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機電傳聲

VoiceLink

機電工程署
EMSD



創新科技活動巡禮2019

InnoEvent Series 2019

機電工程署(機電署)掌握科技脈搏，並針對獨特和嶄新的技術，例如人工智能及物聯網，不斷開發創新、共享機會。今年，我們舉辦一連串創科活動，當中包括創新科技交流日及研討會，並邀請客戶部門出席，分享最新的科技資訊。

我們與香港生產力促進局於2月1日率先合辦「智能機械人研討會」，與客戶分享最新的科技發展，例如智能機械人全自動化生產線、無人駕駛汽車、設置臨時封路雪糕筒的機械人和智能街燈等科技應用。

我們亦會在今年陸續舉辦一連串大型活動和創新科技交流日，其中在第二季的創科客戶研討會將會向客戶介紹我們在創科方面的協作伙伴，以及初創項目的成果。我們還計劃在今年稍後時間與環境局合辦綠色創新科技活動，並邀請大灣區的代表出席，就「綠色創新科技」的主題分享心得。

機電署因應政府推動創新科技的政策，積極擔當「促成者」及「推廣者」的角色，努力把握創科帶來的機遇，並與客戶分享成果，藉此提升政府部門的服務，以及貫徹營運基金最新一個五年策略計劃中有關發展機電數碼化的策略。

The Electrical and Mechanical Services Department (EMSD) keeps abreast of the latest development of technologies. We keep on making innovative efforts and sharing opportunities on unique and sophisticated technologies such as artificial intelligence (AI) and Internet of Things. This year, we will organise an



在今年2月1日舉行的「智能機械人研討會」上，我們與客戶分享機械人的最新科技發展。

At the Robotic I&T Seminar held on 1 February 2019, we shared the latest robotics technologies with clients.

InnoEvent Series, including Inno Theme Days and seminars, and will invite client departments to these events to share the latest updates on technologies.

On 1 February, we took the lead to hold the Robotic Innovation & Technology (I&T) Seminar in collaboration with the Hong Kong Productivity Council, during which we shared with the clients the latest technological development such as application of automated robotic production line, autonomous driving, traffic cone handling robot for temporary road closure and smart lamp post, etc.

We will be continuously organising a series of large-scale events and Inno Theme Days this year, of which the I&T Client Seminar to be held in the second quarter will introduce to clients our I&T collaborative partners and the results of start-up projects. We are also planning a green I&T event with the Environment Bureau to be held later this year, and representatives from the Greater Bay Area will be invited to share their insights.

In line with the Government's policy of promoting I&T, the EMSD is actively playing the roles of "facilitator" and "promoter", as well as striving to seize the opportunities brought by I&T. We will share I&T results with clients to enhance services of government departments, and carry out the EMSTF's strategy of developing E&M digitisation as set out in its latest five-year strategic plan.

創新科技交流活動2019 Inno Theme Events 2019*

日期 Date	主題 Theme
2019年第二季 2nd Quarter 2019	創科客戶研討會 I&T Client Seminar
2019年第三季 3rd Quarter 2019	建築信息模擬 — 建造業的數碼轉型 Building Information Modelling – Digital Transformation in Construction Industry
2019年第三季 3rd Quarter 2019	綠色創新科技 Green I&T
2019年第三季 3rd Quarter 2019	5G流動通訊的機遇與威脅 5G Mobile Communication Opportunities and Threats
2019年第四季 4th Quarter 2019	物聯網 Internet of Things
2019年第四季 4th Quarter 2019	智慧城市 — 最新科技和全球趨勢 Smart City – Latest Technology and Global Trend
2020年第一季 1st Quarter 2020	人工智能和大數據的應用個案分享 Sharing Cases of AI and Big Data Applications

* 詳情待定 Details to be confirmed

客戶如有興趣參加創新科技交流日及研討會，請聯絡我們的高級工程師林鑫駿先生(電話：2808 3879)。

Clients who are interested to participate in the Inno Theme Days and seminars may contact our Senior Engineer, Mr. Tommy Lam at 2808 3879.

共創智慧監獄

Co-creating a Smart Prison with Innovative Technology

為配合懲教署積極發展智慧監獄系統的計劃，機電署主動為客戶部門尋找和配對創新科技解決方案，自去年年中起開展了三個概念性的試驗計劃，以提升監獄的管理效率及保安水平，當中包括應用多項創新科技(例如人工智能、物聯網、藍牙低功耗技術、機械人等)設計和安裝最先進的系統及器材，以期把香港打造成為更安全的智慧城市。

懲教署對監察系統和保安設備素有嚴格要求，就此，我們因應實際環境，在設計過程中構想多個潛在事故的場景。經過多月的反覆測試及不斷改進產品設計和電腦演算法，囚倉監察系統的發展已初見成效，其中影像分析監察系統主要透過智能閉路電視偵測在囚人士的違規或自殘行為，現已率先於壁屋監獄四個囚倉進行試驗；以及為羅湖懲教所引入智慧手帶以配合物聯網的應用，並安裝維生指標和移動及位置監察系統，協助前線人員監察在囚人士的身體狀況和追蹤其活動位置。

我們除了優化管理硬件之外，亦致力推動工序創新，例如緝毒機械臂系統可取代以人手檢查在囚人士的排泄物是否藏有毒品，該系統現正於荔枝角收押所進行初步測試。

這些新設施的試驗計劃完成後，我們將與懲教署進行成效評估，並會研究把這些創新科技方案推廣至其他懲教院所。

In line with the Correctional Services Department's (CSD) plan to actively develop the smart prison system, the EMSD takes the initiative in sourcing and matching innovative technology solutions for client departments, and commenced three conceptual trial schemes since mid-2018 to enhance the efficiency of prison management and the level of security. These include the design and installation of state-of-the-art systems and equipment through the application of various innovative technologies, such as artificial intelligence, Internet of Things (IoT), bluetooth low-energy consumption technology and robotics, etc., with a view to building Hong Kong into a safer smart city.



維生指標監察系統如偵測到在囚人士心跳率異常，會發出警號通知懲教人員。
The Health Signs Monitoring System will deliver a warning to alert the CSD officers if it detects any abnormalities in the heart rates of persons in custody.



智慧手帶可監察在囚人士的心跳率、血含氧量等維生指標，以及他們所處的位置。
Smart wristbands can monitor such health signs as the heart rates and blood oxygen levels of persons in custody as well as their locations.

The CSD has strict requirements on their monitoring systems and security equipment. In this connection, we have conceived various scenarios of potential incidents in the design process having regard to the actual environment. After several months of repeated testing and continuous improvement to the product design and computer algorithm, we start to see some initial results in the development of the dormitory monitoring system, including the Video Analytic Monitoring System, which mainly detects irregularities or self-harm behaviours of persons in custody through smart closed-circuit televisions and is being tested in four dormitories of Pik Uk Prison; as well as the introduction of smart wristbands at the Lo Wu Correctional Institution (LWCI) to tie in with the application of IoT. The LWCI is also installed with Health Signs Monitoring and Passage Surveillance Systems, which help frontline staff monitor the health conditions of persons in custody and track their locations of movement.

Besides optimising the management hardware, we are also dedicated to promoting process innovation. For example, the Drug-detection Robotic Arm System, which is currently undergoing a preliminary test at the Lai Chi Kok Reception Centre, can replace the manual inspection of drug products in the excreta of persons in custody.

Upon completion of the trial schemes for these new facilities, we will evaluate their effectiveness with the CSD and explore extension of such innovative technology solutions to other correctional institutions.

我們樂意與客戶分享用於提升保安的先進科技，如欲查詢詳情，請致電 2808 3384 與高級工程師簡偉光先生聯絡。

We are happy to share with clients the advanced technologies used to enhance security. For details, please contact Mr. Raymond Kan, Senior Engineer, at 2808 3384.

獲香港工程師學會創意大獎

Creativity Wins Innovation Awards from the Hong Kong Institution of Engineers

機電署針對客戶和社會的需要，應用創新的工程知識，並與大學團隊合作研發最新技術，以期提升公共服務質素，改善市民生活。今年3月，機電署聯同香港科技大學研發的智能發燒偵測系統榮獲「香港工程師學會青年會員創意獎2019（組別 I – 專業發明）大獎」，而機電署團隊的「智能眼碌碌」空調控制系統則在另一個組別（組別 II – 創新應用）贏得優異獎。

智能發燒偵測系統集紅外線熱感成像、人工智能和自動化操作技術於一身，實時自動檢測在既定面積範圍內人體溫度的分布，更可讓職員獲得實時數據分析，追蹤疑似發燒人士。此系統有助提升衛生署在邊境口岸執行健康檢查工作的效率，並減少對人流的阻礙。

智能發燒偵測系統的原型設計已經完成，並獲得創新及科技局的科技統籌（整體撥款）計劃資助，稍後會在選定的出入境管制站進行測試。

獲得優異獎的「智能眼碌碌」空調控制系統適合在人流變化大的場館使用，例如大型展覽場館。該系統可透過影像分析技術，實時收集人流數據，以及根據人流的前後變化而自動調校空調風速，讓市民在更舒適的環境活動。該系統亦可透過人數展示板列出場館各區域的人數，當某區域的人羣達到飽和點時，市民可先轉往其他區域參觀，以收人流管制之效，長遠更可全面提升空調系統的能源效益。



頒獎禮後，機電署署長薛永恒先生與榮獲「香港工程師學會青年會員創意獎2019（組別 I – 專業發明）大獎」的機電署同事合照。
Pictured are Mr. Alfred Sit, Director of Electrical and Mechanical Services, with the EMSD colleagues, winners of the grand prize of the HKIE Innovation Awards for Young Members 2019 (Category I – An Invention), after the award presentation ceremony.

With a view to enhancing the quality of public services and improving people's lives, the EMSD applies innovative engineering knowledge to meet the needs of clients and the community, and works with university teams to develop state-of-the-art technologies. In March this year, the Smart Fever Screening System jointly developed by the EMSD and the Hong Kong University of Science and Technology (HKUST) was awarded a grand prize of the Hong Kong Institution of Engineers (HKIE) Innovation Awards for Young Members 2019 (Category I – An Invention). Meanwhile, our NeuroSmart Eyes Air-conditioning Control System also won a merit award in another category (Category II – An Innovative Application of Engineering Theories).

Combining infrared thermal imaging, artificial intelligence and automated operation, the Smart Fever Screening System automatically detects in real time the body temperature profile of people in an area of a given size. It also enables staff to obtain real-time data analysis for tracking febrile suspects, thus enhancing the operation efficiency of the Department of Health for health screening at border control points and minimising obstruction to people flow.

機電署與香港科技大學共同研發的智能發燒偵測系統可實時傳送數據分析，讓工作人員更快速和準確地追蹤疑似發燒人士，以便作進一步檢查。

The Smart Fever Screening System jointly developed by the EMSD and HKUST can transmit data analysis in real time to facilitate prompt and accurate tracking of febrile suspects for further examination.

The prototype of the Smart Fever Screening System has been completed and funding from the Innovation and Technology Bureau's TechConnect (Block Vote) has been secured for trial at selected border control points at a later stage.

The merit award winner, the NeuroSmart Eyes Air-conditioning Control System, is suitable for use at such venues as large exhibition halls with dynamic changes in people flow. With the video analytics technology, the system can collect in real time the data on people flow and adjust the air flow rate according to changes in the crowd density, thus providing a more comfortable environment to the public. Through a display board, the system can also show the level of crowdedness in a specific area. If it reaches a saturation point at a certain exhibition area, visitors can move to other exhibition areas, thus achieving effective control of people traffic. In the long run, it can even enhance energy efficiency of the air-conditioning system.



機電署的「智能眼碌碌」空調控制系統設計獲頒「香港工程師學會青年會員創意獎2019（組別 II – 創新應用）優異獎」。
The design of the EMSD's NeuroSmart Eyes Air-conditioning Control System wins a merit award of the HKIE Innovation Awards for Young Members 2019 (Category II – An Innovative Application of Engineering Theories).

Internet of Things Applications

新科技去除油煙

New Technology to Remove Oily Fumes and Grease

機電署致力研究並引進新興技術，為客戶提供優質的工程方案。熟食中心的廚房排煙系統和排氣管道容易積聚油脂，導致火警事故。有見及此，我們為客戶引進新排煙系統，於一個月內在試點成功安裝紫外光C及臭氧除油煙設備，經過半年測試，證明安全及成效顯著。我們現正在該中心進行全面安裝，預計於今年第二季完成。

由於熟食中心長時間運作，使用水濺機或靜電除油煙器的傳統方法未能全面防止油脂在排氣管道內迅速積聚。我們為客戶安裝的排煙系統，乃科技的一大突破，通過應用紫外光(短波UV-C)結合臭氧的技術，再配合排氣管道的特別設計，能有效地將油煙內的油分子快速分解。同時，紫外光與臭氧能將油分子化成水、氧氣、二氧化碳和聚合油脂，這些非黏性物質能有效防止油脂積聚在管道內壁上。



安裝前 Before installation



安裝後 After installation

The EMSD is committed to developing and introducing emerging technologies, so as to provide quality engineering solutions to clients. The kitchen exhaust system and its ductwork at cooked food centres are prone to grease build-up, resulting in fire incidents. In view of this, a new exhaust system was introduced to the client for the first time, in which ultraviolet-C (UV-C) ozone equipment was successfully installed at a pilot venue within a month. Its operation has been proven to be safe and effective after a half year's testing. Full-scale installation of the equipment is being conducted at the venue, and is scheduled for completion in the second quarter of the year.

Due to the long operating hours of cooked food centres, the conventional method of using water scrubbers or electrostatic precipitators to treat oily fumes can no longer prevent the rapid build-up of grease inside the exhaust ductwork. The new exhaust system we installed for the client is a technology breakthrough, which combines the technologies of UV light (short wave UV-C) and ozone. Coupled with the special design of the exhaust ductwork, the grease molecules of oily fumes can be effectively decomposed. Moreover, the UV light and ozone can further break down the grease molecules into water, oxygen, carbon dioxide and polymerised grease. These non-sticky substances can effectively prevent accumulation of grease on the inner walls of the exhaust ductwork.

我們樂於與客戶分享最新的排煙技術，歡迎致電3757 6027與高級工程師彭國強先生聯絡。

We are happy to share this new exhaust system with clients. Please contact Mr. Sunny Pang, Senior Engineer, at 3757 6027 for details.

安裝配備紫外光C及臭氧除油煙設備的排煙系統六個月後，排氣管道內壁沒有明顯的油脂積聚，效果顯著。
Six months after installation of the exhaust system equipped with UV-C and ozone technologies, there was no obvious grease accumulation on the inner walls of the exhaust ductwork, showing a remarkable effect.

吸納年青新世代

Attracting the Young Generation

機電署聯同香港機電業推廣工作小組於3月8日在職業訓練局葵涌大樓舉辦機電業博覽2019，以「機電新動力」為主題，向年青人介紹機電業最新的培訓資訊、行業發展前景及晉升機會。

博覽會除設有展覽攤位外，亦利用虛擬實境，讓參觀者體驗創新科技在機電業的發展和應用，並透過互動的機電常識問答遊戲，展示機電業在建設智慧香港方面作出的貢獻。我們的學員亦在場介紹機電署的技術員訓練計劃，並接受即場遞交職位申請，方便有興趣年青人投身業界。



香港機電業推廣工作小組代表及嘉賓利用巨型互動屏幕進行博覽會啟動儀式。
Guests and representatives of the Hong Kong E&M Trade Promotion Working Group officiate the launching ceremony of E&M Expo by the use of a giant interactive screen.

此外，機電署在培訓人才方面一直不遺餘力，更鼓勵學員藉着參加公開比賽，接受挑戰，考驗個人技術。我們的兩位見習技術員獲選為製冷與空調項目和電氣安裝項目的香港代表，將於今年8月參加在俄羅

斯喀山舉行的第45屆世界技能大賽。他們正積極備戰，包括參加各地的集訓和邀請賽，藉以提升技術水平，期望能為港爭光。

加強電動車充電設施

Enhancing Electric Vehicle Charging Facilities

今年，我們與環境保護署和土木工程拓展署合作，首次在大嶼山梅窩的政府戶外公共停車場安裝中速充電器，預計於本年年中完成安裝，屆時可為九輛電動車同時充電。相比傳統的標準充電器，中速充電器可大幅減少充電時間近六成。據最新公布的2019至20年度財政預算案所載，政府將撥款1.2億元，擴大政府停車場提供的電動車公共充電網絡，預計到2022年會增逾1 000個公共充電器，令總數增至1 700個。

此外，為加強電動車充電配套設施的功能及效用，機電署會在總部大樓推行先導計劃，率先為充電設施加裝多項智能系統及配件，預計於今年完成安裝。這些系統及配件包括：智能計量系統，用以量度不同停車場的充電設施使用量，從而有效分配資源；佔用傳感器系統，讓車主可上網或利用應用程式預先知道停車場充電設施的佔用率；電子顯示板，用以顯示停車場內可供使用的尚餘充電器數量；電源用量管理系統，供調節繁忙時段的充電速度。這些系統將為未來的電動車充電器安裝計劃提供數據分析，以加強停車場整體充電系統的遠程監控管理。



This year, we co-operate with the Environmental Protection Department and the Civil Engineering and Development Department to install medium chargers for the first time at the outdoor public car park in Mui Wo, Lantau Island, which is targeted to be completed by the middle of this year. Upon completion of the installation, nine electric vehicles (EVs) can be charged there at the same time. Comparing to the conventional standard chargers, the medium chargers can significantly reduce the charging time by nearly 60%. As mentioned in the most recently announced 2019-20 Budget, the Government will allocate \$120 million to extend the public EV charging networks at government car parks. Over 1 000 additional public chargers are expected to be in place by 2022, bringing the total number of chargers to 1 700.

Moreover, in order to strengthen the functions and effectiveness of the ancillary facilities for charging EVs, a pilot

project will be implemented at the EMSD Headquarters to install additional smart systems and accessories on the charging facilities, which is scheduled for completion within this year. These systems and accessories include: the smart metering system which measures the usage of charging facilities at various car parks for better allocation of resources; the occupancy sensor system which enables drivers to have access to the occupancy rate of charging facilities at car parks online or via mobile applications in advance; the electronic display board which shows the number of remaining chargers available for use in a car park; the power consumption management system which regulates the charging speed during peak hours. All these systems provide data analysis for our future EV charger installation plan, thus enhancing the remote monitoring management of the overall EV charging system at car parks.

客戶如對電動車輛充電設施感興趣，歡迎致電3757 6134與我們的高級工程師鄧偉豪先生聯絡。

If clients are interested to know more about the EV charging facilities, please call our Senior Engineer, Mr. Ronald Tang, at 3757 6134.

安裝在機電署總部の中速充電器。
Medium chargers installed at the EMSD Headquarters.

Organised by the EMSD and the Hong Kong Electrical and Mechanical Trade Promotion Working Group, the Electrical and Mechanical Expo 2019 with the theme "E&M New Momentum" was held on 8 March at the Vocational Training Council Kwai Chung Complex, introducing to young people the latest training information, development prospects and promotion opportunities in the E&M trade.

In addition to exhibition booths, the Expo also made use of virtual reality which enabled visitors to experience the development and application of innovative technology in the E&M industry. By means of interactive E&M quiz games, we showcased the contribution of the E&M trade in building a smart Hong Kong. Our

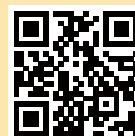
technician trainees were also present at the Expo to introduce the EMSD's Technician Training Scheme, for which on-the-spot applications were accepted, thus making it easier for interested youngsters to join the trade.

Besides, the EMSD has spared no effort in talent training, and encouraged trainees to accept challenges and test their own skills through participation in open competitions. Two of our technician trainees have been selected to participate in the 45th WorldSkills Competition to be held in Kazan, Russia, in August this year, representing Hong Kong in the refrigeration and air-conditioning as well as electrical installations categories. They are now actively preparing themselves for

the competition, including participating in trainings and invitation tournaments in different countries, so as to enhance their skills and bring glory to Hong Kong.

歡迎大家掃描以下二維碼或登入網址 <https://bit.ly/2um0q9u>，瀏覽機電署技術員訓練計劃的宣傳短片。

You are welcome to view the promotional video of the EMSD's Technician Training Scheme by scanning the QR code or visiting the website below: <https://bit.ly/2um0q9u>



感謝客戶 支持意見調查

Thanks to Our Customers for Their Support for the Opinion Survey

機電工程營運基金2018年客戶意見調查於去年年底進行，向客戶發出約2 000多份問卷，回應率達53.1%。我們衷心感謝客戶的支持和參與，亦特別鳴謝逾百位客戶代表接受獨立市場研究公司的進一步訪問，你們的意見及建議將有助我們提升服務質素。目前，我們正就該公司提交的報告及建議，制訂改善方案。

The Electrical and Mechanical Services Trading Fund Customer Opinion Survey 2018 was conducted at the end of last year, under which about 2 000 questionnaires were sent to our customers, with a response rate of 53.1%. We are grateful for our customers' support and participation, and wish to give our special thanks to more than one hundred client representatives who were subsequently interviewed by an independent market research company. Your opinions and suggestions will help us improve our services. We are now formulating enhancement solutions based on the report and recommendations submitted by the market research company.

青年工程師喜獲殊榮

Honour for Our Young Engineer

機電署同事憑藉出色的工程專業才能，以及在工程界和服務社會方面的卓越成就，屢獲殊榮。

我們的機電工程師陸珮群女士獲香港工程師學會頒發2019年度傑出青年工程師獎，是機電署首位獲此殊榮的女工程師，亦是部門第四位獲頒上述獎項的工程師。陸女士於2008年加入機電署擔任見習機械工程師，目前任職氣體標準部。她致力透過創新方案提升石油氣車輛的燃氣安全，其主要貢獻包括推行石油氣車輛燃料缸保安封條系統，以及為新款石油氣的士燃料缸進行類型審批等，更積極參與工程界和服務社會的工作，推廣工程知識。

機電署將會繼續培育更多年青工程師，讓他們發揮所長，為社會和業界作出貢獻。

陸珮群女士獲香港工程師學會頒發2019年度傑出青年工程師獎。

Miss Clare Luk is presented the Young Engineer of the Year Award 2019 by the Hong Kong Institution of Engineers.



The EMSD colleagues have won various prestigious awards for their outstanding engineering expertise and remarkable achievements in the engineering sector and serving the community.

Our E&M Engineer, Miss Clare Luk, was awarded the Young Engineer of the Year Award 2019 by the Hong Kong Institution of Engineers. She is our first female engineer and the fourth EMSD awardee to have received this special honour. Miss Luk joined the EMSD as a Mechanical Engineering Graduate in 2008, and is currently working in our Gas Standards Division. She strives to enhance the gas safety of liquefied petroleum gas (LPG) vehicles through innovative solutions. Her major contributions included the implementation of the Security Label System for LPG Vehicle Fuel Tanks and the type approval of fuel tanks of new LPG taxis. She is also actively engaged in the work of the engineering profession and serving the

community, with a view to promoting engineering knowledge.

The EMSD will continue to nurture more young engineers so that they can give full play to their abilities and contribute to the society and the trade.

您的寶貴意見對我們非常重要！如大家對《機電傳聲》有任何意見或回應，請隨時聯絡我們，讓我們不斷改進。
如果您的同事有興趣收取本通訊及加入郵寄名單，歡迎以電郵（cpsd@emsd.gov.hk）或傳真（傳真號碼：2882 1574）方式通知我們。
如果您希望我們從郵寄名單中刪除您的名字，或更新您的資料，請透過電郵（cpsd@emsd.gov.hk）與我們聯絡。

Your opinion is very important to our continuous improvement in VoiceLink! If you have any comments or feedback for the newsletter, please do not hesitate to let us know anytime. If your colleagues are interested in receiving our newsletter and want to subscribe it, feel free to e-mail or fax us at cpsd@emsd.gov.hk or 2882 1574, and we will add them to our list. In case you wish to remove your name from our newsletter mailing list, or to update your information in the future, please e-mail to cpsd@emsd.gov.hk.

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