

機電 2.0 服務新里程

E&M 2.0 A New Journey

機電工程營運基金第二個五年策略計劃
Electrical and Mechanical Services Trading Fund
The 2nd 5-year Strategic Plan



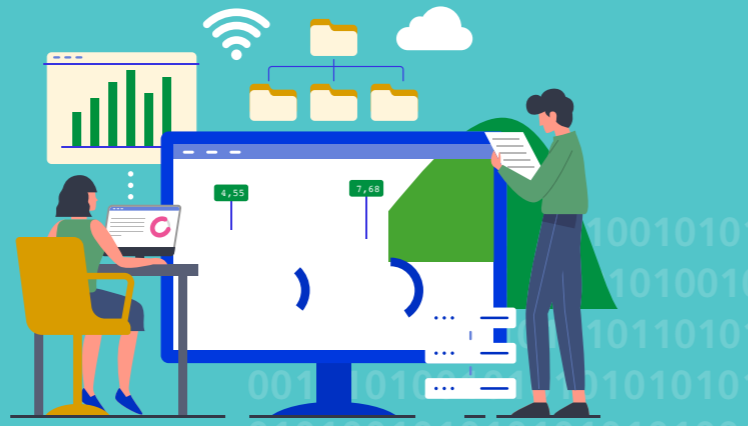
最新進展
Latest Progress
2020年5月
May 2020

策略 1 STRATEGY

機電數碼化 E&M Digitisation

制訂數碼化工程方案

Developing Digitised E&M
Engineering Solutions



深化協作 實踐數碼化

Deepen Collaboration, Implementing Digitisation

事例 CASE 1

創新方案屢獲殊榮—公務員優質服務獎勵計劃

Award-winning Innovative Solutions in the Civil Service Outstanding Award Scheme

機電工程署（機電署）開發的創新方案在公務員優質服務獎勵計劃中榮獲多個獎項。「顧客為本電子平台」項目奪得「隊伍獎（內部支援）」優異獎，而「治未病 化被動為主動」項目奪得特別嘉許獎（創科應用）。

「顧客為本電子平台」項目結合工作管理系統及手機應用程式，除了提高委派工作的效率外，前線同事亦可迅速跟進維修要求和更有效匯報工作進度。而「治未病 化被動為主動」項目則利用機電署自行研發的遙距監控和地理資訊系統偵察運作不正常的設施，在初期主動介入並進行預防性維修，以減少交通燈、隧道及天橋的機電設施出現突發性故障，以及在惡劣天氣時掌握各區機電設施的損毀狀況，以加快修復工作。

The innovative solutions developed by the Electrical and Mechanical Services Department (EMSD) have received several awards in the Civil Service Outstanding Service Award Scheme. The "Customer Centric e-Platform" (CCeP) project won a Meritorious Award in Team Award (Internal Support) and the "From Reactive to Proactive Maintenance" project won a Special Citation Award (Application of Innovation and Technology).

The CCeP project combines job management system with mobile applications to speed up job assignment, while frontline staff can quickly follow up on maintenance requests and report on job progress more effectively. With the idea of "From Reactive to Proactive Maintenance", the EMSD has developed a remote monitoring and geographic information system, which can identify facilities with abnormal operation so that preventive maintenance can be carried out at an early stage to reduce sudden failures of traffic lights and E&M facilities of tunnels and footbridges. The system can also identify damages to E&M facilities in various districts under bad weather conditions to speed up repair.

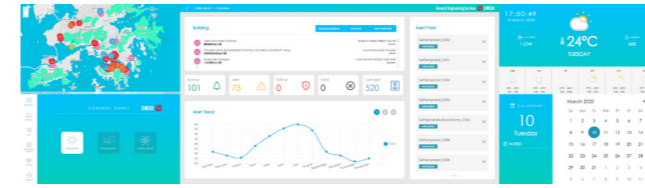


時任公務員事務局局長羅智光先生與公務員優質服務獎勵計劃的機電署得獎團隊合照
The then Secretary for the Civil Service, Mr. Joshua Law and the EMSD winning teams of the Civil Service Outstanding Service Award Scheme

事例 CASE 2

在 2019 冠狀病毒病的疫情下， 利用區域數碼監控中心盡量減少人與人之間的接觸

Minimise People Contact with Help of Regional Digital Control Centre under COVID-19



RDCC 儀表板日常模式示範
Daily Mode demonstration of RDCC dashboard



RDCC 內自訂界面儀表板示範
Custom Mode demonstration of RDCC dashboard

通過使用位於機電署總部大樓的區域數碼監控中心，能集中顯示各個選定且廣泛分布的場地的機電設備實時狀態和警報。我們的前線員工及工程師可透過儀表板遠程監察多個場地的設備，減少需要親身實地視察，把交通途中和場地檢查期間人與人之間密切接觸的機會減至最少。

此外，我們可以将實時圖像傳輸到區域數碼監控中心來監察偏遠場地機房的狀況。有見 2019 冠狀病毒病的爆發，區域數碼監控中心透過新增的自訂界面結合衛生署公布的在線數據，使確診病例和隔離檢疫大樓位置自動更新在地圖中顯示以方便查看。前線員工可以通過中心查看實時機房圖像和設備信息，有助進一步減少前線員工親身到高风险區域實地視察的需要。

By use of the Regional Digital Control Centre (RDCC) at the EMSD Headquarters Building, the E&M equipment status and alarms of various designated and widely dispersed sites are centrally visualised. Our frontline staff and engineers can monitor assets at multiple sites remotely via centralised dashboards and reduce the need for on-site visits, thus minimising the chance of close contact with people during travelling and on-site checking.

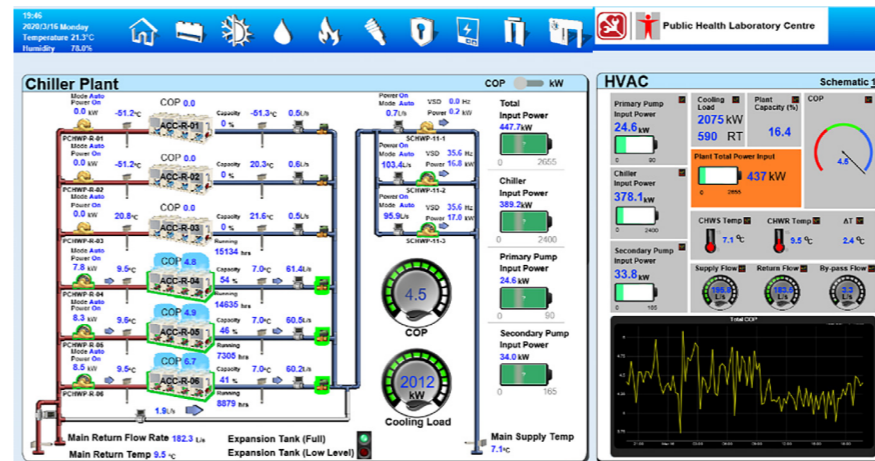
In addition, we can monitor the conditions of remote plant rooms by streaming real-time visual images to the RDCC. In view of the outbreak of COVID-19, a new feature is incorporated by customising a layer with integration of the public online data from the Department of Health (DH). The confirmed cases and quarantine building locations are automatically updated and pinned on the map. Frontline staff can view real-time plant visual images and equipment information via the RDCC, which can further lower the need of frontline staff to go for on-site visits on high-risk areas in person.

事例 CASE 3

於公共衛生檢測中心應用綜合樓宇管理系統以遙距監察 主要機電、空調和屋宇裝備系統

Use of iBMS to Remotely Monitor the Operation of Major EMABS Systems in the PHLC

公共衛生檢測中心作為衛生署的其中一個主要實驗室及後備中心，因應 2019 冠狀病毒病疫情設立了二十四小時運作的臨時熱線中心，以提供無間斷的公共衛生服務。考慮到公共衛生檢測中心並非二十四小時有機電署員工駐場，我們應用了綜合樓宇管理系統實時監察主要機電、空調和屋宇裝備系統（包括冷凍水機組、空氣調節系統、供電系統及其他屋宇裝備等）的運作。即使在辦公時段以外，我們亦可透過實時系統資訊對任何緊急情況迅速作出應對措施。



公共衛生檢測中心綜合樓宇管理系統的儀表板
iBMS Dashboard of the PHLC

The Public Health Laboratory Centre (PHLC) is one of the major laboratories and fallback centres of the DH. A 24-hour temporary call centre was set up to provide round-the-clock public health services during the outbreak of COVID-19. Considering that the PHLC is not a 24 x 7 manned venue with EMSD staff, we utilises the installed integrated Building Management System (iBMS) to conduct real-time remote monitoring on the operation of major EMABS systems (including chilled water plant, air-conditioning system, power supply system, other building services system, etc.) Real-time information of system status can be accessed through the iBMS even during non-office hours, and we can respond to any emergency issue swiftly whenever necessary.

事例
CASE 4

「技能發展中心」正式開幕
Skill Development Centre Opening

機電署總部大樓 3 樓前訓練場地已改建成技能發展中心，並於 2019 年 7 月起分階段投入使用，而開幕儀式亦已於 2020 年 1 月 23 日順利舉行。技能發展中心設有 6 個符合世界技能大賽標準的獨立場地作實習訓練，它們設有燒焊設備、故障查找組件及編程組件，提升訓練效率。此外，技能發展中心內的數碼科技培訓場地亦設有最先進的培訓設施，包括綜合樓宇管理系統和建築信息模擬－資產管理系統，以提升整個機電署團隊的工作能力。

The former training venue at 3/F of the EMSD Headquarters Building has been revamped into the Skill Development Centre and started servicing from July 2019, and the Grand Opening Ceremony has also been successfully held on 23rd January 2020. The Skill Development Centre has 6 WorldSkills-standard practical individual workplaces for training and practicing which are equipped with welding, troubleshooting and programming for enhancing training efficiency. Furthermore, the digital technology training venue in the Skill Development Centre is also equipped with the most advanced training facilities, including integrated Building Management System (iBMS) and Building Information Modelling - Asset Management (BIM-AM), for the betterment of working ability of the whole EMSD Team.



技能發展中心內的訓練設備
Training facilities in the Skill Development Centre



建立專門技術及數碼化團隊
Establish Work Teams with Specialised Technology and Digitisation Practices

事例
CASE 5

啟動特定機電團隊 提升部門應急支援能力並傳承相關知識及經驗
Official Launch of SDU to Enhance the EMSD's Emergency Support Capabilities and Succeed Relevant Knowledge and Experience

特定機電團隊（電力）的分享會暨啟動儀式已於 1 月 22 日順利舉行，參加者來自五個策略業務單位及兩個部門卓越中心（包括機場及屯門醫院），涵蓋區域經理、總技術主任、督察、及監工等共 60 多位精英。分享會能夠讓各部別的精英聚首一堂，分享他們縱橫機電行業多年的寶貴經驗。

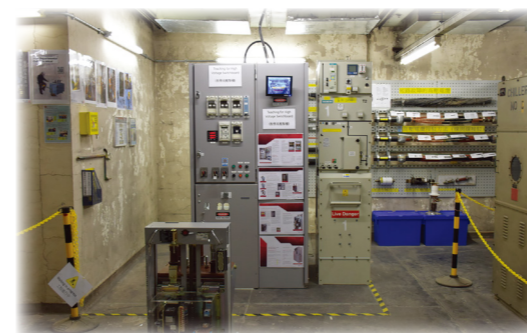
分享會先介紹了特定機電團隊的願景及使命，然後由各隊長和隊員作團隊介紹及經驗分享，包括各自負責的場地用途、重要設施、主要電力系統、應急及備用設備、日常運作模式、應急方案及措施、客戶特別要求等。各參與成員在是次分享會皆獲益良多，亦可讓其他特定機電團隊作借鑑，以提升部門應急支援能力並傳承相關知識及經驗。

The sharing session cum launching ceremony of SDUs (Electrical) was successfully held on 22nd January, with more than 60 participants from our five Strategic Business Units (SBUs) and two Centre of Excellence (CoEs) including the Airport and Tuen Mun Hospital, widely across Regional Managers, Chief Technical Officers, Inspectors, Works Supervisors, etc. The sharing session was attended by our elites, sharing their valuable experiences across their years in E&M industry.

The sharing session started with an introduction of the vision and missions of SDUs. The unit leaders and members shared their experience of the corresponding venue, including its uses, important facilities, major electrical systems, emergency and back-up facilities, daily operation mode, contingency plan and measures, clients' special requirements, etc. Participating members benefited a lot from the sharing session, which can be used as good reference for other SDUs to efficiently enhance the EMSD's emergency support capabilities and succeed relevant knowledge and experience.



特定機電團隊（電力）正式啟動
SDUs (Electrical) has officially launched



教學用的高壓掣櫃
High Voltage Switch Cubicle for educational purpose



帶電測試器、繼電器測試儀及熱感應器
Live Line Tester, Relay Test Unit and Thermal Imager



手提式局部放電檢測儀、真空開關絕緣測試儀及個人防護裝備
Ultra TEV Detector, Vacuum Checker and Personal Protection Equipment

事例 CASE 6

「機電創科網上平台」抗疫主題專頁已收到二百多個抗疫方案
Over 200 Solutions Received on the Anti-epidemic Thematic Page of the E&M InnoPortal

自香港出現 2019 冠狀病毒病的疫情，機電署積極發揮創新科技促成者的角色，鼓勵以創新科技來防疫抗疫，並透過其「機電創科網上平台」建立的抗疫主題專頁，聯繫創科企業研發有助控制疫情的项目。

因疫情嚴峻，加強防疫及抗疫是我們目前最重要的工作。機電署在抗疫主題專頁發布了一系列與抗疫相關的創科方案需求，例如體溫探測移動機械人、移動室內消毒機械人、自動消毒塗層等，並同時加緊聯絡機電署的創科策略伙伴物色合適的方案，截至 3 月底我們已經收到逾 200 個相關方案。

The EMSD is actively taking up the role of innovation facilitator since the outbreak of COVID-19 in Hong Kong, in encouraging the use of innovative technologies to fight and curb the epidemic and liaising with innovation and technology (I&T) enterpriser for the development of projects on curbing the epidemic through the anti-epidemic thematic page established on the E&M InnoPortal.

Considering the severity of the situation, strengthening prevention and fight against the epidemic is our utmost priority. EMSD has released a series of Wish List on anti-epidemic thematic page for I&T solutions related to the fight against the epidemic, e.g. mobile fever screening robots, indoor disinfection robots, self-disinfecting coatings, etc. Meanwhile, the EMSD has strengthened liaison with our innovation strategic partners to identify suitable solutions, and have already received over two hundred relevant solutions by the end of March.



行政長官林鄭月娥女士與時任機電工程署署長薛永恆先生正了解「移動室內消毒機械人」的運作
The Chief Executive Mrs. Carrie Lam visited the EMSD to understand the operation of indoor disinfection robots with the then Director of Electrical and Mechanical Services, Mr. Alfred Sit.

事例 CASE 7

結合人工智能的「體溫探測移動機械人」正式出行
Official Launch of the AI functioned Mobile Fever Screening Robots



發展局局長黃偉綸先生與時任機電工程署署長薛永恆先生試用結合人工智能的「體溫探測移動機械人」
The Secretary for Development Mr. Michael Wong and the then Director of Electrical and Mechanical Services, Mr. Alfred Sit trying the Mobile Fever Screening Robot with AI Function

要防止疫情擴散，找出社區內潛在的染病者是一個很有效的方法，而「體溫探測移動機械人」正是機電署透過「機電創科網上平台」聯繫上數碼港園區的公司後，由香港一家科技公司研發出來的項目。

機械人兼容 Wi-Fi 及 4G 通訊網路，除了能探測體溫外，還可按照地圖和不同環境下所設定的路線行走，尤其適用於無固定出入閘或人群等候的地方。當檢測到體溫異常的人士時，機械人會在屏幕顯示出紅色的影像，並發出警報，提醒管理人員採取跟進行動，大大減輕人手量度體溫的工作。機電署已安排同類機械人在多個政府部門進行測試，期望可以擴大應用至各政府場地，減輕前線人員的工作及感染風險。

Identifying potential infected persons in the community is a very effective way in preventing the spread of the epidemic. The mobile fever screening robot has been developed by a local technology company, after the EMSD reached out to the companies at Cyberport through the E&M InnoPortal.

This robot is compatible with WiFi and 4G mobile network, which can not only screen human body temperature, but also move along routes set on the map and according to different environments, especially suitable for places without a fixed entry / exit gate or filled with waiting crowd. When a person is detected with abnormal body temperature, the screen on the robot will display a red image and an alarm will be sent to alert the managing staff to take follow-up actions, greatly reducing the workload for manual temperature checks. The EMSD has arranged to test robots of the same type at various government departments. It is hoped that these robots can be used at various government venues to reduce the workload and risk of infection of frontline staff.



安裝於各個政府場地的體溫探測機械人
Fever Screening Robots installed in various government venues

事例 CASE 8

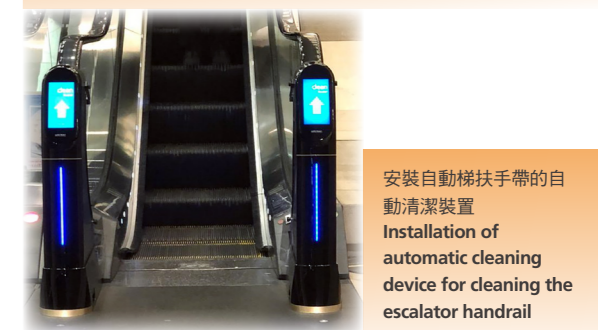
應用新科技改善升降機和自動梯的衛生，以應對 2019 冠狀病毒病疫情
Application of New Technology to Improve the Hygiene of Lifts and Escalators for Combating COVID-19

升降機和自動梯是市民日常使用最多的運輸工具之一，在 2019 冠狀病毒病疫情下，市民大眾都加倍注重個人以至接觸物件的衛生。有見及此，我們最近與多間供應商及升降機 / 自動梯承辦商聯絡，構思一些方案來改善在使用升降機和自動梯時的衛生情況，例如安裝自動梯扶手帶的自動清潔裝置、在升降機內利用二維條碼掃描器作非接觸式樓層控制、以及在升降機內安裝空氣淨化機，讓使用者安心。

Lifts and escalators are one of the most commonly used means of transportation for the public. Due to COVID-19, the public are more conscious of personal hygiene and the hygiene of objects they come into contact with. In view of this, we have contacted various suppliers as well as lift and escalator contractors on solutions to improve the hygiene during the use of the lifts and escalators. For example, automatic cleaning device for cleaning the escalator handrail, use of QR code scanner as contactless means to assign the designated floor inside the lift car, and installation of air purifier insider the lift car, for assuring the users of their safety.



部門已加裝二維條碼掃描器作升降機內非接觸式樓層控制
Addition of QR code scanner as contactless means to assign the designated floor inside the lift car



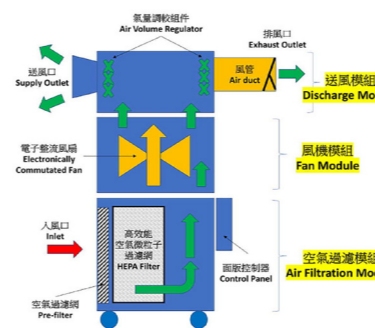
安裝自動梯扶手帶的自動清潔裝置
Installation of automatic cleaning device for cleaning the escalator handrail

事例 CASE 9

以創新思維及科技積極支援抗疫工作
Actively Supporting the Works against the Epidemic with Innovative Ideas and Technologies



流動組合式 - 高效能空氣微粒子過濾器
Mobile Modular HEPA Unit



「流動組合式 - 高效能空氣微粒子過濾器」的剖面圖
Sectional Plan of Mobile Modular HEPA Unit (MMHU)

因應 2019 冠狀病毒病的抗疫需求，機電署協助醫管局把普通病房改裝成負壓病房。考慮到短期內大規模改裝醫院內現有通風系統並不可行，機電署聯同醫管局及業界設計並建造「流動組合式 - 高效能空氣微粒子過濾器」（過濾器），用於把普通病房改裝為負壓病房。

在這些改建病房，過濾器尤如一部大型空氣清新機，內有抽風機及高效能空氣微粒子過濾網，把病房內的空氣過濾後，透過管道將空氣排出室外以維持病房於負氣壓狀態。與傳統改建方法相比，使用過濾器可減少大規模的改裝工程，工期可由三個月大大縮短至兩星期，亦能減輕公眾對病房內空氣排出室外的擔憂。現時超過 100 台過濾器已安裝於各醫院及投入運作。

The Hospital Authority (HA) has solicited the EMSD's assistance to convert some general wards to negative pressure wards to cope with the anti-epidemic demand from COVID-19. Considering that it is not feasible for conducting major modification of the existing ventilation system in hospitals within a short period of time, the EMSD together with the HA and the air-conditioning trade designed and developed the Mobile Modular High-efficiency particulate air (HEPA) Unit (MMHU) for such purpose.

In such wards, an MMHU resembles a large air cleaner with exhaust fan and HEPA filter to extract indoor air from ward area via ducting to outdoor after passing through a HEPA filter, thereby creating negative pressure in ward area. The use of MMHU minimises major modification of ventilation system with traditional means of conversion and shorten the conversion time from 3 months to 2 weeks. It also can alleviate public concern on the air exhausted from wards. At present, more than 100 sets of MMHU have been installed at various hospitals and put into operation.



機電署同事為普通病房安裝「流動組合式 - 高效能空氣微粒子過濾器」把其改裝為負壓病房
EMSD colleagues converting general wards into negative pressure wards by installing MMHU





如您對機電工程營運基金第二個五年策略計劃有任何建議，
歡迎以電郵方式向我們提出：
We welcome your suggestions on the second five-year strategic plan for the EMSTF.
And for enquiries, please email us at
2nd5yearplan@emsd.gov.hk

如欲瀏覽機電工程署創新科技協作平台，請到以下網址：
For the E&M InnoPortal, please visit:
<https://www.emsd.gov.hk/inno>

如欲瀏覽機電工程署主網頁，請到以下網址：
To view the main website of the EMSD, please go to the following website:
<https://www.emsd.gov.hk>

如有其他查詢，請與我們聯絡：
For all enquiries please contact us:

 : (852) 2808 3168

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