

機電 E&M 2.0 服務新里程 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

2021 10月
October

機電工程署
EMSD



事例 CASE 1

資產管理系統數碼化 運作效能顯著提升

Digitisation of Asset Management System for Significant Enhancement of Operation Efficiency

數碼化機電資產管理系統是按照機電工程營運基金第二個五年策略計劃下的目標而開發，其主要功能包括提供通用平台，方便整合、管理和分析各類運作及維修保養數據；以及透過監察機電資產運作數據，提供預測性維修保養和提升效能建議。

該系統的開發工作分為兩個階段。在首階段，我們會在10個數碼化政府場地試行該系統，預計於2022年第一季完成。至於第二階段，我們把約400個數碼化政府場地加入該系統的數據庫內，以進行大數據分析，預計於2023年第一季完成。

The digitised E&M asset management system (AMS) is developed in accordance with the objectives under the 2nd 5-year Strategic Plan of the Electrical and Mechanical Services Trading Fund (EMSTF). It mainly serves to provide a common platform to facilitate consolidation, management and analysis on various types of operational and maintenance data; as well as providing predictive maintenance and suggestions on efficiency enhancement through monitoring the operational data of E&M assets.

The AMS is developed in two phases. The first phase, involving trial operation at 10 digitised government venues, is expected to be completed in the first quarter of 2022. The second phase, with about 400 digitised government venues added to the database of the AMS for facilitating big data analytics, is expected to be completed in the first quarter of 2023.



事例 CASE 2

香園圍口岸邊境管制站區域數碼監控中心正式啟用 與客戶攜手邁向數碼化新里程

Regional Digital Control Centre at Heung Yuen Wai Boundary Control Point Officially Opened - A New Milestone in Digitisation Marked with Our Customers

數碼化對管理日益增多的機電設備至為重要，能靈活應對我們客戶的需求。香園圍口岸邊境管制站採用全新數碼化機電系統，於客運及貨運設施設置感應器，讓機電工程署(機電署)人員遙距監察機電設備的運作，並瞬間獲得設備的最新資訊。機電署亦正為其他邊境管制站的機電設備進行數碼化，籌備把有關設備連接至各區域數碼監控中心。

Digitisation is of utmost importance to the management of the expanding electrical and mechanical (E&M) equipment as it can meet our clients' needs flexibly. Heung Yuen Wai Boundary Control Point adopts the brand-new digitised E&M systems, with which sensors are installed at passenger transportation facilities and cargo facilities so that Electrical and Mechanical Services Department (EMSD) staff can remotely monitor the operation of the E&M equipment and obtain the latest information on the equipment in an instant. Besides, the EMSD is currently working on digitising E&M equipment at other boundary control points in preparation for connecting them to various regional digital control centres.



駐場同事介紹數碼化進程
On-site staff introduced the digitisation process



位於香園圍口岸的區域數碼監控中心
The regional digital control centre at the Heung Yuen Wai Boundary Control Point

事例 CASE 3

制定行業標準 引領各界共享優良作業

Taking the Lead in Sharing Best Practices by Establishing Standards on Operation and Maintenance

為協助各界及客戶維持和提升對機電裝置的優良管理，機電署出版了8本涵蓋不同機電範疇的最佳操作和維修作業守則及指引，其中4本由機電工程營運基金編製，與客戶的機電資產管理息息相關，分別關於暖通空調、升降機及自動梯、電力裝置以及消防裝置。

各守則概述了15個重點領域並闡述各個領域當中「一般」、「良好」和「最佳」三種實務水平的作業模式，切合各持份者在不同場地的運作需要、運作策略目標、資源分配安排和服務水平，提供靈活的作業模式，確立和提升行業的操作及維修標準。

以金鐘道政府合署的冷水機組更新改善項目為例，我們滿足暖通空調守則內相關重點領域的要求，並積極運用各項創新技術，包括「建築信息模擬及資產管理」(BIM-AM)、智能控制及互聯系統等，以改善能源效益及減低排放，預計每年大幅節省120萬度用電量，更減少900噸二氧化碳排放。最終，該項目榮獲《美國冷凍空調學會香港分會2021科技大獎》。

To assist various sectors and our client departments to maintain and enhance quality management of the E&M installations, the EMSD has published 8 booklets on the best practices for operation and maintenance service regarding various E&M areas. Four of them are compiled by the EMSTF and closely related to our clients' assets, including the heating, ventilation and air conditioning (HVAC) installations, lift and escalator installations, electrical installations, and fire service installations.

To meet diverse operational needs, strategic operational objectives, resources allocation, and service levels of the stakeholders, these four booklets on best practices for operation and maintenance service highlight 15 key areas, with detailed description of the "general", "good" and "best" practices of operation for each area. We aim to provide the best practices for stakeholders to adopt as appropriate flexibly, with a view to establishing and uplifting the standards on operation and maintenance among the trade.

Taking the Chiller Replacement Project at Queensway Government Offices (QGO) as an example, we satisfied the requirements of the relevant key areas in the Best Practices Booklet for Operation and Maintenance Service of HVAC installations. We also actively adopted various innovative technologies, including "Building Information Modeling - Asset Management" (BIM-AM), intelligent control and mobile connection systems, to improve energy efficiency and reduce emissions. It is expected to significantly save 1.2 million kilowatt-hours (kWh) electricity each year and reduce 900 tons of carbon dioxide emissions. In the end, the project won the "ASHRAE HK Chapter Technology Award 2021".



利用「建築信息模擬」技術，模擬實際的機房佈局
Application of BIM technology to simulate the actual layout of the plant room



機電工程營運基金推出了4本機電工程署優良操作和維修作業守則及手冊，涵蓋不同機電領域，提供優良作業指引

The EMSTF has published four EMSD booklets and handbooks on the best practices for operation and maintenance service, for various E&M areas, providing the guidelines on the best practices

下載作業守則及指引，請掃描二維碼或瀏覽以下網址

Please scan the QR code or visit the following website to download the booklets and handbooks

https://www.emsd.gov.hk/tc/publications/emsd_operation_maintenance_best_practices_booklets/index.html



事例 CASE 4

全力支援北大嶼山醫院香港感染控制中心 Full Support to the North Lantau Hospital Hong Kong Infection Control Centre

機電署憑藉多年來在公立醫院機電系統方面的廣泛經驗，主動就北大嶼山醫院香港感染控制中心的機電系統設施的設計、安裝、測試、運作及維修保養等多個方面提供技術支援。為及早找出將來或會影響中心運作及維修的問題，機電署早在施工階段已安排具豐富經驗的測試團隊駐守地盤，日以繼夜地進行測試及驗收工作。現時，機電署的團隊亦為香港感染控制中心的運作及維修保養提供24小時技術支援，確保其機電系統設施運作暢順。

With years of experience in the E&M systems in public hospitals, the EMSD proactively provided professional advice on the design, installation, testing, operation and maintenance of various E&M systems at the North Lantau Hospital Hong Kong Infection Control Centre (HKICC). In order to identify the potential issues that may affect the operation and maintenance of the HKICC in the future, the EMSD arranged an experienced testing and commissioning team which stationed at the site during the construction period working night and day to conduct testing and commissioning. The EMSD's team are now providing round-the-clock technical support for the operation and maintenance of the HKICC, ensuring the smooth operation of its E&M system facilities.



香港感染控制中心提供816張隔離病牀，對加強本港應對2019冠狀病毒病疫情起着重要的作用
The HKICC provides 816 isolation beds, contributing greatly in combating the COVID-19 epidemic

機電署與建造團隊緊密合作，日以繼夜進行測試工作，務使香港感染控制中心順利投入服務
In close collaboration with the construction team, the EMSD staff worked round-the-clock to conduct tests to ensure the smooth commissioning of the HKICC



事例 CASE 5

深化粵港澳技術合作 培育大灣區機電人才 Deepening Guangdong-Hong Kong-Macao Cooperation in Technical Skills and Nurturing of E&M Talents in Greater Bay Area



電動汽車新技術網上培訓
Online Training Course on Electric Vehicle



屋宇裝備工程技術網上培訓
Online Training Course on Building Services

為加強兩地人才培訓交流及促進學習以提升技術水平，機電署與廣州市交通技師學院為15名見習技術員(汽車)提供為期六天的網上培訓課程，並已於2021年8月26日完成。另外，廣州市機電技師學院亦為本署20名見習技術員(屋宇裝備)提供為期六天的網上培訓課程，亦已於2021年8月30日完成。

To strengthen the training and exchange of talents and promote learning for skill enhancement between Guangdong and Hong Kong, the EMSD and the Guangzhou Communications Technician Institute arranged a 6-day online training programme for 15 Vehicle Technician Trainees and it was completed on 26 August 2021. Besides, another 6-day online training programme delivered by the Guangzhou Electromechanical Technician College for our 20 Building Services Technician Trainees was completed on 30 August 2021.

事例 CASE 6

優化「知識群體」網頁 Revamping of Knowledge Sharing Webpage - "Knowledge Communities"

為應對接踵而來的種種挑戰，不同工作範疇的同事需要進行技術交流和分享實時資訊，我們優化了主要溝通平台「知識群體」網頁，促進互動交流。優化範疇主要集中在改善用戶體驗方面，我們根據同事過往的瀏覽和使用習慣，重新安排整個網頁的內容規劃，讓同事可更快獲取相關知識，享受簡化的活動報名程序，以及因應需要自行建構新的副網頁分享資訊。

To rise to the challenges ahead, staff in different work areas have to exchange their technical knowledge and share real-time information. We have optimised our major knowledge sharing webpage - "Knowledge Communities" to encourage interaction. The enhancement is mainly focused on improving the user experience. The content arrangement of the webpage is revamped based on the browsing and usage habits of staff, offering faster access to knowledge, providing streamlined event registration process, and enabling the creation of new secondary webpages for sharing information if needed.



「知識群體」主網頁優化版面
Optimised "Knowledge Communities" Webpage

事例 CASE 7

定期交流參與演練 提升團隊應變能力 Regular Exchange and Drill to Enhance Team Resilience

早前，特定機電團隊(電力)舉行了緊急事故與應對措施經驗分享會，內容包括呈報重大事故的程序和個案分享，隊員藉此機會重溫有關呈報事故的指引、流程和要點，以及分析不同緊急事故的處理方式。此外，團隊參加由屯門醫院部門卓越中心(電氣)與中華電力有限公司(中電)合辦的緊急復電演練，交流心得。此演習加強了隊員於發生停電事故時的應對能力，並對日後傳承相關知識及經驗大有裨益。

特定機電團隊(暖通空調)則參觀了港珠澳大橋海水泵房。是次活動通過介紹和參觀海水泵房，讓團隊了解其運作，以及交流相關知識。當日，駐場同事沿途解說，並分享應對泵房發生事故的處理措施和經驗，豐富了隊員對海水泵房的認識，讓他們在日後處理相關情況時更得心應手。

Earlier on, the Special Duty Unit (Electrical) (SDU(E)) organised an emergency incidents and response experience sharing session, covering major incident reporting procedures and cases sharing. The session provided an opportunity for SDU members to review the guidelines, processes and key points of reporting incidents and analyse different ways to cope with emergencies. The SDU(E) also attended the emergency drill co-organised by the Centre of Excellence (Electrical) of Tuen Mun Hospital and China Light and Power Hong Kong Limited (CLP), and exchanged views with both sides. The drill further strengthened the capacity of the team to cope with power outage and helped them pass on the relevant knowledge and experiences.

The SDU (Heating, Ventilation and Air Conditioning) (SDU(HVAC)) visited the seawater pumping facility of the Hong Kong-Zhuhai-Macao Bridge. Through the briefing and visit to the seawater pumping facility, the SDU members learnt about the operation of the facility and exchanged relevant knowledge with on-site staff. On that day, on-site staff shared contingency measures taken and experiences in response to incidents at the facility, thus enriching the members' knowledge of the seawater pumping facility which would better equip them to deal with similar situations in the future.



特定機電團隊(電力)參觀屯門醫院總掣房和了解流動發電機供電轉掣的程序
The SDU(E) visited the main switch room of Tuen Mun Hospital and learnt about the procedures of power switch of the mobile generator



特定機電團隊(暖通空調)實地考察港珠澳大橋海水泵房原型
The SDU (HVAC) undertook a site visit to the prototype of the seawater pumping facility of the Hong Kong-Zhuhai-Macao Bridge

事例 CASE 8

突破場地限制 引入新型升降台支援建構無障礙城市 Introducing New Stairlift Model that Transcends Venue Limitations to Support a Barrier-free City

傳統的升降台通常佔用較大空間，而且安裝升降台後，同一位置便不能作其他用途。此外，部分公共設施受場地所限而未能安裝傳統無障礙設施。有見及此，機電署為民政事務總署的大元社區會堂安裝了新型無障礙升降台。

這款升降台為香港首次使用，較傳統的升降台操作更方便。該裝置在待用時，可作梯級使用；按動旁邊的按鈕，梯級會隨即變成升降平台，為行動不便的人士提供服務。本署亦考慮陸續在更多場地安裝這款裝置，積極與客戶攜手建立無障礙城市。

Traditional stairlifts are generally bulky and require dedicated spaces which cannot be used for other purposes. Also, barrier-free facilities are not available in some public venues due to spatial constraints for installation. In view of this, the EMSD installed the new model of barrier-free stairlift for Tai Yuen Community Hall of the Home Affairs Department.

Making its debut in serving the community in Hong Kong, the newly introduced stairlift is easier to operate, and more flexible in use. The installation serves as a staircase when it is on standby. By simply pressing the buttons at the side, the staircase would be turned into a stairlift for transferring wheelchair users with impaired mobility up or down. The EMSD is planning to install such new stairlifts in more venues, actively working with our clients to build a barrier-free city.



新型升降台運作示範
Demonstration of the stairlift operation



新型升降台日常可作梯級使用，並附有按鈕可操控平台升降輪椅
The new stairlift on standby may be used as a staircase, while it also has buttons at the side for controlling the transfer of wheelchairs up or down



新型升降台符合現行法例要求
The new stairlift complies with the existing legal requirement

事例 CASE 9

應用智能安全帽掌握實時數據 實踐工地管理數碼化以提升安全 Adopting Smart Helmet to Master the Real-time Data Demonstrating Digital Site Management to Enhance Safety

智能安全帽配備物聯網感應器，可以實時監察工友的身體狀況及動作，讓工地管理人員和地盤安全主任可以更有效地管理工地，及早發現危險情況和採取必要的措施防止意外發生，確保工地安全。現時，機電署在啟德發展區區域供冷系統工程北廠採用智能安全帽，示範以創新科技提升工地安全。

The smart helmets are equipped with Internet of Things (IoT) sensors for real-time monitoring of workers' physical condition and motion, enabling site managers and safety officers to achieve effective site management, detect dangerous situation as early as possible, and take necessary actions to prevent accidents and therefore ensuring site safety. To demonstrate the application of innovative technology to enhance site safety, the EMSD has adopted smart helmets in the District Cooling System North Plant at Kai Tak Development Area.



機電署在區域供冷系統工程採用智能安全帽，以提升工地安全
The EMSD has adopted smart helmets in the District Cooling System Plants to enhance site safety

事例 CASE 10

機電署囊括五個獎項 揚威促進機械人科技應用創新比賽 EMSD Swept Five Awards in the Leading Towards Robotics Technologies Innovation Competition

在政府資訊科技總監辦公室(資科辦)策劃的促進機械人科技應用創新比賽中，機電署成績斐然，囊括大獎、二獎，以及3個優異獎。是次比賽共收到38份創新方案，在評審委員會甄選10個入圍方案後，再由資科辦為方案與本地科技業界配對，進行為期6個月的概念驗證。比賽旨在將機械人技術與公共服務接軌，加快在政府部門應用機械人技術。

The EMSD achieved excellent results in the Leading Towards Robotics Technologies Innovation Competition organised by the Office of the Government Chief Information Officer (OGCIO), winning the grand award, the 1st runner-up and 3 merit awards. 10 innovative proposals from the 38 entries were shortlisted by the selection panel to be matched with the local technology industry for 6 month proof-of-concept arranged by the OGCIO. The competition aimed to embrace robotics technologies across a host of public services and expedite the adoption of robotics technologies in various government departments.



大獎：物聯網智能馬桶清潔系統
Grand Prize: Smart Toilet Bowl Cleaning System



二獎：人工智能和機械人技術在智能倉庫中的應用
The 1st Runner up: Application of Artificial Intelligence and Robotics Technologies for Smart Warehouse



優異獎：綜合智能機械人助理
Merit Award: Integrated Smart Robot Assistant

事例 CASE 11

首個檢疫樣本收集機械人於竹篙灣檢疫中心進行實地測試和試行 Field Test and Trial Implementation of the First Robot for Specimen Collection and Delivery Conducted at Penny's Bay Quarantine Centre

為支援大嶼山竹篙灣檢疫中心，機電署與衛生署一同探討創科方案，以優化樣本收集流程。為加快項目進展，機電署以現有的室內派送機械人為基礎，綜合原先技術，包括實時遙距監控和操作、實時定位、自動導航及避障功能，亦新增識別功能，以辨認及收集檢疫中心單位外收集檢疫樣本的容器。此方案可減輕前線醫護人員的工作量，還能減低交叉感染的風險，提升工作效率，以及確保樣本妥善運送。

To support the Penny's Bay Quarantine Centre on Lantau Island, the EMSD and the Department of Health explored the introduction of innovative solutions to optimise the specimen collection and delivery procedures. To expedite the process, the EMSD based on the prevailing indoor delivery robot, consolidated its existing technologies, such as real-time remote monitoring and operation, real-time locating, automatic navigation and obstacle avoidance, and added a new object detection and recognition feature to identify and collect the specimen containers placed outside the quarantine units. This solution can alleviate the work pressure of frontline healthcare staff, minimise the risk of cross-infection, improve work efficiency, and ensure the proper delivery of specimens.



首個檢疫樣本收集機械人於竹篙灣檢疫中心試行
The trial implementation of the first robot for specimen collection and delivery were conducted at the Penny's Bay Quarantine Centre



首個檢疫樣本收集機械人的概念驗證
Proof-of-concept of the first robot for specimen collection and delivery



網頁版本
Webpage version



如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.
For enquiries, please email us at
2nd5yearplan@emsd.gov.hk



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 visit:
<https://www.emsd.gov.hk>

如有其他查詢，請與我們聯絡：
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