計比賽，旨在推廣家用LED燈泡的使用，以及鼓勵公眾選購附有自願性能源效益標籤的LED燈泡。有關比賽共收到超過80份參賽設計，頒獎典禮已於2021年6月25日舉行。

PROMOTING ENERGY EFFICIENCY AND SAFETY IN THE COMMUNITY

During the year, various activities held by us were well received by the public, successfully attaining the goal of promoting energy saving and sustainability.

The LED Lantern Design Competition was held in conjunction with the CIE (Hong Kong) Limited, Hong Kong Interior Design Association, Caritas Bianchi College, Hong Kong Design Institute, Hong Kong Polytechnic University and Technological and Higher Education Institute of Hong Kong. The competition was intended to promote domestic usage of LED light bulbs and encourage the public to opt for LED lamps that bear a label under the Voluntary Energy Efficiency Labelling Scheme. The competition received more than 80 entries. The award presentation ceremony was held on 25 June 2021.

圖為LED燈具設計比賽的優勝者(左)及部分得獎作品(右)，攝於2021年6月舉行的頒獎典禮。比賽由機電署、業界及教育機構合辦，旨在推廣家用LED燈泡的使用，以及鼓勵公眾選購附有自願性能源標籤的LED燈具。

Photos of the winners (left) of the LED Lantern Design Competition and some of their award-winning entries (right) taken at the award presentation ceremony held in June 2021. The EMSD jointly organised the competition with the trade and educational institutions to promote domestic usage of LED light bulbs and encourage the public to opt for LED lamps that bear a label under the Voluntary Energy Efficiency Labelling Scheme.

為了鼓勵私營機構採用重新校驗以提高建築物的能源效益，我們在2020年4月20日首次透過線上通訊工具舉行「全民節能」運動下的「慳神重新校驗大比拼2019」。共有15隊入圍決賽的參賽大廈隊伍參加評審委員會的最終面試。比賽的頒獎典禮短片亦於2020年12月31日上載至有關活動網站。

To encourage the private sector to adopt RCx for enhancing the energy efficiency of buildings, we held the Energy Saving Championship Scheme 2019 under the Energy Saving for All Campaign, which was conducted on 20 April 2020 via online communication tools for the first time. Among the finalists, a total of 15 participating building teams took part in the final interview held by the judging panel. Video clips of the award presentation ceremony were also uploaded to the event website on 31 December 2020.

我們於2020年12月16日首次以線上研討會形式舉行年度樓宇管理研討會，以推廣機電安全及能源效益，內容涵蓋樓宇的電力安全、氣體安全、升降機及自動梯裝置、能源效益及節能措施等。

The annual Property Management Seminar for promoting E&M safety and energy efficiency in buildings was held on 16 Dec 2020 via webinar for the first time. The webinar covered topics on electrical safety, gas safety, lift and escalator installation, energy efficiency, energy efficiency measures of buildings, etc.

加強區域及大灣區合作

作為亞太區經濟合作組織(亞太經合組織)能源工作組的香港官方代表，我們一直積極參與搜集有用的能源發展參考資料，以加強在能源相關範疇分享知識和交流經驗。

雖然疫情期間面對面的跨境交流無法進行，但是我們轉用網絡平台和溝通渠道，加強區域及大灣區的交流和聯繫。由於2019冠狀病毒病疫情，我們在2020年11月17至20日以視像方式舉行原訂於2020年2月及3月舉行的第31屆能源數據及分析專家小組會議、第55屆能源效益及節能專家小組會議，以及兩個能源工作組專家小組研討會。我們為亞太經合組織各夥伴提供良好平台，以深化合作改善能源政策制訂和決策。我們亦在會議上與約150名專家和與會者討論區內的能源挑戰和機遇。機電署的代表再次獲選出任亞太經合組織能源效益及節能專家小組下一屆的主席，將領導亞太經合組織各經濟體系爭取在2035年達到亞太經合組織訂下的目標，以2005年為基年把總能源強度降低45%。

年內，我們亦積極參與亞太經合組織的能源相關項目，包括進行由亞太經合組織撥款的項目，研究七個已發展城市(包括香港在內)的優秀節能表現，以及其成功減低能源強度的關鍵，以在區內推廣可持續發展的能源政策和概念。我們亦提交「亞太經合組織建立重新校驗能力研討會」建議，以及自資舉辦「亞太經合組織區域供冷及供暖系統研討會」。

STRENGTHENING REGIONAL AND GREATER BAY AREA COLLABORATION

As Hong Kong's official representative in the Asia-Pacific Economic Cooperation (APEC) Energy Working Group (EWG), we have been actively engaging in collecting useful energy development information to strengthen knowledge and experience sharing in energy-related areas.

Although face-to-face cross-border communication cannot be carried out during the epidemic, we have switched to online platforms and communication channels to strengthen exchanges and contacts in the region and the Greater Bay Area (GBA). Due to the COVID-19 epidemic, we hosted the 31st Meeting of the Expert Group on Energy Data and Analysis (EGEDA), the 55th Meeting of the Expert Group on Energy Efficiency and Conservation (EGEE&C) and the workshops for the two EWG expert groups, originally scheduled for February and March 2020 respectively, virtually from 17 to 20 November 2020. We provided a sound platform for various APEC partners to deepen co-operation for the enhancement of energy policy formulation and policy decision. We also discussed energy challenges and opportunities in the region with about 150 experts and attendees in the meetings. The representative of the EMSD was selected again to serve as the Chair of the APEC EGEE&C for the next term in leading APEC economies to achieve the APEC's aspirational goal of reducing aggregate energy intensity by 45 percent by 2035 using 2005 as the base.

During the year, we also actively took part in other APEC energy-related activities, including conducting the APEC-funded project to study the outstanding performance of seven urbanised cities (including Hong Kong) and their keys to success in reducing energy intensity so as to promote energy policies and concepts for sustainable development in the region. We also submitted a proposal on "APEC Capacity Building Workshop on Retro-commissioning" and held a self-funded "APEC Workshop of District Cooling and Heating Systems".

機電署署長(左)於2021年3月舉辦的亞太經合組織「減少區內城市能源強度研究」研討會發表講話。研討會的目的，是讓各成員經濟體交流經驗，有助提升減少能源強度的能力。機電署其他高層管理人員和特區政府官員(右)也有出席。

The Director of Electrical and Mechanical Services (left) speaking at the APEC Workshop on Energy Intensity Reduction in the APEC Regions' Urbanised Cities, held in March 2021. The workshop provided an opportunity for the exchange of knowledge among member economies and enhanced their capacity in energy intensity reduction. Other EMSD senior management and HKSAR government officials (right) also attended the event.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

2020年10月28日，我們與新加坡能源市場管理局舉行線上簽署儀式，簽訂諒解備忘錄，加強香港與新加坡在能源相關事務的合作，務求透過創新和協作，共同提升能源安全和應變能力。

On 28 October 2021, a Memorandum of Understanding was signed between us and the Energy Market Authority of Singapore via a virtual signing ceremony, for strengthening co-operation between Hong Kong and Singapore in energy-related matters towards greater energy safety and resilience through innovation and collaboration.

機電署及新加坡能源市場管理局於2020年10月簽訂諒解備忘錄，加強兩地在能源事務方面的合作。圖為雙方機構首長攝於線上簽署儀式。

The EMSD and the Energy Market Authority of Singapore signed a Memorandum of Understanding in October 2020 to strengthen co-operation between the two cities in energy-related matters. The photos show heads of the two organisations at the virtual signing ceremony.

我們亦致力透過粵、港、澳合作，推動大灣區內重新校驗的發展和應用。包括機電署在內的《粵港澳大灣區建築物重新校驗合作備忘錄》各個簽署方，在2020年11月24日透過視像會議舉行第二次全體會議及交流會。

We also promoted the development and application of RCx in the GBA through collaboration with Guangdong and Macao. Signatories of the Memorandum of Co-operation on Retro-commissioning of Buildings in Guangdong-Hong Kong-Macao Greater Bay Area, including the EMSD, held the 2nd plenary meeting via a video conference on 24 November 2020.

來年展望

由於中國內地和區域合作對推動能源相關事務越來越重要，因此我們把其列為來年的主要重點工作。我們會繼續在亞太經合組織能源工作組內擔任領導角色，並會與內地住房和城鄉建設廳合作，協助制訂大灣區建築物重新校驗的藍圖。

香港正爭取在2050年前實現碳中和。我們會加入政府的跨部門碳中和專責小組，分享可再生能源事宜的知識和經驗，以促進政府內部對相關技術和策略的掌握。

「綠色社福機構」措施是2021/22年度政府財政預算案公布推行的新措施。我們會與環境局合作，協助合資格的非政府機構進行能源審核和安裝節能裝置，提升其處所的節能表現，推動社會為減碳出一分力。

THE YEAR AHEAD

As Mainland of China and regional collaboration is increasingly important for promoting energy-related issues, we have made it a major focus for the coming year. We will continue to take a leading role in the APEC EWG, and will collaborate with the Mainland's Housing and Urban-Rural Development authorities to help draw up the blueprint for RCx of buildings in the GBA.

Striving towards the target of achieving carbon neutrality by 2050, we will join the inter-departmental carbon neutrality taskforce to share our knowledge and experience on renewable energy matters to enhance the Government's understanding of the relevant technical knowhow and strategy.

Under the new "Green Welfare NGOs" scheme announced in the 2021/22 Budget to be launched, we will work with the ENB to help eligible NGOs conduct energy audits and install energy-saving installations to enhance the energy performance of their premises, enhancing carbon reduction in the community.

我們會繼續透過機電署網站推廣能源效益、節能以及可再生能源的資訊，並會在E&M Connect流動應用程式加入新功能，例如上載推廣《建築物能源效益守則》、香港建築物能源效益註冊計劃及註冊能源效益評核人的影片。我們亦會參與製作STEM教材套件。

就業界相關事務而言，我們會繼續檢討和修訂《建築物能源效益守則》及《能源審核守則》。我們亦將推出宣傳短片，以增進業界對有關事宜的了解和認識。

為支援政府在《香港智慧城市藍圖2.0》內提倡的「精明規管」計劃，我們會引導業界更廣泛應用創新及科技和樹立榜樣，以提高規管的效率和透明度，以及提升商業機構的競爭力。我們即將推出申請使用淡水冷卻塔和區域供冷系統的電子化服務，方便營商。

我們亦計劃研發可進一步優化區域供冷系統內冷卻模組表現的監控和數據分析系統。

為了提升工程項目的效率和質素，我們會舉辦更多新工程合約4之下的「定期服務合約服務經理認證」及「設計、建造及營造合約擴展」培訓課程，務求讓機電署內相關工程師掌握業界的最新專業技能及提升工作效率。

We will continue to promote messages about energy efficiency, conservation and renewable energy on the website of the EMSD, and add new functions to the E&M Connect mobile application, such as uploading short videos to promote the BEC, the Energy Efficiency Registration Scheme for Buildings and Registered Energy Assessors. We will take part in producing STEM learning kits too.

For trade engagement, we will continue to review and revise the BEC and the EAC. A promotion video will also be released soon to enhance the trade's understanding and awareness of the matters.

In support of the Be the Smart Regulator Programme, stated in the Government's Smart City Blueprint for Hong Kong 2.0, we will steer the trade towards wider use of I&T and facilitate the industry to establish role models, in an effort to enhance regulatory efficiency and transparency, as well as sharpen the competitive edge of commercial organisations. E-application for the FWCTs and the DCSs will be introduced soon to facilitate commercial operations.

Plans are also in place to develop a monitoring and data analytics system for further optimisation of DCS chiller units.

To enhance construction work efficiency and quality, we will conduct more training courses on NEC4 TSC Services Manager Accreditation and DBO Contract Extension to help relevant EMSD engineers acquire new professional skillset and enhance work efficacy.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION

傳承經驗 統領區域能源效益交流
The Legacy of Leading Regional Exchange in Energy Efficiency

機電署前助理署長黃奕進先生在其職業生涯中參與過多項與能源有關的工作，任職機電署26年間，曾帶領多項與節能和減碳有關的工作，包括參與制訂和推行強制性能源效益標籤計劃，出任助理署長執掌電力及能源效益科，代表香港擔任亞太區經濟合作組織（亞太經合組織）能源效益及節能專家小組的主席等，一直不遺餘力推動減緩氣候變化和提升能源效益的工作。

Mr Vy Ek-chin, the former Assistant Director of the EMSD, had served in numerous energy-related roles throughout his career. In his 26-year stint with the EMSD, he led energy efficiency and carbon reduction missions, including taking part in formulating and implementing the Mandatory Energy Efficiency Labelling Scheme, heading the Electricity and Energy Efficiency Branch as an Assistant Director, and representing the Department to serve as the Chairman of the APEC Expert Group on Energy Efficiency and Conservation (EGEE&C). At every turn, he spared no effort to help mitigate climate change and improve energy efficiency.

2020年6月離開全職崗位後，黃先生退而不休，繼續履行新任務，擔任機電署首席能源效益顧問，並於2021年5月獲亞太經合組織能源效益及節能專家小組通過，連任專家小組主席一職，任期兩年。

在上一屆主席任期內，黃先生於2019年9月主持在菲律賓舉行的專家小組第54次會議，以及代表專家小組出席能源工作組第57和58次會議匯報工作進度。隨後的能源工作組會議、專家小組會議及相關研討會因全球疫情跨境往來暫停而改以視像方式舉行。縱使過去一年多，2019冠狀病毒病疫情為全球帶來嚴峻的考驗，專家小組各經濟體成員的參與熱誠不減，大家一直就能源效益及節能的最新工作進行線上交流，保持緊密聯繫，並分享各自的心得，促進經濟體成員互勵互勉提升各自的能源效益，力求達致以2005年為基準年計算，於2035年把亞太地區的總能源強度減少45%的目標。

同時，黃先生亦以專家小組主席的身分，積極與國際組織建立聯繫，並致力推動能源效益及節能方面緊密合作。他表示：「亞太經合組織成員經濟體的能源需求佔全球六成。《巴黎協定》的長期目標是在2050年前實現將全球氣溫升幅限制在攝氏1.5度之內。若要達到這個目標，全球的經濟體必須加強溝通，每個經濟體的力量都同樣重要。」

After he retired from his full-time position in June 2020, he continued on his mission in a new capacity as the EMSD's Principal Energy Efficiency Advisor (PEEA). In May 2021, he was unanimously re-elected the Chairman of the EGEE&C for another two-year term.

During his first term as the Chairman of the Expert Group, Mr Vy chaired the 54th EGEE&C meeting in the Philippines in September 2019 and represented the Expert Group to attend the 57th and 58th meetings of the APEC Energy Working Group (EWG) to report on work progress. The subsequent meetings of the EWG and the Expert Group had to go virtual due to suspension of cross-border travel during the pandemic. Despite the ongoing challenges associated with the pandemic over the past year or so, the EGEE&C's member economies maintained close liaison and continued to enthusiastically exchange views about their latest work on energy efficiency and conservation online. Member economies are committed as ever to rallying each other to achieve energy efficiency, towards the goal of reducing energy intensity in the Asia-Pacific region by 45% in 2035, using 2005 as the base.

Mr Vy has also been actively building connections with international organisations in his capacity as the Chairman of the EGEE&C, and fostering close partnerships for promoting energy efficiency and conservation. "APEC's member economies account for 60% of the global energy demand. The long-term goal envisaged in the Paris Agreement is to keep global temperature increase within 1.5 degree Celsius by 2050. To achieve this goal, global economies have to strengthen communication, as the effort of every economy is equally important," Mr Vy said.

政府亦高度重視氣候變化，研究各種減碳措施，包括探索不同低碳能源和減碳技術、提高新建和現有建築物的能源效益、推動新能源車輛和綠色運輸，以及興建大型轉廢為能設施等。香港特區政府已於2020年《施政報告》宣布，致力爭取於2050年前實現碳中和，為進一步深度減碳定下基礎。

黃先生感恩在過去兩年擔任專家小組主席期間，機電署可通過專家小組的平台積極地發表報告，分享通過區域供冷系統和現有建築物重新校驗以提升能源效益的工作成效和心得，達致經濟體成員之間互相鼓勵、提升社會能源效益的作用。

黃先生表示：「在未來兩年的主席任期內，期望與國際組織加強溝通，提供更多的國際經驗和做法讓專家小組成員參考，並在疫情後推動經濟復甦的工作中，加入綠色概念。專家小組成員可探討如何在能源效益及節能的範疇，製造就業機會，支援經濟復甦。期望在互相鼓勵及推動下，經濟體成員能在各項目中結合有關能源效益和可再生能源的策略和措施，致力達致能源工作組兩大能源目標，即以2005年為基準年，在2035年前將亞太地區的總能源強度減少45%；以及在2030年前使亞太地區可再生能源發電量在地區能源結構中較2010年增加一倍。」

退休後，黃先生注重平衡工作與生活，更多時間與家人及朋友相聚之餘，仍會繼續機電署和亞太經合組織的能源效益工作，傾囊傳授其寶貴經驗。

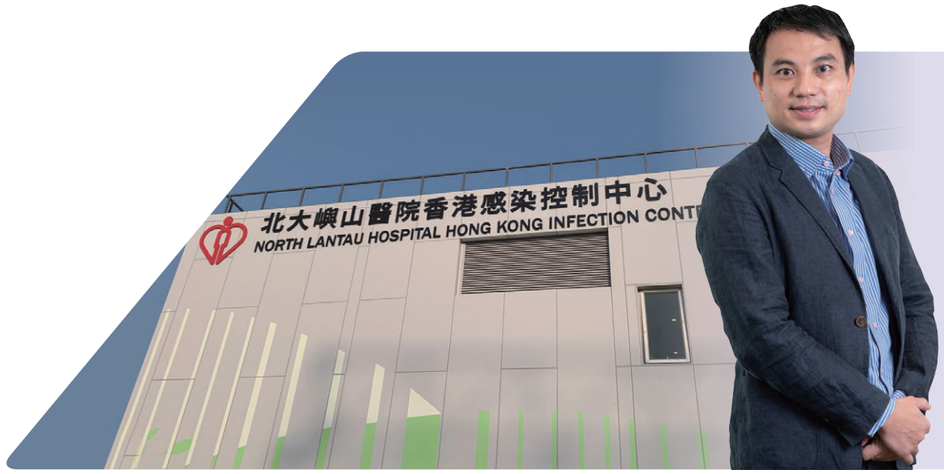
Climate change is also an important issue for the Government, and various carbon reduction initiatives are being studied. That include exploring different forms of low-carbon energy and carbon reduction technologies, elevating the energy efficiency of new and existing buildings, promoting new energy vehicles and green transportation, and developing large-scale waste-to-energy facilities. In the 2020 Policy Address, the HKSAR Government pledged to achieve carbon neutrality before 2050, setting the tone for more intensive carbon reduction.

Mr Vy is thankful that in his previous term as the Chairman of the EGEE&C, the EMSD could make use of the Expert Group's platform to publish reports and share the results and insights in enhancing energy efficiency through the District Cooling Systems and Retro-commissioning for existing buildings, which induced mutual encouragement among member economies to improve energy efficiency in their communities.

"In the coming two-year term as the Chairman, I hope to communicate more closely with international organisations and source more international experience for reference of the Expert Group members. I'll also strive to promote green development in their post-pandemic economic recovery efforts. The Expert Group may explore the possibility of creating employment opportunities and supporting economic recovery in the energy efficiency and conservation field. It is hoped that through mutual encouragement and facilitation, member economies will include strategies and initiatives related to energy efficiency and renewable energy in different projects to strive for two major goals, namely reducing energy intensity in the Asia-Pacific region by 45% by 2035, with 2005 as the baseline, and doubling the share of renewable energy generation in the Asia-Pacific regional energy structure by 2030, as compared to the 2010 level," Mr Vy said.

Now enjoying retirement life, Mr Vy will strike a balance between his work and life. He intends to spend more time with family and friends, while passing on his valuable experience through maintaining his work on energy efficiency with the EMSD and APEC.

推廣能源效益及節能
PROMOTING ENERGY EFFICIENCY AND CONSERVATION



同心協力 建造感染控制醫院
Building an Infection Control Hospital in Concerted Effort

在2020年9至10月期間，香港正面對2019冠狀病毒病第三波疫情。在中央政府支持下，香港特區政府在亞洲國際博覽館旁開始興建北大嶼山醫院香港感染控制中心，並採用組裝合成建築技術進行有關工程，務求該設施在四個月內極速建成，以提供816張負氣壓病牀應付抗疫的醫療服務需要。多個政府部門緊密合作，進行這個關鍵項目的工作。機電署工程師莫肇堅先生代表能源效益事務處擔任個案主任，以確保有關項目符合《建築物能源效益條例》的規定，並配合同步設計、建造和驗收的目標。

When Hong Kong was facing the third wave of the COVID-19 epidemic from September to October 2020, the HKSAR Government kicked off the development of the North Lantau Hospital Hong Kong Infection Control Centre (NLHHKICC) adjacent to the AsiaWorld-Expo, with the support of the Central Government. Modular Integrated Construction (MiC) technology was adopted to have the NLHHKICC built expediently within four months, in order to make available 816 negative pressure beds to meet anti-epidemic medical service needs. Various government departments worked closely together on the critical project. Mr Mok Siu-kin, Francis, an engineer of the EMSD, representing the Energy Efficiency Office (EEO), took part as the case officer in ensuring the project complies with the Buildings Energy Efficiency Ordinance, while tying in with the objective of having the project designed, built and approved in tandem.

他說：「為符合法例要求，北大嶼山醫院香港感染控制中心的審批工作分兩部分進行。第一部分為首階段聲明，是確保擬建建築物的規劃及設計已納入適當的設計規定，而有關規定不低於《建築物能源效益守則》的指明設計標準及規定。第二部分為次階段聲明，是在建築物入伙後審核屋宇裝備裝置已按照《建築物能源效益守則》的標準和相關規定設計、裝設及完成。我們亦進行實地巡查，以確保有關裝置符合規定。」

"To comply with the statutory requirements, the approval work for the NLHHKICC was conducted in two parts. The first part was stage one declaration for ascertaining that suitable design provisions in accordance with the specified standards and requirements not lower than the Building Energy Code (BEC) had been incorporated into the planning and design of the proposed buildings. The second part was stage two declaration for assessing that the building services installations had been designed, installed and completed in accordance with the BEC standards and relevant requirements after occupation of the buildings. We also made on-site inspections to ensure compliance of the installations," he said.

莫先生深知項目的迫切性，而由於組裝合成建築組件在中國內地生產，因此須從開始時便確保工作做得正確，以免出錯而須修補，這點非常重要。在初期階段，他便與各方就所有重要事項進行溝通，並預先與建築署緊密合作。他說：「當我們知道項目團隊對能源效益設計方面有疑問，我們即時與建築署、承建商和註冊能源效益評核人舉行會議，就獲提供的設計圖則進行討論。我們希望在初期階段能盡快進行準備工作和評估程序。我們就設計規劃進行討論，以確定組件裝置在設計階段已充分考慮相關法例要求。」

Mr Mok was keenly aware of the urgency of the project and that it was very important to ensure things going on the right tracks from the outset to avoid remedial works as the MiC modules were manufactured in the Mainland of China. He communicated with all the parties on all the key issues at an early stage and worked closely with the Architectural Services Department (ArchSD) in advance. "When we learnt that the project team had questions about energy efficiency designs, we immediately held meetings with the ArchSD, the contractor and the registered energy assessor (REA) to discuss about the design drawings provided. We hoped that the preparation work and evaluation process could be conducted at the soonest during the early stage. We discussed the design plan to ascertain that the module installations had already taken full consideration of the statutory requirements at the design stage," he said.

他解釋：「我們根據過往的評估經驗，指出容易出錯的地方，例如風櫃內風扇的電動機效率、製冷劑喉管的隔熱材料厚度要求等。我們預先提醒承建商注意這些地方，以及確保他們的工作從開始時便絕對不能出錯。否則，當組件運送到香港後才發現有問題，便須進行拆除及糾正，浪費寶貴時間。此外，我們強調照明裝置的照明功率密度不應超過最高許可值，而不常被佔用的空間(例如走廊)應安裝自動照明控制系統。」

"Based on our previous evaluation experience, we pointed out the areas prone to errors, such as the motor efficiency of the fan in the air handling units, the requirements for insulation thickness of refrigerant pipeworks, etc. We reminded the contractors in advance to pay attention to these areas and got them absolutely right from the outset. Otherwise, if problems were found upon shipment of the modules to Hong Kong, precious time would be wasted on dismantling and rectification works. Besides, we underscored that the lighting power density of lighting installations should not exceed the maximum allowable value, and those spaces which were not always occupied, such as corridors, should be installed with automatic lighting control systems," he explained.

約四個月後，項目於2021年1月進入完成階段。莫先生立即安排督察走遍六座樓高兩層的病房大樓及一座醫療中心進行巡查和拍照存檔。他們檢查現場裝置是否符合法例要求和相關標準，例如照明功率密度是否與提交的設計圖則相符、冷氣機效能系數是否達致《建築物能源效益守則》的標準等。

About four months later in January 2021, the project was at the finishing line. Mr Mok assigned inspectors to walk through six blocks of two-storey wards and the medical centre block to inspect and take photo records immediately. They checked whether the site installations complied with the statutory requirements and relevant standards, such as whether the lighting power density aligned with the submitted plan, whether the coefficient of performance of the air-conditioners met the BEC standards, etc.

莫先生說：「建造這所醫院是社會責任，有助應對當時的嚴峻疫情。在項目的短片中，我們看到工人日以繼夜趕工，組裝合成建築組件最終運抵香港等場面，回想起項目團隊在過程中付出的努力。能夠參與項目，出一分力，讓計劃成真，實在十分感動。」

"Building this hospital was a social responsibility, and it was helpful for dealing with the critical epidemic situation then. When we saw scenes like how workers laboured day and night, the eventual shipment of MiC modules to Hong Kong, etc. in the project video, the hard work of the whole team flashed back. It was really very heartening to have played a part and contributed to the project in making it happens," Mr Mok said.

提升公眾安全及節能意識
RAISING PUBLIC AWARENESS OF SAFETY AND ENERGY CONSERVATION

2020/21年度，為應對2019冠狀病毒病帶來的新生活和工作模式，我們與本港眾多公私營機構一樣，調節思維和運作模式，加強利用網絡渠道和電子工具，維持對業界的規管和溝通工作。我們也繼續推動公眾推廣和教育工作，採用更生動的宣傳製作，以目標為本的方式，致力加強宣傳教育的成效。我們亦配合機電署規管服務的策略方向，加強業界和公眾對機電安全及節能信息的認知，同時以線上形式維持與中國內地（內地）和區域對口機構的聯繫及交流，互相支持及溝通。儘管疫情持續，但各項規管服務範疇的事故數字均維持下降趨勢，成績令人鼓舞。

In 2020/21, in the face of the new lifestyle and work models brought by the epidemic, we adjusted our way of thinking and operation models, like many public and private organisations in Hong Kong. Online channels and digital tools were more extensively used to maintain our regulatory work and communication with the trade. We also continued our public promotion and education work by launching target-based promotion with compelling promotional materials to enhance the effectiveness. In line with the strategic directions of the EMSD's Regulatory Services (RS), we strived to help the electrical and mechanical (E&M) trade and the public internalise messages on E&M safety and energy conservation. Meanwhile, we maintained online communication and exchange with our Mainland of China (Mainland) and regional counterparts to continue mutual support and communication. It was encouraging that, despite the epidemic, the incident numbers in relation to the RS's regulatory areas continued to decline.

靈活調度 提升應變力

審視業務延續計劃

機電署的受規管機構是社區的必要服務和能源供應提供者。緊接2019/20年度發生的社會事件，本港於2020/21年度爆發疫情，對受規管機構的運作造成不同程度的影響。為確保服務供應商能維持正常服務，我們及早與各受規管機構溝通，確保他們已訂立完備的業務延續計劃，備有充足的零部件供應，人手調配靈活，以及設有後備人員。機電署各部別亦以同一準則，確保在規管、服務、溝通、培訓、宣傳教育等一切工作如常進行。

BEING FLEXIBLE AND RESILIENT

Auditing Business Continuity Plans

The RS's regulatees are the community's providers of essential services and energy supply. Following the public order events that took place in 2019/20, the epidemic in 2020/21 affected the operations of our regulatees to varying degrees. To ensure that they were able to maintain the relevant services, we took steps early on to communicate with all regulatees to confirm that each of them had comprehensive business continuity plans in place, adequate supply of parts, flexible human resources deployment and sufficient backup manpower. The EMSD also went by the same principles to ensure that our work on regulatory matters, services, communication, professional development and promotion are conducted as planned.

增加網上功能

機電署一直致力向業界推動創新科技。疫情期間，因應在家工作及社交距離等抗疫安排，我們加強了機電署網頁及E&M Connect和機電行業通兩個流動應用程式的功能，以維持相關服務、培訓及溝通。舉例而言，我們利用機電行業通為註冊技術人員提供安全貼士、實務守則、培訓課程等資訊，並處理政府在疫情期間豁免或寬減收費的退款申請。我們也在E&M Connect增添方便市民的功能，例如讓市民尋找鄰近的註冊電業承辦商和石油氣分銷商的「機電地圖」功能，以及讓市民拍攝註冊氣體裝置技工的註冊證，便能即時獲得技工資料及認可註冊類別的「掃證快」功能。

INTRODUCING NEW ONLINE FUNCTIONS

The EMSD has been at the forefront of promoting innovation and technology (I&T) adoption in the trade. In view of the work-from-home and social distancing arrangements implemented during the epidemic, we enhanced the functions of the EMSD website and our two mobile apps, E&M Connect and E&M Trade App, to maintain our services, professional development and communication with the trade. For instance, through the E&M Trade App, we provided information such as safety tips, codes of practice and professional development courses for trade practitioners. The mobile app was also used to process refund applications for waiver or concession of registration fees under the Government's anti-epidemic support measures. New features for the convenience of the public were also added to the E&M Connect App, such as "E&M Finder", which allows users to search for Registered Electrical Contractors (RECs) and LPG cylinder distributors in the vicinity; and "Scan Fast", which enable users to obtain the information and classes of registration of a registered gas installer (RGI) just by capturing the image of his registration card.

在E&M Connect 增添方便市民的功能，例如讓市民尋找鄰近的註冊電業承辦商和石油氣分銷商的「機電地圖」功能，以及讓市民拍攝註冊氣體裝置技工的註冊證，便能即時獲得技工資料及認可註冊類別的「掃證快」功能。

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機電署在2020/21年內推出聊天機械人（右），運用人工智能技術，為業界及市民解答數以千計關於規管服務各方面工作的問題。我們也推出線上「石油氣瓶車驗車預約系統」（左），方便石油氣瓶車車主為其車輛預約年檢，於疫情下尤其稱便。

The EMSD Chatbot (right), launched in 2020/21, uses AI technology to answer thousands of questions from the trade and the public on various aspects of the work of Regulatory Services. We also introduced the online LPG Cylinder Wagon Examination Booking System (left) to make it easier for vehicle owners of LPG cylinder wagons to make appointments for annual examination, especially under the epidemic.

年內，我們在機電署網站推出聊天機械人，綜合規管服務各部別所提供的數千條資訊，以人工智能技術解答公眾或業界的一般查詢。我們亦設立了線上「石油氣瓶車驗車預約系統」，方便石油氣瓶車車主為其車輛預約進行年檢。此外，我們為石油氣車輛維修員開設證書及證明卡續證平台，讓他們在線上重溫所需課程後，輕鬆完成續證程序。我們還迅速建立了持續進修平台，讓註冊電業工程人員在線上完成持續進修。此措施獲業界鼎力支持，截至財政年度終結時，在38 050名註冊電業工程人員中，約86%已透過網上平台完成持續進修。

During the year, the EMSD introduced the department's Chatbot, which consolidated thousands of pieces of information from various divisions of the RS. Supported by AI technology, it can answer general enquiries from the trade and the public. The LPG Cylinder Wagon Examination Booking System was also launched on the website for vehicle owners of LPG cylinder wagons to make appointments for annual examination. An online platform for renewal of certificate and identification card for LPG vehicle mechanics was also set up to enable the concerned personnel to complete the renewal process online after reviewing the necessary refreshment materials. A continuing professional development (CPD) platform was established within a short time to allow Registered Electrical Workers (REWs) to complete CPD training online. The platform was well received by the trade, and about 86% of the total 38 050 REWs used the platform to fulfil their CPD requirements as at the end of the fiscal year.

展望未來，機電署會繼續配合規管服務的發展策略和政府服務電子化的進程，透過網站和流動應用程式提供更多有關申請牌照、預約、註冊、續牌、進修培訓、資訊、查詢、通告、業界指引和核對清單的服務。我們正籌備於2022年年初為流動應用程式加入新的搜尋功能，顯示全港2 000多家註冊車輛維修工場的位置和路線指示等資料，以提供更多資訊及便利公眾。

Looking forward, the EMSD will continue to extend the functions on the website and the mobile apps, covering services in relation to licence application, booking, registration, renewal, CPD, information, enquiries, service notification, trade guidelines and checklists, in order to be in line with the RS's development strategies and the Government's digitisation progress. We will also provide more information and bring convenience to the public by adding a new search function in the mobile app in early 2022 to show the location, route indication and other information of the some 2 000 registered vehicle maintenance workshops in Hong Kong.

為配合部門的電子化進程，若干部別已升級其電腦運作系統。氣體標準事務處已全面升級內部系統，而電力法例部亦正逐步升級電力法例及規管系統EORSIII，務求配合「精明規管」的策略，便利業界和公眾。

In line with our digitisation drive, certain RS Divisions have upgraded their respective computer operating systems. The Gas Standards Office (GasSO) has upgraded its internal system in a comprehensive manner. The Electricity Legislation Division (ELD) is on track to upgrade its EORS III system, in step with the "Be the Smart Regulator" strategic direction for the convenience of the trade and the public.

提升公眾安全及節能意識
RAISING PUBLIC AWARENESS OF SAFETY AND ENERGY CONSERVATION

疫情下，視像會議已成為新常態，大部分會議、培訓、各種活動以至與內地及海外的交流接觸，都以線上視像方式進行，成效理想，出席人數也踴躍。日後我們會繼續採用視像及現場混合模式，務求最佳效果。

Webinars have become the new normal for the majority of conferences, training, events and exchanges with Mainland and overseas organisations under the epidemic, with positive results and good attendance. We will continue to adopt a mixed mode of online and on-site seminars in the future for optimal results.

以視像會議維持溝通

疫情期間，我們盡量避免召開面對面會議，並把大部分定期業界及公眾聯繫活動，以及與內地和海外組織的會議和交流，改以線上視像模式舉行，整體效果理想。例如，我們在2020年為車輛維修技工共舉辦14場線上持續進修講座及測驗，約有8 600人參加，共提供超過15 000小時的持續專業進修時數，約佔業界每年所需的總持續進修時數兩成半。我們又將第六類勝任人士(CP6，即石油氣車輛維修員)證書及證明卡續證所需的重溫課程改為線上進行，讓有關人士以四個簡單步驟完成續證流程。自2020年5月起，我們安排每月線上安全講座，向業界推廣使用R32輕度易燃雪種的冷氣機的安全知識。在修訂《電力(線路)規例工作守則》後，截至2021年3月，我們共舉行了九次線上簡介會及技術研討會，介紹了新版工作守則的內容。原訂於荃灣大會堂舉行的年度電力規例研討會，亦改以線上直播形式舉行，參與人數超過800人。為推廣可再生能源，我們在2020年分別為鄉議局及區議會舉辦了六次及四次線上講座。另外，政府定下新的「綠色能源目標」，在五年內把政府整體能源表現進一步改善6%。我們就此分別於2020年7月及8月舉辦兩場線上講座，有來自逾50個決策局和部門約280位代表參與。

以上各項活動反應理想，反映視像模式有利我們與業界和公眾進行溝通交流。日後，我們會繼續採用視像及現場混合模式，在便利業界和公眾之餘，亦有助提高活動參與率。

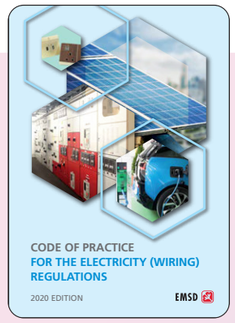
MAINTAINING COMMUNICATION VIA WEBINARS

As face-to-face meetings had to be minimised during the epidemic, a majority of our regular trade and public activities, as well as conferences and exchanges with Mainland and overseas organisations, were held in webinar mode, and the result was satisfactory. For example, we held a total of 14 CPD online seminars and quizzes for vehicle mechanics in 2020. The events were attended by some 8 600 people, and more than 15 000 CPD hours have been granted, accounting for about 25% of the annual CPD requirements for the entire trade. The refreshment materials for renewal of certificate and identification card of Competent Persons (Class 6) (CP6) (i.e. LPG vehicle mechanics) were uploaded online for CP6 to complete the renewal process in four easy steps. Since May 2020, we have been arranging monthly online safety talks to promote safety knowledge about working with air-conditioners using R32 mildly flammable refrigerant. Following the revision of the Code of Practice for the Electricity (Wiring) Regulations (CoP), we held a total of nine online briefing sessions and technical seminars about the content of the CoP as at March 2021. The annual seminar for the members of the electrical trade, originally to be held at Tsuen Wan Town Hall, was moved online and attracted more than 800 practitioners. To promote renewable energy, we held for Heung Yee Kuk and the District Councils six and four webinars respectively in 2020. Pertaining to the Government's new Green Energy Target of improving its overall energy performance by 6% within five years, we held two webinars in July and August 2020 respectively, about 280 representatives from more than 50 policy bureaux and departments participated.

The positive results of the above activities indicated that the webinar mode was effective in facilitating our communication with the trade and the public. We will continue to adopt a mixed mode of online and on-site seminars in the future for the convenience of the trade and the public and a higher engagement rate.

2020年版的《電力(線路)規例工作守則》涵蓋最新的修訂及新增內容，包括就電力裝置於各新發展及應用範疇提供技術指引，並建議引入新的保護裝置，以進一步提升電力安全。新版的工作守則將於2021年12月31日全面實施。

The 2020 edition of the Code of Practice (CoP) for the Electricity (Wiring) Regulations contains the latest revisions and new additions to the CoP, including technical guidelines for latest development and application of electrical installations, as well as recommending the introduction of new protection device to further enhance electrical safety. The revised CoP will take effect on 31 December 2021.



加強業界協作 促進機電安全

更新守則、指引和評級

機電署定期檢討及修訂各項守則、指引、指南，以及評級制度標準，務求與時並進，配合社會發展，為業界提供相關行業標準，以提升專業水平及確保機電安全。

在短短一年半時間內，電力法例部迅速完成《電力(線路)規例工作守則》的更新工作。新版工作守則的新增內容，包括建議為住宿處所內的固定電力裝置安裝電弧故障檢測裝置，以作額外保護，以及規定村屋的固定電力裝置必須加裝電流式漏電斷路器。此外，工作守則還加入有關USB插座和可再生能源發電系統的規定，以及電動車輛充電設施和組裝合成建築法項目的相關電力線路要求等，以提供最新技術指引，切合社會發展。工作守則設有一年寬限期，將於2021年12月31日全面實施。

為應對社會對泊車位的需求，以及配合政府有關機械化泊車系統的政策，一般法例部於2020年6月出版《設置機械化泊車系統的指引》，詳述設置此類泊車系統時的申請程序及考慮因素等，為業界和有關系統的擁有人提供相關資訊。

STRENGTHENING TRADE COLLABORATION TO PROMOTE E&M SAFETY

Updating Codes of Practice, Guidelines and Performance Ratings

To keep abreast of the times and be in tune with the community's development, the EMSD regularly reviews and revises various codes of practice, guidelines, guidance notes and performance rating standards in a bid to provide relevant industry standards to raise professional standards and ensure E&M safety.

The ELD completed the revision of the CoP within just one and a half year. The revised CoP included the recommendation of installing arc fault detection devices for the fixed electrical installations at premises with sleeping accommodation as a means of providing additional protection and the requirement of installing residual current device (RCD) for fixed electrical installations in village houses. It also incorporated the regulations on USB outlets and renewable energy power systems, as well as the requirements for the electrical wiring of charging facilities for electric vehicles and Modular Integrated Construction (MiC) projects. The CoP provides the latest technical guidelines, keeping up with social development. Following a one-year grace period, the revised CoP will take effect on 31 December 2021.

To help meet the community's demand for parking spaces and be in line with the Government's policies on Mechanised Vehicle Parking Systems, the General Legislation Division (GLD) published the Guideline for Implementing Mechanised Vehicle Parking Systems in June 2020, detailing the application procedures and considerations for implementation of such systems for reference of the trade and the relevant system owners.

相片為市面現有的機械化泊車系統。機電署於2020年6月出版《設置機械化泊車系統的指引》，方便業界及系統擁有人推出新的泊車系統，藉以應對社會對泊車位的需求。這也是我們一直協助業界及系統擁有人符合法規的例子之一。

The photos show some of the Mechanised Vehicle Parking Systems (MVPSs) currently in the market. The EMSD's publication of the Guidelines for Implementing Mechanised Vehicle Parking Systems in June 2020 is another example of our continuous efforts to help the trade and system owners to comply with the regulatory requirements while meeting community demand for parking spaces.

提升公眾安全及節能意識
RAISING PUBLIC AWARENESS OF SAFETY AND ENERGY CONSERVATION

氣體標準事務處於2021年2月推出《石油氣車輛燃料系統維修優良作業指引》及《氣體設施設計、操作及維修手冊》，分別為CP6提供作業標準及最佳做法，以進一步改善及優化石油氣車輛燃料系統維修的工作質素；以及就商用廚房煤氣及石油氣裝置的系統設計及操作提出建議，以提升氣體裝置的操作安全。

The GasSO published the Best Practices for Maintenance of Fuel System of Liquefied Petroleum Gas Vehicles and the Handbook on Design, Operation and Maintenance of Gas Utilisation Facilities in February 2021 to provide CP6 with operational standards and best practices to further improve and optimise the quality of maintenance work on the fuel system of LPG vehicles; as well as recommendations on the system design and operations for town gas and LPG installations in commercial kitchen respectively, in a bid to enhance the operational safety of gas installations.

能源效益部會繼續檢討核修訂《建築物能源效益守則》及《能源審核守則》，並擬於2021/22年度推出新的宣傳影片，向相關機構推廣兩份守則。能源效益部亦推出了新版本的《預防退伍軍人病工作守則》，並於機電署網站及新聞稿定期公布退伍軍人桿菌總濃度超過其上限值的淡水冷卻塔水檢測樣本數目，以及相關建築物的地點，加強與傳媒、公眾和相關持份者的溝通，避免淡水冷卻塔因管理不當而出現退伍軍人病感染。

The Energy Efficiency Office (EEO) will continue to review the Building Energy Code (BEC) and the Energy Audit Code (EAC). A promotional video will be released in 2021/22 to promote the two Codes to the relevant organisations. The EEO also issued a new edition of the Code of Practice for Prevention of Legionnaires' Disease. With the numbers of tested water samples from fresh water cooling towers (FWCTs) with total legionella count at or above the upper threshold and the location of the buildings concerned also published regularly via the EMSD website and press releases, we hope to strengthen the communication with the media, the public and relevant stakeholders and minimise the incidence of Legionnaires' Disease infection due to mismanagement of FWCTs.

善用創新科技 促進機電安全

USING I&T TO ENHANCE E&M SAFETY

機電署致力為業界引入創新科技方案，共同推動機電安全。年內，我們在創科方面的工作成果豐碩。舉例而言，一般法例部與本地初創公司共同研發解決方案，以光纖光柵傳感技術實時監測自動梯的運作安全及穩定性，方案在2021年日內瓦國際發明展中奪得金獎，並已安裝於政府場所及公共設施的自動梯，持續收集大數據，以進一步提升精準度。機電署現正積極向業界及自動梯負責人推廣此方案。一般法例部早前亦與職業訓練局(職訓局)及電梯業協會合作，推出設有五個模組的升降機虛擬實境安全培訓工具，讓學員在安全的環境學習升降機維修保養工作的要訣。年內，該培訓工具在第十九屆香港職業安全健康大獎中贏得「職安健改善項目大獎」金獎，並在2020香港資訊及通訊科技獎的「商業方案(商業及公營機構)獎」項目獲頒優異證書。

The EMSD is committed to introducing I&T solutions to the trade to jointly promote E&M safety. During the year, our I&T endeavours reaped notable results. For examples, the solution using Optical Fibre Bragg Grating Sensing technology developed by the GLD and a local start-up to monitor in real time the operational safety and stability of escalators won a Gold Medal in the International Exhibition of Inventions of Geneva 2021. The system has been installed in escalators in government venues and public facilities to collect big data on an ongoing basis for further enhancement of accuracy. Promotional work for this system to the trade and owners of escalators is currently underway. The GLD also developed the Virtual Reality-based Lift Maintenance Simulator (VRLMS) with five modules together with the Vocational Training Council (VTC) and the Lift and Escalator Contractors Association, enabling trainees to learn the keys to lift maintenance and repair work in a safe setting. During the year, the solution was awarded the Gold Award under the OSH Enhancement Program Award in the 19th Hong Kong Occupational Safety & Health Award, and a Certificate of Merit under the Smart Business (Solution for Business and Public Sector Enterprise) Award in the Hong Kong ICT Awards 2020.

一般法例部正利用創科，為全港的升降機及自動梯建立中央數據庫，整合維修資料及記錄。2021年4月，我們推出「升降機及自動梯保養工作移交檢驗報告」網上平台，把紙本檢驗報告電子化，方便註冊承辦商在移交升降機及自動梯的保養工作時翻查資料和記錄。另外，我們在年內利用科技統籌(整體撥款)項目下的撥款740萬港元，着手研發「升降機及自動梯數碼工作日誌」系統，以取代紙本的工作日誌。數碼工作日誌可讓升降機及自動梯工程師及工程人員輕鬆地於雲端伺服器記錄和上載工作細節，有效提升工作效率。系統亦能使用大數據分析技術分析實時數據，讓擁有人和物業管理公司隨時查看其升降機及自動梯的狀況和表現，並讓註冊承辦商更有效地管理升降機及自動梯的保養工作。由於資料使用區塊鏈技術儲存，內容無法被竄改，有助確保其真確性。

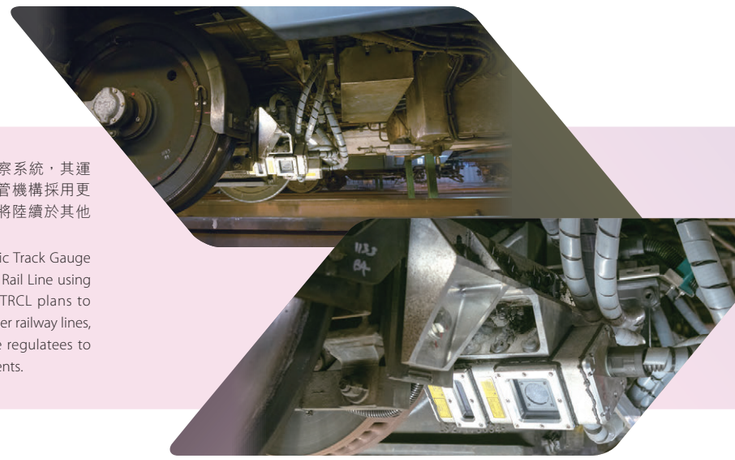
The GLD is also leveraging I&T to establish a centralised database to consolidate maintenance information and records of lifts and escalators in use in the city. The e-platform storing examination reports of lifts and escalators for handover of maintenance work was launched in April 2021 to digitalise hard copy reports to enable registered contractors' easy access to the information and records during the handover of maintenance work for lifts and escalators. The GLD is also developing a Digital Log-book System for Lifts and Escalators with a HK$7.4 million funding from TechConnect (Block Vote) to replace paper logbooks. The digital logbook will allow lift and escalator engineers and workers to easily record and upload the work details to the cloud server, thereby enhancing work efficiency. The system is also equipped with big data analytics for analysis of real-time data, allowing owners and property management companies to keep track of the condition and performance of the lifts and escalators under their management. Registered contractors can also efficiently manage their lifts and escalators maintenance work. As the records on the logbook system are blockchain-based and immutable, the authenticity of the entries can be ensured.

氣體標準事務處積極開發和採用創科方案。年內，我們添置了激光甲烷檢測儀，方便遠距離檢查建築物外牆的氣體喉管，以進行氣體事故調查工作。引入激光甲烷檢測儀後，有關人員不必進入住宅處所即可確認氣體喉管的狀況，使工作更靈活，效率更高。此外，氣體標準事務處於2021年3月取得科技統籌(整體撥款)項目下的撥款，研發數據分析系統，以分析過往氣體事故的數據及氣體喉管狀況，找出氣體事故的成因及主要風險影響因素，從而推算氣體喉管的風險程度，用以制訂有效的監測及預防措施，提升氣體喉管的操作安全。

The GasSO strives to develop and adopt I&T solutions. During the year, we acquired a laser methane detector for remote inspection of external gas pipes of buildings during the investigation of gas incidents. The laser methane detector enhanced the flexibility and efficiency in gas safety inspection work by eliminating the need to enter domestic premises to ascertain gas pipe condition. Besides, the GasSo received funding under TechConnect (Block Vote) in March 2021 for the development of a data analytics system to analyse the historical data of gas incidents and gas pipe condition to identify the causes and key contributing factors of gas incidents. The system will rank the risk levels of gas pipes in order to formulate effective monitoring and preventive measures to enhance the operational safety of gas pipes.

年內，鐵路科監督港鐵公司在輕鐵裝置實時軌道動態性能監察系統。監察系統可在列車行駛期間持續監察路軌狀況(包括軌距及震動)，將收集的數據進行分析研究，監察主要軌道參數的變化趨勢，長遠有助港鐵公司更有效地適時跟進維修工作，提升輕鐵的安全。系統將陸續應用於其他鐵路綫。另一先導計劃是運用影像分析科技，加強智慧監察。我們在機場旅客捷運列車車頭安裝便攜式攝錄機，於人手駕駛列車時實時偵測前面路軌上的物體、紅燈信號等，向司機發出警示以避免發生意外。此外，鐵路科正測試一個分析港鐵公司所提交延後維修工作申請記錄的智慧數據分析系統，以預測維修工作滯後的程度。

During the year, the Railways Branch (RB) monitored the MTR Corporation Limited (MTRCL) in installing a real-time Dynamic Track Gauge Monitoring System (DTGMS) on the Light Rail Line. The system continuously monitors in real-time the condition of the tracks, including the track gauge and vibration, and detects changes in the main track parameter trends with a data analytics tool. In the long run, this will enable the MTRCL to arrange maintenance works in a more effective and timely manner to enhance the safety of the Light Rail. The system will be progressively implemented in other railway lines. Another pilot project was using video analytics technology to enhance smart monitoring. We installed mobile cameras on the airport's automated people mover trains for real-time detection of foreign objects on the track ahead, red-light signals, etc. and issuance of corresponding alerts to drivers during manual driving operation to prevent accidents. The RB is also conducting a trial on a smart data analytics system for analysing the records of the MTRCL's applications for delayed maintenance work to gauge the degree of lagging in their maintenance work.



特寫圖為輕鐵的實時軌道動態性能監察系統，其運用數據分析加強安全。我們鼓勵受規管機構採用更多科技以避免發生事故，港鐵公司也將陸續於其他鐵路綫安裝這系統。

Close-up photos of the real-time Dynamic Track Gauge Monitoring System (DTGMS) on the Light Rail Line using data analytics for greater safety. The MTRCL plans to progressively implement the system in other railway lines, consistent with our efforts to encourage regulatees to adopt more technologies to prevent incidents.

提升公眾安全及節能意識
RAISING PUBLIC AWARENESS OF SAFETY AND ENERGY CONSERVATION

圖為設於港鐵彩虹站的物體偵測系統先導計劃測試情況。當系統偵測到攜帶大型物件、單車或嬰兒車的乘客準備使用自動梯時，即會發出警示信息，提醒乘客切勿使用。這項目由機電署發起，並與港鐵公司協作進行，是我們致力推動創科以加強安全的例子之一。

A pilot project of an object detection system initiated by the EMSD being trialled at the MTR Choi Hung station, which alerts passengers carrying oversized items, bicycles or baby carriages to avoid using escalators. The project is a collaboration with the MTRCL as part of our efforts to promote the use of more innovation and technology to step up safety.

為保障鐵路使用者的安全，鐵路科利用科技統籌(整體撥款)項目下的撥款，與港鐵公司一同研究為車站引入光學雷達物體偵測系統。當偵測到攜帶大型物件、單車或嬰兒車的乘客準備使用自動梯時，系統會即時發出特定信息，提醒乘客使用升降機，並通報站內職員以提供協助，保障乘客安全。該系統不會攝錄乘客的容貌，可保障公眾私隱。系統能透過收集大數據，協助港鐵公司更有效地優化日後的安全營運策略。

To ensure the safety of railway users, the RB, in collaboration with the MTRCL, introduced an object detection system using Light Detection And Ranging (LiDAR) technology with the TechConnect (Block Vote) funding. When passengers carrying oversized items, bicycles or baby carriages intending to use escalators are detected, the system will broadcast targeted messages to remind them to use the lift instead, and alert station staff to offer assistance in order to enhance passenger safety. To protect the privacy of the public, the system will not capture facial images. The big data collected by the system would enable the MTRCL to optimise its future strategies in a more effective manner.

配合政府的「精明規管」政策，能源效益部為業界樹立榜樣，引入創新及科技。我們即將推出申請使用淡水冷卻塔和區域供冷系統的電子化服務，便利業界。我們也會研發監控和數據分析系統，以進一步優化區域供冷系統內冷卻模組表現。

In support of the "Be the Smart Regulator" initiative of the Government, the EEO sets an example on the adoption of I&T for the trade. E-application for the use of FWCTs and district cooling systems (DCSs) will be launched soon to facilitate the trade. The EEO will also develop a monitoring and data analytics system for optimising the performance of the chiller units of DCSs.

目標為本策略 促進宣傳效果

TARGET-ORIENTED STRATEGY FOR GREATER EFFECTIVENESS IN PUBLICITY

年內，規管服務各部別持續以目標為本的策略，就重點事項與業界進行溝通，以及推行宣傳和教育工作。舉例來說，氣體標準事務處完成首個香港持牌食肆氣體使用情況全港問卷調查計劃。透過有關計劃，氣體標準事務處建立了一個載有超過15 000家持牌食肆及會所資料的氣體使用數據庫，並篩選出優先組別為它們進行快速檢測。數據庫可便利氣體標準事務處對定期安全檢查進行協調及跟進，以及有助宣傳和教育工作。此外，氣體標準事務處亦把「長期沒接受安全檢查服務」用戶的定期安全檢查工作，從香港房屋委員會及香港房屋協會轄下的公共屋邨，延展至九個私人屋苑內的該類用戶。我們會繼續與註冊氣體供應公司合作，集中向五年內未有進行氣體裝置檢測的用戶，主動提供定期安全檢查和宣傳。在R32輕度易燃雪種的安全教育和宣傳方面，氣體標準事務處首度接觸發展商，以確保其規劃項目的房間面積符合使用R32雪種冷氣機的安全要求。

During the year, RS Divisions pursued a target-oriented strategy to deliver more focused trade communication, promotion and education. For example, the GasSO completed the first-ever territory-wide survey programme on the gas utilisation of licensed food premises in Hong Kong. Through the programme, the GasSO has built a gas usage database of more than 15 000 licensed food premises and clubhouse restaurants, and identified a priority group for conducting quick checks. The database will facilitate the GasSO's co-ordination and follow-up of regular safety inspections (RSI) as well as promotion and education. Besides, the GasSO also extended the RSI to cover "long-time-no-service" (LTNS) households in 9 private residential estates, apart from those LTNS households in the public housing estates under the Hong Kong Housing Authority and the Hong Kong Housing Society. Proactive RSI and promotion focusing on households that have not had their gas installations inspected for five years will be continued, in partnership with registered gas supply companies. For safety education and promotion about R32 mildly flammable refrigerants, the GasSO reached out to developers for the first time to ensure that the room dimensions of their projects under development meet the safety requirements for using air-conditioners with R32 refrigerants.

年內，電力法例部直接接觸900多個私人屋苑的物業管理公司和業主立案法團，推廣電力安全信息，以及促請他們須聘請註冊電業承辦商進行電力工程。此外，電力法例部亦與香港酒店業協會合作，與酒店業分享新版《電力(線路)規例工作守則》和《電氣產品(安全)規例》中與酒店息息相關的內容，包括為住宿處所加設電弧故障檢測裝置的建議、安裝USB插座須注意的安全規定，以及向客人提供電氣產品時的安全須知等。為提升業界的專業水平，電力法例部製作了宣傳短片上載至社交平台，由2019年「傑出註冊電業工程人員選舉」及「表現優異註冊電業承辦商比賽」的優勝者分享行業的優良作業和心得。為提升公眾的電力安全意識，電力法例部與電氣產品業界合作推行了新一輪宣傳活動，包括經由業界組織向其會員派發有關家用電氣產品安全的宣傳物品，並於相關零售店內展示，使顧客能更了解電氣產品的安全資訊。

During the year, the ELD directly approached the property management companies and owners' corporations of more than 900 private residential estates to promote electrical safety information and urge them that RECs must be engaged for carrying out electrical works. Besides, the ELD also collaborated with the Hong Kong Hotels Association to share with the hotel trade items in the new version of the Code of Practice for the Electricity (Wiring) Regulations and the Electrical Products (Safety) Regulation which were closely related to hotels, such as recommendation for adoption of arc fault detection devices at accommodation premises, safety requirements on installation of USB outlets and safety tips for providing electrical appliances to guests. To enhance the trade's professional standards, the ELD had produced a promotional video featuring winners of the "Outstanding Registered Electrical Worker Awards Scheme" and "Outstanding Registered Electrical Contractors Competition" in 2019 to share best practices and insights. The video was uploaded to social media platforms. To help boost public awareness of electrical safety, the ELD collaborated with the electrical product trade on a new round of promotional activities, including distributing promotional materials relating to the safety of household electrical products via trade organisations to their members and displaying these materials at their retail outlets to enhance customers' understanding of safety information on household electrical products.

規管服務以目標為本方式進行機電安全及能源效益的宣傳工作，務求效果到位。例子之一是深受電業界歡迎、兩年一次的「表現優異註冊電業承辦商比賽」及「傑出註冊電業工程人員選舉」。圖為分別贏得2019年度選舉的金獎及銅獎得主。

Regulatory Services use a target-oriented approach to promote our E&M safety and energy efficiency messages for maximum impact. One of the proven initiatives is the biennial "Outstanding Registered Electrical Contractors Competition" and "Outstanding Registered Electrical Worker Awards Scheme" which are popular with the electrical trade. The photos show the winners of the 2019 competition.

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一般法例部諮詢自動梯業界後，修訂「承辦商表現評級」制度，加入了職安健內容，令評級機制更完善。經優化的評級機制於2020年12月生效。有關評級每季更新一次，顯示各承辦商在過去一年的表現，為公眾揀選承辦商提供一個客觀指標。

Upon consultation with the escalator trade, the GLD revised the Contractor's Performance Rating System by adding occupational safety and health content to make the rating mechanism more comprehensive. The revamped rating mechanism was effective from December 2020. The rating is updated every quarter, showing all the contractors' performance in the past year. It serves as an objective yardstick to help the public choose a contractor.

支援業界持續進修及培訓

SUPPORTING CPD AND TRAINING FOR THE TRADE

機電署要求以持續進修作為註冊續期的條件，以維持及提升註冊從業員的專業水平。在疫情期間，規管服務各部別維持持續進修這項要求，而且進一步增潤進修內容，並便利業界在網上完成持續進修，以符合資格要求。

CPD is required by the EMSD for registration renewal so as to maintain and enhance the professional standards of registered practitioners. During the epidemic, RS Divisions maintained the CPD requirements, while further enriching the content and allowing the trade to conveniently complete CPD online to fulfil qualification requirements.

此外，機電署與專業及培訓組織緊密合作，為機電業界培養技術優良的工程人員。例如，升降機行業正面對優化升降機資助計劃及特別保養所衍生的龐大人手需求。因此，一般法例部與建造業議會合作，把升降機行業納入「中級技工合作培訓計劃」，提供專業培訓課程和向學員及僱主發放津貼。在2020/21年度，有71名一般技工通過有關計劃入行。一般法例部亦與職業訓練局及業界合作，在年內提供超過300個升降機及自動梯業的培訓機會，以吸引更多技工入行。另外，機電署繼續合作籌辦兩年制的「電梯大師」培訓課程，資歷相等於學士學位資格，將有助為業內從業員提供明確的晉升階梯。

Furthermore, the EMSD worked closely with professional and training organisations to train skilled workers. For example, as the Lift Modernisation Subsidy Scheme and special maintenance have generated substantial demand for manpower in the lift trade, the GLD worked with the Construction Industry Council to incorporate the lift trade in the Intermediate Tradesman Collaborative Training Scheme (ITCTS), which provides professional training and subsidies for both the trainee and the employer. In 2020/21, 71 general mechanics joined the trade through the ITCTS. The GLD also collaborated with the VTC and the trade to provide more than 300 training opportunities in the lift and escalator trades during the year to attract more mechanics into the field. Besides, the collaboration on introducing the two-year "Lift Master" course continued. The qualification, equivalent to a bachelor's degree, will help provide a clearer career advancement track for trade practitioners.

加強公眾教育

STRENGTHENING PUBLIC EDUCATION

與公私營機構合作加強宣傳教育

Collaboration with Public and Private Organisations to Enhance Public Education Campaigns

在宣傳教育方面，我們繼續深化目標為本的策略，並製作生動有趣的宣傳物品，通過更精準地選擇宣傳渠道，向目標對象傳播機電安全信息。我們亦積極與公私營機構及社福機構合作，借助各機構的網絡，與其持份者分享重要的機電安全信息，以收事半功倍之效。

For public education campaigns, we continued to advance our target-oriented strategy and produced more compelling materials to impart E&M safety messages to target audience through precisely selected publicity means. We also collaborated actively with public and private organisations as well as welfare organisations, leveraging their networks to amplify our efforts in sharing important E&M safety messages with their stakeholders.

例如年內，電力法例部與香港社會服務聯會合作，聯同其下的相關社福組織，接觸「劏房」單位的業主和住戶，加強電力安全公眾教育。電力法例部亦委派了承辦商在全港18區進行約2 700次探訪，向住戶派發「電力安全核對項目表」，以便住戶檢查其單位的固定電力裝置是否符合相關安全標準。此外，電力法例部調配承辦商到新界村屋進行探訪，並在年內進行了約38 000次探訪，以宣傳在上網電價計劃下的太陽能發電設施必須向署方註冊。通過有關工作，我們亦提醒村屋住戶，必須為其固定電力裝置加裝和測試漏電斷路器，以提升電力安全。這類直接接觸市民的工作大大提升了宣傳教育的成效。

For example, during the year, the ELD collaborated with the Hong Kong Council of Social Service (HKCSS) and its associated welfare organisations to reach out to the owners and residents of sub-divided units (SDUs) to reinforce electrical safety public education. The ELD also appointed contractors to conduct about 2 700 visits across the 18 districts of Hong Kong to distribute the Electrical Safety Checklist for residents to check if their fixed electrical installations complied with the relevant safety standards. Besides, contractors were deployed to visit villages houses in the New Territories, and they made about 38 000 visits during the year to promote the message that generating facilities for solar photovoltaic (PV) systems joining the Feed-in Tariff (FiT) Scheme must be registered with the EMSD. Through the exercise, we also reminded village house residents that their fixed electrical installations must have RCD installed and tested in order to enhance electrical safety. Such outreach efforts greatly enhanced the effectiveness of our public education work.

能源效益事務處與香港照明學會、香港室內設計協會、明愛白英奇專業學校、香港知專設計學院、香港理工大學以及香港高等教育科技學院聯合舉辦了LED燈具設計比賽，旨在推廣家用LED燈泡的使用、宣傳及介紹LED燈泡的優點、提高公眾對LED燈泡的認識，以及鼓勵公眾選購附有自願性能源效益標籤的LED燈泡，這項活動深受歡迎。

The EEO co-organised the LED Lantern Design Competition with the CIE (Hong Kong) Limited, Hong Kong Interior Design Association, Caritas Bianchi College, Hong Kong Design Institute, Hong Kong Polytechnic University and Technological and Higher Education Institute of Hong Kong. The competition, which was intended to promote domestic usage of LED light bulbs, publicise and introduce the advantages of LED bulbs, raise public awareness of LED bulbs, and encourage the public to opt for LED lamps that bear a label under the Voluntary Energy Efficiency Labelling Scheme, was very well received.

為吸引市民興趣，我們以各種方法推廣機電安全，例如最近的宣傳活動，我們呼籲公眾應只購買及使用附有GU標誌的家用氣體爐具。我們更善用社交媒體，推出生動的四格漫畫，以貼近生活的故事帶出GU標誌的好處。

To capture the public's interest, we use various means to promote E&M safety, such as the recent publicity campaign to urge the public to purchase and use only domestic gas appliances bearing a GU mark. We also leverage our social media platforms and use lively four-frame cartoons with down-to-earth storylines to reinforce the GU mark messages.

以有趣形式提升宣傳教育成效

INTERESTING FORMATS TO ENHANCE THE EFFECTIVENESS OF PUBLIC EDUCATION

除了推出全新政府宣傳短片，透過傳統大眾傳媒發放機電安全信息外，我們亦廣泛利用其他線上和線下平台，以生動有趣的題材、形式和方法，把安全信息以各種語言向不同種族發放，與特定及不同層面的目標對象分享與他們息息相關的機電安全資訊。

Other than introducing new TV Announcements in the Public Interest (APIs) to promote E&M safety messages through traditional mass media, we also used other online and offline channels extensively, with compelling topics, formats and means. Content in various languages was created to reach communities of different races to share with target audience of specific and different backgrounds E&M safety information closely related to them.

舉例來說，有關電力安全方面，電力法例部推出全新電視宣傳短片，加強推廣大廈內固定電力裝置必須定期檢查、測試及領取證明書的法定要求。我們亦製作了兩套動畫，分別關於固定電力裝置的定期檢查、測試及領取證明書，以及選購充電器的安全須知，並在四星期內通過各種宣傳渠道(包括電台資訊節目、港鐵列車等)發放電氣安全信息。我們亦利用巴士車身和巴士站進行戶外宣傳，就固定電力裝置定期檢查、測試及領取證明書；精明選購充電器；以及參與上網電價計劃的發電設施註冊事宜，宣傳有關信息和加強公眾意識。

For instance on electrical safety, the ELD launched a new API on TV to emphasise the statutory requirements of conducting periodic inspection, testing and certification (PITC) for fixed electrical installations in buildings. Two animations on PITC for fixed electrical installations and safety tips for purchasing chargers respectively were also produced. Electrical safety messages were disseminated in a four-week campaign via various publicity means, including informational programmes on radio channels, advertisements in MTR trains. Buses and bus stops were also used for outdoor promotion to convey messages and reinforce public awareness on PITC for fixed electrical installations, smart choices for procuring chargers, and registration of generating facilities under the FiT Scheme.

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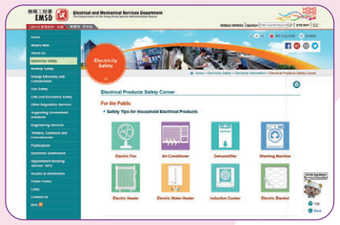
年內，電力法例部於機電署網站推出兩個專頁，分別是「電氣產品安全角」專頁及「分間單位電力安全」專頁。網站專頁就特定主題，為目標讀者群提供詳盡的電力安全資訊，十分有用。

During the year, the Electricity Legislation Division launched two dedicated webpages on the EMSD website, namely "Electrical Products Safety Corner" and "Sub-divided Unit Electrical Safety". Dedicated webpages provide detailed information on specific topics with great informational value to the target audience.



電力法例部同時也利用機電署的網站發放資訊，將上述的宣傳資訊上載網站，並推出「電氣產品安全角」專頁，提供全面的家用電氣產品安全須知，以便利公眾及業界瀏覽有關資訊。我們亦設立「分間單位電力安全」專頁，為分間單位擁有人和住戶提供有關固定電力裝置擁有人責任的資訊，以及電力安全須知。此外，「電力資訊站」專頁已作優化，除加入更豐富的電力安全內容外，亦改良了設計便利市民透過流動裝置瀏覽。

The ELD also uploaded the promotional materials to the EMSD website for public promotion, and launched a dedicated webpage "Electrical Products Safety Corner" to provide comprehensive safety tips on household electrical products for easy browsing by the public and the trade. A dedicated webpage "Sub-divided Unit Electrical Safety" was also launched, providing information on the responsibilities of the owners of fixed electrical installations, as well as electrical safety tips for owners and tenants of sub-divided units. Besides, we the revamped the dedicated webpage "Electricity Information Corner" with enriched electrical safety content and improved design to facilitate browsing via mobile devices.

氣體標準事務處靈活地運用各種宣傳渠道推廣氣體安全。我們透過電視宣傳短片、巴士、地鐵、電車及廣受歡迎的社交媒體平台，向公眾宣傳使用附有「GU」標誌的家用氣體爐具及傳遞氣體安全信息，以加強不同用戶對「GU」標誌的認識。此外，我們就使用R32輕度易燃雪種冷氣機的安全規定，製作電視宣傳短片及巴士廣告，向公眾及業界加強宣傳相關安全信息。

The GasSO deftly used various publicity means to promote gas safety. Public promotion on the use of domestic gas appliances bearing the GU mark and dissemination of gas safety messages were conducted through APIs, buses, MTR and trams, as well as popular social media platforms to enhance the awareness of different users on the GU mark. Besides, APIs and bus advertisements on the safety requirements on using air-conditioners with R32 mildly flammable refrigerants were produced to step up promotion of relevant safety messages to the public and the trade.

一般法例部推出新的電視宣傳短片，由機電署新吉祥物擔任主角，帶出安全使用升降機的信息。

The GLD introduced new APIs featuring the new EMSD mascots to impart tips for the safe use of lifts.

圖為氣體標準事務處的氣體安全大使，向市民講解氣體安全貼士，包括應為家用氣體爐具每18個月檢查一次；另又於多種媒體進行宣傳活動，例如電視及巴士/電車廣告等。

The photos show gas safety ambassadors from the Gas Standards Office interacting with members of the public to remind them of gas safety tips such as conducting safety checks on domestic gas appliances every 18 months. These are supported by various media and publicity campaigns like gas safety advertisements on TV and buses/trams.

我們的2021年傳媒聚會以「創新惠民」為主題，同事更為傳媒朋友示範，如何運用機電署的「建築信息模擬 — 資產管理」系統提高機電維修保養成效，並加強機電資產的表現。同事當天也跟傳媒朋友分享了部門其他創科項目。

At the 2021 media gathering which focused on "Innovation for the Benefits of the Public", our colleagues demonstrated to journalists how the EMSD's Building Information Modelling-Asset Management (BIM-AM) system could boost the effectiveness of E&M maintenance and optisise asset performance. The EMSD's other innovation and technology projects were shared with the media too.

與傳媒聚會

機電署十分重視傳媒關係。我們主動與傳媒分享部門資訊和迅速回應傳媒查詢，以確保部門工作高度透明，以及讓傳媒更了解機電署的最新動向。有關工作包括就不同課題安排傳媒專訪和舉行年度傳媒聚會。由於疫情關係，2020年傳媒聚會已順延至2021年6月中舉行。2021年的聚會以「創新惠民」為主題，集中闡釋機電署近年作為創新促成者的工作，以及機電署同事在國際發明比賽獲得的多個創科獎項。

MEDIA GATHERING

The EMSD values media relations. We proactively share departmental information with the media and respond promptly to media enquiries to ensure a high degree of transparency and enable the press to better understand the latest development of the EMSD. These include arranging media feature interviews on different topics and holding the annual media gathering. Due to the epidemic, the media gathering for 2020 was postponed to mid-June 2021. Under the theme of "Innovation for the Benefits of the Public", the 2021 gathering focused on the EMSD's initiatives in recent years as a facilitator of innovation and the multiple I&T awards our colleagues won in international invention competitions.

以STEM教育為新焦點

另一個宣傳方式，是在我們的資助項目內加入STEM（即科學、科技、工程及數學）元素，以提升其成效。能源效益事務處推行的「採電學社」計劃是一個實例。在該計劃下，機電署負責為合資格的學校安裝小型太陽能發電系統，讓他們參加本地兩家電力公司推行的上網電價計劃。受惠學校除獲得上網電價收入外，亦收到由機電署與其他政府部門合作編製有關可再生能源的「採電學社」STEM教材套件，以提高學生對可再生能源的興趣和認識，以及推廣低碳生活，以應對氣候變化。

此外，電力法例部會製作有關電力安全的STEM教材，以便更有效地向年輕人推廣電力安全。

NEW FOCUS ON STEM EDUCATION

Another form of promotion was adding STEM (i.e. science, technology, engineering and mathematics) elements in our sponsored programmes to enhance their effectiveness. The Solar Harvest scheme implemented by the EEO is a case in point. Under the scheme, the EMSD helps eligible schools set up small-scale solar energy generating systems on their premises for joining the FiT Scheme operated by the two power companies. Beneficiary schools not only gain FiT revenue but also receive a Solar Harvest STEM education kit about renewable energy, jointly produced by the EMSD and other government departments, to stimulate students' interest in and understanding of renewable energy, and promote a low-carbon lifestyle to counter the impact of climate change.

Furthermore, the ELD will produce STEM education materials for more effective promotion of electrical safety to young people.

提升公眾安全及節能意識
RAISING PUBLIC AWARENESS OF SAFETY AND ENERGY CONSERVATION

機電青少年大使計劃屢創新猷

機電署致力培育年輕一代成為機電及創科人才，讓機電業界得以蓬勃發展，並使香港成為更先進的宜居城市。機電青少年大使計劃推出多個新項目，包括定期舉辦一系列精彩多元的線上STEM工作坊予會員參與，讓年青新一代即使在疫情下仍可繼續發揮科技創意。我們每月舉辦與機電工程有關的線上STEM工作坊，均吸引過百名會員參加。參加者除可學習機電科技的基本原理外，更可親手製作屬於自己的機電小玩意，發展邏輯思考、創意設計及解決問題的能力。機電署的工程師亦獲邀參加工作坊，與參加者分享機電知識及資訊，讓他們更能了解機電署的工作，並寓學習於娛樂。

NEW INITIATIVES OF THE E&M YOUNG AMBASSADOR PROGRAMME

The EMSD is committed to nurturing the younger generations to become E&M and I&T talent to keep the E&M trade thriving, and make Hong Kong a more advanced liveable city. Under the E&M Young Ambassador Programme, a number of new initiatives, including a regular series of exciting and diversified online STEM workshops for members were launched, providing youngsters a platform to unleash their innovative potential even during the epidemic. Each of the E&M-related monthly online STEM workshops attracted the participation of more than 100 members. Participants not only learnt about the basic principles of E&M technologies, but also enjoyed hands-on experience of creating their own gadgets to develop capabilities in logical thinking, creative design and problem solving. Engineers from the EMSD were invited to join the workshops to share their E&M knowledge and information, giving participants a deeper understanding of the EMSD's work and great fun in learning.

機電青少年大使計劃推出多個新項目，包括每月的線上STEM工作坊，讓年青一代發揮科技創意。每次工作坊都吸引過百位大使參與，不但學習機電科技的原理，更親手製作機電小玩意，樂趣無窮。

One of the new initiatives of the E&M Young Ambassador Programme is the monthly online STEM workshop which aims to nurture and unleash the innovative potential in our ambassadors. Each workshop attracted over 100 participants, who learned the principles of E&M technologies and created their own gadgets with great fun.

維持國際和區域交流聯繫

雖然在疫情期間，面對面的跨境交流暫停進行，不過規管服務各部別轉用網上渠道，維持與內地、亞太區和國際相關組織的溝通。

在與中國內地相關組織的交流和合作方面，鐵路科以國際鐵路安全議會核心成員機構的身分，促成國家鐵路局於2020年12月起正式成為國際鐵路安全議會核心成員機構。鐵路科亦與國家鐵路局達成安排，協助港鐵公司的高鐵司機在網上續牌。

年內，一般法例部繼續與廣東省特種設備檢測研究院進行有關評估升降機及自動梯安全的合作研究。

氣體標準事務處繼續聯同天津海關對從內地輸港的家用氣體爐具進行認證及審批。氣體標準事務處亦與廣東省科學院合作，共同研發人工智能機械人，透過探測和數據分析檢測石油氣缸車的氣缸內部情況。另一合作項目是聯同杭州海關和電力法例部成立工作小組，從源頭堵截不符合規格的家用電氣產品及未獲批准的家用氣體爐具經跨境電商平台供港。

MAINTAINING INTERNATIONAL AND REGIONAL EXCHANGES AND CONNECTIONS

Though cross-boundary face-to-face exchanges were suspended during the epidemic, RS Divisions turned to online channels to maintain communication with our Mainland, Asia-Pacific and international counterparts.

For exchanges and collaboration with our Mainland counterparts, the RB as a core member organisation of the International Railway Safety Council (IRSC) facilitated the process through which the National Railway Administration (NRA) officially became a core member of the IRSC with effect from December 2020. The RB also made an arrangement with the NRA to help high speed rail drivers of the MTRCL renew their licences online.

The GLD and the Guangdong Institute of Special Equipment Inspection and Research continued the joint study on the evaluation of lift and escalator safety during the year.

The GasSO continued its collaboration with Tianjin Customs to certify and regulate gas appliance supplied to Hong Kong from the Mainland. The GasSO also worked with the Guangdong Academy of Sciences to co-develop an intelligent robot to inspect the inner shell condition of LPG road tankers through detection and data analytics. Another collaboration was forming a working group with Hangzhou Customs and the ELD to intercept at source the supply of non-compliant household electrical appliances and non-approved domestic gas appliances to Hong Kong via cross-border e-commerce platforms.

在區域合作方面，機電署和新加坡能源市場管理局於2020年10月28日簽署諒解備忘錄，以加強香港與新加坡在能源事務的合作。該諒解備忘錄的目的是透過創新和合作，加強雙方的協作關係，共同提升能源安全和應變能力。根據該諒解備忘錄，雙方將共同努力，推動能源合作，以及在兩個關鍵範疇分享最佳作業方式，包括電力及氣體系統和市場，以及可再生能源、能源效益、節約能源、區域供冷和低碳技術，並促進雙方在多邊論壇(例如亞太區經濟合作組織)上的合作。雙方於2021年5月11日舉行雙邊能源研討會，分享有關液化天然氣的知識和經驗，攜手推動低碳生活轉型，支持在2050年前實現碳中和的目標。

For regional collaboration, the EMSD and the Energy Market Authority of Singapore signed a Memorandum of Understanding (MoU) on 28 October 2020 to strengthen the co-operation between Hong Kong and Singapore in energy-related matters. The MoU aimed at enhancing a collaborative relationship towards greater energy safety and resilience through innovation and co-operation. Under the MoU, both parties will promote co-operation and share best practices in two key areas, namely electricity and gas systems and markets; and renewable energy, energy efficiency and conservation, district cooling and low carbon technologies, as well as promoting co-operation at multilateral forums such as the Asia-Pacific Economic Cooperation (APEC). On 11 May 2021, a bilateral energy workshop was held in which the two parties shared knowledge and experience about liquefied natural gas, and jointly encouraged transformation towards low-carbon living, in support of the target of achieving carbon neutrality by 2050.

機電署代表及環境局局長分別於亞太經合組織第55屆能源效益及節能專家小組會議，以及第31屆能源數據及分析專家小組會議上致辭。兩個會議均由機電署於2020年11月以視像方式主辦及主持，在疫情下繼續推動交流活動。

EMSD representatives and the Secretary for the Environment at the 55th Meeting of the APEC Expert Group on Energy Efficiency and Conservation and the 31st Meeting of the Expert Group on Energy Data and Analysis. The EMSD hosted and chaired both virtual events in November 2020 as part of its continued efforts to foster regional exchange activities despite the epidemic.

年內，機電署於2020年11月透過視像會議主辦及主持第55屆能源效益及節能專家小組會議、第31屆能源數據及分析專家小組會議，以及兩個能源工作組專家小組研討會，為亞太區經濟合作組織(亞太經合組織)各伙伴提供良好平台，以深化合作改善能源政策制訂和決策。在2021年5月，源效益及節能專家小組的成員經濟體系一致通過，由機電署的代表出任亞太經合組織能源效益及節能專家小組下一屆的主席。在重新校驗工作方面，由於能源效益事務處是亞太區的先鋒，因此機電署會繼續在大灣區內推動重新校驗的發展和應用。

未來，電力法例部會繼續參加亞太經合組織電氣及電子儀器聯合規管顧問委員會的相關活動，務求緊貼區內經濟體系對電氣產品安全規管的要求。此外，一般法例部將積極籌備主辦在2022年於香港舉行的第71屆國際纜車監管機構會議。

During the year, the EMSD hosted and chaired the 55th Meeting of the Expert Group on Energy Efficiency and Conservation (EGEE&C), the 31st Meeting of the Expert Group on Energy Data and Analysis, and the workshops for the two EWG expert groups via video conferences. The meetings were held in November 2020 in virtual format, providing a sound platform for various APEC partners to deepen co-operation for the enhancement of energy policy formulation and policy decision. In May 2021, EGEE&C member economies unanimously selected the representative of the EMSD as the Chair of the APEC EGEE&C for the next term. As the EEO's work on retro-commissioning (RCx) is trailblazing in the Asia-Pacific region, the EMSD will continue to promote the development and application of RCx in the Greater Bay Area.

In the future, the ELD will continue to take part in relevant activities of APEC Joint Regulatory Advisory Committee on Electrical and Electronic Equipment and keep abreast of the development of regulatory requirements on the safety of electrical products among APEC economies. Besides, the GLD will actively prepare for hosting the 71st Meeting of the International Organisation of Ropeway Supervising Authorities, to be held in Hong Kong in 2022.

機電工程營運基金報告

ELECTRICAL AND MECHANICAL SERVICES TRADING FUND REPORT

抱負 VISION

致力提供優質機電工程服務，精益求精，以提升市民的生活質素。
To improve the quality of life for our community through continuous enhancement of our electrical and mechanical engineering services.

使命 MISSION

客戶 CUSTOMER

提供優質的工程方案，以滿足客戶的需要。
Providing quality engineering solutions to satisfy our customers' needs.

員工 STAFF

建立一支卓越的員工隊伍，並維持和諧的工作環境。
Developing a competent workforce and maintaining a harmonious environment.

部門 ORGANISATION

掌握科技發展和流程改善，以提供更佳服務。
Keeping pace with technology development and process improvement for service enhancement.

信念 VALUES

誠信 INTEGRITY

我們秉持誠信，維持良好道德操守。
We uphold honesty and integrity to embrace an ethical culture.

出色服務 SERVICE EXCELLENCE

我們提供安全可靠、高效率、具成本效益和優質的服務。
We provide safe, reliable, efficient, cost-effective and quality services.

關懷 CARING

我們關懷員工、客戶和市民大眾，並重視環保。
We care for our staff, customers, community and the environment.

以客為本 CUSTOMER FOCUS

為滿足客戶的各種需要，我們盡心竭力，積極提供工程方案，以贏取客戶的信任和支持。
We focus on the needs of our customers and provide engineering solutions in a proactive and responsible manner to win their trust and support.

承擔 COMMITMENT

我們言行一致，信守承諾。
We do what we promise.

常務委員會
EXECUTIVE BOARD

主席 CHAIRMAN

林世雄太平紳士
Mr Lam Sai-hung, JP

發展局常任秘書長（工務）
Permanent Secretary for
Development (Works)

成員 MEMBERS

周紹喜太平紳士
Mr Chau Siu-hei, Francis, JP

發展局副秘書長（工務）3
Deputy Secretary for
Development (Works) 3

彭耀雄太平紳士
Mr Pang Yiu-hung, JP

機電工程營運基金總經理
（機電工程署署長）
General Manager, EMSTF
(Director of Electrical and
Mechanical Services)

張遠芳太平紳士
Mr Cheung Yuen-fong, JP

機電工程署副署長/營運服務
Deputy Director/
Trading Services, EMSD

秘書 SECRETARY

袁秀明女士
Ms Yuen Sau-ming, Anna

機電工程署主任秘書
Departmental Secretary, EMSD

* 薛永恒太平紳士出任機電工程署署長至2020年4月21日
Mr Sit Wing-hang, Alfred, JP was Director of Electrical and Mechanical Services up to 21 April 2020

管理委員會
MANAGEMENT BOARD

* 薛永恒太平紳士出任機電工程署署長至2020年4月21日
Mr Sit Wing-hang, Alfred, JP was Director of Electrical and Mechanical Services up to 21 April 2020

* 王錫章太平紳士出任機電工程署助理署長/1至2020年7月21日
Mr Wong Sek-cheung, JP was Assistant Director/1, EMSD up to 21 July 2020

* 李碧雲女士出任機電工程署總庫務會計師/財政管理至2021年1月12日
Ms Li Pik-wan, Clara was Chief Treasury Accountant/Financial Management, EMSD up to 12 January 2021

主席 CHAIRMAN

1 **彭耀雄太平紳士**
Mr Pang Yiu-hung, JP

機電工程營運基金總經理（機電工程署署長）
General Manager, EMSTF (Director of Electrical and Mechanical Services)

成員 MEMBERS

2 **張遠芳太平紳士**
Mr Cheung Yuen-fong, JP

機電工程署副署長/營運服務
Deputy Director/Trading Services, EMSD

3 **陳嘉聰先生**
Mr Chan Ka-chung

署理機電工程署助理署長/1
Assistant Director/1 (Acting), EMSD

4 **黃偉光先生**
Mr Wong Wai-kwong

機電工程署助理署長/2
Assistant Director/2, EMSD

5 **陳志偉太平紳士**
Mr Chan Chi-wai, Richard, JP

機電工程署助理署長/3
Assistant Director/3, EMSD

6 **李慧儀女士**
Ms Lee Wai-yee

機電工程署總庫務會計師/財政管理
Chief Treasury Accountant/Financial Management, EMSD

7 **劉志偉先生**
Mr Lau Chi-wai, Wilfred

機電工程署員工關係主任
Staff Relations Officer, EMSD

秘書 SECRETARY

8 **袁秀明女士**
Ms Yuen Sau-ming, Anna

機電工程署主任秘書
Departmental Secretary, EMSD

張遠芳太平紳士
Mr Cheung Yuen-fong, JP

機電工程署副署長 / 營運服務
Deputy Director/Trading Services, EMSD

業務回顧與前瞻
OPERATIONS REVIEW AND OUTLOOK

儘管受到2019冠狀病毒病影響，機電工程營運基金2020/21年度維持穩健的財務狀況，總收入增加至85.78億港元，較上年增長約6%(2019/20年度：80.87億港元)，主要受惠於政府新建築項目及其他新業務增長。收入回報率則下降至2.3%，這是正面發展，也符合我們的營運原則，即只收回成本，讓客戶保留資金，為公共服務創造最大價值。

The Electrical and Mechanical Services Trading Fund remained financially healthy in 2020/21 despite the impact of COVID-19. Thanks to the growth arising from new government building projects and other new businesses, the total revenue rose to HK$8,578 million, representing an increase of about 6% compared to the previous year (2019/20: HK$8,087 million). The return on revenue fell to 2.3%, which was a positive development consistent with our cost recovery principle to help our clients retain funding to optimise value for the public.

年內亮點

2020/21年度，營運基金成績美滿，在2020年年底進行的客戶意見調查中獲得的客戶滿意指數創出歷史新高，以8分為滿分計，客戶滿意指數達6.83分，相當於100分的85分，超越2018年調查所得的6.61分。我們在疫情期間仍取得如此佳績，反映客戶信任我們有能力在任何情況下為他們提供支援。

ACHIEVEMENTS

A major achievement in 2020/21 was our record-high Customer Satisfaction Index score of 6.83 on the scale of 8, equivalent to 85 out of 100, in the Customer Opinion Survey conducted in late 2020, an improvement compared to 6.61 in the 2018 survey. Achieving this historic score during the epidemic reflects our clients' trust in our ability to provide support through thick and thin.

年內，我們肩負起新任務，致力降低2019冠狀病毒病在公共場所傳播的風險。舉例而言，我們為安老院舍、健身室和餐廳食肆提供支援，量度通風情況，提供通風裝置的技術建議，並制訂空氣淨化機供應商的建議名單。我們又支援政府首個普及社區檢測計劃和2019冠狀病毒病疫苗接種計劃，提供所需的機電設施，包括安裝運用物聯網技術的綜合疫苗冷藏櫃監察系統，全天候24小時監察社區疫苗接種中心的藥用冷藏櫃，並與衞生防護中心分享實時數據。

我們同時為醫院管理局進行多項工作，包括將大量普通病房改裝成二線負壓病房，安裝數百台「流動組合式 — 高效能空氣微粒子過濾器」，以及為公立醫院加強通風系統，將每小時換氣量增加至12次。就政府在亞洲國際博覽館設立社區治療設施，以及在興建北大嶼山醫院香港感染控制中心的工作，我們也提供堅實支援。

另一項佳績，是同事的創新科技(創科)項目在年內贏得21個獎項和四項專利，包括於享譽盛名的日內瓦國際發明展勇奪四項金獎及四項銀獎。有關項目都是營運基金與初創企業、大學或研究機構合作研發，而最令人欣喜的是，我們參加日內瓦國際發明展的所有參賽項目全部獲獎，成績亮麗，也證明我們作為政府的「創新促成者」與整合者的角色，正發揮作用。

This year we took on new tasks to reduce risks of COVID-19 transmission in public places. For instance, we supported residential care homes for the elderly, gyms and restaurants by measuring their ventilation performance, providing technical advice on ventilation settings, and recommending air-purifier supplier lists. We also supported the Government's first-ever Universal Community Testing Programme (UCTP) and COVID-19 Vaccination Programme (CVP) by providing all the necessary E&M facilities, including an integrated Fridge Monitoring System using Internet of Things (IoT) technology to monitor medical fridges at Community Vaccination Centres (CVCs) round-the-clock and share real-time data with the Centre for Health Protection.

On top of our work for the Hospital Authority, these projects included converting numerous general wards into second-tier negative pressure wards, installing hundreds of Mobile Modular High Efficiency Particulate Air Filter Units and enhancing ventilation systems in public hospitals to increase air flow to 12 air changes per hour. We also solidly supported the Government in setting up a community treatment facility at the AsiaWorld-Expo and the North Lantau Hospital Hong Kong Infection Control Centre.

Another achievement was that our colleagues received 21 awards and four patents, including four gold and four silver medals at the prestigious International Exhibition of Inventions of Geneva for their innovation and technology (I&T) projects this year. Each of these projects were collaborations with start-ups, universities or research institutions, and it is remarkable that all our entries won an award. Such excellent results show that we are working well as the Government's Innovation Facilitator and integrator.

業務回顧與前瞻
OPERATIONS REVIEW AND OUTLOOK

新常態下服務香港

由於營運基金早於多年前已開始涉足創科工作，所以當疫情於2020年年初襲港時，我們已準備就緒，能幫助客戶迅速作出回應，例如馬上進行抗疫創科方案測試或推出可供採用的方案，包括在政府辦公室和場地引入清潔機械人，以及在公立醫院推出送貨機械人。我們還透過「機電創科網上平台」為客戶部門邀請初創企業提供抗疫創科方案，並就40多個項目進行測試，包括消毒機械人和非接觸式升降機按鈕等。

當疫情持續，政府竭盡所能讓市民重過正常生活，享受傳統節慶活動，例如農曆新年年花市場。儘管面對諸多技術挑戰，我們仍悉力在兩星期內為全港15個年花銷售點建立了一套運用政府物聯通的人流量監察系統，以及輪侯與派籌系統，讓客戶可於2021年2月農曆新年期間，井然有序地管理各個年花銷售點，並把公眾感染風險減至最低。我們在今次年花市場，以及在普及社區檢測計劃、疫苗接種計劃和其他抗疫項目中所得的經驗，將為日後在新常態下的工作提供有用參考。

新常態也有助提高我們的營運透明度。由於疫情需要，我們必須更廣泛應用物聯網為機電系統進行遙距監察，因而加快了我們與客戶分享數據的進度。我們現正運用「顧客為本電子平台」作為與客戶分享數據的通用平台，以提高透明度。

以創新科技締造智慧城市

總體而言，我們對營運基金的創科工作感到高興，但絕不自滿，也充分了解要將客戶的機電系統數碼化，以及把香港建設成為智慧城市，任重道遠，未來尚有大量工作需要完成。令人欣慰的是，本港和廣東許多初創企業都已運用我們的「機電創科網上平台」，按平台上的客戶創科願望清單提出各種方案，包括廣受歡迎的機械人和非接觸式升降機按鈕抗疫方案等。

為了優化我們的「建築信息模擬 — 資產管理」系統，我們最近將擴增實境技術和5G通信技術與該系統結合，開發一個綜合平台，讓維修保養人員能通過流動設備及智能眼鏡管理機電資產，實時監察有關設備、進行故障診斷和快速找出設備位置。綜合平台可提升維修保養的工作效率，並可減少公共服務中斷的情況。

SERVING HONG KONG UNDER THE NEW NORMAL

Thanks to the EMSTF's early start in I&T work years ago, we were well prepared to help clients respond quickly when the COVID-19 struck Hong Kong in early 2020. We rapidly trialled or rolled out for clients I&T solutions, including cleaning robots for government offices and venues, and delivery robots in public hospitals. We also leveraged our E&M InnoPortal to invite anti-epidemic solutions from start-ups for client departments, and arranged over 40 trials such as those on disinfection robots and touchless lift buttons.

When the COVID-19 epidemic persisted, the Government worked hard to enable the public to go about their daily lives and enjoy festivities such as the Chinese New Year fairs. Despite many technical challenges, we set up within two weeks a footfall monitoring system using the Government-Wide IoT Network (GWIN) and a queuing and ticketing system for crowd management for the 15 points of sale of New Year flowers, facilitating the client to operate the venues during the Chinese New Year in February 2021 in an orderly manner with minimum risk of infection. This, together with our work on the UCTP, CVP and other anti-epidemic projects, will serve as a useful reference for the way forward to the new normal.

The new normal has helped enhance our operational transparency too. As the epidemic necessitates the wider use of IoT-based remote monitoring of E&M systems, it has in turn accelerated data sharing with clients. We are leveraging our Customer Centric e-Platform as a common platform for data sharing with clients to enhance transparency.

MAKING OUR CITY SMARTER WITH INNOVATION AND TECHNOLOGY

In general, we are pleased but far from complacent about our I&T work, as much remains to be done to digitalise our clients' E&M systems and make our city smarter. It is gratifying that many start-ups in Hong Kong and Guangdong have leveraged our E&M InnoPortal to propose solutions to satisfy clients' I&T wish lists, including much welcomed anti-epidemic solutions like robots and touchless lift buttons.

To fine-tune our Building Information Modelling-Asset Management (BIM-AM) system, we recently combined augmented reality and 5G communication technologies with BIM-AM to develop a comprehensive platform that enables maintenance personnel to use mobile devices to manage assets by carrying out real-time monitoring, fault diagnosis and rapid equipment positioning via smart glasses. This enhances the effectiveness of maintenance work and reduces service disruptions for the public.

我們在運用政府物聯通方面也有長足發展，農曆新年年花銷售點的工作便是一例。此外，我們在渠務署的「智慧渠務 — 洪水監察系統」運用物聯網水位傳感器，將40多個新增的地點連接到政府物聯通。我們也在多幢政府建築物安裝了80多個政府物聯通基站，為遙距監察機電設備進行測試。

作為政府的「創新促成者」，在《香港智慧城市藍圖2.0》提出的130項措施中，我們負責推行其中八項，包括「建築信息模擬 — 資產管理」及政府物聯通等。我們還會為客戶部門的智慧城市項目提供創科支援，例如全港第一所智慧監獄 — 大潭峽懲教所。這些創科項目得以順利開發的關鍵因素，是營運基金上下員工對創科抱持開放態度，大家都勇於嘗試新意念，我們因而也成功轉型為一個精通科技的靈活機構。

深化粵港澳大灣區合作

疫情沒有窒礙我們與粵港澳大灣區的交流。機電署於2020年12月與廣州市人力資源和社會保障局就機電人才發展簽訂新的合作備忘錄，深化機電人才發展合作。至於廣州市技師學院和廣州市工貿技師學院這兩個大灣區內的機構，也繼續為我們的技術員訓練學員提供不同科目的線上培訓課程。

五年策略計劃再進一步

2020/21年度是營運基金第二個五年策略計劃的第三年，取得良好進展。我們完成了多幢主要政府大樓的機電資產數碼化工作，而已完工的建築物總數達200多幢，相當於我們目標的一半。我們年內設立的第一個區域數碼監控中心，先導運作相當成功，其他策略業務單位會引為參考，分別建立本身的區域數碼監控中心，用以監控和分析來自數碼化機電系統的實時數據，從而優化資產效率。

在提升機電水平方面，機電署諮詢業界後，年內出版了四本關於不同機電資產優良操作和維修服務作業守則，每冊均涵蓋基本、良好和最佳作業守則。這四本守則實現了我們與業界分享優良作業守則的願景。

We also made headway in the GWIN, as seen in our work for the points of sale of New Year flowers. For the Drainage Services Department's Smart Drainage – Flood Monitoring System, we connected over 40 additional sites to the GWIN network with IoT water-level sensors. We also set up over 80 GWIN gateways at government buildings for remote E&M monitoring trials.

As the Government's Innovation Facilitator, we have taken up eight of the 130 initiatives put forward in the Hong Kong Smart City Blueprint 2.0, including the BIM-AM and GWIN, etc. We also provided I&T support to clients' smart city initiatives such as the first smart prison at Tai Tam Gap Correctional Institution. The key factor in all these developments is the EMSTF's I&T mind-set which our workforce has embraced to transform us into a tech-savvy, agile organisation where people are ready to try new ideas.

DEEPENING GREATER BAY AREA CO-OPERATION

The epidemic has not stopped our exchanges with the Guangdong-Hong Kong-Macao Greater Bay Area (GBA). The EMSD signed a new Memorandum of Co-operation with the Guangzhou Municipal Human Resources and Social Security Bureau to deepen collaboration on E&M talent development in December 2020. The Guangzhou Technician College and the Guangzhou Industry and Trade Technician College, both GBA entities, have continued to train our technician trainees online on different subjects.

FIVE-YEAR STRATEGIC PLAN PROGRESS FURTHER

2020/21 was the third year of the EMSTF's second Five-year Strategic Plan and made good progress. We completed the E&M assets digitisation at major government buildings, bringing the total to over 200, representing halfway of our target. Based on the success of the first pilot Regional Digital Control Centre (RDCC) established in 2020/21, our other Strategic Business Units will set up their own RDCCs for monitoring and analysing real-time data from the digitised E&M systems to optimise asset efficiency.

In enhancing the standard of E&M facilities, after industry consultations, the EMSD published four booklets on best practices for operation and maintenance services on different E&M assets, each covering basic, good and best practices. The booklets fulfil our vision of sharing best practices with the trade.

業務回顧與前瞻
OPERATIONS REVIEW AND OUTLOOK

對內方面，我們為電氣和空調工作成立了兩支特定機電團隊，旨在樹立優秀團隊的榜樣，尤其在應急支援工作、知識分享傳承、靈活團隊和協作方面起示範作用。為吸引年輕人才，我們優化營運基金的兩個技術員訓練計劃，分別改為兩年制及三年制；新訓練計劃將由2021年新學員入學起實施。

Internally, we launched two special duty units on electrical as well as air-conditioning, serving as role models in building an excellent team for emergency support work, knowledge sharing, agile teamwork and collaboration. To attract young talent, our two Technician Training Schemes were revitalised to become two-year and three-year programmes starting from the 2021 intake.

此外，疫情突顯了我們對社會和環境的承擔。2021年1月政府為油麻地指定「受限區域」進行強制檢測，我們的員工自願參與提供協助，其後又主動支援龍琛路體育館社區疫苗接種中心的運作。我們也響應政府在疫情期間創造就業機會的措施，聘請了約1 500名臨時員工支援各種工作。我們並繼續推行「好人好事嘉許計劃」，鼓勵員工積極參與社區服務。

Besides, the epidemic has underscored our social and environmental commitments. We volunteered to facilitate compulsory COVID-19 testing in the specified "restricted area" in Yau Ma Tei in January 2021, supported the operation of the CVC at Lung Sum Avenue Sports Centre, and hired about 1 500 temporary staff for various support tasks as part of Government's initiative to create jobs during the epidemic. We also continued our "Good People, Good Deeds Commendation Scheme", encouraging staff community service.

環境方面，我們於2020年10月成立了能源管理小組，為約250幢政府建築物統籌能源審核和碳審計，以響應政府的綠色能源目標措施。2021年3月，機電署總部露天廣場翻新工程落成，創造了一個上佳的社區公共空間供市民享用，並加強了總部大樓作為可持續發展示範單位的地位。

Regarding the environment, in October 2020, we set up an energy management team to co-ordinate energy and carbon audits for about 250 government buildings, in support of the Government's "Green Energy Target" initiative. In March 2021, we completed the refurbishment of our headquarters piazza, creating an excellent public space for the community to enjoy and reinforcing our building's status as a showcase of sustainability.

展望將來

年內，營運基金既保持正常服務，也成功落實多項抗疫新任務。展望2021/22年度，我們會充分利用五年策略計劃的最後兩年，實現所有計劃目標，並深化我們與大灣區的合作。

2021年，我們以「同・創・傳・期」為主題，舉行營運基金銀禧誌慶活動。我們不會忘記，營運基金多年來的穩健表現實有賴同事的承擔、客戶的信任、常務委員會及各決策局的指導，以及各商會、合作伙伴、大學及學者、專業團體、培訓和研究機構的支持。我們也衷心感謝營運基金在本港、中國內地和海外的合作伙伴。我們定當竭盡所能，充當機電工程卓越服務提供者和政府的「創新促成者」，作出更大貢獻。

前瞻來年，我們期望營運基金在各方面的努力和協作，都會有更豐碩的成果。

WAY FORWARD

In the year, the EMSTF successfully accomplished many new tasks to fight the epidemic while carrying on with our normal services. In 2021/22, we shall make the most of the final two years of our Five-year Strategic Plan to attain all its goals and deepen our collaborations in the GBA.

As we celebrate the EMSTF's silver jubilee in 2021 under the theme of "Co-innovate and Co-create Our Future", we shall not forget that we owe our steady performance over the years to the commitment of our colleagues, the trust of our clients, the guidance of the Executive Board and policy bureaux, as well as the support of trade associations and partners, universities and academics, professional bodies and training and research institutions. We also sincerely thank our co-operation partners in Hong Kong, the Mainland of China and overseas. We endeavour to make greater contributions as an excellent E&M service provider and Innovation Facilitator in the Government.

We look forward to ever more fruitful ventures and co-operation in 2021/22.

張遠芳
機電工程署副署長/營運服務

Cheung Yuen-fong
Deputy Director/Trading Services, EMSD

營運服務
TRADING SERVICES

抗疫工作與新常態

過去一年，2019冠狀病毒病為香港帶來種種挑戰，影響市民生活，而許多抗疫措施更已成為「新常態」的一部分。我們的策略業務單位互相協作，支援客戶的抗疫工作，為市民的福祉努力。

在抗疫工作中，我們其中一項主要任務是繼續支援政府優化香港的隔離設施。過去一年，我們協助醫院管理局（醫管局）將公立醫院多個普通病房改裝為二線負壓病房，並在有關病房安裝了數百台「流動組合式 — 高效能空氣微粒子過濾器」，以及加強通風系統。

ANTI-EPIDEMIC WORK AND THE NEW NORMAL

In the year under review, the Coronavirus Disease 2019 (COVID-19) brought challenges to every aspect of life in Hong Kong. Once again, our Strategic Business Units (SBUs) worked in concert to support clients in their anti-epidemic efforts for the well-being of the public under the "new normal", where a number of anti-epidemic measures have become part of our daily lives.

In fighting the virus, one of our key tasks was to continue supporting the Government to optimise the isolation facilities in Hong Kong. Over the years, we assisted the Hospital Authority (HA) in converting numerous general wards of public hospitals into second-tier negative pressure wards through the installation of hundreds of Mobile Modular High Efficiency Particulate Air Filter Units (MMHUs) and enhancement of the ventilation systems.

我們主動為新建的北大嶼山醫院香港感染控制中心提供有關各機電系統的設計、安裝、測試及調校的技術意見，使有關機電系統更穩定、運作更有效率及便於維修，以隨時應對嚴峻的2019冠狀病毒病的疫情。

We proactively provided technical advice on the design, installation, testing and commissioning of various E&M systems at the newly established NLHHKICC to enhance the reliability, operational efficiency and maintainability of the systems, in order to combat the severe COVID-19 epidemic at any time.

我們的策略業務單位亦負責為政府其他抗疫防線，包括檢疫和社區治療設施，以及社區檢測和疫苗接種計劃，提供機電和其他技術支援。2019/20年度，我們參與把社區設施改建為檢疫中心的工程。其後，我們向食物及衞生局及衞生署提供技術意見，為指定檢疫酒店計劃下的酒店進行通風系統評估。我們也參與興建新的隔離設施，包括亞洲國際博覽館的社區治療設施和具標誌性的北大嶼山醫院香港感染控制中心，兩者均是疫情高峰期處理大量個案的重要設施。

Our SBUs also provided E&M and other technical support for the Government's other lines of defence, including the quarantine and community treatment facilities and community testing and vaccination programmes. Further to our participation in the conversion works of various community facilities into quarantine centres in 2019/20, we continued to provide technical advice to the Food and Health Bureau and the Department of Health (DH) in assessing the ventilation systems of hotels for the Designated Quarantine Hotel Scheme. We also took part in constructing new isolation facilities such as the Community Treatment Facilities at AsiaWorld-Expo and the iconic North Lantau Hospital Hong Kong Infection Control Centre (NLHHKICC), both of which were vital facilities with capacity for the large number of cases at the peak of the epidemic.

（左上）在疫情期間，香港對醫療設施的需求激增。為應付此情況，亞洲國際博覽館需進行社區治療設施增建工程，機電署團隊和醫管局高級行政經理（工程）源栢樑博士（右四）參與有關工程。機電署就不同機電及醫療設備提供技術支援，包括右下圖中的「流動組合式 — 高效能空氣微粒子過濾器」。

(Top left) The EMSD team, together with Dr Yuen Pak-leung (4th right), Senior Manager (Engineering) of the Hospital Authority, participated in the community treatment facility expansion at AsiaWorld-Expo to cope with Hong Kong's surging demand for medical facilities during the epidemic. The EMSD provided technical support for different E&M and medical equipment, including the MMHUs in the picture of bottom right.

（左下）機電署為消防處何文田救護站增設新的消毒設施，包括更衣間及淋浴間。救護人員可於負壓室更衣和淋浴，減低病毒傳播的風險及加強個人保護。

(Bottom left) The EMSD installed for the Fire Services Department at Ho Man Tin Ambulance Depot a new disinfection facility with changing and shower areas. Ambulance officers can change and take showers in the negative pressure compartment to minimise the risk of spreading the virus and enhance personal protection.

救護車經常運送確診或疑似個案患者，容易留有病毒。我們除了為消防處的救護車進行全面清潔和消毒，以及在其後置空調系統加裝空氣過濾網外，還在何文田救護站增設新的消毒設施，建設負壓室讓救護人員更衣和淋浴，進一步減低病毒傳播的風險，我們也正為薄扶林救護站興建類似設施。

Ambulances are prone to contamination as they were often tasked to convey confirmed or suspected cases. In addition to cleaning and disinfecting the Fire Services Department's ambulances and installing additional air filters in their rear air-conditioning systems, we also installed at Ho Man Tin Ambulance Depot a negative pressure compartment, a new disinfection facility, for ambulance officers to change and shower, further minimising the risk of the spread of the virus. Similar facilities are also being built at Pok Fu Lam Ambulance Depot.

營運服務
TRADING SERVICES

我們在十天內完成中山紀念公園體育館電力供應系統的改裝工作，以為臨時氣膜實驗室提供充足電力，並檢查超過200所社區檢測中心的通風系統，確保普及社區檢測計劃運作暢順。

We modified electricity supply system of the Sun Yat Sen Memorial Park Sports Centre to provide adequate power supply for the temporary air-inflated laboratory at the venue within ten days, and conducted inspections of ventilation systems for over 200 Community Testing Centres, in order to ensure smooth operation of the UCTP.

年內，我們還承接了多個檢疫設施的機電保養維修工作，例如竹篙灣檢疫中心、饒宗頤文化館翠雅山房及柴灣鯉魚門公園度假村。2020年12月，政府為進一步加強外防輸入，減低抵港人士與本地社區接觸，全面實施指定檢疫酒店計劃。我們協助衞生署評估檢疫酒店的通風系統，確保其通風水平良好，符合感染控制的要求。另一項有關入境旅客的抗疫舉措，是為衞生署設立永久性的港口衞生設施，例如在香港國際機場一號客運大樓建造隔離病房。

During the year, we also took on the E&M maintenance of various quarantine facilities such as the Penny's Bay Quarantine Centre, the Heritage Lodge of the Jao Tsung-I Academy and the Chai Wan Lei Yue Mun Park and Holiday Village. In December 2020, the Government introduced the Designated Quarantine Hotel Scheme to prevent the importation of COVID-19 cases and reduce contact between arrivals and the local community, and we helped DH in assessing the ventilation systems in the enlisted hotels to ensure a good level of ventilation to comply with the infection control requirements. Another anti-epidemic initiative on inbound passengers was the establishment of the permanent port health facilities, such as the isolation ward in Terminal One of the Hong Kong International Airport for the DH.

為配合政府於2020年9月推出為期14天的普及社區檢測計劃，我們在三天內為全港200多個普及計劃指定場地（主要為政府體育館和社區會堂）檢查通風系統。我們更於十天內完成中山紀念公園體育館電力供應系統的改裝工作，為臨時氣膜實驗室提供足夠的電力，該實驗室於短時間內大幅提升本港的檢測能力，對推行普及計劃十分關鍵。

To facilitate the Government's 14-day Universal Community Testing Programme (UCTP) launched in September 2020, we inspected the ventilation systems within three days for over 200 venues identified for the UCTP, which were mainly government sports centres and community halls. We also modified, within just ten days, the electricity supply system of Sun Yat Sen Memorial Park Sports Centre to provide sufficient power to the temporary air-inflated laboratory, a facility instrumental in ramping up the testing capacity in a short time for the UCTP.

為支援政府推行2019冠狀病毒病疫苗接種計劃，機電署為教育局九龍塘教育服務中心社區疫苗接種中心安裝綜合疫苗冷藏櫃監察系統，加裝臨時供電系統及為有關設備提供維修保養服務，以確保疫苗接種中心運作順暢。

To support the Government's COVID-19 Vaccination Programme, the EMSD installed the integrated Fridge Monitoring System, added temporary power supply systems and provided maintenance services for the equipment concerned at the Community Vaccination Centre at the Education Bureau Kowloon Tong Education Services Centre, ensuring the smooth operation of the vaccination centre.

2021年2月，政府推行2019冠狀病毒病疫苗接種計劃，免費為全港市民接種疫苗。營運基金團隊即時作出配合，與相關政府部門合作，短時間內在全港18區設立20多個臨時社區疫苗接種中心。我們的工作包括為疫苗接種中心設置機電設施，如電力供應及照明，以及協助採購儲存疫苗的藥用冷藏櫃及相關的不間斷供電系統。為了確保疫苗可以在低溫環境下貯存，我們亦研發和安裝綜合疫苗冷藏櫃監察系統，把實時數據發送至位於機電署總部大樓的客戶服務中心和區域數碼監控中心，以及設於政府總部的區域數碼監控中心儀表板，24小時無間斷監察社區疫苗接種中心內冷藏櫃及其他機電設備的狀況，令疫苗接種工作可以順利進行。

In February 2021, the Government launched the territory-wide COVID-19 Vaccination Programme to offer vaccination free-of-charge to Hong Kong residents. In line with the Programme, the EMSTF teams had already been working with other relevant government departments immediately to set up over 20 temporary Community Vaccination Centres (CVCs) across 18 districts in Hong Kong within a short period of time. We were tasked to set up E&M facilities such as electricity supply and lighting, as well as assisting in the procurement of medical fridges for vaccine storage and associated uninterruptible power supply systems. We also developed and installed an integrated Fridge Monitoring System, which sends real-time data to our Customer Service Centre, our Regional Digital Control Centre (RDCC), both situated at the EMSD Headquarters, as well as our RDCC dashboard in Central Government Offices for round-the-clock monitoring the operating condition of medical fridges and other E&M equipment in the CVCs, ensuring the vaccines can be stored in low temperature and the vaccination programme to be successfully launched.

營運基金團隊亦為客戶部門的辦公室及各公共服務場所加強多方面的防疫設備，當中不少已成為「新常態」下的標準裝備，例如在政府建築物及場所設置的發燒偵測系統、非接觸式升降機按鈕及加強的清潔服務；在街市大樓設置的發燒偵測儀器、空氣冷卻器及紫外光C消毒燈；以及在各懲教院所探訪室和食堂安裝的固定式紫外光C消毒燈等。

The EMSTF teams also strengthened a wide range of anti-epidemic installations at clients' offices and public service venues, many of the installations have become standard features under the "new normal". Examples include the fever screening systems, contactless lift buttons and enhanced cleaning services at government buildings and venues, fever detection devices, air-coolers and ultraviolet-C (UVC) disinfection lamps at market complexes, as well as fixed UVC-lamps for disinfection of visitor rooms and dining halls at various correctional institutions.

(左)機電署為食物環境衞生署轄下保安道街市的自動梯安裝紫外光消毒設施。扶手帶經紫外光燈殺菌處理，有效消滅細菌。

(Left) The EMSD set up escalator ultraviolet light disinfection device at the Po On Road Market for the Food and Environmental Hygiene Department. Handrails are disinfected with UVC-lamps for effective disinfection.

(右)我們已於政府總部安裝非接觸式升降機控制板。該設計應用紅外線感應技術，讓使用者使用升降機時以隔空方式選擇樓層，無需直接接觸升降機控制板，減低人與人之間接觸及病毒傳播風險。

(Right) We have installed contactless lift control panels at the Central Government Offices. The application of infrared sensing technology in the design enables users to select the floors without directly touching the buttons of the lift control panels while using the lift. It minimises person-to-person contact and the risk of virus transmission.

營運服務
TRADING SERVICES

我們為食環署轄下室內熟食中心的空調及通風系統進行檢查及維修，以確保熟食中心內空氣流通。

We conducted inspection and maintenance for air-conditioning and ventilation systems at cooked food centres under the FEHD, thereby ensuring good air ventilation in the cooked food centres.

我們為入境事務處轄下32個人事登記辦事處和智能身份證換領中心安裝的人流量統計系統，會繼續長期運作，讓客戶部門在提供必要服務時盡量減低感染風險。我們亦確保食物環境衛生署（食環署）轄下街市及熟食中心，通風系統符合相關要求。

The headcount sensor control system installed at 32 Registration of Persons Offices and Smart Identity Card Replacement Centres under the Immigration Department will continue to operate on a long-term basis to minimise the risk of infection during the provision of essential services. We also made sure that wet markets and cooked food centres under the Food and Environmental Hygiene Department (FEHD) meet the ventilation requirements.

在多個疫情高峰期期間，虛擬會議和在家工作模式成為客戶部門的常態。我們應公務員事務局要求，為客戶部門檢視視像會議設施，確保設施符合政府的保安和其他要求。由於視像會議很可能成為未來工作模式的一部分，我們會繼續協助客戶部門，提升工作效率。

Virtual conference meetings and work-from-home became the norm for client departments during the peaks of the epidemic. As requested by the Civil Service Bureau, we conducted a review of video conferencing facilities to ensure compliance with the Government's security and other requirements. As virtual meetings are likely to become part of the working mode in the future, we will continue to assist client departments to enhance work efficiency.

年內，多個2019冠狀病毒病感染羣組相繼出現，例如2021年2月的「食肆羣組」和2021年3月的「健身室羣組」，以及多宗在指定檢疫酒店內出現的懷疑互相感染個案。在有關場所找出感染源頭，對防疫抗疫工作至關重要。作為政府跨部門小組的成員之一，我們協助衞生防護中心進行調查工作，包括了解場地的通風系統及在現場量度換氣量及空氣流向。

During the year, several COVID-19 clusters occurred, such as the "restaurant cluster" in February 2021 and the "fitness centre cluster" in March 2021, as well as various suspected infection cases in designated hotels. The investigation on the roots of transmission in these venues became crucial in the anti-epidemic work. In the inter-departmental government team to support the investigations conducted by the Centre for Health Protection (CHP), we provided support on investigations in understanding the on-site ventilation system and measuring the air changes and air flow directions.

疫情期間曾出現2019冠狀病毒病感染羣組（例如「安老院舍羣組」、「健身室羣組」及「食肆羣組」），機電署為衞生防護中心、香港大學袁國勇教授團隊、社會福利署及民政事務總署等提供支援，並派員到有關地點進行調查，以找出傳播源頭。

Upon the emergence of COVID-19 infection clusters, such as the "RCHE cluster", "fitness centre cluster" and "restaurant cluster", the EMSD provided support to the CHP, the team of Professor Yuen Kwok-yung of the University of Hong Kong, the SWD and the Home Affairs Department, etc. and deployed staff to conduct investigations at the sites concerned, in order to find out the root causes of transmissions.

在安老院舍方面，我們為社會福利署（社署）及衞生防護中心提供技術意見，並於2020年7月和8月聯同香港大學的袁國勇教授視察八間安老院舍。2020年12月，營運基金團隊就改善通風系統提出多項建議，並編製安老院舍良好通風的實用要訣，供院舍經營者參考。社署其後更委託顧問進行研究，長遠改善全港1 000多間安老院舍的通風狀況。

We assisted the Social Welfare Department (SWD) and the CHP by providing technical advice to residential care homes for the elderly (RCHEs), and inspected eight care homes in July and August 2020 together with Professor Yuen Kwok-yung of the University of Hong Kong. The EMSTF team made several recommendations on ventilation improvements and compiled a set of tips on good ventilation at RCHEs in December 2020 for reference of the operators. The SWD subsequently commissioned a consultancy study to improve the ventilation of over 1 000 RCHEs across the territory in the long run.

在全球疫情大流行期間，及時分享知識尤為重要。2020年11月，營運基金與香港工程師學會生物醫學分部合辦生物醫學工程會議2020，主題為「以創新科技對抗2019冠狀病毒病及未來的大流行傳染病」，涵蓋八個創新科技範疇，包括人工智能和機械人技術、醫療儀器及消毒方案等。超過30位本地及海外專家以視像會議形式，向300多位來自不同城市的參加者，分享嶄新的科研成果及創科應用方案。

Prompt knowledge sharing is important in a global pandemic. In November 2020, the EMSTF co-organised the Biomedical Engineering Conference BME 2020 with the Biomedical Division of the Hong Kong Institution of Engineers under the theme of "Fighting COVID-19 and Future Pandemics with Innovation & Technology", focusing on eight innovation and technology (I&T) areas, such as artificial intelligence and robotics, medical devices and disinfection solutions. Over 30 local and overseas experts presented cutting-edge research and I&T applications at the virtual event to more than 300 participants from different cities.

政務司司長向營運基金多個策略業務單位的百多位同事發出致謝函，感謝他們執行抗疫工作，不遺餘力，而公務員事務局局長也向我們的同事頒發感謝狀。各策略業務單位齊心抗疫，不但有助客戶保護員工，維持必要的公共服務，更為大眾安全作出貢獻。

The Chief Secretary for Administration sent appreciation letters to over 100 EMSTF colleagues of different SBUs to thank them for their services in fighting the virus. The Secretary for Civil Service also sent our colleagues a certificate of appreciation. The concerted effort by our SBUs in fighting the virus not only helped clients protect their staff while maintaining essential public services, but also contributed to the safety of the community.

營運服務
TRADING SERVICES

善用機電知識控制感染
Applying E&M Knowledge to Infection Control

為減輕疫情對香港醫療系統的壓力，高級工程師鄭淑芳女士（左四）及施培康先生（右四）與他們的團隊成員，為北大嶼山醫院香港感染控制中心的機電設備提供各項技術支援、測試及調校服務，竭盡全力協助醫院投入運作。

To alleviate the pressure of the epidemic on Hong Kong's healthcare system, senior engineers Ms Cheng Shuk-fong, Justine (4th left) and Mr Sze Pui-hong, Jason (4th right), and members of their teams provided various technical support and testing and commissioning services for the E&M equipment of the NLHHKICC, devoting their best efforts to assist and facilitate the commissioning of the hospital.

2020年年初，2019冠狀病毒病持續爆發，為本港醫療系統帶來巨大壓力。香港特別行政區政府於2020年7月向中央政府請求協助，在赤鱲角迅速建設臨時醫院。這所新建的北大嶼山醫院香港感染控制中心，整座設施均以組裝合成建築法建造。

憑藉處理負壓病房的豐富經驗，衞生工程部高級工程師鄭淑芳女士和施培康先生與機電工程營運基金同事組成團隊，應發展局邀請就香港感染控制中心內有關機電系統設施的設計、安裝及測調提供技術支援，務使香港感染控制中心各系統更加穩定可靠及便於維修。有關工程於2020年9月展開，在同年11月起進行測試和校驗。政府原訂目標是在2021年2月26日接收第一批病人，最終亦順利達標。

鄭女士說：「最緊凑的時間是在2021年1月。期間，我們與承辦商日以繼夜測調各種機電系統和設備，最終成功同步完成安裝、測試和調校工作。為免影響日間的安裝工作，部分測調均在晚上六時後才可進行。」

施先生憶述團隊在1月下旬的一星期內密集地進行兩項綜合測試，涵蓋多種機電系統，包括通風系統、緊急發電機、電力供應、消防系統和升降機。由於測試相當複雜，營運基金共調派逾40位同事參與相關工作。有關綜合測試能驗證各機電系統能否正常運作，以確保香港感染控制中心日後能暢順運作。

對於能夠參與這個項目，團隊成員均感到非常榮幸。鄭女士和施先生衷心感謝團隊各位成員為項目主動多走一步，竭誠盡責，最終在非常短時間內能如期完成項目。

During the waves of COVID-19 outbreak in early 2020, Hong Kong's healthcare system was put under immense pressure. In July 2020, the Government of the Hong Kong Special Administrative Region sought assistance from the Central Government for the rapid construction of a temporary hospital in Chek Lap Kok. The new North Lantau Hospital Hong Kong Infection Control Centre (NLHHKICC) was constructed entirely with the Modular Integrated Construction (MiC) method.

With rich experience in handling matters relating to negative pressure wards, Ms Cheng Shuk-fong, Justine and Mr Sze Pui-hong, Jason, both senior engineers of the Health Sector Division, formed a team with EMSTF colleagues to provide technical support as invited by Development Bureau for the design, installation, testing and commissioning to enhance the reliability and maintainability of various E&M systems at the NLHHKICC. The construction was commenced in September 2020, and the testing and commissioning work was carried out from November 2020 onwards. Aimed at admitting the first batch of patients on 26 February 2021, the Government's target was successfully met.

"In January 2021, we were under great pressure as we worked zealously with the contractors to test and commission the E&M systems and equipment. With the efforts, the installation, testing and commissioning work was eventually completed in a concurrent and timely manner. Some tests were conducted after 6:00 p.m. to avoid disruption to the installation work during the daytime," said Ms Cheng.

Mr Sze recalled that the team performed two highly intensive integrated tests within a week starting in late January 2021, covering a wide range of E&M systems, including ventilation system, emergency generators, electricity supply, fire services installations and lifts. Over 40 EMSTF colleagues took part in those complex tests. The integrated tests verified that the E&M systems functioned properly with a view to ensuring the smooth running of NLHHKICC in the future.

All team members felt very honoured to be involved in the project. Both Ms Cheng and Mr Sze cordially thanked everyone in the team for proactively going the extra mile to complete the tasks with dedication and within a very short timeframe.

深層清潔救護車
Carrying out Deep Cleaning for Ambulances

陳俊斌先生有11年維修保養救護車的經驗。疫情期間，他負責為救護車進行全面清潔消毒及維修保養工作，以保障救護人員及市民的安全。

Mr Chan Chun-bun has 11 years of experience in ambulance maintenance. He is responsible for conducting thorough cleaning and disinfection of ambulances, as well as maintenance work during the epidemic, ensuring the safety of ambulance officers and members of the public.

在疫情下，為救護車進行維修保養屬高風險工作，但車輛工程分部的一級技術員陳俊斌先生並未因此卻步。他擁有11年維修保養救護車的經驗，也曾在機電工程署的車輛維修工場為其他政府車輛進行維修保養。

按照慣例，救護車會在進行維修保養前先接受清潔。陳先生說：「與垃圾車上明顯及容易清除的污漬不同，病毒微小得無法看見，因此清潔救護車比清潔垃圾收集車複雜許多。」作為救護車定期維修保養團隊的成員之一，陳先生在工作時會穿着全套個人防護裝備，使用消毒劑徹底清潔救護車車門、扶手和通風口，並在開始維修保養工作前更換空調過濾網。

陳先生解釋道：「如救護車曾接載2019冠狀病毒病確診或疑似個案患者，我們會進行更嚴格徹底的清潔工作。」團隊會先為空調系統更換過濾網，再啓動放置在救護車車內的臭氧裝置，並關上所有車門消毒約90分鐘，讓裝置釋出濃度充足的臭氧，為救護車徹底消毒，殺滅隱藏在空調系統中的細菌和病毒。完成後，團隊會打開車門，讓臭氧徹底消散後，才進行維修保養工作。

近日團隊還採用了「預防性零部件更換計劃」，提早更換特定零件和組件，進一步避免救護車故障。

陳先生於2007年參加機電署的技術員訓練計劃。由於現時的工作涉及救護車，他非常重視個人防護，並嚴格遵守所有衞生指引。他說：「這樣不但可以保護自己，更可保障家人和同事的安全。」

In the epidemic, ambulance maintenance is considered a high-risk task. However, the heightened risk did not discourage Mr Chan Chun-bun, a technician I of the Vehicle Engineering Sub-division, from performing his duties. He has 11 years of experience in ambulance maintenance and also worked on other government vehicles at the EMSD depot.

As a common practice, ambulances are cleaned before maintenance. "Since viruses are microscopic, cleaning an ambulance is more complicated than cleaning a refuse collection vehicle, for example, where the visible filth can be easily removed," said Mr Chan. Being one of the team members responsible for scheduled maintenance of ambulances, Mr Chan would wear full personal protective equipment at work, use disinfectant to thoroughly clean ambulance doors, handrails and ventilation outlets, and replace the air-conditioning filters before carrying out the maintenance work.

"When an ambulance that had carried a patient of confirmed or suspected COVID-19 case arrives for maintenance, we would carry out a more rigorous cleaning," explained Mr Chan. After replacing all filters in the air-conditioning system with new ones, they would activate an ozone device placed in the ambulance with all vehicle doors shut for about 90 minutes. The device would emit ozone at a density that kills germs and viruses, including those hidden in the air-conditioning system. Upon completion of the process, the vehicle doors would then be opened wide to disperse the ozone thoroughly before carrying out the maintenance work.

Recently, the team adopted the Advance Bulk Replacement Programme, under which specific parts and components are replaced early to better avoid ambulance breakdowns.

Mr Chan joined the EMSD's Technician Training Scheme in 2007. Given his current work on ambulances, he takes personal protection seriously and strictly observes all instructions on hygiene. "This is for the safety of myself, my family and my colleagues," he said.

營運服務
TRADING SERVICES

靈活支援普及社區檢測和疫苗接種工作
Providing Dynamic Support for Universal Community Testing and Vaccination Drives

工程師李潔珍女士帶領團隊，支援中山紀念公園體育館臨時氣膜實驗室的電力供應服務。團隊與各部門聯繫合作，運用豐富經驗和專業知識，在極短時間內重新配置場內的掣櫃。

Ms Lee Kit-chun, Cherry, an engineer, led her team to provide power supply for the air-inflated temporary laboratories at the SYSMP Sports Centre. Using their rich experience and expertise, they communicated and collaborated with various departments to complete the re-configurations of the switchboards at the venue in a very short period of time.

市政工程部工程師李潔珍女士帶領機電工程營運基金團隊，支援中山紀念公園體育館的臨時氣膜實驗室。她負責的任務與其他抗疫工作一樣，必須在瞬息萬變的環境中爭分奪秒，快速完成任務。

2020年8月初，李女士接獲通知，為配合政府計劃於9月1日推出的普及社區檢測計劃，她的團隊需在不足兩個星期內改動中山紀念公園體育館的電力系統，以提供足夠電力支援館內16個臨時加置的氣膜實驗室運作。

李女士憶述：「由於時間緊迫，我們的工作必須快而準。」除改動電力裝置外，團隊亦需要馬上檢查體育館的通風系統，以確保適合實驗室的運作。另外，團隊又要為所有選定為普及社區檢測計劃的場地進行通風評估，並分析每個場地是否適合用作為檢測中心。由於項目緊迫，團隊只用了短短三天時間，即由8月18日至20日，走訪和評估了200多個選定場地。9月1日至14日普及社區檢測計劃開展期間，團隊持續監察全部141個社區檢測中心的供電和通風系統，並提供故障檢修服務。

及後中山紀念公園體育館也成為政府2019冠狀病毒病疫苗接種計劃的其中一個接種場地，自2021年1月下旬開始，李女士的團隊與其他政府部門和醫院管理局展開籌備工作，設計適合各個社區疫苗接種中心的圖則、人流方向，以至電力供應和線路安排。中山紀念公園體育館是最早改裝完成的社區疫苗接種中心，其設置安排亦成為其他社區疫苗接種中心的參考範本。

李女士感謝所有團隊成員辛勤工作。她說：「我們學會如何有效進行協調工作，又認識了其他部門和政策局的同事，在疫情下為社區提供支援，工作愉快而且別具意義。」

Ms Lee Kit-chun, Cherry, an engineer of the Municipal Sector Division, led the EMSTF team to support the temporary air-inflated laboratory at the Sun Yat Sen Memorial Park (SYSMP) Sports Centre. Challenging yet typical, her task was to complete the anti-epidemic work in a fast-changing environment within a very tight timeframe.

Ms Lee was notified in early August 2020 that in preparation for the Government's Universal Community Testing Programme (UCTP) scheduled for implementation on 1 September, her team had less than two weeks to enhance the electricity system of the SYSMP Sports Centre to ensure sufficient electricity supply to support the operation of 16 additional air-inflated temporary laboratories therein.

"Working under a tight schedule, our co-ordination work had to be done quickly and precisely," Ms Lee recalled. Her team inspected the venue's ventilation system immediately to ensure its reliability for laboratory operations. Apart from modifying the electrical installations, the team conducted ventilation assessment of various potential UCTP venues and analysed their suitability. Tasked to complete this urgent mission, the team visited and assessed over 200 selected venues within only three days from 18 to 20 August. Throughout the implementation of the UCTP from 1 to 14 September, the team continuously monitored the power supply and ventilation systems of all of the 141 UCTP testing centres, and provided troubleshooting services.

The SYSMP Sports Centre also became one of the pilot venues for the Government's COVID-19 Vaccination Programme. Working together with other government departments and the Hospital Authority, Ms Lee's team began the relevant preparatory work in late January 2021 by drawing up the optimal cubicle layouts for the Community Vaccination Centres (CVCs), the traffic flow, as well as the electricity supply and wiring arrangements. The SYSMP Sports Centre was the first sports centre to be converted to a CVC and its set-up later become the template for other CVCs.

Ms Lee thanked all her team members for their hard work. "We have learnt a lot about effective co-ordination work, met colleagues from other departments and bureaux, and helped the community in the epidemic. It was a joyful and meaningful experience," she remarked.

改善室內通風　保障市民健康
Enhancing Ventilation to Ensure the Safety of the Community

疫情期間，綜合工程部高級工程師葉學山先生(左)和市政工程部工程師梁志滔先生(右)與他們的團隊，致力檢查不同感染羣組曾經所處場所的通風系統，並提供詳細的改善建議。能參與抗疫工作，為客戶提供支援，他倆感到非常自豪。

During the epidemic, Mr Ip Hok-shan, a senior engineer (left) of the GESD and Mr Leung Chi-to, an engineer (right) of the MunSD and their teams were devoted to investigating the ventilation systems in venues of different COVID-19 clusters, and provided detailed improvement suggestions. Both were proud of being able to contribute to the fight against COVID-19 and provide support to our clients.

年內，本港多間安老院舍、健身室和食肆先後出現2019冠狀病毒病感染羣組。營運基金就改善有關場所的通風狀況，為客戶部門提供技術意見和支援。

為協助社會福利署和衞生防護中心，綜合工程部高級工程師葉學山先生和其團隊，聯同政府顧問袁國勇教授視察爆發疫情的安老院，並檢查有關場所的通風系統。葉先生說：「為評估通風不足會否促使病毒傳播，我們檢視了當時的通風系統數據，檢查設備是否正常運作，並進行煙霧測試，模擬空氣流向和流量。」經參考國際標準後，團隊建議，安老院舍的換氣量應達到每小時至少六次。2020年12月，機電署發布有關安老院舍保持良好通風的指引及要訣。

2021年3月，葉先生獲委派調查「健身室羣組」。他的團隊協助量度和評估涉事健身室的通風效能，並建議全港健身室的換氣量應達到每小時至少六次。

提供堂食的餐飲處所同樣容易爆發疫症，2021年2月底K11人文購物藝術館的一間食肆出現感染羣組便是一例。2021年3月初，市政工程部工程師梁志滔先生獲派聯同袁教授及衞生防護中心人員，協助食物環境衞生署評估該食肆的通風系統。政府同月發布指示，要求所有提供堂食的餐飲處所在2021年4月30日或之前，須確保其換氣量已達每小時至少六次或安裝空氣淨化設備。梁先生和他的團隊隨即展開兩項工作，包括制訂技術指引，闡述每小時換氣量的計算和量度方法，以及提供可作替代方案的空氣淨化機型號清單。

梁先生說：「我們與餐飲業和酒店業代表會面，協助業界了解和遵從每小時換氣量的要求。我們亦以大量時間評估和審視數百個由供應商提交的資料，最終擬定空氣淨化機型號清單，供餐飲處所的負責人使用。」

能在抗疫關鍵時刻出一分力，葉先生和梁先生都感到很高興。他們感謝前線同事，即使現場環境可能已受病毒感染，他們仍然無畏無懼，竭誠完成工作。

In the wake of the COVID-19 clusters that occurred in residential care homes for the elderly (RCHEs), a fitness centre and a restaurant in Hong Kong, the EMSTF provided technical advice and support to clients in enhancing the ventilation of those premises.

Mr Ip Hok-shan, a senior engineer of the General Engineering Services Division (GESD), was part of the team that assisted the Social Welfare Department and the Centre for Health Protection (CHP), alongside Government advisor Professor Yuen Kwok-yung, in checking the ventilation systems of RCHEs where outbreaks occurred. "To ascertain whether inadequate ventilation led to the spread of virus, we reviewed the existing ventilation data, checked whether the equipment was working in order, and conducted smoke tests to simulate airflow direction and volume," Mr Ip explained. The team made reference to international standards and recommended that the air change per hour (ACH) of RCHEs should reach six. In December 2020, the EMSD issued a set of guidelines and tips on maintaining good ventilation at RCHEs.

Mr Ip was also called upon again to look into a major "fitness centre cluster" in March 2021. His team helped measure and assess the ventilation performance of the fitness centre, and advised that the ACH of fitness centres should also reach six.

Dine-in catering premises were also prone to epidemic outbreaks, as was the case of a restaurant in K11 MUSEA in late February 2021. Mr Leung Chi-to, an engineer of the Municipal Sector Division (MunSD), was tasked to assist the Food and Environmental Hygiene Department in assessing the ventilation system of the restaurant in early March, along with Professor Yuen and officers of the CHP. In the same month, the Government issued a direction that required all dine-in catering premises to ensure a minimum of six ACH or install air purifiers on or before 30 April 2021. Mr Leung and his team immediately began to work on two tasks, which were to compile a set of technical guidelines with ACH calculation and measurement methods, and provide a list of suitable air purifier models as an alternative.

"We met with representatives of the catering and hotel trades to help them comply with the requirements on ACH. We also spent a large amount of time evaluating and vetting hundreds of supplier submissions. Eventually, we came up with a list of air purifier models for food premises operators," said Mr Leung.

Both Mr Ip and Mr Leung were glad that they helped fight the virus at a critical time. They thanked frontline colleagues who were undaunted by the risk of infection in potentially contaminated environments and performed their duties with full dedication.

營運服務
TRADING SERVICES

把握嶄新機遇　滿足服務需求

在疫情下，客戶對若干機電服務的需求大增，且對新構思及項目也普遍持更開放態度，在2021/22年度為營運基金帶來新機遇。許多客戶與我們續簽服務水平協議，反映對我們的服務高度信任。

年內，車輛工程團隊的客戶對車輛維修服務的需求有所增加，例如食物環境衞生署(食環署)、消防處和香港郵政均續簽了年期較長的服務水平協議，分別涵蓋垃圾收集車、救護車/非救護車輛和郵政車輛，而政府產業署和路政署也續簽了服務水平協議。香港警務處(警務處)推出為期三年的保安提升計劃，希望加強警署及其他設施的保安措施，營運基金因此開展新項目和提供維修保養服務。

CAPTURING NEW OPPORTUNITIES AND MEETING SERVICE DEMAND

During the epidemic, the EMSTF captured new opportunities in 2021/22 as clients' demand for certain E&M services surged and their attitude towards new ideas and projects became more welcoming generally. Many clients renewed their Service Level Agreements (SLAs), indicating a high level of trust in our services.

Our vehicle engineering team, for example, saw the increased demand for vehicle maintenance services during the year. Various clients, including the Food and Environmental Hygiene Department (FEHD), Fire Services Department and Hongkong Post, renewed their SLAs on refuse collection vehicles, ambulances/non-ambulance vehicles and postal vehicles respectively, with longer agreement periods. The Government Property Agency and the Highways Department also renewed their SLAs. The Hong Kong Police Force (HKPF), with its three-year Security Enhancement Programme, planned to step up the security measures at police stations and other facilities, generating new projects and maintenance service business opportunities for the EMSTF.

機電署為香港警務處東九龍總區總部的各項機電設備進行維修保養工作。相關設備包括供工人進行大廈外牆及窗戶清潔的吊船(右)，以及提供鮮風和維持空氣質素的鮮風機組(下)。

The EMSD carried out maintenance work for various E&M equipment at the Kowloon East Regional Headquarters of the HKPF. The relevant equipment included the suspended working platforms which allow workers to work at height to clean the walls and windows of the building (right), as well as the air handling units which provide fresh air and maintain air quality of the venue (bottom).

我們於2021年年初榮獲ISO 13485醫療器材品質管理系統認證，是首個獲得此認證的政府部門，以及本港少數獲得此認證的多品牌醫療儀器「第三方」維修保養服務供應商。

We received ISO 13485 certification for Quality Management System for Medical Devices in early 2021, becoming the first government department and one of the few "third party" maintenance service providers of multi-brand medical devices in Hong Kong to receive the certification.

本港人口持續增長和老化，社會對優質公共醫療服務的需求有增無減。就此，醫院管理局(醫管局)推出兩個十年醫院發展計劃，項目包括現有醫院的重建或擴建工程，以及新醫院的興建工程。我們在2020年4月成立新部別，支援政府和醫管局落實相關發展計劃。此外，機電工程署署長獲邀加入由食物及衞生局(食衞局)領導的十年醫院發展計劃督導委員會，而我們的助理署長/2亦是其附屬技術及設計事宜工作小組的成員。憑藉機電署多年來對醫療衞生處所內機電系統操作與維修保養方面所累積的知識，以及疫情期間的獨到經驗，為計劃提供專業意見。

年內，我們多個公共衞生項目均取得進展。例如就中醫醫院及新政府中藥檢測中心的興建，向食衞局、衞生署及政府化驗所提供項目管理及技術諮詢服務。這兩項新設施擬建於將軍澳，落成啓用後會為我們帶來新商機。

我們與政府化驗所也簽訂了新的五年服務水平協議，此舉在疫情期間意義殊深。營運基金更於2021年年初獲得ISO 13485醫療器材品質管理系統認證，成為本港少數獲得認證的多品牌醫療儀器「第三方」維修保養服務供應商。我們也是首個獲得這項認證的政府部門。

With a growing and ageing population, the need for quality public healthcare services will surely increase in Hong Kong. In this respect, the Hospital Authority (HA) launched two Ten-year Hospital Development Plans (HDPs), which cover the redevelopment or expansion of existing hospitals and the construction of new ones. To support the Government and the HA in implementing the HDPs, we set up a new Division in April 2020. Meanwhile, the Director of Electrical and Mechanical Services was invited to join the Steering Committee on Ten-year Hospital Development Plans led by the Food and Health Bureau (FHB), and our Assistant Director/2 also joined the associated Working Group on Technical and Design Issues, in a bid to provide professional advice based on our substantive and insightful experience in relation to the operation and maintenance (O&M) of E&M systems in healthcare premises, especially during the epidemic.

During the year, we have made progress in a variety of public health projects. For example, we provided project management and technical advisory services for the FHB, the Department of Health and the Government Laboratory (GL) on the construction of the Chinese Medicine Hospital and the new Government Chinese Medicines Testing Institute. To be situated in Tseung Kwan O, the two new facilities will bring new business opportunities upon commissioning.

Our SLA with the GL was renewed for five years, bearing great significance at the time of the epidemic. The EMSTF also obtained ISO 13485 certification of Quality Management System for Medical Devices in early 2021, becoming one of the few "third party" multi-brand medical devices maintenance service providers in Hong Kong, and the first government department to attain the certification.

營運服務
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疫情亦為政府物聯通的應用帶來新機遇。因應二月的年花銷售活動，我們在兩星期內為食環署設計及部署一套人流監察、輪侯及派籌系統，以維持市民的社交距離，減低活動期間病毒傳播的風險。

The epidemic also brought new opportunities in the application of the Government-Wide Internet of Things Network (GWIN). To reduce the risk of virus spread during the sale event of New Year flowers held in February 2021, we designed and deployed for the FEHD a footfall monitoring, queuing and ticketing system to maintain social distancing within just two weeks.

我們在全港15個年花銷售點安排臨時電力供應和照明，並建立了以雲端系統為基礎的中央人流監察系統。我們在銷售點的各個出入口裝設三套使用不同技術的傳感器，分別點算進出人數，以策萬全。傳感器採集數據供雲端系統運算後，現場的顯示屏會即時亮起綠、黃或紅色燈號，以顯示場內人數水平。

At the 15 points of sale of New Year flowers across the territory, not only did we arrange for temporary electricity supply and lighting, but we also set up a cloud-based central footfall monitoring system using three sets of sensors with different technologies to count the number of visitors at every entrance and exit point for multiple assurance. After the footfall data collected by the sensors were computed by the cloud-based system, the on-site display panel would issue either a green, amber or red signal in real time to indicate the crowd size.

所有年花銷售點均已裝設政府物聯通基站，全面覆蓋場地，以支援人流監察系統。我們亦加裝了後備的流動式基站，增強網絡可靠性。活動得以順利舉行，足證政府物聯通安裝容易，其獨立網絡高度可靠，適合用於大型活動進行人羣管控，而且即使在室外應用也不受影響。

GWIN gateways were set up to provide coverage for all points of sale to support the footfall system, and additional mobile gateways on stand-by were also included to enhance network reliability. The successful event demonstrated that GWIN was an easy-to-set-up, highly reliable and independent network well suited for crowd control at large-scale events, even used outdoors.

物聯網時鐘是另一個運用政府物聯通的項目，在年內開始向客戶推廣。以往同事經常需要前往不同政府場地，爬往高處以手動方式調校時鐘，涉及工作安全風險。有見及此，同事構思利用政府物聯通網絡通信，並自動與香港天文台的標準時間同步，令物聯網時鐘無需人手調校。我們已為物聯網時鐘取得專利，並已安裝於食環署轄下一個公共辦事處。物聯網時鐘也適用於其他客戶場地，例如渡輪碼頭和體育館等。

During the year, we also kick-started the promotion for our in-house designed Internet of Things (IoT) Clock, another GWIN initiative. In the past, colleagues were often tasked to climb up to manually adjust clocks at various government venues, resulted in potential safety hazards. The IoT Clock, this new concept provided by our colleagues, using GWIN for network communication; and automatically synchronises with the standard time maintained by the Hong Kong Observatory, thereby eliminating the need for manual adjustment. The IoT Clock, already patented, has been installed at a FEHD public office and can be applied to other client venues, such as ferry terminals and sports grounds.

就2021年年花銷售活動，我們為食環署在15個年花銷售點設計及部署以雲端系統為基礎的中央人流監察系統。我們於各個銷售點的出入口裝設三套紅外線傳感器，配合派籌系統及顯示屏，有效監察人流及減低病毒傳播的風險。

For the sale event of New Year flowers held in 2021, we designed and deployed for the FEHD a cloud-based central footfall monitoring system at the 15 points of sale of New Year flower. With three sets of infrared sensors installed at every entrance and exit point, the ticketing systems and display panels in the points of sale, the system effectively monitored the footfall and reduced the risk of virus spread.

為使政府場地的時鐘更準確可靠，我們設計了物聯網時鐘並在客戶場地應用。該時鐘，通過政府物聯通定期為物聯網時鐘校準時間。

We designed an IoT Clock and applied it at clients' venues to enhance the accuracy of their clocks. The clock time is regularly synchronised by the Government-Wide IoT Network.

我們的「建築信息模擬 — 資產管理」團隊把握疫情帶來的機遇，加強資產管理數碼化的工作。在疫情導致經濟下行期間，我們聘請額外人手前往遍布全港的客戶場地，檢查和驗證有關機電資產的位置和數據，並為部分合適的設備加裝無線射頻辨識裝置。在完成上述工作後，我們便能建立全面的數據庫，讓我們了解客戶機電資產的最新狀況，以及為客戶的現有建築物建構「建築信息模擬 — 資產管理」模型，以便日後進行維修保養工作。

Our Building Information Modelling-Asset Management (BIM-AM) team seized the opportunity arising from the epidemic to strengthen its asset management digitisation work. During the economic downturn caused by the epidemic, we engaged extra personnel to visit client venues across the territory to check and verify the location as well as the data of their E&M assets and affix Radio Frequency Identification devices on their equipment where appropriate. Upon completion of the project, the valuable and comprehensive database we built will provide us with an up-to-date picture of clients' E&M assets and facilitate our construction of BIM-AM models for clients' existing buildings for future maintenance.

疫情沒有阻礙我們為文化、康樂及其他政府公共設施進行翻新工程。舉例而言，我們其中一項創新科技試驗項目智能洗手間，已於年內開展，在香港文化中心和荃灣體育館安裝。為節省能源及改善照明效果，我們計劃在城門谷運動場的足球場安裝發光二極管照明系統。另一項目是為康樂及文化事務署（康文署）轄下的體育場館安裝200多個電動車充電器，以配合增加本港電動車充電設施的政策。

The epidemic did not stop us from renovating various cultural, recreational and other government facilities for the public. An example is the installation of smart toilets, one of our innovation and technology (I&T) trial projects commenced during the year, at the Hong Kong Cultural Centre and Tsuen Wan Sports Centre. To save energy and improve illumination effect, we planned to install Light Emitting Diode lighting system at the soccer pitch of Shing Mun Valley Sports Ground. Another project was to install over 200 electric vehicle (EV) chargers in the Leisure and Cultural Services Department (LCSD) sports venues, to tie in with the government-wide initiative to ramp up EV charging facilities in Hong Kong.

由於預期新界西和大嶼山的人口會不斷增長，以及區內的市政和康樂設施也會相應增加，我們已重組相關組別，以期更有效地為新界的食環署和康文署場地提供支援。此外，我們將為元朗劇院的吊杆和舞台燈光開展翻新工程，引入最先進的舞台技術。

In anticipation of the population growth in New Territories West and Lantau as well as the growing number of municipal and recreational facilities therein, we re-organised our teams to better support FEHD and LCSD venues in the New Territories. In implementing our up-coming major project involving fly bars and stage lighting renovation at Yuen Long Theatre, we will introduce relevant state-of-the-art stage technologies.

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(左) 為提升公共設施的服務質素，我們在香港文化中心增設智能洗手間管理系統。通過物聯網平台和流動應用程式，職員可以獲取洗手間實時環境狀況的資訊，而使用者亦能了解洗手間內空氣質素和排隊等候情況。

(Left) We set up the smart toilet management system at the Hong Kong Cultural Centre to enhance the service quality of public facilities. Real-time environmental condition is provided for staff, while toilet users get to know the indoor air quality and queuing situation for toilets through the IoT platform and mobile applications.

(右) 為推廣綠色生活環境，機電署為康文署於各區運動場館增設電動車充電設施，方便電動車駕駛者及促進電動車的普及應用。圖中為設置於深水埗運動場的新電動車充電站。

(Right) In order to promote a green living environment, the EMSD installed EV charging facilities for the LCSD in sports venues of various districts, thereby bringing convenience to EV drivers and facilitating the widespread application of EVs. Picture shows the new EV charger at the Sham Shui Po Sports Ground.

海事處計劃為昂船洲政府船塢進行現代化改善工程，而由營運基金協助指導的相關顧問研究工作進展良好。船塢佔地9.8公頃，設有船舶升降系統及大型修船棚，負責政府船隻的保養維修工作，也是政府船隻的運作基地。是次現代化改善工程的重點，在於運用創新科技提升船塢設施。

營運基金致力提升機電業的作業水平和技術專長。經過數載籌備，以及與業界進行多次商討，我們已編修並於2021年年初在網上發布四本有關不同機電範疇的優良操作和維修作業守則，所涵蓋範疇與營運基金、承辦商、客戶和其他持份者息息相關，包括暖氣通風及空調裝置、升降機及自動梯裝置、電力裝置，以及消防裝置。

我們透過分享有關操作和維修的經驗及優良作業方式，致力提升業界水平。這四本作業守則順利出版，是營運基金的重要里程碑。

2021年是營運基金成立25周年。我們以「同・創・傳・期」為主題，籌備一系列慶祝活動，與客戶、業界和市民大眾一起慶賀這個別具意義的時刻。我們希望藉此銀禧慶典回顧過去，並與所有持份者共創未來。

For the Government Dockyard modernisation project on Stonecutters Island planned by the Marine Department, the relevant consultancy study, steered by the EMSTF, is in good progress. Occupying a site of 9.8 hectares and equipped with ship lifting hoists and huge repairing sheds, the dockyard is used for the maintenance of vessels owned by the Government and serves as the operational base of such vessels. The focus of the modernisation work is on upgrading the dockyard facilities with I&T applications.

The EMSTF attaches great importance to boosting the E&M trade's best practices and technical expertise. After years of preparation and discussion with the trade, we had edited and published online in early 2021 four operation and maintenance best practices booklets, covering topics highly relevant to the EMSTF, its contractors, clients and other stakeholders, including heating, ventilation and air conditioning installations; lift and escalator installations; electrical installations; and fire service installations.

The publication of these booklets marked a milestone in our quest to raise the trades' standards by sharing our O&M experiences and best practices.

The year 2021 marks the 25th anniversary of the EMSTF. Under the theme of "Co-innovate and Co-create Our Future", we prepare a series of events for clients, the trade and the public. The Silver Jubilee is a great occasion to reflect on the past and create our future in collaboration with our stakeholders.

節慶活動安排得當　妥善保障公眾健康
Safeguarding Public Health during Traditional Festivities

數碼科技部團隊為2021年年花銷售點設計及安裝中央人流監察系統。儘管面對技術問題兼且準備時間緊迫，有關人員成功克服挑戰，展現出色的團隊精神。

The DTD team designed and installed the central footfall monitoring system for the points of sale of New Year flowers in 2021. The team successfully overcame the challenges involving technical issues and tight preparation time, demonstrating excellent team spirit.

今年年初，營運基金為全港15個年花銷售點安裝以雲端系統為基礎的中央人流監察系統。我們的團隊作出適切安排，讓市民在疫情期間仍能參加這個傳統節慶活動，團隊成員一致同意這次服務「經驗難逢，十分愉快」。在為期六天的活動中，各銷售點秩序井然，共接待訪客約87萬人次。

在2021年年初疫情反覆，當政府最終決定舉辦年花銷售活動時，營運基金只有兩個星期時間為活動作準備。我們的其中一項主要任務是控制人流，減低病毒傳播風險。數碼科技部高級工程師陳賀賢先生帶領團隊，設計和部署人流監察、輪候及派籌系統。有關系統以雲端為基礎，並使用政府物聯通網絡及4G網絡。陳先生說：「由於我們從未把人流監察系統應用於年宵花市，因此必須迅速靈活地解決多項技術問題。」猶幸數碼科技部快速動員超過160名同事進行相關工作，包括系統設計、採購、現場操作、後勤資訊科技支援及整體工程監察，讓計劃順利推進。

團隊於各年花銷售點的各個出入口裝設三套採用不同技術的傳感器。以雲端計算場內人流數據後，顯示屏會即時顯示紅、黃或綠色燈號。當紅燈亮起時，會場會暫停讓訪客入場。

數碼科技部團隊的另一位高級工程師陳斯諾先生則談到其他運作上的挑戰，例如由於天氣惡劣，曾有安裝了傳感器的水馬被強風吹倒。他說：「同事必須馬上重新安裝和測試傳感器，確保系統恢復正常運作。」

團隊的一位工程師黃偉達先生表示，是次活動「匯聚了營運基金數代的資訊科技專才，承傳了我們竭盡所能服務市民的傳統。」陳賀賢先生總結指，這次活動證明了人流監察系統和政府物聯通網絡均能有效地於戶外應用，也讓團隊比較三種傳感器技術的成效，對營運基金的未來工作意義重大。

Members of the team that implemented the cloud-based central footfall monitoring system at the 15 points of sale of New Year flowers in early 2021 unanimously agreed that it was "an enjoyable experience" in providing services to enable the public to enjoy the traditional event in the epidemic. During the six-day event, the points of sale received about 870 000 visitors in an orderly manner.

When the Government gave the go-ahead for the sale event of New Year flowers in early 2021 upon considering the fluctuating epidemic situation, we had only two weeks for the preparation work. One of our key tasks was to control the number of visitors to minimise the risk of infection transmission. Mr Chan Hor-yin, a senior engineer of the Digitalisation and Technology Division (DTD), headed the team that was responsible for the design and deployment of the footfall monitoring, queuing and ticketing system. All relevant systems were cloud-based, operating on both GWIN and 4G networks. "As we had never applied a footfall system to Lunar New Year fairs before, we had to creatively resolve a number of technical issues in a highly efficient manner," said Mr Chan. Fortunately, the DTD promptly mobilised over 160 colleagues to share the work, including system design, procurement, on-site operation, back-end information technology (IT) support, and overall monitoring, enabling the smooth progress of our project.

Every entrance and exit of the points of sale was equipped with three sets of sensors using different technology. After the footfall data was computed by the cloud-based system, the on-site display panel would issue either a green, amber or red signal in real time. Admission would be suspended when the red signal was issued.

Mr Chan Sze-nok, another senior engineer of the DTD, shared other operational challenges. For example, under adverse weather condition, some water barriers with sensors installed had been brought down by strong wind. "Our colleagues had to immediately re-install and test the sensors to ensure proper operation of the system," he recalled.

Mr Wong Wai-tat, Timothy, an engineer of the team, said that the event "brought together our different generations of IT professionals and passed on the EMSTF's legacy of serving the public with dedication". Mr Chan Hor-yin concluded that the fairs proved the effectiveness of the footfall system and GWIN in outdoor applications and allowed the team to compare the effectiveness of three sensor technologies, providing valuable reference for the EMSTF's future work.

營運服務
TRADING SERVICES

創新環保科技　打造智慧城市

作為政府的「創新促成者」，機電工程署繼續向客戶、機電業界和公營機構推廣廣泛應用創新科技（創科），包括綠色環保科技，促使香港轉型成為在2020年12月公布的《香港智慧城市藍圖2.0》（《藍圖2.0》）所描繪的智慧城市。

近年，我們一直與初創企業和科研機構合作，開發各種創科試驗項目，其中多個項目已在客戶場地成功應用。2021年3月，機電署多個創科項目更在日內瓦國際發明展囊括八個獎項，包括四金四銀，寫下歷史一頁。該展覽是全球發明界的年度盛事之一。受疫情影響，今年活動改以線上形式舉行，吸引了來自20多個國家和地區的600多個發明項目競逐。

LEVERAGING INNOVATION AND GREEN TECHNOLOGIES TO BUILD A SMART CITY

As the Government's Innovation Facilitator, the EMSD continued to promote among clients, the E&M trade and the public sector, the wider use of innovation and technology (I&T), including the use of green technologies, with the aim of transforming Hong Kong into a smart city as outlined in the Hong Kong Smart City Blueprint 2.0 (Blueprint 2.0) published in December 2020.

In recent years, we have been collaborating with start-ups and research institutions on various I&T trial projects, and several successful ones were already applied at client venues. A milestone was marked in March 2021 when the EMSD's I&T projects won eight medals, four gold and four silver, at the International Exhibition of Inventions of Geneva, one of the most significant annual global events of inventions. Due to the epidemic, the event was held online and evaluated more than 600 inventions from over 20 countries/regions.

我們的創科項目於2021年日內瓦國際發明展贏得八個獎項，包括四項金獎及四項銀獎，成績優異。

Our I&T projects achieved excellent results at the International Exhibition of Inventions of Geneva 2021, winning a total of eight medals, including four Gold Medals and four Silver Medals.

機電署四個榮獲金獎的項目為實時升降機預測保養系統、智能自動梯實時監測系統、建築語義人工智能系統，以及物聯網智能馬桶清潔系統。

The EMSD won four Gold Medals for the projects including a Cloud-based Predictive Maintenance System for Real-time Lift Monitoring; Artificial Intelligent Nylon Optical Fibre Sensing Escalator Combs; Building Semantic Artificial Intelligence; and an Internet of Things (IoT)-enabled Smart Toilet Bowl Cleaning System.

我們研發的物聯網智能馬桶清潔系統在日內瓦國際發明展奪得金獎。清潔機械人以影像分析馬桶的清潔狀況，並利用內置刷頭執行不同程度的清潔工作，確保洗手間清潔衞生，同時減低清潔人員接觸病毒的風險。

The IoT-enabled Smart Toilet Bowl Cleaning System we developed won a Gold Medal in the International Exhibition of Inventions of Geneva. The cleaning robot can analyse the cleanliness of the toilet bowl with video analytic technology and perform different cleaning tasks with its built-in brush, ensuring the cleanliness and hygiene of the toilet and minimising the cleaning workers' risk of contracting virus.

我們透過光纖溫度傳感系統監測高壓電纜的溫度變化。該系統在偵測到異常情況時，例如高壓電纜溫度過高，會即時發出預警，通知有關人員立即進行所需維修以維持正常和穩定的供電。

We monitor the temperature changes of high voltage cables through the Fibre Optic Temperature Sensing System. When it detects abnormalities, such as overheating of high voltage cables, an alert will be sent immediately to inform us to conduct the necessary maintenance promptly to maintain normal and stable electricity supply.

至於四個榮獲銀獎的項目包括利用智能節能空氣過濾器技術的空氣過濾器2.0、以光纖溫度傳感系統為配電網進行預測監察、非侵入式升降機智能狀態監測數據分析系統，以及用於智慧監獄的影像分析及監察系統。我們取得的優秀成績，足證我們與客戶及合作伙伴在廣闊的創科應用範疇攜手努力的成果，亦有助鼓勵更多客戶採用創科方案。

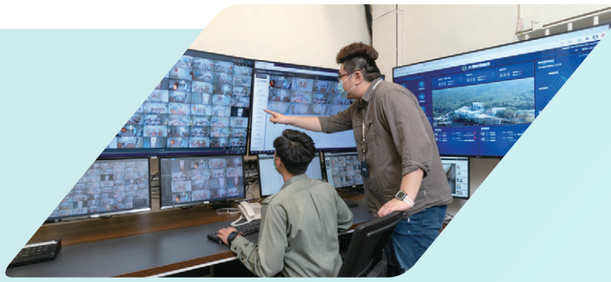
Our winning projects for the four Silver Medals were Air Filter 2.0 — Energy Saving Smart Air Filter Technology; Fibre Optic Temperature Sensing System for Predictive Monitoring of Electrical Distribution Network; Non-intrusive Data Analytics System for Adaptive Intelligent Condition Monitoring of Lifts; and Smart Prison — Video Analytic Monitoring System. The excellent results testify to our successful joint effort with clients and collaboration partners in a wide array of I&T application areas and will encourage more clients to adopt I&T.

此外，我們也樂見智慧監獄項目再次獲獎。早於2019年，智慧監獄的另一個研發項目，即移動及位置監察系統和維生指標監察系統，也於同一發明展勇奪金獎。

We are glad to see the Smart Prison projects being recognised for a second time. Back in 2019, another Smart Prison project on Passage Surveillance System (or later referred as Movement and Location Monitoring System) and Health Signs Monitoring System also won a Gold Medal in the same event.

在日常運作方面，我們的員工正運用更多創科方案和流動應用程式，為客戶處理服務預約、更新工作進度和管理承辦商服務。舉例而言，車輛工程團隊建立了一個全新的網上「故障處理服務系統」，讓拖車承辦商可通過流動應用程式接收工作指示並記錄出勤資料，而客戶則可輕鬆遙距查閱相關工作狀況和記錄。與多個操作及維修承辦商合作的市政工程團隊，現正測試名為「HEARTS」的應用程式，用以記錄承辦商個別工作人員在特定地點的出勤和維修工作詳情。

On a day-to-day level, our staff are using more I&T solutions and mobile applications (apps) for service bookings, job status updates and contractor management. The vehicle engineering team, for example, built a new online Fault Call Attendance System, on which our towing contractors could receive job requests and record their attendance information using a mobile app while clients could remotely access the related job status and records with ease. The municipal sector team, which works with many contractors in O&M operations, has been trialling a "HEARTS" app which records the attendance and work details of individual contractor workers at specific locations.



我們為懲教署研發影像分析及監察系統。系統使用實時影像比對，自動檢測和識別在囚人士的異常行為，例如打架和可疑的人羣聚集等。若偵測到異常行為，系統會提示值班職員採取適當行動。

We developed the Video Analytic Monitoring System for the Correctional Services Department. By real-time comparison of CCTV images, the system automatically detects abnormal behaviours of the persons in custody, such as fighting and suspicious gathering. If abnormal behaviours are detected, the system will notify the duty officers to take corresponding actions.

營運服務
TRADING SERVICES

我們為運輸署在中環耀星街安裝了新一代停車收費錶，該系統除了支援不同電子支付工具外，亦配備車位傳感器，偵測車位是否已被佔用，以提供實時信息，協助駕駛者尋找空置停車位，更可配合流動應用程式「入錶易」遙距繳付泊車費。

A new-generation parking meter has been installed for the TD at Yiu Sing Street in Central. The new parking meter system which supports multiple e-payment means, is also equipped with occupancy sensors for detecting whether parking spaces are occupied so as to provide real-time information to assist motorists in finding vacant parking spaces. Moreover, it supports payment of parking fees by remote payment through the mobile app HKeMeter.

年內，我們為客戶開展了多個大型創科項目，其中最矚目的是2021年1月正式推出的新一代路旁停車收費錶。作為運輸署的技術顧問，我們以專業創科知識協助署方落實「智慧出行」措施。

The year under review saw several major I&T projects launched for clients, most notable being the new generation of on-street parking meters officially, rolled out in January 2021. As the technical advisor to the Transport Department (TD), we leveraged our I&T expertise to support the TD to achieve the "Smart Mobility" initiatives.

全新的智能停車收費錶提供更便捷的泊車和支付設施，收費錶接受多種方式繳付泊車費，並設有「入錶易」流動應用程式，方便駕駛者在現場繳費或遙距付款延長泊車時間。新收費錶配備了車位傳感器，以毫米波雷達技術偵測停車位是否已被佔用，系統會據此為駕駛者提供實時信息。預計至2021年年中，約有5 000個新停車收費錶投入服務。這個嶄新項目勢將徹底改變路旁停車收費錶的面貌，系統未來也可增添更多智能功能。

The new system provides more convenient parking and payment facilities, including meters accepting payment of the parking fees by multiple means and a mobile app called HKeMeter that supports on-site payment of parking fees and parking time extensions by remote payment. The new meters are equipped with sensors using millimetre wave radar technology which can detect whether parking spaces are occupied, and the system could provide real-time information to motorists. It is estimated that about 5 000 new parking meters will be put into operation by mid-2021. This exciting project will give a facelift to the on-street parking meters, and additional smart features will potentially be incorporated in the future.

另一個取得良好進展的運輸署項目是停車位指引及車輛搜尋系統，其項目管理服務亦由我們負責。該系統將安裝在十個現有的多層公眾停車場，利用傳感器收集實時空置停車位資訊並傳送給駕駛者，指引他們前往空置停車位；系統的車輛搜尋功能則可指示駕駛者前往其車輛停泊的準確位置。項目預計於2022年第二季完成，屬《藍圖2.0》另一項「智慧出行」措施，定能提高公眾停車場的效率。

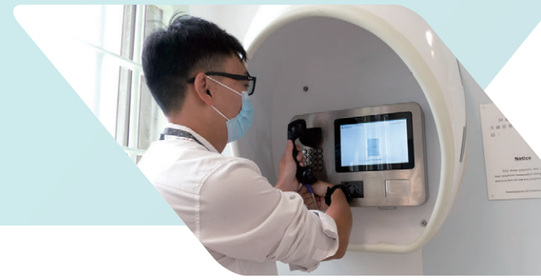
Another TD project that made good headway was the Bay Guidance and Car Searching System, for which we provided project management services. The systems will be installed in ten existing multi-storey public car parks. Using sensors to collect real-time occupancy information, the system has the bay guidance function to disseminate information to guide motorists to vacant parking spaces, and the car searching function to advise motorists where to find their parked vehicles. Scheduled for completion by the second quarter of 2022, this project being another "Smart Mobility" initiative in the Blueprint 2.0 will definitely enhance the efficiency of public car parks.

除了近年在市政街市等場地陸續安裝綜合樓宇管理系統，以便更有效監察升降機和自動梯等機電系統外，我們也為政府飛行服務隊總部、香港國際機場一號客運大樓的入境事務處辦事處、亞洲空運中心的香港海關辦事處、東涌游泳池及東涌市政大樓等場地的機電和空調設施，完成與綜合樓宇管理系統相關的數碼化工作，以提高系統監察的效率及加快維修保養的工作。

Further to our efforts in recent years to install integrated Building Management Systems (iBMS) at venues such as municipal markets to better monitor E&M systems such as lifts and escalators, we have completed the iBMS digitisation of E&M and air-conditioning facilities at venues such as Government Flying Service Headquarters, the office of the Immigration Department at Terminal 1 of the Hong Kong International Airport, the office of the Customs and Excise Department at Asia Airfreight Terminal, Tung Chung Swimming Pool and Tung Chung Municipal Services Building. Digitised iBMS enhance the efficiency of system monitoring and speed up maintenance works.

我們在大潭峽懲教所裝設綜合智能通訊系統，供在囚人士致電指定人士。有別於傳統電話，系統透過語音生物特徵識別功能及智慧手帶核實在囚人士的身分，並會自動為通話計時。

The Integrated Intelligent Communication System installed by the EMSD at TGCI allows PICs to call registered contacts. Unlike traditional phones, this system can verify the identity of the PICs with its voice biometrics identification feature and the smart wristbands, and time the calls automatically.



營運基金與懲教署攜手合作發展的智慧監獄，不但屢獲獎項，更為各種創科項目的應用奠定基礎。我們在多個懲教院所，已就不同創科項目完成40多次實地測試，包括移動及位置監察系統、維生指標監察系統、綜合智能通訊系統及巡邏機械人等。年內的重點是為稍後於2021年正式啓用的香港第一所智慧監獄 — 大潭峽懲教所做好籌備工作。

The EMSTF's collaboration with the Correctional Services Department (CSD) on its Smart Prison initiative has not only won awards but also set the stage for real-life launch of the various I&T projects. After more than 40 trials of different systems such as Movement and Location Monitoring System, Health Signs Monitoring System, Integrated Intelligent Communication System and patrol robots at various correctional institutions, our focus during the year was the preparation for the official opening of Tai Tam Gap Correctional Institution (TGCI), the first Smart Prison of Hong Kong later in 2021.

我們為智慧監獄開發的最新創科系統，包括獲獎的移動及位置監察系統、維生指標監察系統，以及影像分析及監察系統。影像分析及監察系統運用以骨架為參考基礎的演算法，能更快捷有效地偵測閉路電視所拍攝到在囚人士的異常行為，例如自殘、打架和擅進禁區，有助提升保安及運作效率。大潭峽懲教所安裝了電子儲物櫃，方便在囚人士使用。此外，我們在歌連臣角懲教所測試了無人機偵測系統，在懲教所的周邊範圍進行自動化空中巡邏。

The latest additions to the Smart Prison I&T systems included the award-winning Movement and Location Monitoring System, Health Signs Monitoring System and Video Analytic Monitoring System. Using a skeleton-based algorithm, the Video Analytic Monitoring System can detect abnormal behaviours, such as self-harm, fighting and entering prohibited areas, of persons in custody (PICs) captured on CCTV cameras more efficiently, enhancing security and operation efficiency. E-lockers have been deployed at the TGCI for PICs' convenience. At the Cape Collinson Correctional Institution, an Unmanned Aircraft Detection System has been piloted for automatic boundary aerial inspections.

我們為懲教署大潭峽懲教所設置電子儲物櫃系統，讓在囚人士妥善存放個人物品。在囚人士可透過智慧手帶開啓電子儲物櫃。

To allow PICs to store their belongings properly, we installed the PICs e-locker system at TGCI for the CSD. The PICs can unlock the e-lockers with their smart wristbands.

營運服務
TRADING SERVICES

我們為渠務署在昂船洲污水處理廠設置洞穴式自動虛擬環境系統，讓訪客以虛擬方式參觀廠內不同設施，360度體驗污水處理流程，為他們帶來全新體驗。該系統亦可作為員工內部安全訓練之用。

We deployed the CAVE system at the Stonecutters Island Sewage Treatment Works for the DSD, providing brand-new experience for visitors who can virtually visit different facilities and experience the sewage treatment process with a 360-degree view. The system also facilitates safety training for staff internally.

渠務署是營運基金另一個長期合作伙伴。該署的昂船洲污水處理資訊中心引進了洞穴式自動虛擬環境技術，讓參觀人士以虛擬方式親身體驗污水處理流程。我們利用無人航拍機，拍攝整個污水處理廠鳥瞰景像及沉澱池池底的環境，製成虛擬場境。這類虛擬現實和擴增實境技術，不僅為訪客帶來全新有趣的體驗，更可供內部培訓之用。

Our another long-time partner is the Drainage Services Department (DSD) which has deployed the Cave Automatic Virtual Environment (CAVE) technology at the information centre of its Stonecutters Island Sewage Treatment Works. This technology allows visitors to have an immersive virtual experience of the sewage treatment process. To accomplish the virtual environment, we used camera drones to capture full aerial views of the entire facility as well as the condition at the bottom of the sedimentation tanks. The virtual reality and augmented reality experience is not only interesting for visitors but also applicable for the DSD's internal training.

年內，渠務署的「智慧渠務 — 防洪監察系統」，也進一步發展。繼在2019/20年度於13個地點安裝了物聯網水位傳感器後，我們在2020/21年度於另外40多個地點，同樣安裝了傳感器。物聯網傳感器網絡擴展後，增強了署方實時監測風暴潮水位的能力，並可監測地勢險要的位置。

The DSD's Smart Drainage — Flood Monitoring System made further progress during the year, as we installed IoT water level sensors at more than 40 sites, in addition to 13 sites in 2019/20. The extended network of IoT sensors has enhanced the DSD's capacity to monitor real-time storm surge levels, even on difficult terrain.

為配合《藍圖2.0》的「精明規管」計劃，營運基金一直為客戶部門和機電署規管服務提供創科支援，推動政府牌照申請服務流程電子化，包括提供電子申請、電子支付和電子發牌服務，讓用戶以安全方便的線上方式申請牌照。政府物聯通的建設工程也取得良好進展，沙田和東九龍的網絡工程已完成，而港島的政府物聯通基站建設工程現正進行。我們還為發展局的智慧工地安全項目提供政府物聯通網絡支援。

To support the "Be the Smart Regulator" programme in the Blueprint 2.0, the EMSTF has been providing I&T support to client departments and the EMSD's Regulatory Services for digitising government licensing processes, including e-submission, e-payment and e-licencsing, in a secure and user-friendly manner. Construction of the Government-Wide IoT Network (GWIN) also saw good progress, with network coverage completed for Sha Tin and East Kowloon and the rollout of the GWIN gateway to Hong Kong Island underway. We also provided the GWIN network to support the Development Bureau's smart construction site safety projects.

我們為渠務署於多個地點安裝「智慧渠務—防洪監察系統」，利用物聯網技術及新型傳感器，實時監測水位高度的變化和相關數據，有助在颱風季節及早實施應急措施。

We installed the Smart Drainage – Flood Monitoring System in various sites for the DSD. Using IoT technology and a new type of sensor, the system can monitor in real-time the changes in water levels and relevant data to facilitate early implementation of contingency measures during typhoon season.

為解決鼠患，我們研發了嶄新的智慧捕鼠系統。我們先在老鼠出沒的地點設置傳感器，收集牠們活動路線的資訊，再於相關位置安裝智慧捕鼠籠以捕捉老鼠。

We developed a brand new Smart Mouse Trap System to address rodent infestation. After installing IoT sensors at places with rodent problems to collect information on their routes, smart mouse traps were set at those areas to catch the rodents.

我們許多創科項目都與市民生活息息相關。以防控鼠患為例，我們進行了測試，在捕鼠籠上加設物聯網動態傳感器，以協助客戶部門捕鼠。為了更準確偵測老鼠出沒位置，我們設置熱能探測攝錄機和具備人工智能的物聯網傳感器網絡，以監測和分析老鼠的活動情況，分析結果會以地圖形式傳送給客戶，用於防治鼠患。該系統將於2021年年中在荃灣楊屋道街市進行測試。

Many of our I&T projects are closely related to the people's daily life. Take rodent control as an example, to help clients capture rodents, we conducted a trial where IoT motion sensors were put on rodent traps. To locate the rodents more precisely, we set up thermal imaging cameras and a network of IoT sensors with artificial intelligence to monitor and analyse rodent activities. The results, in the form of a map, would be provided to the client for rodent control actions. The system was scheduled for testing in the Yeung Uk Road Market in Tsuen Wan in mid-2021.

為預防登革熱爆發，我們研發了三款噴霧器機械人，協助食物環境衛生署的滅蚊工作。機械人的概念原型設計，備有多種防蟲噴霧器，可配合不同地形環境使用。

To prevent dengue fever outbreak, we developed three types of robotics foggers to help the FEHD's mosquito control work. The prototypes have been designed to suit different operating terrain condition with a variety of pest control applicators.

我們亦積極應用機械人技術，持續改善公共服務，例如運用機械人清潔馬桶、清潔及檢查蒸氣鍋爐火管等。政府資訊科技總監辦公室於2020年6月推出「敢想．共創」創科推廣活動，設有「促進機械人科技應用」創新比賽，旨在推動公共服務注入更多創新意念，機電署共有五個方案入圍。

We are also active in applying robotics technologies to continuously improve public services such as cleaning toilet bowls, cleaning and inspecting steam boilers' fire tubes, etc. Five EMSD proposals have been shortlisted in the Leading Towards Robotics Technologies competition in the Catch the Innovation Campaign, which aimed to inspire innovative applications in public services, launched in June 2020 by the Office of the Government Chief Information Officer.

營運服務
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疫情期間，為減少人與人接觸，我們為客戶引入具備各種功能的機械人，包括消毒機械人(左)、體溫探測機械人(中)及派送機械人(右)，以協助客戶執行不同任務，紓緩前線人員的工作負擔。

To reduce social contact in the epidemic, we introduced to our clients robots with various functions, e.g. disinfection robot (left), fever screening robot (middle) and delivery robot (right), to assist them in performing different tasks and alleviate the workload of their frontline staff.

此外，我們開展了一項測試計劃，研究運用物聯網技術保障遠足人士的安全。有關系統的儀器具備定位和緊急求救功能，方便救援隊伍在微弱或全無流動電話網絡覆蓋的偏遠地區，追踪急需援助的遠足人士位置。相關儀器的原型設計合約已於2021年1月批出。

Moreover, a trial scheme was launched to explore IoT technology for enhancing hiker safety. Equipped with positioning and SOS features, the system would help rescue teams track distressed hikers' location in remote areas of weak or no mobile network coverage. The device prototype design contract was awarded in January 2021.

營運基金一向支持政府的節能措施。為響應2019年《施政報告》提出的「綠色能源目標」措施，我們已於2020年10月成立能源管理小組，為大約250幢政府建築物，統籌在2020/21至2022/23年度期間的能源審核和碳排放審計。該措施旨在減少政府的能源消耗量，目標是以2018/19年度為基準，在2020/21至2024/25年度把能源消耗量進一步減少6%。

The EMSTF has always supported the Government's energy-saving initiatives. In response to the "Green Energy Target" initiative introduced in the 2019 Policy Address, in October 2020, we set up an energy management team to co-ordinate and conduct energy audits and carbon audits for about 250 government buildings from 2020/21 to 2022/23. This initiative seeks to further reduce energy consumption within the Government by 6% for the period from 2020/21 to 2024/25, using 2018/19 as the baseline.

截至2021年3月，數份能源審核和碳排放審計顧問合約的工作已經展開，涵蓋123幢政府建築物。當我們為建築物物色到能源管理機會後，便會協助客戶部門申請撥款，以落實相關的節能項目。同時，營運基金在2020/21至2025/26年度會繼續協助客戶進行節能項目，進一步擴展綠色項目服務範圍，例如更換照明和空調系統，以及研究安裝太陽能板和其他可再生能源系統的可行性。

As at end March 2021, our work under several consultancy contracts for energy audits and carbon audits covering 123 government buildings have commenced. When energy management opportunities (EMOs) are identified, we shall assist clients in bidding funds to implement energy-saving projects arising from the EMOs. Meanwhile, the EMSTF continues to help our clients carry out energy-saving projects from 2020/21 to 2025/26, further expanding our green projects portfolio such as lighting and air-conditioning system replacements, and explore the feasibility of photovoltaic panel and other renewable energy system installation works.

於2021年年初完成翻新的機電署總部露天廣場設有各類綠化設施，例如新穎的園藝設計、太陽能樹及太陽能水耕種植花園等，讓同事和市民能享受更舒適的綠化休憩環境。

The piazza at the EMSD Headquarters, refurbished in early 2021, features various green facilities, such as novel landscape design, a solar tree and a solar-powered hydroponic garden, etc., thereby enabling colleagues and the public to enjoy a more comfortable, green and relaxing environment.

我們的車輛工程服務也為低碳時代作好準備。政府的電動車隊以轎車為主，現正不斷擴充。為滿足電動車的維修保養需求，我們會增強相關的新技術知識和添置新設備，例如電動車故障診斷工具等，以確保我們負責維修保養的電動車在路上行駛時安全兼且性能良好。目前政府車隊約有160輛電動車，預計未來五年電動車的數目會有所增加。

Our vehicle engineering services are also preparing for a low-carbon age. To meet the maintenance needs of a growing government electric vehicles (EVs) fleet which mainly consists of saloon cars, new technological know-how and equipment such as fault diagnosis tools will be stepped up to ensure the safety and roadworthiness of the EVs under our maintenance. With about 160 EVs currently, the number of government EVs is expected to increase in the next five years.

此外，為慶祝機電署總部大樓的露天廣場翻新工程完成，我們於2021年3月舉行了開幕典禮。我們一直致力將機電署總部大樓打造成展示節能和綠色科技的模範建築，此項翻新工程正是其中一個例子。全新的露天廣場為訪客和市民提供優美舒適的公共空間，也是我們展開各種創科技術試驗的場地。位於露天廣場旁邊新落成的「機電創科廊」，展示各種創科項目，稍後將向公眾開放。我們希望總部大樓這些新落成的設施能帶來示範作用，啓發客戶和公眾發揮可持續發展的創意理念。

Celebrating the completion of the piazza refurbishment of our Headquarters, we held an opening ceremony in March 2021. The project is part of our continued effort to make the EMSD Headquarters a model building applying energy-saving and green technologies. Providing a pleasant public space for visitors and the community, the piazza is where some of our I&T technical trials took place. Adjacent to the piazza is our newly completed E&M InnoFoyer which displays various I&T projects and will be opened to the public soon. With these facilities, we hope our Headquarters will become an ever more inspiring sustainability showcase for our clients and the public.

位於機電署總部大樓地下的「機電創科廊」，展示不同的多媒體互動展品，包括部門的創科成果及應用，例如智能應急照明系統及物聯網時鐘等。

The E&M InnoFoyer located at the ground floor of the EMSD Headquarters, showcased various multimedia exhibits, including the EMSD's I&T projects and applications, such as the Smart Emergency Lighting System, IoT Clock, etc.

營運服務
TRADING SERVICES

第一所智慧監獄的幕後功臣
The Team behind Hong Kong's First Smart Prison

同屬保安及車輛工程部的工程師劉宏業先生及許詠然女士積極協助懲教署建設智慧監獄。他們表示，創新科技對懲教院所提升運作效率及保安水平方面有巨大潛力，將協助智慧監獄的發展邁出一大步。

Mr Lau Wang-yip, Martin and Ms Hui Wing-yin, Bertha, both engineers from the Security and Vehicle Services Division, actively supported the CSD in the development of Smart Prison. They remarked that I&T had enormous potential in upgrading the operational efficiency and security level of correctional institutions, enabling a big step forward for Hong Kong's Smart Prison development.

對保安及車輛工程部的青年工程師劉宏業先生和許詠然女士來說，過去一年尤其充實。他們為協助懲教署建設智慧監獄，開發了多項數碼技術方案，而全港第一所智慧監獄 — 大潭峽懲教所為本港智慧監獄的發展開拓新里程。

許女士和劉先生近年積極參與懲教署發展智慧監獄方案的工作，通過應用獲獎的創科解決方案，提升懲教署的運作效率，推動以人性化的方式管理在囚人士。

劉先生特別提到大潭峽懲教所的影像分析及監察系統和綜合智能通訊系統。這套最新的影像分析及監察系統汲取了以往寶貴的測試經驗，運用優化的電腦演算法和火柴人視像分析法，識別幾種異常情況，包括打架、聚集、攀爬等。如發生任何一種情況，系統會即時通知懲教人員採取行動保護在囚人士。至於綜合智能通訊系統，許女士解釋說：「該系統能讓在囚人士使用個人登入密碼和電話卡，在電話亭自行撥打電話。系統使用生物識別和相關技術，支援所有通訊保安措施。在囚人士不需要懲教人員在場才能撥打電話，可讓署方騰出寶貴的人力資源，執行其他職務。」

至於大潭峽懲教所的其他優化創科方案，包括應用解像度更高的閉路電視鏡頭，以支援影像分析及監察系統的影像分析功能，以及為新一代智慧手帶選取更合適的用料。如在囚人士心跳偏離正常標準或他們進入禁區，經優化的智慧手帶會向懲教人員發出警報。劉先生和許女士都認為人工智能在智慧監獄發展方面有巨大潛力，而在汲取實際測試經驗後再持續調整創科方案也很重要。

The past year was particularly fulfilling for our young engineers Mr Lau Wang-yip, Martin and Ms Hui Wing-yin, Bertha of the Security and Vehicle Services Division. They exerted great efforts in developing various digital solutions for the Smart Prison initiative under the Correctional Services Department (CSD), Hong Kong's first Smart Prison, Tai Tam Gap Correctional Institution (TGCI), marked the new chapter of the development of smart prisons in the territory.

Both Ms Hui and Mr Lau have been deeply involved in deploying award-winning innovation and technology (I&T) solutions for the CSD's Smart Prison protocol in recent years. The new developments aim to enhance the client's operational efficiency and to promote the humanised management of persons in custody (PICs).

Mr Lau highlighted TGCI's Video Analytic Monitoring System (VAMS) and Integrated Intelligent Communication System (IICS). The latest version of VAMS, drawing on previous valuable trial experience, uses enhanced algorithms and stick-figure visualisation analytics to identify several abnormal situations, namely fighting, aggregation, reaching high, etc. Once any of such situations are identified, the system will immediately alert CSD officers so they can take action to better protect PICs. For the IICS, Ms Hui explained, "PICs may now make calls at a phone booth using a personalised log-in and phone card, with all security measures fully supported by the system's biometrics and related technologies. The system allows PICs to make calls without having a CSD officer present, releasing precious manpower for other duties."

Other improvements included the use of CCTV cameras of higher resolution to support the VAMS's visual analytics function, as well as using better materials for a new generation of smart wristbands. The improved wristband will send an alarm to CSD staff if a PIC's heartbeat deviates from the normal range or if they enter a restricted area. Both Mr Lau and Ms Hui agreed that artificial intelligence had great potential for Smart Prison development, and that continuous fine-tuning of I&T solutions after real-life trials was important, too.

升降機預測保養金獎方案
A Gold-medal Solution to Predictive Lift Maintenance

機電署光纖傳感升降機監測系統的設計及研發團隊，致力開發升降機預測保養技術，工程師梁建峰先生(右一)為成員之一。該系統贏得2021年日內瓦國際發明展金獎。

Mr Leung Kin-fung (1st right), an engineer, is a member of the EMSD optical fibre sensing lift monitoring system design and development team, which endeavoured to develop the predictive lift maintenance technology. The system developed won a Gold Medal at the International Exhibition of Inventions of Geneva 2021.

綜合工程部工程師梁建峰先生時常有個想法，如果能找到一個準確預測和預防升降機故障的方案，必定很棒。他負責營運基金各客戶大樓和場地3 000多部升降機的維修保養的工作，所以十分明白這樣一個解決方案，可為他的團隊、升降機維修業、物管經理以至廣大市民帶來極大裨益。

2019年，梁先生的團隊開始研究運用光纖技術開發創新科技方案。團隊利用光纖光柵傳感器和電子傳感器，收集升降機主要組件的實時數據。

「這項技術讓我們能夠在升降機運行期間，實時監察組件的狀況，並識別運行模式。使用人工智能技術分析數據，從而預測故障，便能在最佳時機，即故障發生之前，進行適當的維修保養工作。」

實時升降機預測保養系統屬非侵入式系統，由營運基金與本地初創公司共同研發，並在享譽全球的2021年日內瓦國際發明展獲得金獎。梁先生指出，這也是本港首次將光纖傳感技術應用於升降機維修保養工作。該系統於2019年年底首次在四部政府升降機試用，其後更在不同政府場地共十部升降機試用。

談及遇到的挑戰，梁先生憶述項目研發初期，最大困難是選定可準確預測故障的主要升降機組件。經過多次測試後，團隊終於確定牽引摩打、制動臂、鋼纜和升降機門是安裝傳感器的最佳位置。機電署現已為該系統制訂標準化設計，並陸續與業界分享。

Mr Leung Kin-fung, an engineer working in the General Engineering Services Division, has often thought how wonderful it would be if one could accurately predict and prevent lift faults. Being responsible for the maintenance work of more than 3 000 lifts in the EMSTF's various client buildings and venues, Mr Leung appreciated the enormous value such a solution would bring to his team and the lift maintenance trade, as well as to building managers and the public they serve.

In 2019, Mr Leung's team started developing an innovation and technology solution with the application of optical fibre technology. The team's novel predictive maintenance system uses both Fibre Bragg grating sensors and electronic sensors to gather real-time data on major lift components.

"This technology allows us to monitor the condition of the components during lift operation in real time, and recognise operational patterns. We use artificial intelligence technologies to analyse the data collected, and predict faults, so that appropriate maintenance can be carried out at the right time, that is, before faults occur."

The non-intrusive system, namely Cloud-based Predictive Maintenance System for Real-Time Lift Monitoring, that we jointly developed with a local start-up, won a Gold Medal in the world-renowned International Exhibition of Inventions of Geneva 2021. Mr Leung remarked that this was the first time that the optical fibre sensing technology was applied to lift maintenance in Hong Kong. After the first trial on four government lifts in late 2019, the system has since been trialled on a total of ten lifts at different government venues.

Talking about the challenges encountered, Mr Leung recalled initial difficulties in determining the major lift components for fault prediction. After repeated experimentation, the traction motor, brake arms, steel ropes and lift doors were the components identified as the best locations for the sensors. A standardised design was developed for the system and shared with the trade progressively.

營運服務
TRADING SERVICES

支持公共基建發展

基建發展與香港的經濟增長息息相關。營運基金多年來一直支持本港的公共基建設施發展及其機電設施的維修保養工作，服務涵蓋多個領域，包括道路與航空交通、邊境管制口岸、公共衞生、政府數據中心、公共大樓和設施，甚至應對氣候變化問題。

SUPPORTING PUBLIC INFRASTRUCTURE DEVELOPMENT

Infrastructure development is closely related to Hong Kong's economic growth. The EMSTF has long been playing a role in supporting the city's public infrastructure development programmes and maintaining their E&M facilities, covering diverse areas such as road and air transport, boundary control points, public health, government data centres, public buildings and facilities and even combating climate change.

為確保屯赤隧道能順利啓用，我們積極協助運輸署進行通車籌備工作，為各項機電設施進行技術評估和檢查，包括在隧道內及控制室裝設的發光二極管照明系統。

To ensure the smooth opening of the TM-CLK Tunnel, we actively assisted the TD in the preparatory work for the commissioning and conducted technical assessment and inspection on various E&M facilities, including the Light Emitting Diode lighting system installed inside the tunnel and the control room.

屯門至赤鱲角連接路已於年內竣工，其中包括全港最長的海底行車隧道 — 屯門–赤鱲角隧道（屯赤隧道）。該隧道已於2020年12月通車，現為連接新界西北和北大嶼山的主要通道，有助應付預期會大幅增加的區內運輸需求。

The past year saw the completion of the Tuen Mun-Chek Lap Kok (TM-CLK) Link, with the TM-CLK Tunnel, Hong Kong's longest sub-sea tunnel. The TM-CLK Tunnel, opened in December 2020, provides a strategic link connecting Northwest New Territories and North Lantau to meet anticipated huge traffic demand.

在屯門至赤鱲角連接路的工程階段，營運基金為其機電系統提供諮詢服務。該連接路啓用後，我們負責其機電、屋宇裝備、交通管制及監察系統方面的管理、操作和維修保養合約監督工作。

The EMSTF provided E&M system advisory services for the TM-CLK Link during the project stage. After project commissioning, we have taken on the monitoring of the management, operation and maintenance contracts regarding the E&M, building services, and traffic control and surveillance system of the TM-CLK Link.

兩年多前，我們協助運輸署進行籌備工作，為開通屯赤隧道提供專業和技術支援。營運基金為隧道各項機電設備及系統進行技術評估，並監督青嶼幹線豁免收費安排的技術調整工作，確保屯赤隧道能夠順利通車，並同步落實青嶼幹線豁免收費安排。

More than two years ago, we assisted the Transport Department (TD) in the preparatory work, and offered professional and technical support for the commissioning of the TM-CLK Tunnel. The EMSTF conducted technical assessments on various E&M equipment and systems of the tunnel and oversaw the technical adjustments of the toll waiver system of the Lantau Link, ensuring smooth commissioning of the TM-CLK Tunnel and the implementation of the Lantau Link toll waiver.

此外，香園圍邊境管制站的貨檢設施已於2020年8月啓用，大大縮短了香港與深圳東地區之間的行車時間，令跨境物流更暢順便利。營運基金為香港海關（海關）和入境事務處（入境處）等客戶部門安裝各種機電及電子系統，並負責系統的機電維修保養工作。

Moreover, the cargo clearance facilities of the Heung Yuen Wai Boundary Control Point was commissioned in August 2020, greatly shortening the travelling time between Hong Kong and eastern Shenzhen, and facilitating cross-border logistics. The EMSTF installed various E&M and electronic systems for client departments such as the Customs and Excise Department (C&ED) and the Immigration Department (ImmD), and has taken up the E&M maintenance work for the systems.

其他陸路運輸基建項目的工程正在進行。將軍澳–藍田隧道預計於2022年通車。屬六號幹線中段部分的T2主幹路及茶果嶺隧道，將會連接中九龍幹線及將軍澳–藍田隧道，暫定於2026年通車。我們一直為這些項目提供技術顧問服務。

Other land transport infrastructures are in progress. The Tseung Kwan O-Lam Tin (TKO-LT) Tunnel is expected to commence operation in 2022. Trunk Road T2 and Cha Kwo Ling Tunnel, which together will constitute the middle section of Route 6 connecting the Central Kowloon Route and TKO-LT Tunnel, is tentatively scheduled to be commissioned in 2026. We have been providing technical consultancy services for these projects.

航空運輸設施方面，海關、入境處和衞生署等客戶部門會在香港國際機場即將落成的多式聯運中轉客運大樓（中轉大樓）增設新的邊境管制機電設施和電子系統，我們繼續就此為他們提供諮詢和項目管理服務。中轉大樓由香港機場管理局（機管局）發展，預計於2022年年底啓用，設有一條封閉行車橋，接駁直通港珠澳大橋的香港口岸設施，為雙向陸空轉乘的旅客提供輕鬆便捷的全新轉乘體驗。

On air transport related facilities, we continued to provide consultancy and project services to clients such as the C&ED, ImmD and Department of Health (DH) for their new boundary control E&M facilities and electronic systems at the upcoming Intermodal Transfer Terminal (ITT). Developed by the Airport Authority Hong Kong (AAHK) and scheduled for commissioning in end 2022, the ITT will have a bonded vehicular bridge linking up the Hong Kong Boundary Crossing Facilities of the Hong Kong-Zhuhai-Macao Bridge with the Hong Kong International Airport (HKIA), thus providing new hassle-free travelling experience for bridge-to-air/air-to-bridge transfer passengers.

此外，我們將於香港國際機場設立全新車輛維修工場，為因應三跑道系統而新增和現有的飛機救援車及消防車提供維修保養服務。去年，營運基金與機場相關的客戶部門，包括民航處、海關及機管局，簽訂了新的長期服務水平協議，既加強了伙伴關係，更顯示客戶對我們服務的信任。以與機管局新簽訂的七年定期合約為例，機管局委託我們負責維修保養助航燈系統的工作。該系統是極為專門的範疇，我們在這方面提供首屈一指的專業技術和可靠服務。

Also, we will establish a new vehicle maintenance workshop at the HKIA for maintaining new and existing aircraft rescue and fire fighting vehicles for the Three-runway System. Our partnerships with airport-related clients also received a boost last year as the Civil Aviation Department, C&ED and AAHK signed long-term new Service Level Agreements with the EMSTF, signifying their trust in our services. The seven-year new term contract with the AAHK, for example, commissions us to provide the maintenance of the Airfield Ground Lighting System, a highly specialised area where our expertise and reliability are unrivalled in Hong Kong.

一如以往數年，我們的機場團隊在機管局2019/20機場安全嘉許計劃中獲得多個獎項，包括最優秀安全督導員、良好安全建議和模範安全行為獎項。此外，我們一位同事因在管理交通燈緊急維修方面表現出色，榮獲2020年申訴專員嘉許獎。

As in the past years, our airport team was awarded several awards, including the Best Safety Supervisor, Good Safety Suggestion and Role Model in Safety Behaviour, in the AAHK's 2019/20 Airport Safety Recognition Scheme. One of our colleagues also won the Ombudsman's Awards 2020 for his outstanding performance in managing traffic light emergency repairs.

對車主而言，位於青衣的運輸署多層車輛檢驗綜合大樓（驗車大樓）落成開放是重要的發展項目。驗車大樓將於2021年4月分階段啓用，樓高三層，共配備30條驗車線和輔屬設施，可為不同類型的車輛進行檢驗。現有的三個政府驗車中心將分階段重置到新驗車大樓。與其他運輸基建設施一樣，我們在工程項目階段負責提供技術諮詢，在項目落成後，則提供大樓的機電維修保養。

An important development for vehicle owners was the opening of the newly completed multi-storey TD Vehicle Examination Complex in Tsing Yi, which will commence operation in phases in April 2021. The complex is equipped with 30 inspection lanes in total and auxiliary facilities on three floors for examinations and inspections of various vehicles. Services provided by the three existing government vehicle examination centres will be reprovisioned to the new complex in phases. As for other transport infrastructures, we provided technical advice in the project stage and have taken up the E&M maintenance services of the complex upon its opening.

我們為新落成的青衣運輸署車輛檢驗綜合大樓設計及安裝先進的驗車設備及電子控制系統，大幅提升驗車服務效率及質素。我們在設計過程中更應用了建築信息模擬技術，為日後的實時數據設施故障分析做好準備。

We have designed and installed advanced examination equipment and an electronic control system for the newly built Transport Department Vehicle Examination Complex in Tsing Yi, which will greatly improve the service quality and efficiency of vehicle examination. Building Information Modelling technology has also been applied in the design process to prepare for real-time data analysis of facility faults in future.

營運服務
TRADING SERVICES

我們為公共衞生檢測中心安裝智能照明系統，利用「ZigBee」技術無線控制電力供應及記錄用電量。當該系統透過紅外線傳感器偵測到有人經過時，便會自動把燈光調節至適當光度，以節省用電。

We installed the smart lighting system at the Public Health Laboratory Centre and wirelessly control power supply and record power consumption using the "ZigBee" technology. When the infrared sensor detects people passing by, the system will automatically adjust the light to the desired luminance to save electricity.

支援香港公共衞生基建設施是我們其中一項工作，例如支援醫院管理局（醫管局）進行屯門醫院手術室大樓擴建計劃、威爾斯親王醫院住院新翼大樓建設、擴建北區醫院、醫管局支援服務中心及北區社區健康中心等項目。此外，我們為公共衞生檢測中心安裝智能照明系統，並為北區醫院安裝智能緊急照明系統，使系統操作更靈活，並便利客戶定期測試電池操作的照明裝置。

Supporting Hong Kong's public health infrastructures is part of our work, such as supporting the Hospital Authority (HA) on the Extension of the Operating Theatre Block for Tuen Mun Hospital, new In-patient Extension Block of Prince of Wales Hospital, the Extension of North District Hospital, Hospital Authority Supporting Services Centre, and North District Community Health Centre. Also, the installation of smart lighting system at the Public Health Laboratory Centre and the smart emergency lighting system at the North District Hospital helped improve operational flexibility and facilitate periodic tests of battery-operated lightings for clients.

此外，我們一直為衞生署重置沙田富山公眾殮房提供技術意見，並就部分傢俱及設備提供項目管理服務。重置項目預計於2021/22年度落成。

Moreover, we have been providing project management services on selected Furniture and Equipment items and giving technical advice to the DH on the reprovisioning of Fu Shan Public Mortuary at Sha Tin, scheduled for completion in 2021/22.

社會福利署的小欖綜合康復服務大樓是社會服務界的重點項目。該綜合大樓將提供約1 150個住宿照顧服務名額及550個日間訓練名額。我們與客戶緊密合作，為大樓在2021/22年啓用時接手機電設施的維修保養服務作好準備。

A major project for the social services sector is the Siu Lam Integrated Rehabilitation Services Complex of the Social Welfare Department. It will provide about 1 150 residential care places and 550 day training places. We have been working with the client to prepare for taking up the facility's E&M maintenance services when it commences operation in 2021/22.

政府數據中心是提供本港公共服務和發展智慧城市的重要基建設施。政府資訊科技總監辦公室（資科辦）正在長沙灣建造政府數據中心大樓，我們就此提供技術意見和支援。該大樓是資科辦首幢專為數據中心而興建的獨立大樓，會支援各決策局及部門為市民提供便利可靠的電子政府服務。新數據中心將會配備高度靈活兼且節能的供電和冷卻系統，以便數據中心發揮最佳功能，提升能源效益。

Government data centres are critical infrastructures for public services and smart city development. We have been providing technical advice and support to the Office of the Government Chief Information Officer (OGCIO) on developing a government data centre complex in Cheung Sha Wan. Being OGCIO's first purpose-built, standalone data centre building, it will support bureaux and departments in the provision of reliable and convenient e-Government services. The new data centre will be equipped with resilient and energy-efficient power supply and cooling systems for optimal performance and energy efficiency.

氣候變化及其影響已成為加強基建設施工作日趨重要的考慮因素。近年像山竹的超強颱風，對本港設施造成嚴重破壞。例如沿海的泵房的基建在颱風襲港期間一旦受到破壞，可引致停電或其他重大事故。機電署作為政府跨部門代表組成的氣候變化督導委員會（督導委員會）成員之一，在年內成立了一個團隊，專門負責協調營運基金在督導委員會的工作。

Climate change and its impact have become an increasingly important consideration in infrastructure enhancement. In recent years, super typhoons like Mangkhut have brought extensive damage to our city's facilities, including coastal infrastructure such as pump houses which could lead to power outages or major incidents. As a member of the Government's Steering Committee on Climate Change (SCCC) which comprises representatives of different government departments, we set up a team to co-ordinate the work of the EMSTF during the year.

土木工程拓展署向督導委員會提交「提升基建抗逆力計劃」後，我們隨即與多個客戶部門聯絡，就營運基金負責保養的重要沿岸基建設施，馬上進行檢視和落實相關的改善工程。

Following the submission of an Infrastructure Resilience Enhancement Plan to the SCCC by the Civil Engineering and Development Department, we have liaised with various clients to review and implement the enhancement measures for critical coastal infrastructures under the EMSTF's maintenance.

為先進的驗車大樓做好準備
Gearing up for the State-of-the-Art Vehicle Examination Complex

高級工程師李雨華先生表示，熟悉驗車流程對新車輛檢驗綜合大樓項目的準備工作十分重要，所以他安排團隊成員接受專業的驗車工作培訓，確保驗車大樓落成後能暢順運作。

Mr Lee Yue-wah, Ellis, a senior engineer, remarked that a good understanding of the vehicle examination process was vital to the preparation work of the new VEC project. He therefore arranged his team members to undergo professional vehicle examination work training, ensuring the smooth operation of the VEC upon commissioning.

青衣多層車輛檢驗綜合大樓（驗車大樓）第一期將於2021年4月啓用，標誌運輸署邁進新里程。驗車大樓全面投入運作後，將取代運輸署現有三個政府驗車中心。

The opening of the first phase of the multi-storey Vehicle Examination Complex (VEC) in Tsing Yi in April 2021 will mark a new milestone for the Transport Department (TD). Upon its full operation, the VEC will replace all three existing TD vehicle examination centres.

邊境及運輸工程部高級工程師李雨華先生於2018年開始參與該項目，當時團隊面對的首項挑戰，就是要在短時間內熟習驗車流程。李先生需要確保團隊成員透過向運輸署驗車主任和工作人員了解，認識不同車種的驗車流程，又安排中國內地製造商的專家為團隊的同事提供培訓，以便他們更深入了解驗車工作。

Mr Lee Yue-wah, Ellis, a senior engineer in the Boundary Crossing Facilities and Transport Services Division, joined the project in 2018. One of the first challenges his team facing was to quickly ramp up their knowledge of the vehicle examination workflow. Mr Lee made sure that his team members spent time with the TD's vehicle examination officers to familiarise themselves with the examination workflow for different types of vehicles. Training by experts from manufacturers in the Mainland of China was also arranged for the team to gain insights into vehicle examination works.

驗車大樓是本港首幢多層綜合車輛檢驗大樓，配備全面的先進設備。大樓由一座樓高七層的辦公大樓和三層驗車大堂組成，共設有30條驗車線和檢驗不同類型車輛的輔屬設施。驗車設備和電子系統的設計採用了建築信息模擬技術，可提供詳細的數碼記錄，方便日後進行數據分析，有助提升各系統的維修保養工作。

As the first facility of its kind in Hong Kong, the VEC is a comprehensive and state-of-the-art multi-storey vehicle examination centre adopting new technologies. It comprises a seven-storey office tower and a three-storey inspection hall with a total of 30 inspection lanes and auxiliary facilities for examining various types of vehicles. Building Information Modelling was used in the design of vehicle examination equipment and electronic systems, providing a detailed digital record that can be analysed in the future for the improvement of the maintenance process.

李先生解釋說：「驗車大樓大部分系統均採用最先進的技術，因此測試需時。」舉例來說，驗車大樓設有為雙層巴士進行安全測試的傾斜測試台，以及其他輔屬設施為車輛進行測試。車輛必須接受測試證明運作安全，才獲批在路上行駛。

"Most VEC systems are cutting-edge, so testing takes time," Mr Lee explained. For example, the VEC features a tilt test platform for double-decker bus safety testing and auxiliary facilities that evaluate the reliability of vehicles before the tested vehicles are permitted to operate on roads.

李先生說：「我們訂立了極高的測試標準，亦會密切監察系統，讓運輸署人員及其客戶體驗順暢的驗車流程。」行文之際，大樓地下和一樓的驗車線已投入服務，而二樓的設備測試也進展順利，預備今年稍後正式啓用。李先生總結說：「驗車大樓是大型項目，亦帶來獨特的挑戰。我們很高興能跟客戶一起解決難題。」

"We set very high testing standards and monitor the systems closely to provide a smooth vehicle examination process for TD officers and their customers," Mr Lee said. At the time of writing, examination lanes on the ground and first floors are already in service, while equipment testing is proceeding well in preparation for the opening of the second floor later this year. "The VEC is a large project and poses a unique challenge. We are glad to have overcome difficulties together with the client," Mr Lee concluded.

企業管理
CORPORATE STEWARDSHIP

2020/21年度，2019冠狀病毒病疫情席捲全球，改變了大家的工作方式和生活習慣。我們的企業單位面對各種挑戰，仍繼續為各策略業務單位、機電業界、機電署同事，以及廣大市民提供強大支援，致力實現「透過與不同持份者的伙伴關係，創造公眾價值及改善社會」的企業目標。

2020/21 saw the Coronavirus Disease 2019 (COVID-19) epidemic changed the way we work and live. Despite the challenges, our corporate units continued to render dedicated support to all Strategic Business Units (SBUs), the E&M trade, our fellow EMSD colleagues and the community in moving towards the EMSTF's corporate goal of "creating public value for community betterment through partnership with different stakeholders".

近年，營運基金的策略重點為機電數碼化及創新科技（創科）。雖然過去一年充滿挑戰，但我們的策略發揮成效，成功協助客戶及其他持份者維持正常服務和把握新機遇。我們的重點工作如下。

The EMSTF's strategic focus on E&M digitisation and Innovation and Technology (I&T) in recent years paid off in enabling our clients and other stakeholders to maintain services and seize new opportunities during the challenging year of 2020/21. The following are the highlights of our work.

全天候支援客戶、承辦商和機電業界

SUPPORTING CLIENTS, CONTRACTORS AND THE E&M TRADE AT ALL TIMES

訂定業務延續計劃　為感染控制提供指引

Formulating Business Continuity Plan to Provide Guidelines on Infection Control Measures

我們的業務延續計劃為部門提供指引，讓我們在疫情期間繼續維持核心運作和必要的客戶服務。計劃於2020年年初推出，並定期進行更新。2020年5月，我們進行防疫演習，透過模擬各項業務延續過程，尤其是相關感染控制，讓我們檢視防疫表現，尋求可予改善之處。演習過後，我們再次修訂業務延續計劃。現時的業務延續計劃為第13版，是我們應對各種疫情狀況的首要參考文件。

Our Business Continuity Plan (BCP) provides us with guidelines for maintaining the Department's core operations and essential client services during the epidemic. First introduced in early 2020 and updated on a regular basis, our BCP was further revised in May 2020 following a drill that allowed us to simulate various BCP processes, in particular the infection control, and review our performance to identify possible improvements. Now in its 13th version, the BCP has become our main reference in handling various epidemic situations.

機電工程署總部大樓採用了多款非接觸式升降機按鈕方案，例如「無觸按鈕」(「kNOw Touch」)非接觸式升降機控制板、運用全息影像技術的懸浮式樓層按鈕、掃描二維碼選擇樓層，以及iLED免觸電梯按鈕，以減低病毒傳播風險。

The EMSD Headquarters Building has adopted various contactless lift button solutions to reduce the risk of virus spread, for instance "kNOw Touch" contactless lift control panel, floating floor button with the application of holographic technology, QR code scanning for selection of floors, and iLED touchless lift button.

2020/21財政年度關鍵績效指標成績及表現承諾　Key Performance Indicator Results and Performance Pledges in Financial Year 2020/21

耗電量[1]（千瓦小時）[機電署總部大樓、企業數據中心及各策略業務單位主要場地]
Electricity Consumption[1] (kWh)
[EMSD Headquarters Building, Corporate Data Centre and all SBUs Major Venues]

目標 Target	成績 Result
8 785 700	8 698 778

新業務及業務增長（百萬元）
New Business and Growth of Business ($M)

目標 Target	成績 Result
621.5	695.9

員工建議計劃書[1]（份）
Staff Suggestion Proposal[1] (no.)

目標 Target	成績 Result
75	128

員工滿意度指數[1][以10分為滿分計]
Staff Satisfaction Rating[1] [on a 10-point scale]

目標 Target	成績 Result
6.8	不適用[2] N/A[2]

每月電話調查客戶滿意度 (%)
Percentage of Satisfaction Level Based on Monthly Customer Feedback (%)

目標 Target	成績 Result
99	99.89

客戶滿意指數 [以8分為滿分計]
Customer Satisfaction Index [on an 8-point scale]

目標 Target	成績 Result
6.6	6.83[3]

違反法例次數（宗）
Statutory Non-compliance (no.)

目標 Target	成績 Result
0	0

營運基金員工的訓練日數（每名員工接受訓練的日數）
Training Days of EMSTF Staff (no. of training days per staff member)

目標 Target	成績 Result
4.5	4.86

達到服務水平協議所訂的表現目標 (%)
Percentage of Service Level Agreement (SLA) Service Performance Target Compliance (%)

目標 Target	成績 Result
99	99.99

每千名營運基金員工須呈報的累積意外宗數（每千人計算）
Accumulated Reportable Accidents per 1 000 EMSTF Staff (no. per 1 000 staff)

目標 Target	成績 Result
5.0[4]	2.26

收入回報率 (%)
Return on Revenue (%)

目標 Target	成績 Result
5.5	2.3[5]

年內續訂的服務水平協議 (%)
Percentage of SLA Renewed during the Year (%)

目標 Target	成績 Result
95	100

1 此項目適用於機電工程署整個部門，其他項目只適用於機電工程營運基金。
2 下一次調查將於2021年進行。
3 數字為2020年的調查結果。
4 此為警戒水平，並非目標。
5 機電工程營運基金於上年度創造約1 500個有時限的職位，以應對2019冠狀病毒病疫情對本港經濟構成的嚴重打擊。因此，實際成績與預算目標的差異相對較大。

1 This item applies to the EMSD as a whole. Other items apply to the EMSTF only.
2 The next survey will be conducted in 2021.
3 Result from the survey conducted in 2020.
4 This is an alert level, not a target.
5 The EMSTF created about 1 500 time-limited posts during the year in response to the severe blow of the COVID-19 epidemic to economic activities in Hong Kong. Therefore, there is a relatively large difference between actual results and the anticipated target.

企業管理
CORPORATE STEWARDSHIP

疫情期間，機電工程署總部大樓除了公用地方及設施會進行定期清潔及消毒外，大樓內指定地點亦會按需要進行消毒，藉此預防交叉感染。

During the epidemic, apart from regular cleaning and disinfection of the common areas and facilities of the EMSD Headquarters Building, disinfection of designated locations of the building was also conducted as needed to prevent the risk of cross-contamination.

我們的業務延續計劃列出一系列抗疫指引和感染控制措施，包括為所有策略業務單位維持穩定的個人保護裝備供應，例如外科口罩、N95口罩和消毒搓手液；監察前線員工的2019冠狀病毒病檢測結果；為所有感染個案的工作場所消毒；管理員工輪值系統；利用資訊科技方便員工在家工作；確保工作場所清潔安全，以及為策略業務單位提供必要備用零部件，以確保他們在物流中斷的情況下仍能繼續為客戶提供服務。我們也繼續引入創科抗疫方案，例如在機電署總部大樓採用最新的消毒機械人和免觸式升降機按鈕等。

Our BCP laid down a number of anti-epidemic guidelines and infection control measures, including maintaining stable supply of personal protective equipment such as surgical masks, N95 masks and hand sanitisers for all SBUs, monitoring the COVID-19 test results of frontline staff, disinfecting the workplaces of all reported infection cases, managing staff rostering system, harnessing information technology to facilitate work-from-home arrangements, ensuring clean and safe workplaces, and providing essential spare parts to SBUs to help them continue to serve the clients despite logistics disruptions. We also continued to deploy I&T solutions to fight the virus. For examples, we adopted the latest disinfection robots and contactless lift buttons at the EMSD Headquarters.

支援業界

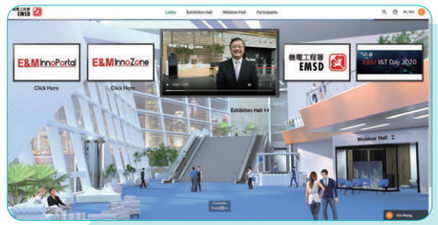
因應社交距離措施，許多活動需改為線上進行。2020年8月下旬至9月初，我們舉辦了首個虛擬「機電創科日」，協助客戶和業界尋找創科方案。活動吸引超過40家參展商展示了50多項創科方案。我們亦舉辦逾40場線上研討會和講座，並安排參加者以360度全方位虛擬形式參觀我們的「機電創科專區」。逾450位業界和客戶代表透過線上形式遙距參與活動。此外，我們分別於2020年11月和2021年3月在線上舉辦承辦商研討會，涵蓋了多個主題，包括工作場所的衞生情況、防疫措施、安全作業以及合約和招標事宜等，合共吸引超過530位同業參加。

Supporting the Trade

Due to the social distancing measures, many events went online. We held the first virtual E&M I&T Day from late August to early September 2020 to assist clients and the trade in exploring I&T solutions. Featuring more than 50 I&T solutions from over 40 exhibitors, more than 40 webinars and talks, as well as a 360-degree virtual tour of our E&M InnoZone, the event attracted over 450 trade and client representatives, all of which participated in the event remotely. Covering diverse topics such as workplace hygiene, anti-virus measures, safety practices, as well as contract and tendering matters, our EMSD Contractors Forums held online in November 2020 and March 2021 respectively attracted a total of over 530 trade practitioners.

為協助機電業在疫情期間維持正常運作，我們為機電署的「機電行業通」流動應用程式增添多項新功能，包括讓註冊車輛維修工場的負責人以電子方式申請「防疫抗疫基金」。為紓緩業界的經營壓力，政府更推出了寬減註冊電業工程人員註冊費用的安排。合資格的註冊電業工程人員/註冊電業承辦商可透過「機電行業通」流動應用程式申請註冊費退款。

To help the E&M trade operate as usual during the epidemic, we added new features to the EMSD's E&M Trade App, such as enabling the persons-in-charge of registered vehicle maintenance workshops to submit electronic applications for the Anti-epidemic Fund. The E&M Trade App also allowed eligible Registered Electrical Workers/Registered Electrical Contractors to apply online for refund of application fee under the fee concessions arrangements, another relief measure introduced by the Government to alleviate the operating pressure of the trade.



為協助業界尋找創科方案，機電署首次以虛擬方式舉行創科展覽活動「機電創科日2020」，吸引逾40個參展商展出50多項創科方案，並舉辦了逾40場線上研討會及講座。

To assist the trade in exploring I&T solutions, the EMSD launched the E&M I&T Day 2020 in the form of virtual exhibition for the first time, featuring over 50 I&T solutions from more than 40 exhibitors and over 40 webinars and talks.

我們繼續致力協助業界招募年輕人投身機電行業。2020年10月，我們為一眾生力軍舉辦「機電‧啓航2020」迎新典禮，並邀請了政務司司長及其他嘉賓在機電署總部大樓主持開幕儀式。活動以混合模式進行，約800名來自主要公私營機構的年輕機電學員透過線上直播參與互動活動。我們今年更特別攝製微電影，通過探索創新的預防性維修概念，闡述機電業的未來發展。

Our efforts to help the trade recruit young talent continued as well. The "E&M GO! 2020" Orientation Ceremony for new recruits was held in October 2020 in a hybrid format. Officiated by the Chief Secretary for Administration and other guests at the EMSD Headquarters, the event was attended by about 800 young E&M trainees from major public and private organisations through live streaming with interactive activities. A special mini-movie was also produced this year to depict the future of the E&M trade with the exploration of innovative preventive maintenance concepts.

跨境人才培育

我們於2018年與廣州市人力資源和社會保障局(人社局)簽訂有關機電人才發展的合作備忘錄，在「世界技能大賽」的聯合集訓和機電業界的交流連繫方面取得成果。機電署與人社局於2020年12月再次簽訂備忘錄，進一步深化雙方在提升技術員培訓和「世界技能大賽」培訓的合作。是次簽署儀式成功以跨境線上形式進行，機電署、人社局、中央人民政府駐香港特別行政區聯絡辦公室、本地機電業聯會及廣州市人民政府港澳事務辦公室的代表，均在線上共同見證了是次簽署儀式。

Cross-border Talent Development

Our Memorandum of Co-operation (MoC) signed in 2018 with the Guangzhou Municipal Human Resources and Social Security Bureau (HRSSGZ) on E&M talent development has already borne fruit in joint training for WorldSkills competitions and networking among E&M trades. EMSD and the HRSSGZ signed another MoC in December 2020 to further deepen the collaboration in boosting technician training and strengthening the WorldSkills competitions training. The signing ceremony was witnessed by representatives from the EMSD, the HRSSGZ, the Liaison Office of the Central People's Government in the Hong Kong Special Administrative Region, local E&M trade associations and the Hong Kong and Macao Affairs Office of Guangzhou Municipal Government at a successful cross-border web event.

轉移到跨境線上培訓是另一相關的發展趨勢。我們與中國內地(內地)多個機構簽訂了合作備忘錄，但受疫情影響，備忘錄所載的主要活動亦須暫停，儘管如此，不少線上培訓試點項目卻成功舉行。舉例來說，廣州市技師學院為我們的20名電氣見習技術員提供了為期五天的線上培訓課程，於2020年年底和2021年年初舉行。廣州市工貿技師學院亦於2021年3月12日為我們的20名空調見習技術員舉辦了為期半天的線上培訓課程。

A related development was the shift to cross-border online training. Though major activities planned under the various MoCs with entities in the Mainland of China (Mainland) were suspended due to COVID-19, online training was successfully held for various pilot programmes. The Guangzhou Technician College delivered a five-day online training programme, held in late 2020 and early 2021, for 20 of our Electrical Technician Trainees (TTs). The Guangzhou Industry and Trade Technician College also held a half-day training session online for 20 of our Air-conditioning TTs on 12 March 2021.

由機電署與廣州市技師學院聯合舉辦的首個見習技術員線上培訓課程已順利舉行。

The first online training programme for technician trainees jointly organised by the EMSD and the Guangzhou Technician College was held successfully.

企業管理
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(左上)機電署署長彭耀雄先生於2020年9月為第二屆「Inno@E&M 創新科技挑戰賽」頒獎典禮暨分享會致歡迎辭。

(Top left) Mr Pang Yiu-hung, Director of Electrical and Mechanical Services, delivered the opening speech at the award presentation ceremony cum sharing session of the second Inno@E&M Challenge held in September 2020.

(右下)成功晉身比賽另一階段的「創新小隊」將進一步實踐他們的創科方案。

(Bottom right) The InnoTeams advanced to the second stage of the competition would further implement their I&T solutions.

不論是部門的本地課程，還是與內地城市合辦的課程，在當下充滿挑戰的世代，線上培訓模式已行之有成效，勢將大行其道。

Online training, whether our local courses or joint programmes with the Mainland cities, has been highly effective in these challenging times and are becoming a trend in the future.

內部支援及流程改善

由2020年10月起，我們為即將畢業的見習技術員安排綜合樓宇管理系統培訓，日後並會為前線員工提供同類培訓，以進一步推動營運基金的數碼化工作。

Internal Support and Process Improvements

We have been providing our final-year TTs with integrated Building Management System training since October 2020. These will be made available to current frontline staff in due course to further promote EMSTF's ongoing digitisation.

我們還一直探討物流自動化，例如研究在倉庫試用自動導引車、移動式貨架和智能櫃，以提升物料管理效率。

We have also been exploring logistics automation, such as trialling automatic guided vehicles, moveable shelves and e-lockers in our warehouses for more efficient management.

為推動在各個營運層面採用創科及培養創科文化，部門分別於2018年及2019年舉辦第一及第二屆「Inno@E&M創新科技挑戰賽」，鼓勵員工提出創科解決方案，滿足客戶的需要及部門的內部需求。第二屆「Inno@E&M創新科技挑戰賽」的得獎項目亦正落實推行。此外，機電署於11月參與合辦的生物醫學工程會議2020，正是推動創科的另一例子，活動雲集業界專家，分享各種創科抗疫方案的見解和心得。

To promote the adoption of I&T in all aspects of our operation and foster the I&T culture, the first and second Inno@E&M Challenge were held in 2018 and 2019 respectively to encourage staff proposals of I&T solutions which address clients' requests and our internal needs. The winning projects of the second Inno@E&M Challenge have been under implementation. Another example was the Biomedical Engineering Conference BME 2020 co-organised by the EMSD in November, in which experts gathered to share insights on anti-epidemic I&T solutions.

承辦商的表現是確保我們服務質素的另一重要環節。我們於2020年7月在「顧客為本電子平台」推出了維修表現儀表板，方便同事分析維修服務數據，從而更有效監察承辦商的表現。

Contractor performance is another vital element in our service quality. We launched a corrective maintenance performance dashboard on our "Customer Centric e-Platform" in July 2020, allowing us to analyse maintenance service data for more effective monitoring of contractor performance.

機電署與香港工程師學會生物醫學分部聯合舉辦生物醫學工程會議2020，活動旨在匯聚世界各地專家為長遠抗疫需要集思廣益，並讓業界加強聯繫，分享專業見解。

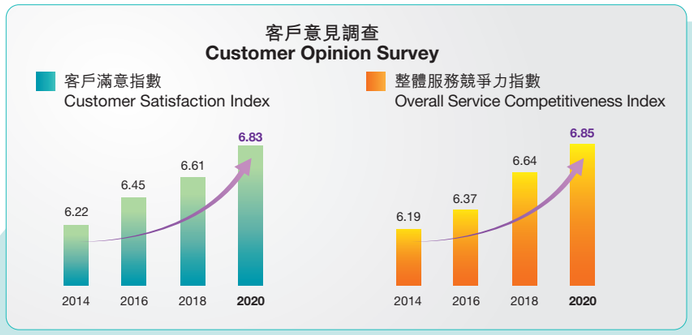
The EMSD co-organised the Biomedical Engineering Conference BME 2020 with the Biomedical Division of the Hong Kong Institution of Engineers. The event facilitated exchange of ideas among experts from around the world on the long-term anti-epidemic solutions, promoted networking among trade practitioners, and shared their professional insights.

招標文件的質素和招標過程的效率，對管理承辦商而言，是不太為人所知卻又相當重要的環節。部門的招標文件彙編先導計劃於年內繼續推行，目的是讓各個策略業務單位在處理超過140萬元的維修保養合約時，可更簡單便捷地擬備和編製合適的招標文件。

A less visible but nonetheless important aspect of contractor management is the quality of tender documents and efficiency of the tendering process. The Compilation of Tender Documents Pilot Scheme continued during the year with the aim of allowing SBUs to prepare appropriate tender documents for maintenance term contracts over $1.4 million more easily and quickly.

此外，我們已於2021年2月開發並試用智慧標書系統，該系統旨在進一步協助策略業務單位的人員，以簡單程序擬備標準招標文件。該系統的軟件設計完善，可把項目工程師擬備標準招標文件的過程自動化，有助節省時間並確保招標文件的質素。當成功開發整套系統後，部門的標準機電工程招標文件便可全部自動編製而成。

In addition, a Smart Tender Document System (STDS) was developed and soft-launched in February 2021 to further help SBUs' staff compile standard tender documents in one single step. STDS is a sophisticated software dedicated to automating the compilation process of standard tender documents for project engineers, saving time and ensuring the quality of tender documents issued. Upon successful development of the entire STDS, all standard tender documents for our electrical and mechanical works will be generated automatically.



在客戶部門的支持下，機電署於2020年客戶意見調查中，整體客戶滿意指數及整體服務競爭力指數分別取得6.83分及6.85分(以8分為滿分計)，兩者均創歷史新高。

Thanks to client departments' support, the EMSD scored 6.83 and 6.85 (on an 8-point scale) respectively in the Customer Satisfaction Index and Overall Service Competitiveness Index in the Customer Opinion Survey 2020, both reaching a record high level.

客戶滿意指數再創新高

為進一步改善營運基金的服務，我們於2020年10月和11月，以及2021年3月和4月，分別為策略業務單位的人員試辦了數次「優質客戶服務工作坊」。工作坊是根據各策略業務單位不同客戶的個別需求而特別設計，深受好評。

Record High Customer Satisfaction Index

To further improve EMSTF services, we held several pilot customer service workshops for our SBU colleagues in October and November 2020 and in March and April 2021. Tailored for various SBUs according to their specific client needs, these workshops were well received.

我們為提升客戶體驗而作出的整體努力也有目共睹。由2020年11月中旬至12月進行的最新客戶意見調查所得結果令人鼓舞。我們的客戶滿意指數達6.83分(以8分為滿分計)，整體服務競爭力指數為6.85分，兩者均創歷史新高。這次意見調查的客戶部門回覆率甚高，反應熱烈，為我們提供了寶貴及可行的建議，有助優化營運服務的策略。

Our concerted efforts to enhance the customer experience has paid off, as clearly reflected in the very encouraging results of the latest Customer Opinion Survey, conducted from mid-November to December in 2020. We scored 6.83 out of 8 on the Customer Satisfaction Index and 6.85 on the Overall Service Competitiveness Index, both being record highs. Thanks to the high response rate and valuable feedback from client departments, the survey has provided valuable and actionable insights for the enhancement of our strategies.

機電署為各部別舉辦「優質客戶服務工作坊」，藉不同的模擬個案和角色扮演練習，協助同事掌握客戶服務的技巧，以提升團隊合作、工作效率及提供更優質的客戶服務。

The EMSD organised customer service workshops for various divisions, where different simulated cases and role-playing exercises were used to help colleagues master the techniques of customer service to enhance teamwork, improve work efficiency and provide better customer service.

企業管理
CORPORATE STEWARDSHIP

時刻關懷員工

幫助員工在疫情期間保持健康

保障同事免受病毒感染是我們的首要任務，也是部門業務延續計劃的重點工作。我們除了為機電署總部提供各種防疫設施及方案，包括裝設發燒偵測系統連體溫檢查站、免觸式消毒站、腳踏式開門器、免觸式升降機按鈕、透明間隔板和使用消毒機械人等之外，還因應疫情的變化而不時修訂有關員工和訪客進入總部大樓的防控政策。

每當機電署有員工確診或疑似感染2019冠狀病毒病時，我們會立即在所有受影響的辦公室範圍進行全面消毒。另外，整幢大樓的日常清潔亦已加強，在2020/21年度合共進行了158次此類即時消毒工作。

疫情帶來各種困擾和變數，對許多同事構成很大壓力，而多年來一直由非政府機構為部門所有員工提供的輔導諮詢服務，此時此刻更形重要。年內，我們舉辦了五場線上輔導研討會，幫助員工在這個非常時期保持身心健康。

疫情期間，前線員工日以繼夜協助客戶抗疫，並維持主要公共服務，我們的高層管理團隊積極表達對員工的讚賞。例如管理層於2020年4月進行特別的「親善大使探訪」，走訪了30家醫院的機電工場為員工打氣，表達他們對員工的關懷和讚賞。

ALWAYS CARE FOR OUR STAFF

Helping Staff Stay Healthy in the Epidemic

Keeping our colleagues safe from the virus is our top priority and a pillar of our BCP. Apart from equipping the EMSD Headquarters with various epidemic control solutions, including fever screening systems with body temperature checkpoints, touchless sanitising stations, foot-operated door openers, touchless lift buttons, transparent barriers and disinfection robots, the admission policy for staff and visitors was also revised from time to time as the epidemic situation evolves.

Whenever a colleague was suspected or confirmed to have COVID-19 infection, thorough disinfection of all affected office areas was promptly carried out. A total of 158 times of such ad-hoc disinfection were carried out in 2020/21, on top of stepped-up daily cleaning service for the entire building.

With much disruptions and uncertainties, the epidemic has been highly stressful for many colleagues. Our counselling services for all staff, provided by non-governmental organisations, have continued and proved particularly valuable. During the year, five online counselling webinars were held to help staff maintain their mental and physical health during these unusual times.

During the epidemic, our senior management has been active in expressing our gratitude to frontline staff who devoted themselves round-the-clock to help clients fight the virus and maintain essential services for the public. For example, a special round of Ambassador Visits was made to EMSTF workshops in 30 hospitals in April 2020 to boost staff morale and show top management's support and appreciation.

機電署舉辦「親善大使探訪」活動，關懷前線員工的工作情況，感謝同事對2019冠狀病毒病抗疫工作的努力和貢獻，以及為同事打氣。

The EMSD conducted Ambassador Visits to show care for our frontline staff, recognise their hard work and contributions in the fight against COVID-19, and encourage them to keep up the good work.

機電署推出名為「『員』來關你事」的嶄新項目，為員工提供工作環境及設施、工作流程、職業前景等方面的最新資訊，從而培養員工的歸屬感。

The EMSD launched a new project "All You Need to Know!" to provide the latest updates on working environment and facilities, workflow, career prospects, etc. for staff to cultivate their sense of belonging.

為促進同事的工作與生活平衡，機電署員工康樂會舉辦了一系列名為「同您ZOOM一ZOOM」的線上活動，分享主題包括瑜伽、中醫養生、辦公室收納、親子關係、精神健康等。

To promote work-life balance for colleagues, the EMSD Staff Club held a series of online activities called "ZOOM with You", with themes such as yoga, Chinese medicine and health maintenance, office storage, parent-child relationship, mental health, etc. for sharing.

員工活動多姿多采

年內，我們也舉辦了首屆「E&M抗疫好『煮』意比賽」，讓同事一展廚藝。為了進一步提高員工士氣，我們發起了「由心連起『打氣』短片大募集」活動，邀請所有同事製作短片，分享大家積極應對疫情的正能量。我們還鼓勵同事在家鍛鍊體魄，並重點鼓勵員工進行伸展和帶氧運動，又推出「機電喜動吧！」一分鐘自我挑戰賽和「健康達人」比賽，廣受同事歡迎。

我們以創新方法幫助大家保持活力及正向思維，讓同事及其家人積極參與活動。我們的旗艦線上活動「同您ZOOM一ZOOM」系列，內容包括瑜伽、辦公室運動、傳統中醫、收納及斷捨離技巧、烘焙和咖啡拉花、親子關係、精神健康等課程，吸引了超過2 000人踴躍參加。

另外，我們於2021年年初推出名為「『員』來關你事」的全新項目，為員工提供有關機電署的最新資訊，包括優化工作環境、提升工作流程的安排，以及與員工息息相關的事宜，從而培養員工的歸屬感。此外，近年多個部別已逐步進行翻新工程，使設施與時並進，並改善內部溝通、工作流程和程序。翻新後的辦公室更添活力和色彩，提供大量相連的開放空間供同事交流協作，在當今數碼年代至為重要。

Rich and Colourful Staff Engagement Events

Moreover, we organised the first "E&M Cooking Contest" to showcase colleagues' cooking talent during the year. To further keep up the staff spirits, we initiated a "Call for Cheer" campaign that invited all colleagues to make short videos to share their positive vibes in the face of the epidemic. Encouraging our colleagues to keep fit at home, focusing on stretching and aerobics workouts, we introduced the "E&M Move!" one-minute challenge competition and the "Health Master Competition", which were both well received.

To keep our colleagues and their families engaged, we employed innovative ways to help everyone stay positive and energetic. Our flagship online event was the "ZOOM with You" series, with sessions on yoga, office workouts, traditional Chinese medicine, storage and decluttering skills, bakery and latte art, parent-child relationship, mental health, etc., attracted over 2 000 participants.

Besides, a new project named "All You Need to Know!" was launched in early 2021 to provide staff with the latest updates on the EMSD's work environment improvement, workflow enhancement and staff related matters in order to cultivate a sense of belonging. Moreover, refurbishment works have been taking place at different divisions one after another in recent years, with the aim of bringing our facilities up-to-date to improve internal communication, workflow and procedures. The refurbished offices are more dynamic and colourful, with plenty of connected open spaces for discussion and collaboration, which are vital in this digital age.

為建立更佳的工作環境以促進員工之間的交流，市政工程部的新辦公室採用創新設計元素，色彩明亮，並提供更多共享空間。

To provide a better working environment for facilitating staff communication, the new office of the Municipal Sector Division adopted innovative design features with bright colours and more connecting space.

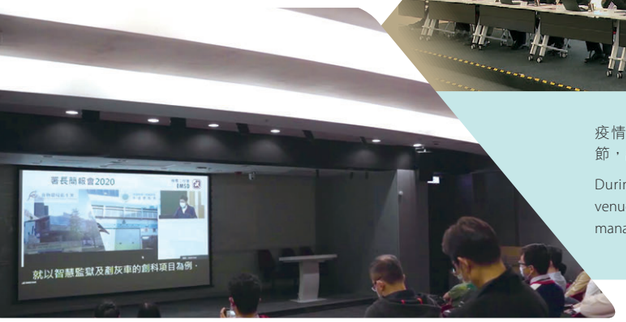
企業管理
CORPORATE STEWARDSHIP

利用網上平台與員工溝通是另一項相關的發展，2019年員工滿意度調查正是其中一例。以10分為滿分計，調查所得的員工滿意度指數為6.8分，而顧問公司更於2020年4月舉辦了兩場線上直播，向全體員工公布調查結果。至於2020年署長簡報會，除了安排小部分同事到場出席外，大會也在約60個場地，包括總部以外的多個辦公室和工場，進行視像直播，讓同事實時參與。這項線上直播安排可方便更多員工出席簡報會，參加人數勝過往年。

A related development was the use of online platforms for staff communication. A case in point was the 2019 Staff Satisfaction Survey, which returned a satisfaction level of 6.8 on a scale of 10. The survey findings were presented by the consultant via online broadcast in two sessions in April 2020. The 2020 DEMS Briefing was conducted at the presence of a small face-to-face audience and broadcast live via audio-visual equipment in some 60 outstation offices and workshops. This arrangement enabled more staff to attend than had been possible in previous year.

2021年年中是營運基金的銀禧紀念。為籌備誌慶工作，我們特別邀請所有員工投票選出大家最喜愛的25周年標誌。員工反應熱烈，銀禧紀念標誌已順利誕生。

To prepare for EMSTF's silver jubilee celebration in mid-2021, we invited all staff to vote for their favourite 25th anniversary logo. Response was enthusiastic, and the jubilee logo has been launched.



疫情期間，2020 年署長簡報會首次於60 多個場地同步直播，並設有線上問答環節，讓同事直接向管理層表達意見。

During the epidemic, the 2020 DEMS Briefing was held via live broadcast at over 60 venues for the first time, allowing colleagues to express their views directly to the senior management during online question and answer sessions.

線上招聘新進展

繼在2019/20年度開創以視像會議形式為見習工程師訓練計劃的四百多名申請人進行首輪面試後，我們於2020/21年度再次為該計劃五百多名申請人，以視像會議形式進行面試。我們的視像會議系統裝置、程序和保安，均獲政府資訊科技總監辦公室認可。

機電署的招聘面試和遴選電子平台，是政府首個線上面試和記錄系統。我們的資料庫載有一百多條面試題目，而系統既可在面試過程中為申請人隨機揀選面試題目，節省大量人手工序和時間，又可檢索申請人的錄像簡報短片，方便進行詳細評估。

New Progress on Online Recruitment

Further to our breakthrough in 2019/20 to use video conferencing for the first-round interviews of over 400 candidates for the Engineering Graduate Training Scheme, we held online video interviews for over 500 candidates for the Scheme in 2020/21. The set-up, procedures and security of our video conference system have been endorsed by the Office of the Government Chief Information Officer.

Our e-Platform for Recruitment Interview and Selection is the first online interview and recording system in the Government. With a database containing over 100 interview questions, the system can generate questions at random for candidates during the interview, saving much staff time and manual work. Video clips of candidates' presentations can also be retrieved for detailed assessment.

「品質及安全日2020」以「2019冠狀病毒病下的職安健挑戰」為主題，於2021年2月以線上直播形式舉行，得獎團隊即場介紹獲獎個案。

With the theme of "Occupational Safety and Health Challenges under COVID-19", the Quality and Safety Day 2020 was held in February 2021 via online live broadcast. The winning teams presented their winning projects on-site.

部門內外獎項嘉許表現

一年一度的「品質及安全日」已於2021年2月以線上形式舉行，參加者透過視像會議軟件參與活動，而獲獎者、主講嘉賓和其他嘉賓則到現場出席。「品質及安全日」旨在表揚同事對培養營運基金持續改善的文化所作的貢獻，當日頒發「最佳改善個案獎」、「最佳職安健改善個案獎」和「最佳環保個案獎」，冠軍團隊亦即場與同事分享獲獎心得和良好作業方式。

在疫情下，我們仍續創佳績。我們的員工揚威於2020年10月舉行的「世界技能大賽香港代表選拔賽」，在「空調及製冷」項目勇奪首四個獎項，另有四名員工在「電氣安裝」項目獲獎。機電署參賽員工表現出色，將代表香港參加於2021年在成都舉行的穗港澳蓉青年技能競賽，以及於2022年在上海舉行的世界技能大賽。

與此同時，機電署三名同事在11月舉行的2020年公務員事務局局長嘉許狀頒授典禮上獲頒獎狀。得獎者是兩位管理值班工程師和一位一級監工，他們多年來竭誠服務表現出色，獲嘉許表揚。

Recognition from Internal and External Awards

The annual Quality and Safety Day was held online in February 2021, with participants attending via video conference software and awardees, speakers and guests taking part on-site. The event recognised colleagues who have contributed to the EMSTF's continuous improvement culture and presented the Best Improvement Project Awards, Best Occupational Health and Safety Enhancement Project Awards, and Best Green Project Awards, with each champion team sharing best practices to inspire us all.

It is worth noting that COVID-19 has not stopped the EMSTF from winning awards. Our candidates won the top four places in the Refrigeration and Air-conditioning trade of the WorldSkills Hong Kong Competition in October 2020, while four candidates won in the Electrical Installations trade. Our outstanding candidates will be the representatives of Hong Kong in the Guangzhou/Hong Kong/Macao/Chengdu Youth Skills Competition in Chengdu in 2021, and the WorldSkills Competition to be taken place in Shanghai in 2022.

Meanwhile, three EMSD colleagues received the Secretary for the Civil Service's Commendation Award 2020 at a presentation ceremony held in November. The two shift charge engineers and one works supervisor won recognition for their outstanding services over the years.

機電署三位同事於2020 年獲頒公務員事務局局長嘉許狀，以表揚他們盡心竭力服務市民，專業幹練，表現出色。

In 2020, three EMSD colleagues were awarded the Secretary for the Civil Service's Commendation in recognition of their outstanding performance and professionalism in serving the public with dedication.

企業管理
CORPORATE STEWARDSHIP

服務社羣

支援政府抗疫

2019冠狀病毒病疫情為社會各界帶來各種困難，部門同事積極參與政府的抗疫工作，在極短時間內成立了支援隊伍，協助政府推行2019冠狀病毒病特定羣組檢測計劃，並協助營運社區疫苗接種中心，發揮竭誠服務社羣的精神。

應用技術專長於公共服務

機電署再次參加「樂齡科技博覽暨高峰會2020」，展示各種可用於長者護理行業的抗疫創科解決方案。機電署還在活動中頒發獎項予「樂齡科技顯愛心2019」青年挑戰賽的優勝者。我們與香港社會服務聯會合辦該項樂齡科技比賽，旨在鼓勵中小學生運用創科提升長者的生活質素。

至於發展局與建造業議會合辦的第26屆公德地盤嘉許計劃，共有18項由機電署監督的合約獲提名，並贏得一項銀獎、兩項銅獎及三項優異獎。我們希望藉此為社區樹立榜樣，推廣地盤公德、工地安全及健康和環保的良好作業方法。

SERVING THE COMMUNITY

Supporting the Government's Fight-the-Virus Efforts

The COVID-19 epidemic has brought hardships to the community and we have contributed to the Government's efforts in fighting the virus together for the community. We formed support teams at very short notice to help implement the Government's COVID-19 Targeted Group Testing Scheme and assist to operate a Community Vaccination Centre, demonstrating our spirit of serving the community with great dedication.

Applying our Technical Expertise to Public Services

Once again the EMSD took part in the Gerontech and Innovation Expo cum Summit 2020, showcasing our various anti-epidemic I&T solutions applicable in the elderly care sector. The EMSD also presented awards to the winners of the Gerontech Youth Challenge 2019 at the event. The Challenge, a gerontechnology competition that we co-organised with the Hong Kong Council of Social Service, encouraged primary and secondary students to apply I&T to improve the elderly's quality of living.

A total of 18 EMSD contracts were nominated in the 26th Considerate Contractors Site Award Scheme jointly organised by the Development Bureau and Construction Industry Council (CIC), winning one Silver Award, two Bronze Awards and three Merit Awards. By setting an example for the community, we promoted a considerate attitude and good site safety, health and environmental practices for work sites.

機電署署長及管理團隊到訪龍琛路體育館社區疫苗接種中心，視察中心運作情況，以及由本署設計和安裝的綜合疫苗冷藏櫃監察系統。

The Director of Electrical and Mechanical Services and the EMSD's management team visit the Community Vaccination Centre at Lung Sum Avenue Sports Centre to inspect the centre's operation and the integrated Fridge Monitoring System designed and installed by the EMSD.

機電署的新吉祥物「機智啤啤」和「智析寶寶」擔當親善大使，將協助宣傳工作。他們亦擁有Facebook 和 Instagram 專頁（@emsdwittybear），以簡單有趣的方式，與市民分享各種機電知識和小貼士。

As the ambassadors of the EMSD, Witty Bear and KnowBot, our new mascots, will assist in publicity campaigns. They also have Facebook and Instagram pages (@emsdwittybear) to share with the public various E&M knowledge and tips in a simple and interesting way.

關心社會及弱勢社羣

為推動機電署的宣傳工作，我們創作了兩個新吉祥物，以助加強與公眾的互動。我們邀請員工為新吉祥物命名，最後選出了「機智啤啤」和「智析寶寶」作為吉祥物的名字。

兩個吉祥物將擔當機電署的親善大使，加強機電署與公眾在日常生活中的聯繫，推廣機電安全、能源效益及創新科技的相關資訊，並進一步促進部門與客戶及其他業界伙伴的緊密合作。他們亦擁有Facebook及Instagram 專頁（@emsdwittybear），與市民大眾見面，以簡單有趣的方式，分享各種機電知識和小貼士。

我們繼續推行「好人好事嘉許計劃」，表揚同事熱心為社區及部門服務的好人好事。嘉許計劃有助我們建立一支用心工作、服務市民的關愛團隊。

員工也熱心參與「公益金線上百萬行」及線上「保良局慈善步行」等慈善活動。此外，我們十分感謝同事的慷慨捐助及無私奉獻，於2020年11月建造業議會的「建造業魯班飯行動」中擔當義工，向弱勢社羣免費派發熱食，並參與包裝和分發飯盒的工作。我們的義工還參加了建造業議會的其他慈善活動，當中包括準備「長者關愛包」和參加「海岸清潔日」等。

年內，我們與客戶攜手參與社區服務項目，例如協助運輸署於上水一家由非政府機構營運的導盲犬訓練學校安裝交通燈，讓導盲犬能在高度像真的環境下，學習如何帶領失明人士過馬路。

總部大樓可為鄰近社區創造公眾價值，尤其大樓的露天廣場，更是深受行人和訪客歡迎的公共空間。露天廣場的改善工程於2019年動工，2021年年初順利完成，並於同年3月舉行開幕儀式。廣場配備了創新設計的園景、特色水景和太陽能水耕種植花園，全部均採用環保物料建造，充分體現綠色生活和可持續發展的理念，提供出色的示範空間，適合進行各種社區參與和公眾教育活動。

Reaching Out to the Community and the Needy

To promote the EMSD's publicity work, we have created two new mascots to help us engage with the public. Staff were invited to name the new mascots, and their names were finalised as Witty Bear and KnowBot.

Being the ambassadors of the EMSD, the two mascots will strengthen the EMSD's connection with the public in daily life, deliver relevant information on E&M safety, energy efficiency and innovation and technology, and further facilitate the Department's collaboration with clients and trade partners. They also have Facebook and Instagram pages (@emsdwittybear) to meet with members of the public and share with them various E&M knowledge and tips in a simple and interesting way.

We have continued to implement the "Good People, Good Deeds Commendation Scheme", under which awards were given to colleagues who have provided attentive services to the community and the Department. It helped to nurture a caring team dedicated to serving the public.

Staff also participated in charitable activities such as the Community Chest Virtual Walk for Millions and the online Po Leung Kuk Charity Walk. Also, thanks to our colleagues' generous donations and voluntary efforts in packing and distribution, we contributed to CIC's Construction Industry Lo Pan Rice Campaign in November 2020 to provide free hot meals to the needy. Our volunteers also helped in other CIC activities, like preparing "Elderly Caring Packs" and taking part in the "Shorelines Cleanup Day".

We joined hands with clients in community-oriented projects during the year. Our team helped the Transport Department install traffic lights in a guide dog training school, a facility operated by a non-governmental organisation in Sheung Shui, so that the guide dogs could learn how to guide the visually impaired to cross the roads in a highly realistic setting.

We are always mindful of the public value our headquarters building creates for the neighbouring community, in particular our piazza, which is a public space much enjoyed by pedestrians and visitors. The piazza refurbishment works that began in 2019 have been completed in early 2021, and its opening ceremony was held in March 2021. With an innovative landscape design, stylish water features and a solar-powered hydroponic garden, all built with eco-friendly materials, the new piazza is a spectacular showcase of green living and sustainability fit for community engagement and public education activities.

機電工程署總部大樓露天廣場翻新後於2021年3月舉行開幕典禮。舒適優美的綠化環境為露天廣場增添活力，亦為訪客提供一個公共空間。

The opening ceremony of the newly refurbished piazza of the EMSD Headquarters Building was held in March 2021. A comfortable and beautiful green environment adds vitality to the piazza and provides a public space to visitors.

社會及環保報告

SOCIAL AND ENVIRONMENTAL REPORT

關於本報告
ABOUT THIS REPORT

匯報原則

機電工程署(機電署)每年均會在年報匯報部門的社會及環保工作。本社會及環保報告(本報告)概述機電署於2020/21財政年度各項主要措施及計劃，以及在環境、社會和經濟方面的進展。

本報告根據全球報告倡議組織標準的核心選項編寫，並參照環境保護署的《環保報告指引—管制人員適用》及聯合國可持續發展目標。為確保報告內容清晰分明，機電署堅守報告原則，包括利益相關者包容性、可持續發展背景、實質性及完整性，同時確保報告的準確性、平衡性、清晰度、可比性、可靠性和時效性，以維持報告質素。

相關的全球報告倡議組織和可持續發展目標的指標及對照的報告章節已載於第190頁的**全球報告倡議組織內容索引**，並附有其他適用的補充資料。我們已委託獨立第三方核實本報告，確保其準確性、可靠性和公信力，符合全球報告倡議組織標準的核心選項。**獨立保證意見聲明書**已載於第208頁。

本報告已通過全球報告倡議組織的「實質性議題審核」，經審議確定當中的全球報告倡議組織內容索引闡述清晰，102-40至102-49披露議題的參照索引與報告內文的相應章節一致。

報告範圍

本報告載述機電署於2020/21財政年度(由2020年4月1日至2021年3月31日)的主要可持續發展措施及成果。除另外說明，報告中截至2021年3月31日止的所有數據均為部門於知悉範圍內所整合的標準化實際數字。報告披露2020/21財政年度的財務數據，所有金額均以港元為單位。

機電署轄下設有規管服務及營運服務兩大服務範疇，後者亦稱為機電工程營運基金(營運基金)。於匯報年度，規管服務轄下的一般法例部分為兩個部別，營運基金轄下的衞生工程部亦分為兩個部別，而保安及車輛工程部的分部則由八個增至九個。於匯報期內，機電署的權責關係、規模、架構及供應鏈均無重大變化。

REPORTING PRINCIPLES

The Electrical and Mechanical Services Department (EMSD) reports on its social and environmental performance annually, as part of its annual report. This Social and Environmental Report (hereafter "this Report") summarises major initiatives and programmes undertaken by the EMSD in the fiscal year 2020/21, as well as the progress achieved across environmental, social and economic aspects.

This Report has been prepared in accordance with the GRI Standards: Core option, and with reference to A Guide to Environmental Reporting for Controlling Officers published by the Environmental Protection Department and the United Nations Sustainable Development Goals (SDGs). In order to better define the report content, the EMSD closely observes the reporting principles, including Stakeholder Inclusiveness, Sustainability Context, Materiality, and Completeness. It also strives to maintain high reporting quality by ensuring Accuracy, Balance, Clarity, Comparability, Reliability and Timeliness.

The **GRI Content Index** on page 190 provides a cross-reference of relevant Global Reporting Initiative (GRI) and SDGs disclosures that correspond to various sections of this Report, supplemented by further information where applicable. An independent third party was engaged to verify this Report to ensure its accuracy, reliability and credibility and its compliance to the Core option of the GRI Standards. Please refer to the **Independent Assurance Opinion Statement** on page 208.

Through the GRI Materiality Disclosures Service, this Report has been reviewed by GRI to confirm the enclosed GRI Content Index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of this Report.

REPORTING SCOPE

In this Report, key sustainability initiatives and achievements took place during the fiscal year 2020/21 (from 1 April 2020 to 31 March 2021) are highlighted. All data in this Report are standardised and presented in absolute figures as of 31 March 2021 to the best of our knowledge, unless otherwise stated. Financial data in this Report are disclosed for the fiscal year 2020/21, and all monetary values are expressed in Hong Kong Dollars.

The EMSD comprises of two functional units, namely Regulatory Services (RS) and Trading Services. The latter is also known as the Electrical and Mechanical Services Trading Fund (EMSTF). During the reporting year, the General Legislation Division under RS was divided into two divisions. Under EMSTF, the Health Sector Division was divided into two divisions; while the Security and Vehicle Services Division expanded its sub-divisions from eight to nine. Otherwise, there were no significant changes with regard to departmental ownership, size, structure, or its supply chain during the reporting period.

重要議題及邊界

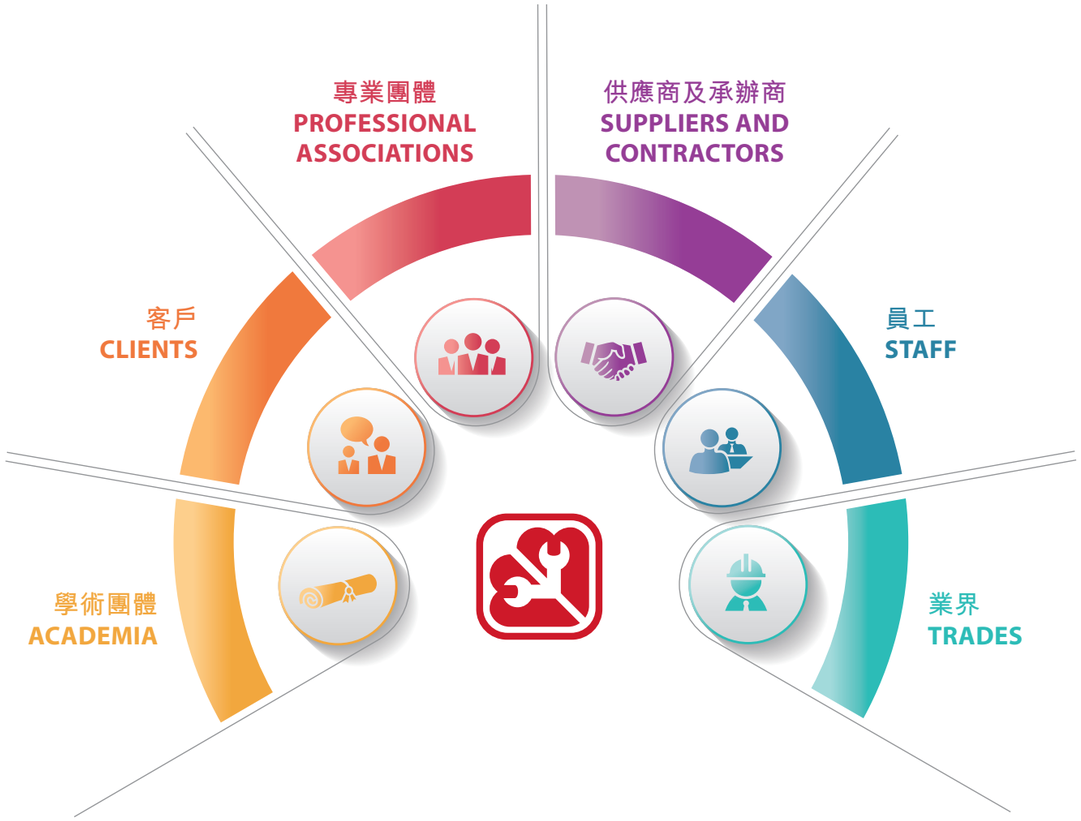
本報告參照全球報告倡議組織標準的原則及規定，透過廣泛的持份者諮詢活動和重要性評估擬定報告內容，然後界定與機電署運作最相關的主要持份者組別並識別其優先次序。

機電署每年均聘請獨立外界顧問進行持份者參與活動，包括問卷調查、焦點討論小組會議和訪談，以助匯報部門的環保及社會工作表現。過去數年曾參與諮詢的主要持份者組別包括員工、學術團體、客戶、供應商/承辦商及業界。在2021年，我們透過問卷調查徵詢員工代表和新參與諮詢的專業團體持份者組別的意見。我們歸納所有主要持份者組別自2014/15年度至今回饋的意見，然後進行重要性評估，根據評估結果界定與機電署最相關環境、社會及經濟議題的優先次序。

MATERIAL TOPICS AND BOUNDARIES

Following reporting principles and requirements of the GRI Standards, the EMSD defined the content of this Report through a comprehensive stakeholder engagement and materiality assessment process. A number of stakeholder groups relevant to the EMSD's operations have been prioritised and engaged.

To prepare for annual reporting on environmental and social performance, the EMSD has been commissioning an independent external consultant to conduct annual stakeholder engagement activities, such as questionnaire survey, focus groups meetings and interviews. Key stakeholder groups engaged in the past few years included staff, academia, clients, suppliers/contractors, and trades. In 2021, a questionnaire survey was conducted to seek input from staff representatives and an additional stakeholder group of professional associations. After reviewing the consolidated feedback from all stakeholder groups we have engaged since 2014/15, a materiality assessment was performed. The assessment results facilitated the prioritisation of environmental, social and economic topics which were most relevant to the EMSD.

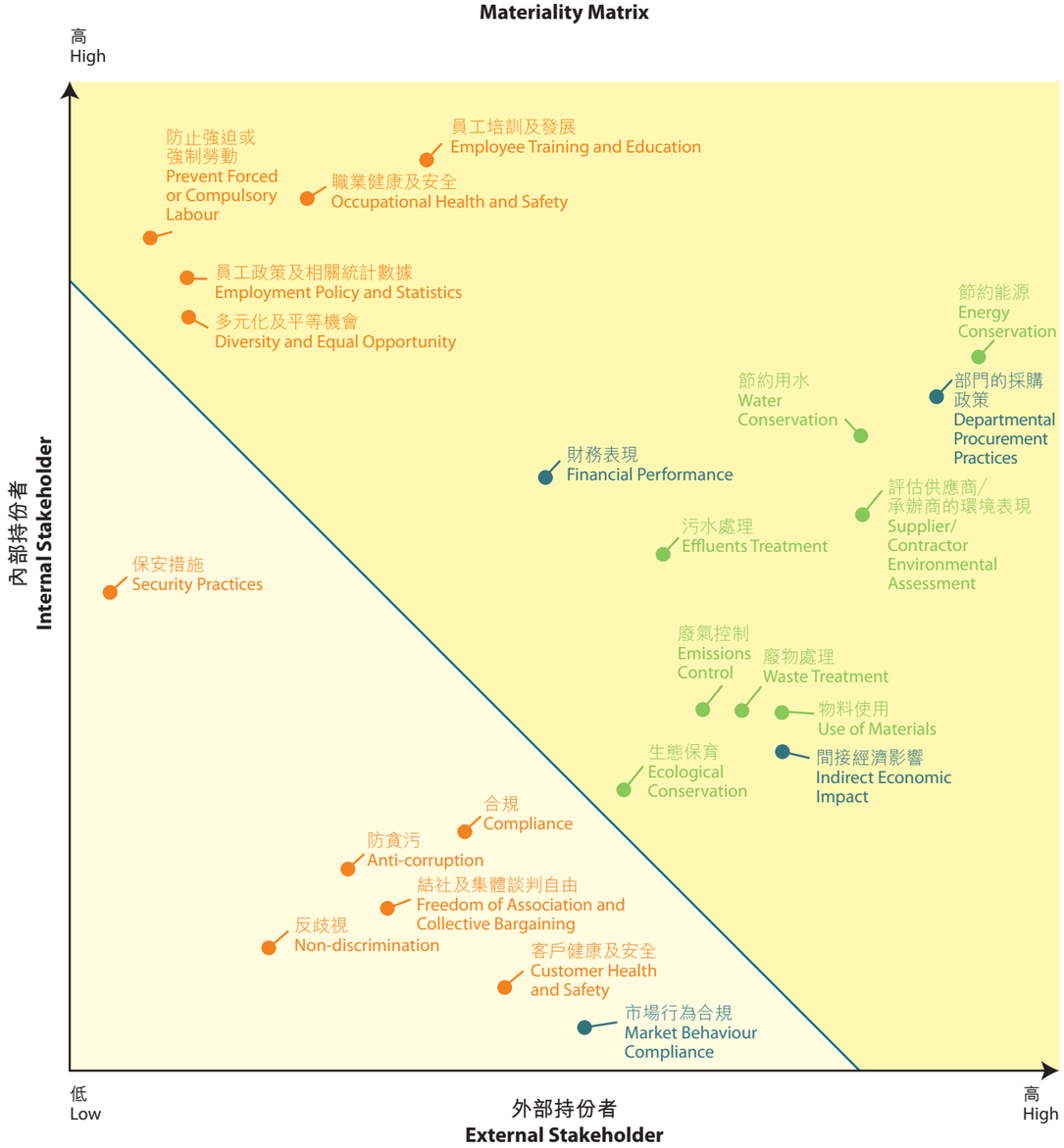


關於本報告
ABOUT THIS REPORT

為確保本報告完整及持平地表述機電署的可持續發展表現和影響，我們採用以下的重要性矩陣列出重要性評估結果，最相關或重要的議題置於分界線之右上角，此外並以表格形式簡列所有已識別的重要議題及其邊界。本報告共識別出16項重要議題，當中防止強迫或強制勞動為今年新界定的重要議題。

Taking consideration of comprehensiveness and balanced representation of the EMSD's sustainability performance and impacts, the materiality assessment results are illustrated in the following materiality matrix, with the most relevant or material topics placed in the upper right corner above the cut-off line. These identified material topics and their corresponding boundaries are also summarised in a table format. There are 16 identified material topics in total, of which Prevent Forced or Compulsory Labour being a newly added material topic this year.

重要性矩陣
Materiality Matrix



類別 Categories	重要議題 Material Topics	邊界 Boundaries	
		機電署的運作 Operations of the EMSD	主要供應商的運作 Operations of our Major Suppliers
環境 Environmental	生態保育 Ecological Conservation	✓	
	節約能源 Energy Conservation	✓	✓
	污水處理 Effluents Treatment	✓	✓
	廢物處理 Waste Treatment	✓	✓
	廢氣控制 Emissions Control	✓	
	節約用水 Water Conservation	✓	
	物料使用 Use of Materials	✓	✓
	評估供應商/承辦商的環境表現 Supplier/Contractor Environmental Assessment	✓	✓
經濟 Economic	財務表現 Financial Performance	✓	
	部門的採購政策 Departmental Procurement Practices	✓	✓
	間接經濟影響 Indirect Economic Impact	✓	
社會 Social	員工培訓及發展 Employee Training and Education	✓	✓
	職業健康及安全 Occupational Health and Safety	✓	
	多元化及平等機會 Diversity and Equal Opportunity	✓	
	員工政策及相關統計數據 Employment Policy and Statistics	✓	
	防止強迫或強制勞動 Prevent Forced or Compulsory Labour	✓	

本報告已上載於部門網站。歡迎讀者就我們的運作、可持續發展方面的成效、報告內容和方式提出意見及建議，您的寶貴意見有助我們持續改進。請透過電郵與我們查詢或發表意見：ccsd@emsd.gov.hk。

This Report is uploaded to our department website. We appreciate comments and suggestions from readers on our operations, sustainability performance, report content as well as reporting approach. Your valuable comments and suggestions will help us improve continuously. For enquiries or comments, please contact us at ccsd@emsd.gov.hk.

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

管理方針

機電署竭力在日常營運和決策中推動環境及社會可持續發展理念。我們嚴格遵從相關的社會及環境法規，並着力制訂涵蓋環境、安全及健康層面的政策。為了不斷改進本署的可持續發展策略和政策，我們全方位推展工作，配合政府的倡議，同時緊貼國際趨勢。我們會定期檢討表現，識別任何與可持續發展相關的風險與契機，以便持續改進，並會主動透過不同渠道積極與持份者聯繫溝通。

在本港及全球推動可持續發展進程

政府致力帶領香港在2050年前實現碳中和。為此，香港現正努力實踐減碳目標，在2035年前把碳排放總量從2005年的水平減半，並在2050年前實現碳中和。政府同時亦訂立新目標，在2024/25年度之前將能源表現從2018/19年度水平提高6%。機電署作為政府部門，一方面悉力促進香港達成節約能源目標，另一方面繼續改進香港的能源管理規管架構，支持機構和個人等各界持份者凝聚力量，實現節能或減碳的共同目標。

機電署矢志為促進全球可持續發展作出貢獻。我們支持聯合國可持續發展目標。該套目標涵蓋17項全球已識別的高級別可持續發展專注範疇，我們從中界定了八項與我們營運最相關的目標，並與我們的可持續發展措施作對照，詳列於右頁。

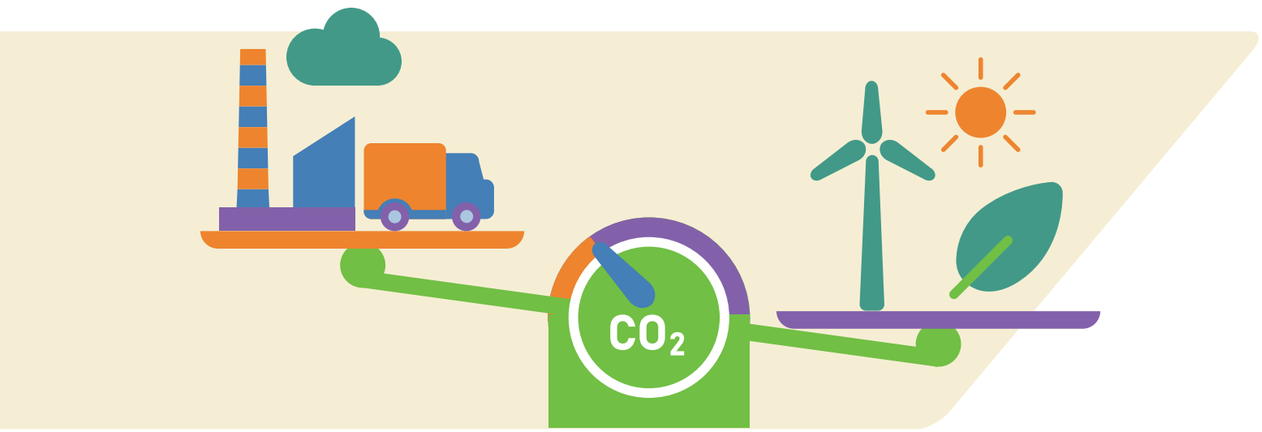
MANAGEMENT APPROACH

At the EMSD, we devote our efforts to promoting sustainable environmental and social development across our operations and decision-making process. We strictly comply with applicable social and environmental laws and regulations, and place great emphasis on our environmental, safety and health policies. To enhance our sustainability strategies and policies, we continue to explore ways to echo the Government's initiatives while better aligning with international trends. We regularly review our performance to identify sustainability-related risks and opportunities for improvement, while proactively engaging our stakeholders through various channels.

Contribution to Local and Global Sustainability Agenda

The Government is committed to leading Hong Kong to achieve carbon neutrality by 2050. In this regard, the city is aiming to reduce the total carbon emissions by half before 2035 from the 2005 level and achieving carbon neutrality by 2050. The Government has also set its new target to improve energy performance by 6% from the 2018/19 level by 2024/25. In addition to working towards the energy reduction target as a government department, the EMSD also continues to improve Hong Kong's regulatory energy management framework, so as to facilitate different stakeholders, including organisations and individuals, in reaching our shared energy or carbon reduction goal.

Making contributions to global sustainable development, the EMSD goes the extra mile. We support the Sustainable Development Goals (SDGs) developed by the United Nations, which cover 17 high-level sustainability focus areas identified for the world. We have identified eight out of them that are most relevant to our operations, and made reference of our sustainability efforts to these SDGs as stated on the right page.



環境範疇
Environmental Aspect

相關聯合國可持續發展目標
Relevant SDGs

經濟適用的清潔能源 | 負責任消費和生產 | 氣候行動

機電署於2020/21年度的貢獻
Contributions by the EMSD in 2020/21

- 實施及檢討相關法例、政策、計劃和其他措施，支持香港減碳量。
- 更新「香港可再生能源網」，向市民提供實用的可再生能源技術資訊。
- 應用區域供冷系統為啟德發展區內場所供應能源，包括機電署總部大樓。
- 2020/21年度總採購金額中的16.24%為環保產品。

- Implemented and reviewed relevant legislation, policies, schemes and other initiatives to support carbon reduction in Hong Kong.
- Updated HK RE Net, a website that provides the public with useful information on renewable energy technologies.
- Applied the District Cooling System to supply energy to premises at the Kai Tak Development, including the EMSD Headquarters Building.
- Procured approximately 16.24% of total purchased value being green products in 2020/21.

詳情請參閱**環保成效**章節
Please refer to **Environmental Performance** for details

社會範疇
Social Aspect

相關聯合國可持續發展目標
Relevant SDGs

良好健康與福祉 | 優質教育 | 體面工作和經濟增長 | 產業、創新和基礎設施 | 可持續城市和社區

機電署於2020/21年度的貢獻
Contributions by the EMSD in 2020/21

- 透過舉辦一系列活動及計劃持續推廣機電安全。
- 為機電業培育未來專業人才。
- 支持《有能者・聘之約章》及共融機構嘉許計劃。

- Continued to promote E&M safety through a series of events and schemes.
- Nurtured potential professionals for the E&M industry.
- Supported the Talent-Wise Employment Charter and Inclusive Organisations Recognition Scheme.

詳情請參閱**社會成效**章節
Please refer to **Social Performance** for details

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

機電署服務的可持續發展方針

規管服務

作為監管機構，機電署負責頒布、實施及檢討與機電安全和能源效益有關的主要法例及標準，從而保障公眾利益。我們除了提供專業解決方案、立法和發布各類指引，亦經常籌辦技術論壇及行業教育活動，推廣良好作業，以提高能源效益。

營運服務

本署秉持以客為本的宗旨，提供優質可靠的機電服務，我們致力與客戶及業界建立長遠的伙伴關係。此外，我們不斷引入最先進的技術，以助提高客戶場所的能源效益。

管理可持續發展相關風險

我們日常運作和管理供應鏈均充分考慮與可持續發展相關的風險，廣行預防措施以防患於未然。為確保作業安全可靠，我們定期為客戶的機電系統及設備安排預防性檢查和維修保養。我們亦已制訂企業及業務計劃並設立監管機制，確保可完善管理已識別的風險和查找改進空間。

持份者的參與

與直接受機電署營運影響或參與其中的內部和外界持份者組別保持聯繫，是本署可持續發展工作不可或缺的重要環節。我們透過不同渠道與各持份者定期溝通，了解他們關注的議題，竭力達到他們的期望。我們與主要持份者溝通的渠道載列於右頁。

為方便界定社會及環保報告的優先重要議題，機電署每年均會委託外界的獨立顧問進行報告實質性調查。

Sustainability and our Services

Regulatory Services

Being a regulatory body, it is our role to enact, implement and review key legislation and standards relating to E&M safety and energy efficiency to protect public interest. In addition to providing professional solutions and introduction of legislation and guidelines, we also organise technical forums and educational sessions regularly to promote industry best practices for improving energy efficiency.

Trading Services

Upholding a customer-oriented principle, the EMSD is devoted to providing high quality and reliable E&M services. We maintain long-term partnerships with our clients and the trade. Moreover, we keep enhancing the energy performance of client premises by introducing the most up-to-date technologies.

Managing Sustainability-related Risks

Taking into consideration sustainability-related risks in our operation and supply chain, the EMSD widely adopts a precautionary approach. In order to ensure that E&M facilities and equipment are safe and reliable for our clients' operation, preventive inspection and maintenance are regularly arranged. We have established the Corporate and Business Plan and put a control mechanism in place to manage identified risks and explore improvement opportunities.

STAKEHOLDER ENGAGEMENT

Communicating with internal and external stakeholder groups who are directly affected by or involved in the EMSD's operations is an integral part of our sustainability endeavour. We regularly engage with our stakeholders to understand their expectations and address their concerns. As shown in the table on the right page, different channels have been used to assist our communication with key stakeholders.

To help the EMSD prioritise material topics for social and environmental reporting, a Report Materiality Survey has been conducted annually by an independent external consultant.

主要持份者及參與渠道
KEY STAKEHOLDERS AND ENGAGEMENT CHANNELS

傳媒 Media

- 傳媒聚會
  Media Gatherings
- 就傳媒查詢回應及發表意見
  Feedback and Responses to Media Enquiries

客戶 Clients

- 客戶意見調查及訪問
  Customer Opinion Surveys and Interviews
- 電話調查
  Telephone Surveys
- 客戶通訊
  Customer Newsletters
- 合作項目
  Joint-projects
- 會議
  Meetings
- 研討會及座談會
  Symposiums and Seminars
- 報告實質性調查
  Report Materiality Survey

政府決策局及部門 Government Bureaux and Departments

- 會議
  Meetings
- 研討會及座談會
  Symposiums and Seminars
- 報告實質性調查
  Report Materiality Survey

供應商及承辦商 Suppliers and Contractors

- 會議
  Meetings
- 報告實質性調查
  Report Materiality Survey
- 研討會及座談會
  Symposiums and Seminars

公眾人士 General Public

學術團體 Academia

非政府組織 Non-governmental Organisations

培訓機構 Training Institutes

- 機電安全及節能社區推廣活動
  Community-wide Promotion of E&M Safety and Energy Efficiency
- 合作項目
  Joint-projects
- 研討會及座談會
  Symposiums and Seminars
- 會議
  Meetings
- 通訊
  Newsletters
- YouTube
- 報告實質性調查
  Report Materiality Survey

專業團體及行業公會 Professional and Trade Associations

受規管行業 Regulated Trades

- 業界參與計劃
  Trade Engagement Programme
- 研討會及座談會
  Symposiums and Seminars
- 工作小組
  Working Groups
- 會議
  Meetings
- 報告實質性調查
  Report Materiality Survey

員工 Staff

- 員工滿意度調查
  Staff Satisfaction Surveys
- 員工工會及員工協商委員會
  Staff Unions and Departmental Consultative Committees
- 焦點討論小組
  Focus Groups
- 員工通訊
  Staff Newsletters
- 高級管理層親善大使探訪
  Ambassador Visits by Senior Management
- 培訓課程
  Training Sessions
- 比賽及團隊建立活動
  Competitions and Team-building Activities
- 會議
  Meetings
- 報告實質性調查
  Report Materiality Survey

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

聯繫我們的客戶

我們繼續加強與客戶溝通協作，年內委託獨立市場研究公司進行客戶意見調查，致力進一步提升客戶體驗及本署的競爭力。我們的宗旨是精益求精，因此已根據上一次調查的結果，於四個範疇推行多項措施，務求不斷改進。2020年，我們的客戶滿意指數取得6.83分(以8分為滿分)，較2018年的6.61分高3.3%，創下歷史新高。我們將繼續努力，使服務質素及競爭力更上一層樓。

2018年客戶意見調查後推行四個範疇的改善措施：

- 應用新科技
- 與客戶溝通
- 加強項目及承辦商管理
- 提供工作時間長及準確價格計算

除了定期進行客戶意見調查，我們亦推出以手機操作的「顧客為本電子平台 — 工作管理」系統，全面實踐環保無紙工作，透過數碼流程妥善安排維修保養工程，加強與客戶及承辦商聯繫。

為使機電服務水準和質素不斷進步，滿足客戶的需要，機電署於匯報年度為各策略業務單位安排一系列「優質客戶服務工作坊」。我們的專業培訓顧問深入了解同事們與客戶溝通時遇到的種種問題後，設計了多項互動課程，指導員工如何應用客戶服務技巧。

Engaging our Clients

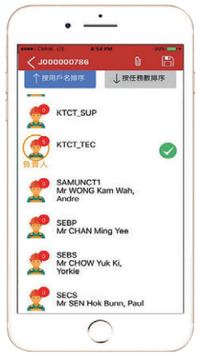
We continue to strengthen communication and collaboration with our clients. This year, we appointed an independent market research company to conduct a Customer Opinion Survey (COS) to further enhance customer experience and our competitiveness. Dedicated to making improvement, we have already implemented some measures based on the results from the last survey on four areas. The Customer Satisfaction Index increased 3.3% from 6.61 in 2018 to 6.83 (out of 8) in 2020, reaching its historical high. We will continue to strive for enhancement of our service quality and competitiveness.

Four Improvement Areas since COS in 2018:

- New Technologies Application
- Customers Communication
- Project and Contractor Management Enhancement
- Provision of Work Programme and Accurate Cost Estimate

In addition to conducting regular COS, we have established a mobile paperless Customer Centric e-Platform – Job Management system to strengthen communication with clients and contractors for efficient arrangement of maintenance work through a digitalised process.

With a view to enhance our E&M service standards and service quality on an ongoing basis for the benefit of our clients, we organised a series of quality customer service workshops for all strategic business units during the reporting year. After gaining in-depth understanding of the difficulties in customer communication encountered by colleagues, the professional training consultant designed interactive learning programmes to support the application of customer service skills.



「顧客為本電子平台 — 工作管理」系統
The Customer Centric e-Platform – Job Management system

管理我們的供應鏈

我們與承辦商及供應商緊密合作，致力提供安全優質的機電服務，並且供應與機電安裝、操作及維修相關的零部件、設備和服務。機電署依從公開及公平的程序甄選承辦商和供應商，並定期檢討他們的表現。與此同時，我們亦為供應鏈伙伴制訂多項政策及指引，嚴格遵從所有關於守法合規、產品質素標準、職業健康與安全、商業操守和環境管理的規定。

Managing our Supply Chain

We work closely with contractors and suppliers in delivering safe and quality E&M services as well as in providing parts or equipment and services related to E&M installation, operation and maintenance. The EMSD follows an open and fair process to select contractors and suppliers, and reviews their performance regularly. We have set up policies and guidance for our supply chain partners and adhere to all applicable requirements for legal compliance, product quality standards, occupational health and safety, business conduct and environmental management.

供應鏈的環境及社會考慮因素
Supply Chain Environmental and Social Considerations

環境層面
Environmental Aspect

- 規定承辦商和供應商嚴格遵守機電署合約訂明的環保規定。
  Require contractors and suppliers to stringently observe the environmental requirements of our contracts.
- 相關承辦商和供應商的環境管理系統須符合ISO 14001環境管理系統認證標準。
  Certify environmental management systems of applicable contractors and suppliers with the ISO 14001 Environmental Management System.
- 鼓勵供應商提供環保產品。
  Encourage suppliers to provide environmental friendly products.
- 保存環保產品供應商資料在本署數據庫以供日後採購時評選。
  Keep supplier information of sustainable products in our database for future procurement consideration.

社會層面
Social Aspect

- 要求承辦商在適用招標項目中持有ISO 9001品質管理系統證書。
  Require contractors to hold the ISO 9001 Quality Management Certification for applicable tenders.
- 為承辦商提供安全指引以實現機電署「零意外」的目標。
  Provide contractors with safety guidelines to achieve our "Zero Accidents" target.
- 定期檢討承辦商的安全表現。
  Review contractors safety performance regularly.

機電署積極引入各種先進技術，推動香港發展成為更傑出的綠色智慧城市。我們鼓勵承辦商和供應商採用創新的解決方案，透過「機電創科網上平台」，他們可向本署分享最新產品和技術，同時我們亦歡迎新的承辦商及供應商登記納入機電署供應商名冊。

The EMSD has been utilising a myriad of advanced technologies for developing a greener and smarter city. We encourage innovative solutions from our contractors and suppliers. In particular, the E&M InnoPortal provides a technical platform for suppliers to share their new products and technologies with us. New contractors and suppliers are encouraged to register on the EMSD Suppliers List.

可持續發展認證及嘉許

我們設有綜合管理系統，務實地全面推進品質、環境及職業健康與安全成效。機電署的綜合管理系統結合ISO 9001:2015品質管理系統、ISO 14001:2015環境管理系統、ISO 45001:2018職業健康與安全管理系統和ISO 37001:2016反賄賂管理系統。於匯報年度，我們取得ISO 13485:2016醫療器材品質管理系統證書，足證本署的醫療工程服務品質達到國際標準。

機電署在可持續發展路上永不停步，我們的努力得到公開肯定，於匯報年度內榮獲多個獎項。我們衷心感激所有持份者一直支持本署，很高興與他們分享殊榮和喜悅。

SUSTAINABILITY CERTIFICATIONS AND RECOGNITIONS

To drive continuous improvement in quality, environmental as well as occupational health and safety performance in an ethical manner, we have put in place an Integrated Management System (IMS). Our IMS consists of ISO 9001:2015 Quality Management System, ISO 14001:2015 Environmental Management System, ISO 45001:2018 Occupational Health and Safety Management Systems, and ISO 37001:2016 Anti-bribery Management Systems. During the reporting year, we obtained a new certification for ISO 13485:2016 Medical Devices – Quality Management System, which affirmed that our medical engineering service quality had reached the international standard.

Our relentless pursuit of sustainability was recognised by multiple awards during the reporting year. We would like to express our gratitude to all stakeholders for their long-standing support and share our joy with them.

可持續發展管理方針
SUSTAINABILITY MANAGEMENT APPROACH

「世界技能大賽香港代表選拔賽」2019/20
WorldSkills Hong Kong Competition 2019/20

「世界技能大賽」是全球最具規模的國際技能比賽，旨在推廣職業專才教育。機電署12位見習技術員在香港代表選拔賽中成績斐然，讓本署首次囊括在「電氣安裝」及「空調及製冷」項目中所有香港隊的入圍資格。

The WorldSkills Competition is the largest international technical skills event that promotes vocational and professional education. 12 EMSD technician trainees made excellent achievements in the selection competition in Hong Kong. This was the first time that we swept the board with all Hong Kong Team qualifications in the Electrical Installations trade and Refrigeration and Air Conditioning trade categories.

2020建築信息模擬成就嘉許禮
Celebration of BIM Achievement 2020

我們一直銳意推動「建築信息模擬 — 資產管理」技術，年內憑着豐碩的成果，在2020建築信息模擬成就嘉許禮奪得三個獎項。

Our persistent effort in developing the Building Information Modelling-Asset Management (BIM-AM) technology was acknowledged by three awards at the Celebration of BIM Achievement 2020.

機電署除獲嘉許為「2020建築信息模擬機構」外，我們的「機電工程署總部大樓構建建築信息模擬及管理資產資料」項目亦贏得「2020建築信息模擬項目」嘉許。本署透過採用三維激光掃描儀為機電署總部大樓進行現場勘察和分析，為建築物構建建築信息模擬模型，提高工作效率。機電署高級工程師陳賀賢先生（下圖前排左二）也獲頒發「2020建築信息模擬專業人員」獎，表揚他的傑出貢獻，積極推廣機電業界數碼化。

In addition to becoming the "BIM Organisation 2020", our project "Construction of Building Information Model and Asset Information Inputting for EMSD Headquarters" was awarded "BIM Project 2020". With the help of a 3D laser scanner for site survey and analysis, we constructed a BIM model for the EMSD Headquarters Building to enhance working efficiency. Mr Chan Hor-yin, Steve, (2nd left, front row, photo from the below), a senior engineer of the EMSD, was awarded "BIMer 2020" for his outstanding contribution in promoting and adopting digitalisation in the E&M industry.

第26屆公德地盤嘉許計劃
The 26th Considerate Contractors Site Award Scheme

機電署負責監督的六項工程合約於第26屆公德地盤嘉許計劃獲獎，分別奪得一個銀獎、兩個銅獎和三個優異獎。是次獲獎突顯各承辦商的工地安全和環境管理工作水準甚高，機電署亦不遺餘力地促進職業安全與健康。

Under the 26th Considerate Contractors Site Award Scheme, a Silver Award, two Bronze Awards and three Merit Awards were presented to six contracts under the supervision of the EMSD. These awards testified that site safety and environmental management were well-maintained by contractors, and the EMSD spared no effort in enhancing occupational safety and health.

美國通訊專業聯盟「2020 Vision Awards」及2021年ARC國際年報大獎
2020 Vision Awards and 2021 International ARC Awards

機電署銳意開拓創新有效的方式與持份者溝通，我們的努力得到國際認同，年內榮獲多項大獎。《機電工程署二零一九至二零年年報》和《機電工程營運基金二零一九至二零年報告》在下列年報大賽中取得優異成績：

Our dedication to creative and effective communication with stakeholders is highly recognised. In the year under review, we garnered international awards on the strength of this effort. The Electrical and Mechanical Services Department Annual Report 2019/20 and the Electrical and Mechanical Services Trading Fund Report 2019/20 achieved excellent results in the following competitions:

美國通訊專業聯盟「2020 Vision Awards」：
League of American Communications Professionals LLC (LACP) 2020 Vision Awards:

- 金獎
  Gold Award
- 技術成就獎
  Technical Achievement Award
- 50份最佳中文年報
  Top 50 Chinese Reports
- 亞太區80份最佳年報
  Top 80 Reports in Asia-Pacific Region

2021年ARC國際年報大獎：
2021 International Annual Report Competition (ARC) Awards:

- 「非牟利機構(印刷版年報)：政府機構及辦公室」組別銅獎
  Bronze Award in the category of Non-Profit Organisation (Print A.R.): Government Agencies & Offices
- 「非牟利機構(網上版年報)：政府機構及辦公室」組別銅獎
  Bronze Award in the category of Non-Profit Organisation (Online A.R.): Government Agencies & Offices

環保成效
ENVIRONMENTAL PERFORMANCE

經濟適用的清潔能源 | 負責任消費和生產 | 氣候行動

氣候變化的影響迫在眉睫，面對當前的挑戰，機電署不僅運用專業知識與技術促進香港轉型成為更可持續發展的綠色城市，與此同時亦盡政府部門肩負的責任，積極創造更環保的工作環境。

In light of pressing climate changes, the EMSD not only leverages expertise in facilitating Hong Kong's transformation into a more environmental and sustainable city, but also shoulders its indispensable responsibilities as a government department to create a greener workplace.

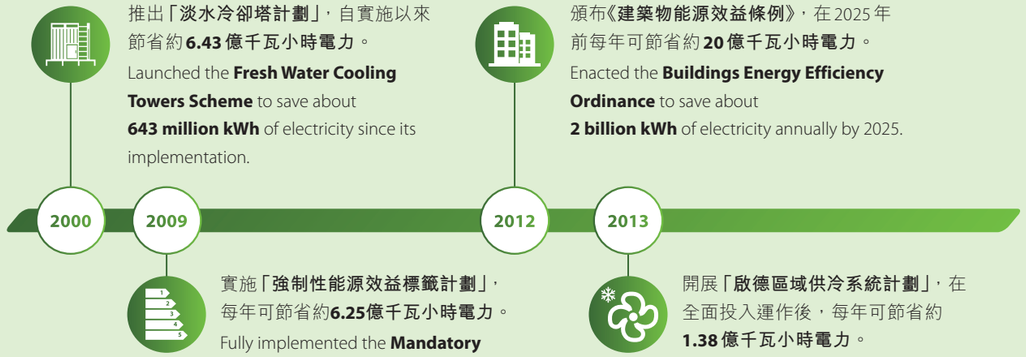
推動香港的綠色進程

機電署以實現《香港都市節能藍圖2015~2025+》各項目標為要務，透過與各界持份者合作，積極提高香港的能源效益。我們致力完善法例、政策、計劃及其他倡議，務求監管能源使用和加強公眾意識。

FACILITATING TRANSITION TO A GREENER CITY

In pursuit of the objective of the Energy Saving Plan for Hong Kong's Built Environment 2015~2025+, it is our mission to make our city more energy-efficient through joint efforts with stakeholders. We refine legislations, policies, schemes and other initiatives to regulate energy use and enhance public awareness.

能源效益政策及計劃的成效
Impact of Energy Efficiency Policies and Schemes



能源效益政策

《建築物能源效益條例》

建築物的用電量佔全港總用電量約90%，遠高於全球平均值的40%。為提高建築物的能源效益，政府先後引入多項監管規例。按照目前趨勢，推行能源政策確可達到迅速減碳的成果。

為協助制訂及實施《建築物能源效益條例》下的《建築物能源效益守則》及《能源審核守則》，機電署與不同持份者，如業界、專業機構、學界及政府部門等成立技術工作小組，就屋宇裝備裝置及能源審核的合規事宜提供技術指引。此外，兩套守則亦會定期進行檢討，確保緊貼最新的技術發展和國際標準。

「強制性能源效益標籤計劃」

「強制性能源效益標籤計劃」第一階段於2009年全面實施，旨在規定所有訂明產品供應時須貼上能源標籤以展示其能源效益等級，為消費者提供能源效益表現相關產品的資訊，鼓勵他們選購高能源效益產品。「強制性能源效益標籤計劃」第三階段已於2019年全面實施，最新階段涵蓋範圍擴大至八類電氣產品。

我們於匯報年度發布《產品能源標籤實務守則2020》，指定個別訂明產品的最新能源效益評級標準，以進一步提高能源效益。

能源效益計劃

區域供冷系統

大型城市發展項目規劃時必須考慮強大的空調需求，啟德發展區便是一例，而區域供冷系統被認為較傳統氣冷式空調系統有更高能源效益。機電署由2013年開始陸續為啟德區內建築物提供區域供冷服務，現有的區域供冷系統工程預期於2028年全面落成啓用，估計每年可節省1.38億度電，相當於每年減少排放96 500公噸二氧化碳，實現可觀的節能效益。

Energy Efficiency Policies

Buildings Energy Efficiency Ordinance (BEEO)

Buildings account for about 90% of Hong Kong's total electricity consumption, compared to a global average of 40%. Regulations are driving buildings to be more energy-efficient and current trends indicate that energy policies will lead to rapid decarbonisation.

To support the development and implementation of the Building Energy Code (BEC) and Energy Audit Code (EAC) under the BEEO, the EMSD has liaised with different stakeholders to establish a Technical Task Force made up of trade parties, professional institutions, academics and government departments. The Task Force aims to offer technical guidance on compliance for building services installations and energy audit. Meanwhile, the Codes of Practice are reviewed on a regular basis in order to align with the latest technology advancements and the development of international standards.

Mandatory Energy Efficiency Labelling Scheme

In 2009, we fully implemented the initial phase of the Mandatory Energy Efficiency Labelling Scheme (MEELS), dedicated to encouraging consumers to purchase more energy-efficient products by informing the energy efficiency performance of the prescribed products which requires bearing energy labels. The full implementation of the third phase of MEELS in 2019 extended the coverage to eight types of prescribed electrical products.

The Code of Practice on Energy Labelling of Products 2020 was published during the reporting year to set out the upgraded energy efficiency grading standards of specific prescribed products, in order to further enhance energy efficiency.

Energy Efficiency Schemes

District Cooling System

For the planning of large scale urban developments with a strong demand for air-conditioning, such as the Kai Tak Development, the District Cooling System (DCS) is considered to be the most energy-efficient system when compared with traditional air-cooled air-conditioning systems. The provision of District Cooling Services to KTD has been provided progressively since 2013 and the project of the existing DCS plants is planned for completion and full scale operation by 2028. It will achieve estimated annual saving of 138 million kWh in electricity consumption, with a corresponding reduction of 96 500 tonnes of carbon dioxide emissions per annum, which brings significant savings in energy consumption.

環保成效
ENVIRONMENTAL PERFORMANCE

淡水冷卻塔

機電署於2000年推出淡水冷卻塔計劃以來，致力提倡非住宅樓宇廣泛應用淡水冷卻塔的空調系統。淡水冷卻塔的空調系統較氣冷式空調系統更具能源效益，碳排放亦較低。在本匯報年度，我們共接獲49宗申請並批准安裝108個淡水冷卻塔[1]。按照估計，所有在本匯報年度已落成淡水冷卻塔的設施每年可減少約48 000公噸碳排放。

重新校驗現有建築物

重新校驗旨在透過系統性檢驗以評定現有樓宇的節能表現，然後推行適當的優化措施，降低能源成本及改善室內環境。專門訓練和專業發展是培育更多重新校驗專才和支持廣泛地重新校驗現有樓宇的關鍵。為促進重新校驗的實踐工作，我們擬備了《重新校驗技術指引》，並編製一系列重新校驗專業人員的培訓教材。由於該指引仍不斷更新，香港的樓宇業主需要自行培訓專業人員和聘請服務供應商執行重新校驗。

提倡廣泛使用可再生能源

機電署一直響應和配合政府推廣的環保承諾，積極鼓勵各界廣泛使用可再生能源。我們發布多份相關技術指引和指南，同時建立「香港可再生能源網」，透過網上平台向公眾提供最新的可再生能源實用資訊。

Fresh Water Cooling Towers

The EMSD has been actively promoting wider use of fresh water cooling towers for air-conditioning systems in non-domestic buildings under the Fresh Water Cooling Towers (FWCT) Scheme since its launch in 2000. Comparing to the air-cooled air-conditioning system, fresh water cooling demonstrates higher energy efficiency and lower carbon emission. A total of 49 FWCT applications were received with 108 FWCTs[1] approved for installation during this reporting year. It is estimated that energy savings associated with the successful implementation of FWCTs within this reporting year can reduce about 48 000 tonnes of carbon emissions annually.

Retro-commissioning of Existing Buildings

Retro-commissioning (RCx) is a systematic examination of an existing building's energy performance to identify areas for optimisation to reduce energy costs and improve the indoor environment. Specialised training and professional development are critical to increase the supply of RCx professionals and to support the extensive implementation of RCx on existing buildings. To support the implementation of RCx, we introduced the Technical Guidelines on RCx and prepared a series of training materials for RCx practitioners. As the RCx guidelines are still evolving, Hong Kong building owners need to develop internal RCx capabilities and engage external RCx service providers for such tasks.

Promoting the Wider Use of Renewable Energy

The EMSD actively promotes wider adoption of renewable energy in response to the Government's environmental commitment. Apart from issuing technical guidelines and guidance notes, we established the HK RE Net, an online portal which offers handy and most up-to-date information on renewable energy to the public.

「香港可再生能源網」
The HK RE Net

全球不同地區必須共同合作，才可達致可再生能源普及化。為此，機電署於2020年11月主辦視像會議，邀請16個亞太區經濟合作組織（亞太經合組織）成員國逾150位代表參加，分享他們實施可再生能源政策及措施的經驗。

Joint efforts across different regions are important for driving the adoption of renewable energy. In November 2020, we hosted a virtual meeting for over 150 delegates from 16 Asia-Pacific Economic Cooperation (APEC) member economies to share experience in implementing renewable energy policies and measures.

香港和亞太經合組織成員國代表主持聯席會議。
Representatives of Hong Kong and APEC member economies hosting the joint meeting.

[1] 每宗淡水冷卻塔申請可能涉及一個或多個淡水冷卻塔。
Each FWCT application may involve one or more than one cooling tower(s).

締造更環保的工作環境

機電署嚴格實施ISO 14001:2015環境管理系統，提綱挈領地推行各種環保計劃，並且定期檢討我們的環保成效。機電署日常運作時會充分考慮環境因素，盡量減少耗用資源和產生廢物，從而塑造更環保的工作環境。

能耗及碳排放

為響應政府實踐新綠色能源目標，我們緊密監察有關工作的進展，不斷開拓更多提升能源表現的途徑。目標設定在2020/21至2024/25年度的五年期間的相若運作情況下，以2018/19年度為基準，能源表現提高6%。這不僅涵蓋政府建築及其基礎設施中的電力，還包括其他形式的能源。可再生能源對碳減排的貢獻亦計算在內。在2020/21年度，我們的建築及其基礎設施比2018/19年度的能源表現提高了0.1%。

CREATING A GREENER WORKPLACE

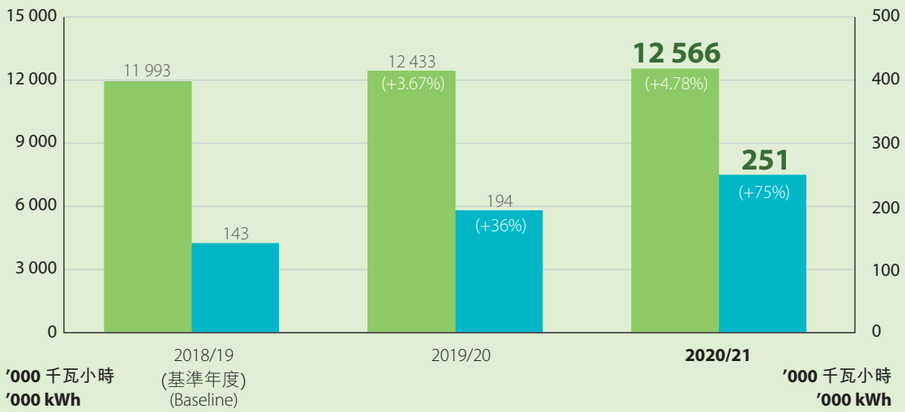
The EMSD adheres to the ISO 14001:2015 Environmental Management System to systematically develop environmental programmes and review environmental performance regularly. Environmental considerations are integrated into our daily operations to minimise the use of resources and waste generation for a greener workplace.

Energy Uses and Carbon Emissions

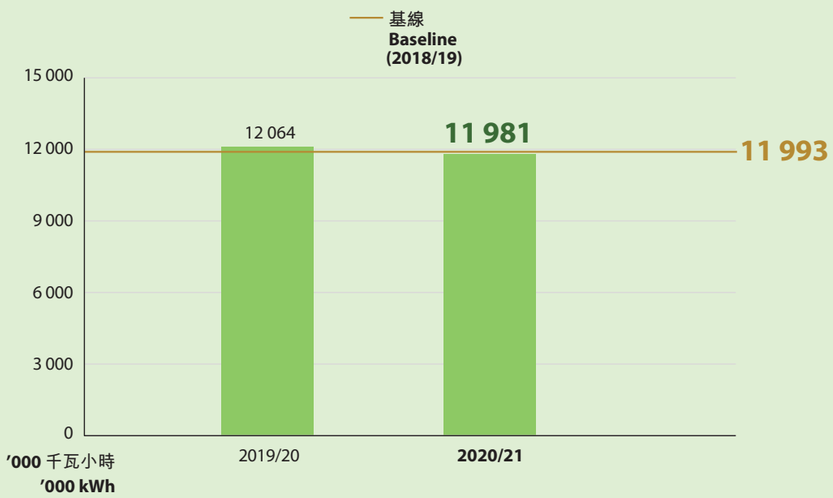
In response to the Government's new Green Energy Target, the EMSD closely monitors our progress and continues to explore energy performance improvement opportunities. The target is set to have 6% of improvement in energy performance for the five-year period from 2020/21 to 2024/25, under comparable operating conditions in 2018/19 as the baseline. It covers not only electricity, but also other forms of energy in government buildings and its infrastructure facilities. The contribution of renewable energy to carbon reduction is also taken into account. In 2020/21, our buildings and infrastructure facilities recorded a 0.1% improvement in energy performance as compared to 2018/19.

環保成效
ENVIRONMENTAL PERFORMANCE

能源表現
Energy Performance



於相若運作情況下的能源表現[2]
Energy Performance under Comparable Operating Conditions[2]

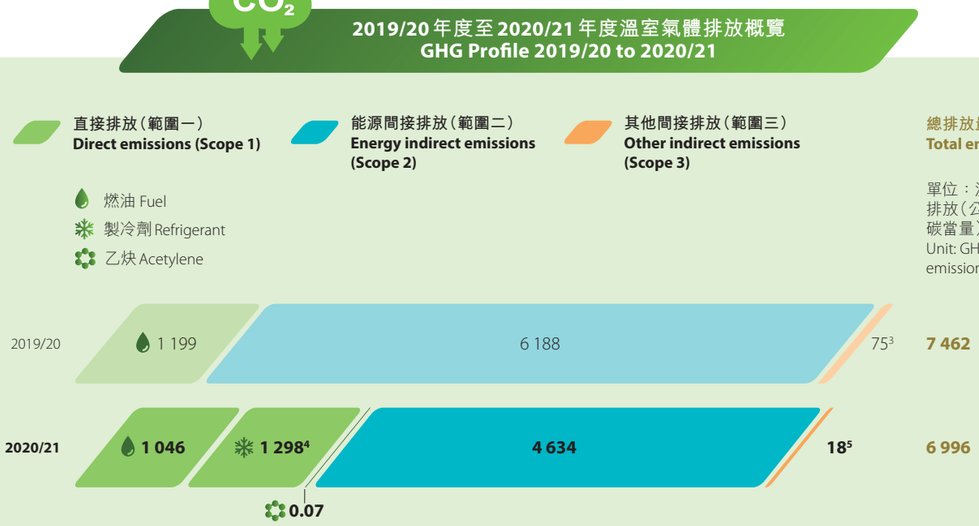


[2] 此計算比較於2018/19至2020/21年度仍然運作的營運單位能源用量的改變。
The calculation compares energy consumption changes of operating units that were still in operation from 2018/19 to 2020/21.

機電署的溫室氣體排放主要源於營運中的燃油和製冷劑(範圍一),其他排放源頭包括外購電力(範圍二)及處置廢紙和公務旅行(範圍三)。本匯報年度的溫室氣體排放總量約為6 996公噸二氧化碳當量,強度為每位員工1.16公噸二氧化碳當量。2019/20年度及2020/21年度的碳排放成分已列於下表。

The EMSD's greenhouse gas (GHG) emissions mainly originate from fuel consumption and refrigerant consumption (Scope 1). Other sources include purchased electricity consumption (Scope 2), and others, such as waste paper disposal and business travelling (Scope 3). The total GHG emissions during the reporting year were approximately 6 996 tonnes of carbon dioxide equivalent (tCO_2e), with an intensity of 1.16 tCO_2e per employee. Below is the composition of the EMSD's carbon profile in 2019/20 and 2020/21.

2019/20年度至2020/21年度溫室氣體排放概覽
GHG Profile 2019/20 to 2020/21



掃描此二維碼或登入以下網址可連結機電署的年度碳審計資訊:
The information of the EMSD's annual carbon audit can be accessed through scanning this QR code or visiting:
https://bems.emsd.gov.hk/bems/faces/dist/public.10031.139.xhtml

[3] 數據只包括2019/20年度公務旅行。
The figure only includes business travelling in 2019/20.

[4] 2020/21年度製冷劑數據經審查後新增其溫室氣體排放。
In 2020/21, refrigerant consumption was available after data review, its associated GHG emission was newly included.

[5] 數據包括2020/21年度處置廢紙及公務旅行。由於2019冠狀病毒病疫情,2020/21年度並沒有海外公務旅行數據記錄。
The figure includes waste paper disposal and business travelling in 2020/21. No overseas business travelling was recorded in 2020/21, due to the COVID-19 epidemic.

環保成效
ENVIRONMENTAL PERFORMANCE

本署確保車輛妥善維修，日常營運並會調配更高級別排放標準的車輛，積極推廣綠色出行。於匯報年度，機電署轄下共有195部車輛，其中包括14部電動車及4部混合動力車輛。

此外，我們亦積極應用環保建築策略，主動將總部大樓的空調系統連接區域供冷系統。為善用天然可再生能源，大樓露天廣場於匯報年度翻新時增設了多項太陽能裝置，包括於天篷安裝太陽能發電系統及太陽能樹燈飾。

The EMSD promotes green mobility within our operations through proper maintenance and deploying vehicles with higher emission standards. We operated a fleet of 195 vehicles, in which 14 were electric vehicles and 4 were hybrid vehicles, during the reporting period.

To demonstrate our dedication in adopting green building solutions, we take the initiative to connect the air-conditioning system of the headquarters building to the DCS. Solar energy fixtures, such as photovoltaics on the canopy and solar tree lighting, were integrated in the outdoor piazza renovation during the reporting year to make better use of natural renewable resources.

露天廣場的太陽能樹燈飾

The solar tree lighting in the outdoor piazza

環保採購及減廢

本署的採購制度明確規定按照ISO 14001:2015環境管理系統的要求甄選供應商。我們亦會參照環境保護署訂立的環保規格，於可行情況下為機電項目選購適當的環保產品。

於本匯報年度，機電署供應商名冊共有468間提供環保產品的供應商，本署斥資約9,690萬港元採購環保產品(佔部門總採購金額16.24%以上)，較2019/20年度(7,121萬港元)增加36.08%。

Green Procurement and Waste Avoidance

In our procurement process, we impose explicit requirements to select responsible suppliers in accordance with the ISO 14001:2015 Environmental Management System, and follow the green specifications issued by the Environmental Protection Department as a reference to source appropriate green products for our E&M projects whenever possible.

A total of 468 suppliers that provided green products were included in the EMSD Suppliers List during the reporting year. We spent approximately HK$96.90 million (over 16.24% of the total purchased value) on procuring green products, up by 36.08% when compared to 2019/20 (HK$71.21 million).

我們已引入多項廢物管理措施，所有廢物在源頭分類，並於可行情況下盡量回收。而辦公室及工場的廢物均按照機電署的內部環保措施處理，將有害廢物、無害廢物及回收物料分類收集，再交由合資格承辦商妥善處理。本署總部大樓各顯著位置均設置回收箱，方便回收各類廢物。於匯報年度，機電署購買或耗用3 777個碳粉盒。3 502個碳粉盒由承辦商回收或妥善棄置。

管理水資源

水是彌足珍貴的天然資源，因此我們採取全方位的策略管理水資源。我們的總部大樓已接駁區域供冷系統，利用海水取代食水作冷卻媒介，並陸續安裝多種節約用水的裝置，例如水龍頭傳感器和設置雨水回用系統，減少工作場所的用水量。

Waste management initiatives are in place by separating waste at source and recycling when feasible. The EMSD follows internal environmental procedures to handle waste collected from offices and workshops. We sort and collect hazardous waste, non-hazardous waste and recyclables separately, and engage qualified contractors for further handling. Recycling bins are allocated at prominent places in the EMSD Headquarters Building. During the reporting year, the EMSD bought or consumed 3 777 toner cartridges, and 3 502 toner cartridges were handled by contractors for recycling or disposal properly.

Water Management

We regard freshwater as a valuable natural resource, and take a holistic approach to water management. Since connecting our headquarters building to the DCS, freshwater has been replaced by seawater as a medium for cooling. We have gradually deployed different water-efficient devices, such as sensor-equipped water taps and a rainwater collection system, to minimise water consumption in the workplace.

社會成效
SOCIAL PERFORMANCE

良好健康與福祉 | 優質教育 | 體面工作和經濟增長 | 產業、創新和基礎設施 | 可持續城市和社區

機電署作為政府部門及領頭的機電工程服務供應商，肩負社會責任，致力促進社會和工作環境的可持續發展。我們盡展專業知識與技能貢獻社會，並為機電業培育專業人才，關愛及支持轄下員工。2021年，機電署連續第七年榮獲香港社會服務聯會頒發「同心展關懷」標誌，表彰我們積極推動社會發展。

As a government body and the leading E&M engineering service provider, the EMSD shoulders the social responsibility of achieving sustainability both in our community and at the workplace. We contribute our professional expertise to serve the community, nurture professionals for the E&M industry, as well as caring for our staff. In 2021, the Hong Kong Council of Social Service (HKCSS) awarded the Caring Organisation Logo to the EMSD for the seventh consecutive year to recognise our commitment to driving community development.

連續五年或以上獲香港社會服務聯會頒發「同心展關懷」標誌
The 5 Years Plus Caring Organisation Logo awarded by HKCSS

以專業睿智服務社會
CONTRIBUTING PROFESSIONAL EXPERTISE TO SERVE SOCIETY

機電署在促進香港機電安全及能源應用範疇上不遺餘力，作為本港提供機電裝置顧問與監管服務的主要機構之一，服務範圍涵蓋電力安全、機械安全、氣體安全、鐵路安全以至能源效益和機電公用設施監察等。我們不斷提升專業機電服務，為市民創造更優質的生活。

The EMSD spares no effort to support Hong Kong's E&M safety development and energy utilisation. As one of the key advisory and regulatory service providers in E&M installations, including electrical safety, mechanical safety, gas safety, railway safety, as well as energy efficiency and utilities monitoring, we continuously improve our professional E&M services and enhance the quality of life in Hong Kong.

提升業界技能

我們鼓勵機電同業分享專業知識，互相溝通，藉此強化業界的技能。年內我們分別籌辦各類技術研討會、講座和論壇，提供平台讓機電業界分享良好作業方式，鞏固技能貢獻業界。研討的主題包括但不限於機電工程服務、能源效益、綠色作業、創新科技及職業安全健康等。

Advancing Industry Capabilities

Professional knowledge sharing and effective communication within the industry are important for enhancing industry capabilities. To this end, we organised various technical seminars, symposiums and forums for the E&M trade to share best practices and build our competence to serve the industry. Topics include but not limited to E&M engineering services, energy efficiency, green operation, innovation and technology, and occupational safety and health.

工程人員及技術人員培訓

機電署的見習工程師訓練計劃推出至今超過30年，旨在扶植見習工程師考取專業工程師資格。本計劃迄今已成功培訓超過500名專業工程人才，為機電業服務。我們除了培訓技術人員如何運用綜合樓宇管理系統將機電設備數碼化外，還舉辦多個關於機電業的內部線上培訓課程。此外，為提供更多元化的優質培訓，我們專門研發了一套升降機虛擬實境安全培訓軟件。本署的綜合學員管理系統設有在職評估功能，評核各受訓技術人員的表現。

Training for our Engineers and Technicians

The EMSD has operated the Engineering Graduate Training Scheme for more than 30 years with an aim to assist engineering graduates to achieve professional engineer qualifications. Since the introduction of the scheme, more than 500 engineering professionals have been trained successfully under the EMSD. In addition to the integrated Building Management Systems (iBMS) on digitalisation, the EMSD also organised internal online training programmes related to the E&M industry for our technical staff. To enhance the diversity and quality of training, we developed a Virtual Reality training software on lift safety. Our Integrated Trainee Management System is empowered by an on-job assessment function to evaluate the performance of trained technicians.

提供培訓課程提升員工技能服務機電業。
Providing training course to build our competence to serve the E&M industry.

智慧城市發展

我們依循《香港智慧城市藍圖2.0》及《香港氣候行動藍圖2030+》的願景，致力引入各種創新科技（創科），促進香港發展成為智慧城市。我們善用每個與創科業界成員交流意念及經驗的機遇，並積極參與各類活動，包括「樂齡科技博覽暨高峰會2020」。

Smart City Development

Guided by the vision set out in the Smart City Blueprint for Hong Kong 2.0 and Hong Kong's Climate Action Plan 2030+ by the Government, the EMSD incorporated innovative technologies into smart city development. We took part in different events and activities, such as the Gerontech and Innovation Expo cum Summit 2020 in innovation and technology, to exchange ideas and share experience with industry players.

優化業界監管規例

為促進機電業持續改善、保障工人及公眾的安全，機電署定期檢討和更新監管規例。我們與業界協會、商會、大專院校、專業機構及電力公司共同商議，修訂了《電力（線路）規例工作守則》，並於2020年底發布新版。

Enhancing Industrial Regulations

With a view to facilitating continuous improvement of the E&M industry and ensuring the safety of workers and the public, the EMSD regularly reviews and revamps regulations. Having joined hands with trade associations, chambers of commerce, tertiary education institutions, professional organisations and power companies, the EMSD revised the Code of Practice for the Electricity (Wiring) Regulations and issued a new edition at the end of 2020.

社會成效
SOCIAL PERFORMANCE

為機電業栽培人才

我們冀盼吸引及招攬有意投身機電業的人才，於匯報年度繼續投放資源籌辦各式各樣的推廣活動和計劃，向機電從業員及市民推廣機電服務和分享機電知識。

本署的機電青少年大使計劃已連續舉辦超過十年，旨在喚起青少年對能源效益、機電行業及安全措施等機電主題的興趣，讓他們組成青年團隊，在社區推廣相關概念。年內我們推出了多個線上科學、科技、工程及數學（STEM）工作坊，讓青少年大使在輕鬆有趣的環境中汲取機電知識，例如2020年11月及12月舉辦的「機電夢車場STEM工作坊」及「夢幻飄雪STEM工作坊」均深受歡迎，共吸引過百位青少年大使參加。

NURTURING TALENTS FOR THE E&M INDUSTRY

Aiming to attract and recruit potential talents for the E&M industry, the EMSD continued to allocate resources to organise diverse promotion events and schemes for practitioners and the public during the reporting year to introduce E&M services and share E&M knowledge.

The EMSD has organised the E&M Young Ambassador (EMYA) Programme for over a decade. EMYA Programme aims to encourage youngsters' interest in energy efficiency, the E&M industry and safety measures, as well as to build a young team to promote these concepts in the community. A wide range of online Science, Technology, Engineering, and Mathematics (STEM) workshops were launched, enabling young ambassadors to acquire E&M knowledge in a relaxed and fun way. For example, the Creative Robot Car and Christmas STEM Workshops held online in November and December 2020 received overwhelming feedback, with more than 100 participants joining the event.

2020/21年度公眾及業界參與活動亮點
Highlights of Public and Trade Engagement Activities in 2020/21

車輛維修自願註冊計劃
Voluntary Registration Schemes for Vehicle Maintenance

- 舉辦三場車輛維修技術線上講座，共有約1 900人參加。
  Conducted three technical webinars on vehicle maintenance for a total of around 1 900 participants.
- 聯同車輛維修技術諮詢委員會協辦「車輛維修自願註冊計劃」宣傳短片創作比賽。
  Co-organised the Voluntary Registration Scheme for Vehicle Maintenance Promotional Video Competition jointly with the Vehicle Maintenance Technical Advisory Committee.
- 設計11個與車輛維修業相關主題的線上問答比賽，吸引超過6 700人參與。
  Designed 11 online quizzes on topics related to the vehicle maintenance trade for over 6 700 participants.

氣體安全
Gas Safety

- 註冊氣體供應公司及氣體安全諮詢委員會舉行定期會議。
  Held regular meetings with registered gas supply companies and the Gas Safety Advisory Committee.
- 為建築工人、技術員、地產及物業管理員舉辦超過28場氣體安全線上講座或研討會。
  Provided over 28 gas safety talks through webinars or seminars for construction workers, technicians, property and property management staff.
- 舉辦線上培訓課程，向註冊氣體工程承辦商及註冊氣體裝置技工講解法例規定和一般作業方法。
  Orgnised online training on statutory requirements and general practices for registered gas contractors and registered gas installers.
- 進行209次工地坑道巡查以推廣《避免損壞氣體喉管工作守則》。
  Carried out 209 trench inspections at construction sites to promote the Code of Practice on Avoidance of Damage to Gas Pipes.

《重新校驗技術指引》
Technical Guidelines on Retro-commissioning

- 為各界機構舉辦九場簡報會和分享會。
  Delivered nine presentations and sharing sessions for various organisations.

能源效益
Energy Efficiency

- 舉辦56場外展講座和安排36次機電署總部教育徑實體/虛擬參觀活動，招待1 585名來自不同機構及學校的訪客。
  Organised 56 outreach talks and 36 physical/virtual visits to the Education Path of the EMSD Headquarters for 1 585 visitors from different organisations and schools.
- 舉行八個有關「強制性能源效益標籤計劃」的學校展覽。
  Conducted eight school exhibitions on the Mandatory Energy Efficiency Labelling Scheme.

升降機及自動梯安全、機動遊戲機安全及架空纜車安全
Lifts and Escalators Safety, Amusement Rides Safety and Aerial Ropeways Safety

- 繼續聯同市區重建局推行45億港元的「優化升降機資助計劃」，為業主提供資助及專業支援，於2019/20至2025/26年度優化約8 000部舊式升降機。
  Continued to partner with the Urban Renewal Authority to implement the HK$4.5 billion Lift Modernisation Subsidy Scheme to provide subsidy and professional support to owners for modernising approximately 8 000 aged lifts from 2019/20 to 2025/26.
- 與職業訓練局合辦資歷架構第五級的升降機工人（電梯大師）專業文憑課程。
  Partnered with the Vocational Training Council to formulate a professional diploma course of the Hong Kong Qualifications Framework Level 5 for lift workers (Lift Master).
- 為幼稚園、青年中心及長者中心舉辦678場線上講座及72場外展講座，分別向超過22 000名及超過1 000名參加者推廣安全使用機動遊戲、架空纜車、升降機及自動梯。
  Conducted 678 sessions of online talks and 72 sessions of outreach talks for kindergartens, youth centres and elderly centres, reaching over 22 000 participants and over 1 000 participants respectively to foster the safe use of amusement rides, aerial ropeways, lifts and escalators.
- 為業界代表、升降機及自動梯擁有人、業主立案法團成員及物業管理人員舉行38場講座和其他宣傳活動，講解《升降機及自動梯條例》和升降機及自動梯的管理、優化改善及使用安全。
  Held 38 talks and other publicity activities for trade representatives, lift and escalator owners, members of incorporated owners and building management staff to introduce the Lifts and Escalators Ordinance, along with the management, modernisation and safe use of lifts and escalators.

義工服務
Voluntary Services

- 本署員工完成八個義工項目，合共錄得541小時義工服務時數，成功籌得13,600港元善款。受惠機構包括香港公益金、保良局及建造業關愛機構。
  Completed eight volunteering projects in which our staff contributed a total of 541 man-hours. HK$13,600 was successfully raised for charity. Beneficiaries included the Community Chest of Hong Kong, Po Leung Kuk, and the Construction Industry Caring Organisations.

社會成效
SOCIAL PERFORMANCE

關懷員工

機電署深明員工作出的貢獻對實踐可持續發展十分重要。根據政府的公務員聘用條款及非公務員合約僱員計劃，機電署員工只要符合《公務員事務規例》及公務員事務局通告和通函列明的資格，便可享有一系列醫療及牙科護理福利。

我們也十分關注員工的身心健康，特設員工熱線提供心理支援服務，並持續簽署《精神健康職場約章》，承諾關顧員工的健康。

CARING FOR OUR STAFF

The EMSD believes our employees are the key to achieving sustainable development. Under the employment terms of the Government's civil service and the non-civil service contract staff scheme, staff members who meet eligibility criteria set out in the Civil Service Regulations and the Civil Service Bureau Circulars and Circular Memoranda are entitled to a range of medical and dental benefits based on their employment terms.

In addition to caring for the physical health of our employees, we provide psychological support through a designated hotline. We continue to sign the Mental Health Workplace Charter to show our devotion to caring for their health.

員工統計
Staff Statistics

截至2021年3月，機電署共有6 038名員工（2019/20年度：5 726名），包括全職、常任制及合約制員工，年內並無聘用兼職員工。本匯報年度的新入職率和離職率分別為12.3%及5.0%。由於本署三個部別重組，包括保安及車輛工程部、一般法例部及衞生工程部，以及業務發展，因此年內增聘60名（1.0%）新僱員。

The EMSD consisted of a total 6 038 staff members (2019/20: 5 726 staff members), including full-time, permanent and contract employees, as at March 2021. There was no part-time staff recorded. In this reporting year, the new employee hire rate and turnover rate were 12.3% and 5.0% respectively. Due to the re-organisation of three divisions, namely the Security and Vehicle Services Division, the General Legislation Division and the Health Sector Division, and business development needs, the EMSD hired approximately 60 (1.0%) additional new employees.

按性別劃分
Breakdown by Gender

按職系劃分
Breakdown by Grade

多元化與平等機會

機電署矢志為轄下團隊營造良好的工作環境，提倡多元共融，並確保所有員工均享有公平及公正的待遇，絕不容許出現任何形式的歧視、騷擾和誹謗行為。為推動有特殊需要的人士就業，我們繼續參與《有能者‧聘之約章》及共融機構嘉許計劃。

我們致力保障人權，嚴禁聘用強迫及強制性勞工。本匯報年度並無發現任何營運或供應商違反關於童工及強迫勞工的法規，亦無任何涉及歧視的事件。

Diversity and Equal Opportunities

Striving to create a supportive working environment and promote workplace diversity, the EMSD ensures all staff members are treated fairly and equally, and has no tolerance to any form of discrimination, harassment and vilification in the working environment. The EMSD continued to participate in the Talent-Wise Employment Charter and Inclusive Organisations Recognition Scheme, fully reflecting our commitment to employment with special needs.

The EMSD is dedicated to protecting human rights and has zero tolerance for forced or compulsory labour. No violation of laws and regulations related to child or forced labour, or any incidents of discrimination were identified across operations of the EMSD and our suppliers during the reporting year.

職業安全與健康

本署非常重視日常營運的職業安全與健康（職安健），更列為優先要項之一。我們在綜合管理系統下設立機電工程營運基金的職安健管理系統，專責規劃、實施、評估和持續改善所有職安健措施與成效。我們嚴格遵守機電署的安全與健康政策，執行機電工程時務必把安全放在首要位置。

我們的綜合管理系統實施了ISO 45001:2018職業健康及安全管理系統，確保員工和承辦商的作業安全與健康。此外，我們成立了職安健策導委員會，全面統籌本署營運上的職安健表現，另設立部別職安健委員會，加強溝通和確保工作間安全與健康的作業方法得以貫徹推行。

Occupational Safety and Health

The EMSD prioritises occupational safety and health (OSH) as one of foremost concerns in our operation. Our Integrated Management System (IMS) comprises an OSH management system for EMSTF to oversee the planning, implementation, evaluation, and continuous improvement of safety and health controls and performance. We strictly follow the EMSD Safety and Health Policy when providing any E&M services.

With an aim to ensuring workplace safety and health of our staff and contractors, we implement an ISO 45001:2018 certified Occupational Health and Safety Management Systems in our IMS. The Steering Committee on OSH plays a key role to oversee OSH performance across our operations, while the Divisional Occupational Safety and Health Committees (DivOSHCs) are responsible for strengthening communication and ensuring effective implementation of workplace safety and health practices.

社會成效
SOCIAL PERFORMANCE

職安健管理

為盡量避免工業意外發生，我們實施全方位管理，確保可盡早識別危害和評估風險，以及調查所有職安健事件和採取跟進行動。

OSH Management

To minimise occupational injuries, we take a comprehensive approach to cover the aspects of hazard identification and risk assessment, incident investigation and follow-up actions.

危害識別及風險評估
Hazard Identification and Risk Assessment

- 參考系統程序手冊，識別與作業相關的危害。
  Identify work-related hazards with reference from the System Procedure Manual.
- 每個策略業務單位根據各自的業務性質進行風險評估，然後擬定相關的作業指示。
  Conduct risk assessments and establish corresponding work instruction based on the business nature of each Strategic Business Unit.
- 為同事提供必要的個人防護設備及裝備。
  Provide necessary personal protective equipment and gear to staff members.

調查事件
Incident Investigation

- 如發現職安健事件，應停止所有作業，立即向直屬上司報告。
  Stop all works and report to a supervisor immediately if OSH incident is happened.
- 調查事件成因及回應組別安全督導員或部別安全主任的合理查詢。
  Investigate reasons of the incident and respond to reasonable enquiries made by the Sectional Safety Supervisor or the Safety Officer of the division.
- 保障舉報安全危害或拒絕在危險環境工作的員工免被報復。
  Protect the staff members who report safety hazards or decide to remove themselves from dangerous working environment from reprisals.

跟進行動
Follow-up Actions

- 職安健策導委員會及部別職安健委員會定期舉行會議，檢討內部措施及評估職安健表現。
  Hold regular meetings to review internal measures and evaluate OSH performance by the Steering Committee on OSH and DivOSHCs.
- 不時舉行內部審核，持續優化職安健管理。
  Conduct internal audits periodically to drive continuous improvement in OSH management.

職安健意識

我們積極提高員工和承辦商的安全意識，提供各類安全培訓活動及要求承辦商遵守的安全條例，讓他們掌握處理職安健事件的必要技能。在疫情下，我們安排推廣活動，也透過數碼平台向員工傳達安全訊息，包括部門內聯網、內部刊物及電郵等。

OSH Awareness

To enhance safety awareness of our staff and contractors, and to equip them with necessary skills to handle OSH incidents, the EMSD runs a variety of safety training programmes and sets corresponding requirements for contractors. We delivered safety messages through digital channels to our staff during the epidemic, including the departmental intranet, internal publications and emails.

安全培訓
Safety Training

內部員工
Internal Staff

- **強制性基本安全訓練**
  Mandatory Basic Safety Training
- **一般職安健培訓**
  General OSH Training
- **安全督導員培訓**
  Safety Supervisor Training
- **研討會**
  Seminars

承辦商
Contractors

- **承辦商研討會**
  The EMSD Contractors Forum
  推廣最新的安全標準和相關措施。
  Promoting the latest safety standards and relevant measures.
- **政府合約**
  Government Contract
  《工地安全特別規格》訂明承辦商必須為工地工人提供必要的安全培訓。
  Stipulating in Particular Specifications on Site Safety that contractors must provide necessary safety training for their site workers.

培訓及發展

機電署與員工保持緊密聯繫，提供必要的培訓活動提升專業和個人技能，輔助同事的事業發展。我們按照年度部門培訓發展計劃，制訂一系列內部和外部培訓及發展課程，內容包括工作技能、證書課程、職業發展、員工操守及監管規定等。

機電署的流動應用程式E&M Connect於本匯報年度增設新功能，員工可搜尋培訓課程資料並即時報名。我們的培訓管理系統方便直屬上司為下屬安排合適的培訓課程，同時有助識別個別員工的綜合技能和不同部別的營運需要。

Training and Development

The EMSD regularly engages our staff members and equips them with necessary professional and personal skills for career development. According to the annual Departmental Training and Development Plan, a series of internal and external training and development programmes are organised. Topics include job skills, certificate courses, career development, staff conduct, regulatory requirements, etc.

During the reporting year, a new feature was added in the EMSD mobile application E&M Connect that would allow staff to search for details of training programmes and submit applications. Supervisors can arrange suitable training courses for their subordinates with the help of the Training Management System, which helps to map the skillsets of employees and operational needs of different divisions.

社會成效
SOCIAL PERFORMANCE

本匯報年度雖受疫情影響，但無礙我們持續推展培訓及發展活動，部分培訓課程改用線上模式，既可滿足員工的培訓需要，亦符合社交距離的限制規定。2020/21年度的平均培訓時數[6]如下：

Despite the outbreak of the epidemic, we continued training and development efforts by modifying some training courses into online mode to meet training needs of our employees while observing social distancing requirements. The breakdown of average training hours[6] for 2020/21 are as shown below:

按性別劃分的平均培訓時數
Average Training Hours by Gender

男性 Male

22.7 小時 hours

女性 Female

25.5 小時 hours

按職系劃分的平均培訓時數
Average Training Hours by Grade

首長職系人員（高級管理層）
Directorate Grade Staff (Senior Management)

21.1 小時 hours

技術、專業、行政及輔助職系人員（一般員工）
Technical, Professional, Administrative and Support Staff (General Staff)

23.0 小時 hours

6 平均培訓時數是按員工培訓日數乘以每日培訓小時數（6小時）再除以員工年末總人數計算。
Average training hours were calculated by multiplying the employee training days and the training hours (6 hours) per day, and then divided it by the total number of employees at the year-end.

員工溝通

機電署十分重視員工的意見及建議，深明此乃提升營運效率的關鍵。我們設有多種渠道促進內部溝通：

Staff Communication

The EMSD values staff members' opinions and suggestions, which are crucial to enhancing operation efficiency. Various channels are available to facilitate internal communication, including:

探訪和約見員工
On-site Visits and Interviews

- 部門協商委員會與前線員工會面，聆聽及了解他們的需要及關注議題，特別是與疫情相關的問題。
  The departmental consultative committees listen to frontline staff to understand their concerns and needs, especially under the epidemic.

「好人好事嘉許計劃」
"Good People, Good Deeds Commendation Scheme"

- 舉辦「好人好事嘉許計劃」，表彰用心服務社群的員工。
  We award employees dedicated to serving the community with the "Good People, Good Deeds Commendation Scheme".

員工投訴程序
Staff Complaints Procedure

- 本署設有正式的投訴程序，確保員工的投訴得到妥善處理。
  Staff can register grievances through formal mechanisms to ensure proper handling of all complaints.

「好人好事嘉許計劃」旨在發掘部門的好人好事個案，並表揚同事多行一步的服務精神。
The "Good People, Good Deeds Commendation Scheme" aims to look for inspiring good deeds in the Department, and recognise colleagues for their spirit of going an extra mile.

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MATERIALITY DISCLOSURES SERVICE 2021

對於本報告的英文版，全球報告倡議組織確認本報告按要求清晰表述全球報告倡議組織內容索引以及標示「一般披露」102-40至102-49的位置。

For the Materiality Disclosures Service, GRI Services reviewed that the GRI content index is clearly presented and the references for Disclosures 102-40 to 102-49 align with appropriate sections in the body of this Report. The service was performed on the English version of this Report.

可持續發展報告標準 GRI Standards	一般披露 General Disclosures		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
GRI 101: 基礎 2016 GRI 101: Foundation 2016					
GRI 102: 一般披露 2016 GRI 102: General Disclosures 2016	**機構簡介 Organisational Profile**				
	102-1	機構名稱 Name of the organisation	關於本報告 About this Report	P.160	✓
	102-2	業務活動、品牌、產品及服務 Activities, brands, products, and services	部門簡介及架構 Organisational Profile and Structure	封面內頁 Inner page of cover	✓
	102-3	機構總部的位置 Location of headquarters	香港九龍啟成街3號 3 Kai Shing Street, Kowloon, Hong Kong	—	✓
	102-4	營運地點 Location of operations	只限香港 Hong Kong only	—	✓
	102-5	擁有權及法律形式 Ownership and legal form	屬於中華人民共和國香港特別行政區政府的一部分 Part of the Government of the Hong Kong Special Administrative Region of the People's Republic of China	—	✓
	102-6	所服務的市場 Markets served	中國香港 Hong Kong, China	—	✓
	102-7	機構的規模 Scale of the organisation	機電工程署二零二零至二一年年報 EMSD Annual Report 2020/21 社會成效 Social Performance	P.24-25, 110 P.184	✓
8 DECENT WORK AND ECONOMIC GROWTH 體面工作和經濟增長	102-8	有關僱員及其他員工的資料 Information on employees and other workers	社會成效 Social Performance 全球報告倡議組織內容索引 GRI Content Index 統計資料摘要 Summary of Statistics	P.184 P.190 P.204-205	✓
	102-9	供應鏈 Supply chain	可持續發展管理方針 Sustainability Management Approach * 機電工程署聘請了3 067名供應商，他們大多負責提供機電安裝、運作及保養相關的配件/設備及服務。 * There are 3 067 suppliers engaged by the EMSD. They are mainly involved in provision of parts/equipment and services related to E&M installation, operation and maintenance.	P.168-169	✓
	102-10	機構與其供應鏈方面的重大改變 Significant changes to the organisation and its supply chain	關於本報告 About this Report	P.160	✓
	102-11	謹慎方針或原則 Precautionary principle or approach	可持續發展管理方針 Sustainability Management Approach	P.166	✓
	102-12	由外部所制訂的倡議 External initiatives	可持續發展管理方針 Sustainability Management Approach	P.169-171	✓

可持續發展報告標準 GRI Standards	一般披露 General Disclosures		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
	102-13	機構參與的協會的會員資格 Membership of associations	* 機電工程署屬於以下協會的成員： 1) 保障資料主任聯會 2) 歐洲標準委員會 3) 綠十字會 4) 香港職業安全衛生協會 5) 英國燃氣專業學會 6) 國際纜車監管機構 7) 國際鐵路安全議會 * The EMSD holds membership in the following associations: 1) Data Protection Officers' Club 2) European Committee for Standardisation 3) Green Cross Group 4) Hong Kong Occupational Safety and Health Association 5) Institution of Gas Engineers and Managers 6) International Organisation of Ropeway Supervising Authorities 7) International Railway Safety Council	—	✓
	策略 Strategy				
	102-14	最高決策者的聲明 Statement from senior decision-maker	機電工程署二零二零至二一年年報 EMSD Annual Report 2020/21	P.2-9	✓
	102-15	重大影響、風險及機遇 Key impacts, risks, and opportunities	可持續發展管理方針 Sustainability Management Approach	P.166	✓
	道德與誠信 Ethics and Integrity				
	102-16	價值、原則、標準和行為規範 Values, principles, standards, and norms of behaviour	機電工程署二零二零至二一年年報 EMSD Annual Report 2020/21	P.13, 105	✓
	管治 Governance				
	102-18	管治結構 Governance structure	* 我們的管治結構載於：https://www.emsd.gov.hk/tc/about_us/our_organisation/ 我們的品質、環境及生產力策導委員會及職安健策導委員會負責經濟、環境和社會議題的決策。 * Our governance structure is listed on our website at: https://www.emsd.gov.hk/en/about_us/our_organisation/ Our Quality, Environmental & Productivity Steering Committee and Steering Committee on OSH are responsible for decision-making on economic, environmental and social topics.	—	✓
	102-20	管理層在經濟、環境和社會議題方面的責任 Executive-level responsibility for economic, environmental, and social topics	* 我們的高級管理層參與了品質、環境及生產力策導委員會以及內部環保採購工作小組。機電署的助理署長負責監督機構內部的可持續發展議題。 * Our senior management staff participates in Quality, Environmental & Productivity Steering Committee and internal working group on green procurement. Assistant Directors of the EMSD are appointed to oversee sustainability issues within the organisation.	—	✓

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	持份者參與 Stakeholder Engagement				
	102-40	持份群體清單 List of stakeholder groups	關於本報告 About this Report	P.161	✓
	102-41	集體談判協議 Collective bargaining agreements	* 共有11個機電工程署工會由員工以自願性質參與，另有九個員工協商委員會代表不同職系及職級的機電工程署員工就員工福利與部門溝通。全體的員工(100%)都受集體談判協議的保障。 * There are 11 EMSD staff unions which can be joined on voluntary basis. There are also nine departmental consultative committees who are representatives of all grades and ranks of the EMSD staff to liaise with the Department for the well-being of the staff. All of our employees (100%) are covered by collective bargaining agreements.	—	✓
	102-42	界定及挑選持份者 Identifying and selecting stakeholders	關於本報告 About this Report 可持續發展管理方針 Sustainability Management Approach	P.161 P.167	✓
	102-43	引入持份者參與的方針 Approach to stakeholder engagement	關於本報告 About this Report 可持續發展管理方針 Sustainability Management Approach	P.161 P.167	✓
	102-44	提出的主要議題及關注事項 Key topics and concerns raised	關於本報告 About this Report	P.162-163	✓
	報告方式 Reporting Practice				
	102-45	財務報表所包含的單位 Entities included in the consolidated financial statements	關於本報告 About this Report	P.160	✓
	102-46	界定報告內容及議題界限 Defining report content and topic boundaries	關於本報告 About this Report	P.160-163	✓
	102-47	重要議題清單 List of material topics	關於本報告 About this Report	P.162-163	✓
	102-48	重整信息 Restatements of information	* 上年度報告的統計資料摘要中，以下資料作出更正： 1. 2019/20年度柴油用量從3 880千兆焦耳(107 766升)更正為4 044千兆焦耳(112 336升)； 2. 2018/19年度及2019/20年度因購買電力使用總量涵蓋範圍新增機電署轄下設施，其2018/19年度數據從11 751 000千瓦小時(42 305千兆焦耳)更正為11 850 000千瓦小時(42 658千兆焦耳)，而2019/20年度數據從12 117 000千瓦小時(43 622千兆焦耳)更正為12 239 000千瓦小時(44 059千兆焦耳)。購買電力使用強度分別從2 111千瓦小時/員工更正為2 129千瓦小時/員工，及2 116千瓦小時/員工更正為2 137千瓦小時/員工； 3. 2018/19年度能源間接溫室氣體排放(範圍二)從6 065公噸二氧化碳當量更正為6 115公噸二氧化碳當量。2019/20年度直接溫室氣體排放(範圍一)和能源間接溫室氣體排放(範圍二)分別從1 187公噸二氧化碳當量更正為1 199公噸二氧化碳當量及從6 127公噸二氧化碳當量更正為6 188公噸二氧化碳當量。2018/19年度及2019/20年度總溫室氣體排放因此分別從7 251公噸二氧化碳當量更正為7 301公噸二氧化碳當量和7 389公噸二氧化碳當量更正為7 462公噸二氧化碳當量； 4. 2018/19年度太陽能發電系統所生產的可再生電力從633千兆焦耳(175 631千瓦小時)更正為515千兆焦耳(142 985千瓦小時)； 5. 2019/20年度用水量從未能提供更正為14 809立方米； 6. 2019/20年度廢紙棄置量從7 755公斤更正為6 281公斤，而由承辦商處理的廢紙數量從22 435公斤更正為23 685公斤； 7. 2019/20年度由承辦商處理的廢油(潤滑油)數量從4 720升更正為6 931升；及 8. 2019/20年度機電署員工工傷由29宗更正為28宗，工傷比率(按每200 000工時計算)因此由0.44更正為0.42。 * In the Summary of Statistics of this report last year, the following information is restated: 1. Diesel consumption amount in 2019/20 was revised from 3 880 GJ (107 766 L) to 4 044 GJ (112 336 L); 2. The coverage of total purchased electricity consumption added the infrastructures of the EMSD in 2018/19 and 2019/20. Therefore, that of 2018/19 was changed from 11 751 000 kWh (42 305 GJ) to 11 850 000 kWh (42 658 GJ), while that of 2019/20 was changed from 12 117 000 kWh (43 622 GJ) to 12 239 000 kWh (44 059 GJ). The corresponding purchased electricity consumption intensities were revised from 2 111 kWh/employee to 2 129 kWh/employee and 2 116 kWh/employee to 2 137 kWh/employee, respectively; 3. The energy indirect GHG emissions (Scope 2) in 2018/19 was revised from 6 065 tCO_2e to 6 115 tCO_2e. The direct GHG emissions (Scope 1) and energy indirect GHG emissions (Scope 2) in 2019/20 were revised from 1 187 tCO_2e to 1 199 tCO_2e and 6 127 tCO_2e to 6 188 tCO_2e, respectively. The total GHG emissions in 2018/19 and 2019/20 were therefore revised from 7 251 tCO_2e to 7 301 tCO_2e and 7 389 tCO_2e to 7 462 tCO_2e, respectively; 4. The renewable electricity generated from solar photovoltaic system in 2018/19 was revised from 633 GJ (175 631 kWh) to 515 GJ (142 985 kWh); 5. Water consumption data in 2019/20 was revised from not available to 14 809 m^3; 6. The amount of waste paper disposal in 2019/20 was revised from 7 755 kg to 6 281 kg and that of handled by contractors was revised from 22 435 kg to 23 685 kg; 7. The amount of waste oil (lubrication oil) handled by contractors in 2019/20 was revised from 4 720 L to 6 931 L; and 8. The recordable work-related injuries in 2019/20 was revised from 29 to 28, the recordable work-related injuries rate (number per 200 000 man-hours) was therefore revised from 0.44 to 0.42.	—	✓
	102-49	匯報上的改變 Changes in reporting	關於本報告 About this Report * 「防止強迫或強制勞動」為新增重要議題。「合規」沒有識別為供應商的重要議題邊界。「關於本報告」章節亦概括了新添加的議題邊界。 * "Prevent Forced or Compulsory Labour" was newly-added material topic. "Compliance" was not identified as material boundaries for suppliers. Newly added topic boundaries were also outlined in "About this Report".	P.162-163	✓

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	102-50	匯報期 Reporting period	關於本報告 About this Report	P.160	✓
	102-51	上一份報告的日期 Date of most recent report	2020年12月 December 2020	—	✓
	102-52	匯報周期 Reporting cycle	關於本報告 About this Report	P.160	✓
	102-53	查詢報告的聯絡點 Contact point for questions regarding this report	關於本報告 About this Report	P.163	✓
	102-54	按照 GRI 標準提出的匯報申述 Claims of reporting in accordance with the GRI Standards	關於本報告 About this Report	P.160	✓
	102-55	全球報告倡議組織內容索引 GRI content index	全球報告倡議組織內容索引 GRI Content Index	P.190-200	✓
	102-56	外部認證 External assurance	關於本報告 About this Report	P.160	✓
			獨立保證意見聲明書 Independent Assurance Opinion Statement	P.208-211	

可持續發展報告標準 GRI Standards	特定議題標準 Topic-specific Standards		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
	經濟 Economic				
	經濟成效（財務表現） Economic Performance (Financial Performance)				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1		機電工程署二零二零至二一年年報 EMSD Annual Report 2020/21	P.110-115	✓
	103-2		關於本報告 About this Report	P.162-163	
	103-3				
GRI 201: 經濟績效 2016 **GRI 201: Economic Performance 2016**	201-1	機構所產生及分配的直接經濟價值 Direct economic value generated and distributed	機電工程署二零二零至二一年年報 EMSD Annual Report 2020/21	P.110-115	✓
	間接經濟影響 Indirect Economic Impacts				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1		關於本報告 About this Report	P.162-163	✓
	103-2		社會成效 Social Performance	P.180-189	
	103-3				
GRI 203: 間接經濟影響 2016 **GRI 203: Indirect Economic Impacts 2016**	203-1	基礎設施投資與支援性服務 Infrastructure investments and services supported	機電工程署二零二零至二一年年報 EMSD Annual Report 2020/21	P.16-21, 110-115	✓
	203-2	重大間接經濟影響 Significant indirect economic impacts	社會成效 Social Performance	P.180-P.183	✓

可持續發展報告標準 GRI Standards	特定議題標準 Topic-specific Standards		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
	採購實務 Procurement Practices				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1		關於本報告 About this Report	P.162-163	✓
	103-2		可持續發展管理方針 Sustainability Management Approach	P.168-169	
	103-3		環保成效 Environmental Performance	P.178-179	
GRI 204: 採購實務 2016 **GRI 204: Procurement Practices 2016**	204-1	本地供應商採購的支出比例 Proportion of spending on local suppliers	* 物料供應分部的服務及產品主要購自本地（即指香港）供應商/承辦商或分銷商。香港以外的供應商於2020/21年度只佔大約0.2%。 * Acquisition of services and goods handled by Supplies sub-division are mainly from local (i.e Hong Kong) suppliers/contractors or local agents. Suppliers outside Hong Kong only take up around 0.2% in 2020/21.	—	✓
	環境 Environmental				
	物料 Materials				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1		關於本報告 About this Report	P.162-163	✓
	103-2		環保成效 Environmental Performance	P.178-179	
	103-3				
GRI 301: 物料 2016 **GRI 301: Materials 2016**	301-1	所採用原材料的重量或體積 Materials used by weight or volume	統計資料摘要 Summary of Statistics	P.202	✓
	能源 Energy				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1		關於本報告 About this Report	P.162-163	✓
	103-2		環保成效 Environmental Performance	P.172-179	
	103-3				
GRI 302: 能源 2016 **GRI 302: Energy 2016**	302-1	機構內部的能源消耗量 Energy consumption within the organisation	環保成效 Environmental Performance 統計資料摘要 Summary of Statistics	P.175-178 P.201	✓
	302-3	能源強度 Energy intensity	環保成效 Environmental Performance 統計資料摘要 Summary of Statistics	P.175-176 P.201	✓
	302-4	減少能源的消耗 Reduction of energy consumption	環保成效 Environmental Performance	P.175-176	✓

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		水與污水 Water and Effluents				
GRI 103: 管理方針 2016 GRI 103: Management Approach 2016		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		環保成效 Environmental Performance	P.179	
		103-3				
GRI 303: 水資源與污水 2018 GRI 303: Water and Effluents 2018	12 負責任消費和生產	303-1	水資源共享的處理 Interactions with water as a shared resources	環保成效 Environmental Performance	P.179	✓
		303-2	排水管理及影響 Management of water discharge-related impacts	環保成效 Environmental Performance	P.179	✓
		303-5	耗水量 Water consumption	環保成效 Environmental Performance	P.179	✓
				統計資料摘要 Summary of Statistics	P.201	
				* 香港沒有特定地區遭受缺水威脅。 * No specific regions are water stressed in Hong Kong.		
		生物多樣性（生態保育） Biodiversity (Ecological Conservation)				
GRI 103: 管理方針 2016 GRI 103: Management Approach 2016		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		環保成效 Environmental Performance	P.175	
		103-3		* 機構所擁有、租賃、管理的營運地點均不在環境保護區或區外的具有重要生物多樣性價值的地區或其毗鄰地區。在接近自然棲息地的運營點，我們密切監測生物多樣性的狀況。報告期內，我們並沒有收到任何有關影響本地生物多樣性的投訴。 * No operation sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas. At operational sites that are of close proximity to natural habitats, we closely monitor the status of biodiversity. During the reporting year, we did not receive any complaints on affecting the local biodiversity.		
GRI 304: 生物多樣性 2016 GRI 304: Biodiversity 2016		304-1	機構所擁有、租賃、管理的營運地點或其鄰近地區位於環境保護區或區外的具有重要生物多樣性價值的地區或其毗鄰地區 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	* 機構所擁有、租賃、管理的營運地點均不在環境保護區或區外的具有重要生物多樣性價值的地區或其毗鄰地區。 * No operation sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	—	✓

可持續發展報告標準 GRI Standards		特定議題標準 Topic-specific Standards		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
		排放物 Emissions				
GRI 103: 管理方針 2016 GRI 103: Management Approach 2016		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		環保成效 Environmental Performance	P.177	
		103-3				
GRI 305: 排放 2016 GRI 305: Emissions 2016	12 負責任消費和生產 13 氣候行動	305-1	直接溫室氣體排放（範圍一） Direct (Scope 1) GHG emissions	環保成效 Environmental Performance	P.177	✓
				統計資料摘要 Summary of Statistics	P.201	
		305-2	能源間接溫室氣體排放（範圍二） Energy indirect (Scope 2) GHG emissions	環保成效 Environmental Performance	P.177	✓
				統計資料摘要 Summary of Statistics	P.201	
		305-3	其他間接溫室氣體排放（範圍三） Other indirect (Scope 3) GHG emissions	環保成效 Environmental Performance	P.177	✓
				統計資料摘要 Summary of Statistics	P.201	
		305-5	溫室氣體減排量 Reduction of GHG emissions	環保成效 Environmental Performance	P.177	✓
		廢物 Wastes				
GRI 103: 管理方針 2016 GRI 103: Management Approach 2016		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		環保成效 Environmental Performance	P.178-179	
		103-3				
GRI 306: 廢棄物 2020 GRI 306: Waste 2020	12 負責任消費和生產	306-1	廢棄物的產生與廢棄物相關的重大影響 Waste generation and significant waste-related impacts	環保成效 Environmental Performance	P.178-179	✓
		306-2	廢棄物相關的重大影響管理 Management of significant waste-related impacts	環保成效 Environmental Performance	P.178-179	✓
		306-3	產生的廢棄物 Waste generated	環保成效 Environmental Performance	P.178-179	✓
				統計資料摘要 Summary of Statistics	P.203	
		評估供應商 / 承辦商的環境表現 Supplier Environmental Assessment				
GRI 103: 管理方針 2016 GRI 103: Management Approach 2016		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		環保成效 Environmental Performance	P.178-179	
		103-3				

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可持續發展報告標準 GRI Standards	特定議題標準 Topic-specific Standards		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
GRI 308: 供應商環境評估 2016 **GRI 308: Supplier Environmental Assessment 2016**	308-1	按照環境準則篩選的新供應商 New suppliers that were screened using environmental criteria	* 機電署未有用環保標準篩選新供應商。本署歡迎所有供應商登記成為機電工程署的供應商，並會記錄他們的環保產品。 * No new suppliers were screened using environmental criteria by the EMSD. All suppliers are welcome to register on the EMSD Suppliers List and their environment-friendly products would be recorded.	—	✓
	社會 Social				
	僱員關係 Employment				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1 103-2 103-3		關於本報告 About this Report 社會成效 Social Performance	P.162-163 P.184	✓
GRI 401: 僱傭 2016 **GRI 401: Employment 2016**	401-1	新入職員工及員工離職率 New employee hires and employee turnover	社會成效 Social Performance 統計資料摘要 Summary of Statistics	P.184 P.204-205	✓
	401-2	不提供予臨時或兼職員工的全職員工福利 Benefits provided to full-time employees that are not provided to temporary or part-time employees	* 公務員及非公務員僱員如符合相關規定及守則要求，均享有醫療及牙醫服務、教育津貼、年假及旅費、房屋津貼等。 * Employees appointed on civil service and non-civil service terms are entitled with medical and dental services, education allowance, leave and passage, housing benefit, etc. if they meet the eligibility criteria as stipulated in the relevant rules and regulations.	—	✓
	職業健康及安全 Occupational Health and Safety				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1 103-2 103-3		關於本報告 About this Report 社會成效 Social Performance	P.162-163 P.185-187	✓

可持續發展報告標準 GRI Standards	特定議題標準 Topic-specific Standards		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
GRI 403: 職業健康與安全 2018 **GRI 403: Occupational Health and Safety 2018**	403-1	職業健康與安全管理體系 Occupational health and safety management system	社會成效 Social Performance	P.185	✓
	403-2	危險辨識、風險管理及事故調查 Hazard identification, risk management, and incident investigation	社會成效 Social Performance	P.186	✓
	403-3	職業健康服務 Occupational health services	社會成效 Social Performance	P.185-186	✓
	403-4	員工參與、諮詢及溝通有關職業健康及安全的事宜 Worker participation, consultation, and communication on occupational health and safety	社會成效 Social Performance * 部別職安健委員會及職安健策導委員會代表規管及營運服務，即是機電署的全體員工。部別職安健委員會每三個月開會一次，而職安健策導委員會每三至六個月開會一次。 * Both Regulatory and Trading Services of the EMSD, which represented the whole workforce of the EMSD, represented by the Divisional Occupational Safety and Health Committees and Steering Committee on Occupational Safety and Health. The Divisional Occupational Safety and Health Committees meet every three months, while Steering Committee on Occupational Safety and Health meets every three to six months.	P.187	✓
	403-5	員工職業健康及安全培訓 Worker training on occupational health and safety	社會成效 Social Performance	P.187	✓
	403-6	促進員工健康 Promotion of worker health	可持續發展管理方針 Sustainability Management Approach 社會成效 Social Performance	P.166 P.187	✓
	403-7	預防和減輕與業務關係直接相關的職業健康和安全的影響 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	社會成效 Social Performance	P.185-186	✓
	403-9	因工受傷 Work-related injuries	社會成效 Social Performance 統計資料摘要 Summary of Statistics	P.186 P.206	✓
	培訓與教育 Training and Education				
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**	103-1 103-2 103-3		關於本報告 About this Report 社會成效 Social Performance	P.162 P.187-188	✓

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可持續發展報告標準 GRI Standards		特定議題標準 Topic-specific Standards		參照 / * 直接解釋 Reference/ * Direct Answer	頁數 Page No.	外部認證 External Assurance
GRI 404: 培訓與教育 2016 **GRI 404: Training and Education 2016**	優質教育	404-1	每名員工每年接受培訓的平均小時數 Average hours of training per year per employee	社會成效 Social Performance	P.188	✓
				統計資料摘要 Summary of Statistics	P.207	
	體面工作和經濟增長	404-3	定期接受成效及職業發展評估的員工百分比 Percentage of employees receiving regular performance and career development reviews	* 報告期內，100%的機電署員工接受工作表現評估及培訓需要評估。 * 100% of the EMSD's employees received performance review as well as evaluation on training needs during the reporting period.	—	✓
多元化與平等機會 **Diversity and Equal Opportunity**						
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		社會成效 Social Performance	P.185	
		103-3				
GRI 405: 多元化與平等機會 2016 **GRI 405: Diversity and Equal Opportunity 2016**	體面工作和經濟增長	405-1	管治機構及員工多樣性 Diversity of governance bodies and employees	社會成效 Social Performance	P.185	✓
				統計資料摘要 Summary of Statistics	P.205	
				* 機電署沒有員工多樣性相關資料提供。 * The EMSD does not hold any information on diversity of employees.		
反歧視 **Non-discrimination**						
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		社會成效 Social Performance	P.185	
		103-3				
GRI 406: 反歧視 2016 **GRI 406: Non-discrimination 2016**		406-1	歧視事件及採取的糾正行動 Incidents of discrimination and corrective actions taken	社會成效 Social Performance	P.185	✓
防止強迫或強制勞動 **Prevent Forced or Compulsory Labour**						
GRI 103: 管理方針 2016 **GRI 103: Management Approach 2016**		103-1		關於本報告 About this Report	P.162-163	✓
		103-2		社會成效 Social Performance	P.185	
		103-3				
GRI 409: 強迫或強制勞動 2016 **GRI 409: Forced or Compulsory Labour 2016**		409-1	具有強迫或強制勞動事件重大風險的機構和供應商 Operations and suppliers at significant risk for incidents of forced or compulsory labour	社會成效 Social Performance	P.185	✓

統計資料摘要
SUMMARY OF STATISTICS

環境 ENVIRONMENT

		單位 Unit	2018/19	2019/20	2020/21
能源 Energy					
柴油 Diesel		千兆焦耳[7] (GJ)[7] （升 L）	2 790 (77 507)	4 044 (112 336)	3 917 (108 802)
汽油 Gasoline		千兆焦耳[7] (GJ)[7] （升 L）	11 848 (359 034)	10 848 (328 741)	9 094 (275 564)
太陽能發電系統所生產的可再生電力[8] Renewable electricity generated from solar photovoltaic system[8]		千兆焦耳[7] (GJ)[7] （千瓦小時 kWh）	515 (142 985)	699 (194 121)	902 (250 684)
購買電力使用總量 Total purchased electricity consumption		千兆焦耳[7] (GJ)[7] （'000 千瓦小時 '000 kWh）	42 658 (11 850)	44 059 (12 239)	44 334 (12 315)
購買電力使用強度 Purchased electricity consumption intensity		千瓦小時 / 員工 kWh/employee	2 129	2 137	2 040
水 Water					
水 Water		立方米 m^3	13 348	14 809	16 743[9]
溫室氣體排放[10] GHG Emissions[10]					
直接排放（範圍一） Direct emissions (Scope 1)	燃油 Fuel	公噸二氧化碳當量 tCO_2e	1 186	1 199	1 046
	製冷劑 Refrigerant	公噸二氧化碳當量 tCO_2e	–	–	1 298[11]
	乙炔[12] Acetylene[12]	公噸二氧化碳當量 tCO_2e	–	–	0.07
能源間接排放（範圍二） Energy indirect emissions (Scope 2)		公噸二氧化碳當量 tCO_2e	6 115	6 188	4 634
其他間接排放（範圍三） Other indirect emissions (Scope 3)		公噸二氧化碳當量 tCO_2e	–[13]	75[14]	18[15]
總排放量 Total emissions		公噸二氧化碳當量 tCO_2e	7 301	7 462	6 996

7 系數的單位統一換算成千兆焦耳：柴油（0.036 千兆焦耳 / 升）、汽油（0.033 千兆焦耳 / 升）、電力（0.0036 千兆焦耳 / 千瓦小時）。
Conversion factors used to standardise the units to gigajoules (GJ): diesel (0.036GJ/L), gasoline (0.033GJ/L), electricity (0.0036GJ/kWh).

8 產生的可再生電力，只供內部使用。
The generated renewable electricity is for internal use only.

9 2020/21 年度進行的實地工程有機會導致用水量上升。另外，相關政府部門因水錶評估審核此數據，預計下一份報告將會確定用水量。
There was an on-site construction work in 2020/21 which may lead to increased water consumption. In addition, the data was under further review by related government departments on meter evaluation. The relevant data is expected to be finalised in the next report.

10 參考《香港建築物（商業、住宅或公共用途）的溫室氣體排放及減除的審計和報告指引》（由環境保護署及機電工程署發布），溫室氣體包括二氧化碳、甲烷、氧化亞氮及氫氟碳化物。
Made reference to the Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings of Commercial, Residential or Institutional Purposes in Hong Kong (by Environmental Protection Department and the EMSD), GHG types include CO_2, CH_4, N_2O and HFCs.

11 2020/21 年度製冷劑數據經審查後新增其溫室氣體排放。
In 2020/21, refrigerant consumption was available after data review, its associated GHG emission was newly included.

12 參考《香港中小企業碳審計工具箱》（由香港大學及香港城市大學發布）。
Made reference to the Carbon Audit Toolkit for Small and Medium Enterprises in Hong Kong (by The University of Hong Kong and City University of Hong Kong).

13 2018/19 年度的數據沒有記錄。
No data record keeping in 2018/19.

14 2019/20 年度的範圍三排放數據僅包括公務旅行。
It included business travelling only in 2019/20.

15 棄置到堆填區的廢紙和公務旅行已納入 2020/21 年度的範圍三排放數據計算中，然而由於 2019 冠狀病毒病的情況下，沒有公務旅行的排放數據記錄。
It included paper waste disposal and business travelling in 2020/21. There was no overseas business travelling recorded in 2020/21, due to the COVID-19 epidemic.

統計資料摘要
SUMMARY OF STATISTICS

	單位 Unit	2018/19	2019/20	2020/21
物料 Material				
不可再生材料 Non-renewable Materials				
油漆及溶劑 Paint & solvent	升 L	493	132	18
潤滑油 Lubrication oil	升 L	4 235	3 565	1 992
油脂 Grease	公斤 kg	492	264	32
工業用氣體 Industrial gas	立方米 m^3	0	0	61
蓄電池電解液 Battery electrolyte	升 L	0	0	0
原子車胎 Tubeless tyre	條 No.	230	217	197
外車胎 Outer cover tyre	條 No.	0	0	0
車胎內膽 Inner tube	條 No.	0	0	0
可再生材料 Renewable Materials				
紙張[16] Paper[16]	令 ream	28 184	28 023	28 224

16 機電署購買和使用再造紙張。
At the EMSD, we purchase and consume paper with recycled content.

	單位 Unit	2018/19 妥善棄置 Properly Disposed	2018/19 由承辦商處理 Handled by Contractors	2019/20 妥善棄置 Properly Disposed	2019/20 由承辦商處理 Handled by Contractors	2020/21 妥善棄置 Properly Disposed	2020/21 由承辦商處理 Handled by Contractors
污水及廢物 Effluents and Waste							
無害廢物[17] Non-hazardous waste[17]							
廢紙 Waste paper	公斤 kg	4 307	30 596	6 281	23 685	3 670	34 117
鋁罐及金屬罐 Aluminium and metal cans	個 No.	–[18]	20 750	0	17 375	0	10 563
膠樽 Plastic bottles	個 No.	–[18]	6 375	0	6 438	0	5 219
即棄電池 Disposable batteries	公斤 kg	546	310	290	131	38	138
金屬廢料 Metal scraps	公斤 kg	9 789	7 149	9 996	3 785	6 780	250
有害廢物[19] Hazardous waste[19]							
可充電電池 Rechargeable batteries	公斤 kg	–	1 394	–	1 669	–	282
廢油（潤滑油） Waste oil (lubrication oil)	升 L	–	4 801	–	6 931	–	2 844
舊車胎 Used vehicle tyres	條 No.	–	58	–	40	–	197
舊光管/含水銀照明燈 Spent fluorescent/mercury lamps	盞 No.	–	9 230	–	8 123	–	5 279

17 廢物處置方法根據本地政府要求處理。產生的無害廢物由合資格承辦商收集以作回收或妥善棄置。
Disposal method determined based on compliance with local government requirements. Non-hazardous waste is collected through licensed contractors for recycling or disposal to the landfills.

18 2018/19年度的棄置量數據沒有記錄。
No data record keeping for disposal in 2018/19.

19 廢物處置方法根據本地政府要求處理。產生的有害廢物由合資格承辦商收集以作回收或妥善棄置。可充電電池、廢油（潤滑油）、舊車胎及舊光管/含水銀照明燈沒有棄置量數據記錄。
Disposal method determined based on compliance with local government requirements. Hazardous waste is collected by licensed contractors for recycling or disposal to the landfills. There were no data record keeping for disposal of rechargeable batteries, waste oil (lubrication oil), used vehicle tyres and spent fluorescent/mercury lamps.

統計資料摘要
SUMMARY OF STATISTICS

社會 SOCIAL

僱員人數[20] Employees Statistics[20]

	截至2020年3月31日（百分比） As of 31 March 2020 (Percentage)		截至2021年3月31日（百分比） As of 31 March 2021 (Percentage)	
總人數 Total number	5 726		6 038	
男女分佈 By gender				
男性 Male	5 061	(88.4%)	5 339	(88.4%)
女性 Female	665	(11.6%)	699	(11.6%)
合約類型分佈 By employment type				
常任制 Permanent				
男性 Male	3 437	(86.7%)	3 463	(86.5%)
女性 Female	529	(13.3%)	541	(13.5%)
合約制 Contract				
男性 Male	1 624	(92.3%)	1 876	(92.2%)
女性 Female	136	(7.7%)	158	(7.8%)
年齡分佈 By age group				
50歲或以上 Aged 50 or above	1 725	(30.1%)	1 776	(29.4%)
30 – 49歲 Aged 30-49	2 680	(46.8%)	2 717	(45.0%)
29歲或以下 Aged 29 or under	1 321	(23.1%)	1 545	(25.6%)

2020/21新入職員工 2020/21 New Hires

	截至2020年3月31日（百分比） As of 31 March 2020 (Percentage)		截至2021年3月31日（百分比） As of 31 March 2021 (Percentage)	
總人數 Total number	643 （佔總員工11.2%） (11.2% of total employee)		745 （佔總員工12.3%） (12.3% of total employee)	
年齡分佈 By age group				
50歲或以上 Aged 50 or above	133	(20.7%)	100	(13.4%)
30 – 49歲 Aged 30-49	189	(29.4%)	134	(18.0%)
29歲或以下 Aged 29 or under	321	(49.9%)	511	(68.6%)
男女分佈 By gender				
男性 Male	566	(88.0%)	676	(90.7%)
女性 Female	77	(12.0%)	69	(9.3%)

[20] 機電署並無聘用任何非僱員的工人，所有員工均在香港執勤。
The EMSD does not employ workers who are not employees. All staff are based in Hong Kong.

2020/21離職員工 2020/21 Turnover

	截至2020年3月31日（百分比） As of 31 March 2020 (Percentage)		截至2021年3月31日（百分比） As of 31 March 2021 (Percentage)	
總人數 Total number	363 （佔總員工6.3%） (6.3% of total employee)		302 （佔總員工5.0%） (5.0% of total employee)	
年齡分佈 By age group				
50歲或以上 Aged 50 or above	219	(60.3%)	168	(55.6%)
30 – 49歲 Aged 30-49	29	(8.0%)	37	(12.3%)
29歲或以下 Aged 29 or under	115	(31.7%)	97	(32.1%)
男女分佈 By gender				
男性 Male	332	(91.5%)	271	(89.7%)
女性 Female	31	(8.5%)	31	(10.3%)

管理層的結構 Composition of Senior Management

	截至2020年3月31日（百分比） As of 31 March 2020 (Percentage)		截至2021年3月31日（百分比） As of 31 March 2021 (Percentage)	
總管理層人數 Total number of senior management staff	147 （佔總員工2.6%） (2.6% of total employee)		198 （佔總員工3.3%） (3.3% of total employee)	
年齡分佈 By age group				
50歲或以上 Aged 50 or above	96	(65.3%)	114	(57.6%)
30 – 49歲 Aged 30-49	51	(34.7%)	84	(42.4%)
29歲或以下 Aged 29 or under	0	(0%)	0	(0%)
男女分佈 By gender				
男性 Male	133	(90.5%)	173	(87.4%)
女性 Female	14	(9.5%)	25	(12.6%)

統計資料摘要
SUMMARY OF STATISTICS

職業健康及安全指標 Occupational Health and Safety Indicators

		2019/20	2020/21
機電署員工 For EMSD employees			
死亡 Fatalities	數字 Number	0	0
	比率 Rate	0	0
嚴重工傷[21] High-consequence work-related injuries[21]	數字 Number	4	0
	比率 Rate（按每 200 000 工時計算） (number per 200 000 man-hours)	0.06	0
工傷[22] Recordable work-related injuries[22]	數字 Number	28	27
	比率 Rate（按每 200 000 工時計算） (number per 200 000 man-hours)	0.42	0.39
工作小時 Number of hours worked	小時 Hour	13 258 752	13 878 852
機電署承辦商 For EMSD contractors			
死亡 Fatalities	數字 Number	0	0
	比率 Rate	0	0
嚴重工傷[21] High-consequence work-related injuries[21]	數字 Number	1	3
	比率 Rate（按每 200 000 工時計算） (number per 200 000 man-hours)	0.03	0.07
工傷[23] Recordable work-related injuries[23]	數字 Number	4	11
	比率 Rate（按每 200 000 工時計算） (number per 200 000 man-hours)	0.11	0.27
工作小時 Number of hours worked	小時 Hour	7 492 571	8 184 268

21 嚴重工傷（不包括死亡）指因工作而導致的損傷，從而使員工不能/不可/預計未能於六個月內回復傷前的健康狀態。
High-consequence work-related injuries (excluding fatalities) refer to work-related injury that results in an injury from which the worker cannot, does not, or is not expected to recover fully to pre-injury health status within six months.

22 報告涉及機電署人員工作時的任何意外，包括未導致給予受傷人員病假的意外。2020/21 年度機電署員工工傷主要類型是滑倒、絆倒或在同一高度跌倒、灰塵入眼以及撞到固定或靜止物體。
Any accident involving the EMSD personnel on duty reported, including those accidents which have not resulted in the granting of any sick leave to the injured person. Main types of work-related injury reported in 2020/21 for the EMSD employees were slip, trip or fall on the same level, dust get into eye and striking against fixed or stationary object.

23 2020/21 年度機電署承辦商工傷主要類型是高處墮下、滑倒、絆倒或在同一高度跌倒。
Main types of work-related injury reported in 2020/21 for the EMSD contractors were fall of person, slip, trip or fall on the same level.

培訓與教育 Training and Education

	單位 Unit	2019/20	2020/21
平均受訓時數 Average training hours			
男女分佈 By gender			
男性 Male	小時 Hour	25.0	22.7
女性 Female	小時 Hour	24.4	25.5
職系分佈 By grade			
高級管理層[24] Senior management[24]	小時 Hour	53.8	21.1
一般員工[25] General staff[25]	小時 Hour	24.8	23.0

24 高級管理層指首長職系員工。
Senior management refers to directorate grade staff.

25 一般員工指技術職系、專業職系和行政及輔助職系員工。
General staff refers to technical, professional, administrative and support staff.

獨立保證意見聲明書
INDEPENDENT ASSURANCE OPINION STATEMENT

驗證聲明

香港通用檢測認證有限公司對機電工程署社會及環保報告2020/21中關於可持續發展活動的報告

驗證/核證的性質

香港通用檢測認證有限公司（以下簡稱SGS）受機電工程署（以下簡稱機電署）的委託，對機電工程署社會及環保報告2020/21（以下簡稱報告）中由2020年4月1日至2021年3月31日期間的年度表現，進行獨立驗證。

本驗證聲明的預期使用者

本驗證聲明旨在告知機電署之持份者及管理人員使用。

責任

報告中的資訊及其介紹為機電署的理事機構和管理層的責任，SGS並未參與編寫報告中所載的任何材料。

我們的責任是就核查範圍內的文本、數據、圖表和聲明發表意見，旨在告知機電署的所有持份者。

驗證標準、類型和驗證級別

用於進行驗證的SGS可持續發展報告驗證協定基於國際公認的驗證指引和標準，包括全球報告倡議組織可持續性報告標準（GRI標準）中包含的原則101：基礎2016報告品質。

驗證範圍和報告準則

驗證範圍包括如下詳述的特定成效信息的質量、準確性和可靠性的評估，以及對GRI標準「核心選項」的遵守情況的評估。

驗證方法

該驗證包括驗證前研究、在位於香港九龍灣機電署總部現場與相關員工面談；相關文件和記錄審查和通過持份者參與的相關結果進行驗證。

限制和緩解

直接從獨立審計的財務賬戶中提取的財務數據並未在作為此驗證過程的一部分中進行回溯檢查。

在允許的時間範圍內，一些未被確定為重大議題的陳述和信息被排除在驗證範圍之外。

獨立和能力聲明

SGS確認我們獨立於機電工程署，與該機構、其附屬機構和持份者不存在偏見和利益衝突。

驗證團隊是由具備對此項任務有關的知識、經驗和資格人員組成，包括由能夠勝任ISO 9001、ISO 14001、SA 8000和GRI標準的審核員。

驗證/核證意見

我們對機電署在其報告中依據GRI標準「核心選項」的編制感到滿意。 根據上述方法和所進行的核實工作，我們對經核實的報告中包含的信息和數據的準確性、可靠性，及就反映機電署的可持續發展表現的公平性和平衡性感到滿意。驗證團隊認為報告符合GRI標準「核心選項」。

簽署：
代表香港通用檢測認證有限公司

關靜儀
總監
知識與管理
香港通用檢測認證有限公司
香港新界香港科學園第三期22E座三樓303及305室

2021年11月18日

WWW.SGS.COM

獨立保證意見聲明書
INDEPENDENT ASSURANCE OPINION STATEMENT

SGS

ASSURANCE STATEMENT

SGS HONG KONG LIMITED'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE ELECTRICAL AND MECHANICAL SERVICES DEPARTMENT'S SOCIAL AND ENVIRONMENTAL REPORT 2020/21

NATURE OF THE ASSURANCE/VERIFICATION

SGS Hong Kong Limited (hereafter referred to as SGS) was commissioned by the Electrical and Mechanical Services Department (hereafter referred to as EMSD) to conduct an independent assurance of the EMSD Social and Environmental Report 2020/21 (hereafter referred to as the Report), covering the performance of the fiscal year from 1 April 2020 to 31 March 2021.

INTENDED USERS OF THIS ASSURANCE STATEMENT

This Assurance Statement is provided with the intention of informing the EMSD's stakeholders and management to be used.

RESPONSIBILITIES

The information in the Report and its presentation are the responsibility of the governing body and the management of the EMSD. SGS has not been involved in the preparation of any of the material included in the Report.

Our responsibility is to express an opinion on the text, data, graphs and statements within the scope of verification with the intention to inform all the EMSD's stakeholders.

ASSURANCE STANDARDS, TYPE AND LEVEL OF ASSURANCE

The SGS Sustainability Report Assurance protocols used to conduct assurance are based upon internationally recognised assurance guidance and standards including the Principles contained within the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) 101: Foundation 2016 for report quality.

SCOPE OF ASSURANCE AND REPORTING CRITERIA

The scope of the assurance included evaluation of quality, accuracy and reliability of specified performance information as detailed below and evaluation of adherence to the Core option of GRI Standards.

ASSURANCE METHODOLOGY

The assurance comprised a combination of pre-assurance research, interviews with relevant employees on-site at the EMSD Headquarters in Kowloon Bay, Hong Kong; documentation and record review and validation with the relevant findings from stakeholder engagement.

LIMITATIONS AND MITIGATION

Financial data drawn directly from independently audited financial accounts has not been checked back to source as part of this assurance process.

Some statements and information that were not identified as material issues were excluded from the scope of the assurance during the timescale allowed.

STATEMENT OF INDEPENDENCE AND COMPETENCE

SGS affirms our independence from the EMSD, being free from bias and conflicts of interest with the organisation, its subsidiaries and stakeholders.

The assurance team was assembled based on their knowledge, experience and qualifications for this assignment, and comprised auditors competent in ISO 9001, ISO 14001, SA 8000, and GRI Standards.

ASSURANCE/VERIFICATION OPINION

We are satisfied that the EMSD's reporting has been prepared in accordance with the Core option of GRI Standards. Based on the aforesaid methodology and the verification work performed, we are satisfied that the information and data contained within the Report verified is accurate, reliable and provides a fair and balanced representation of the EMSD sustainability performance. The assurance team is of the opinion that the Report conforms to the Core option of GRI Standards.

Signed:
For and on behalf of SGS Hong Kong Limited

Miranda Kwan
Director, Knowledge Solutions
SGS Hong Kong Limited
Units 303 & 305, 3/F., Building 22E, Phase 3, Hong Kong Science Park, New Territories, Hong Kong

18 November 2021

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鳴謝
ACKNOWLEDGMENTS

在年報製作過程中，承蒙下列部門及機構提供協助，機電工程署特此鳴謝。
The EMSD would like to express its sincere thanks to the following departments and organisations for their support and co-operation in the course of preparing this annual report (list in alphabetical order).

懲教署	Correctional Services Department
香港海關	Customs and Excise Department
衞生署	Department of Health
渠務署	Drainage Services Department
教育局	Education Bureau
消防處	Fire Services Department
食物環境衞生署	Food and Environmental Hygiene Department
政府產業署	Government Property Agency
路政署	Highways Department
香港警務處	Hong Kong Police Force
醫院管理局	Hospital Authority
入境事務處	Immigration Department
香港樂高探索中心	LEGOLAND Discovery Centre Hong Kong
康樂及文化事務署	Leisure and Cultural Services Department
香港鐵路有限公司	MTR Corporation Limited
北區醫院	North District Hospital
香港機場管理局	The Airport Authority Hong Kong
運輸署	Transport Department
將軍澳醫院	Tseung Kwan O Hospital
屯門醫院	Tuen Mun Hospital
市區重建局	Urban Renewal Authority

EMSD

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