

智能 EnergyWits



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二零二五年三月

March 2025

「機電工程署研討會2024」
EMSD Symposium 2024

機電工程署研討會 2024 - 區域供冷系統
開放日創新科技連結未來 啟發不同世代
EMSD Symposium 2024 – DCS Open Day
leveraging innovative technology and
inspiring different generations

「淡水冷卻塔和建築物能源效益的
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Technical Forum on Control and
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提高冷凍器具(雪櫃)、洗衣機及
儲水式電熱水器的能源效益評級標準
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《能源審核守則》2024年版正式發布
The Official Launch of the 2024 Edition
of Building Energy Code and
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第十九屆國際環保博覽
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Hong Kong Joint Symposium 2024
「從提量、提速、提效、提質探索區域
供冷系統」演講
Presentation in "Delving into District
Cooling System with Quantity, Speed,
Efficiency and Quality" at
Hong Kong Joint Symposium 2024



「機電工程署研討會2024」 EMSD Symposium 2024

「機電工程署研討會2024」十二月十六日圓滿舉行。研討會是慶祝中華人民共和國成立75周年的活動之一，以「高質量發展 領綠色未來」為主題，由國家能源局和國家鐵路局官員及清華大學學者作主題演講。超過400位來自本地、內地及海外政府部門、公營機構、機電和創科業界，以及專業機構的代表和學者出席，分享有關新能源、智能機電、綠色交通、高效建築等創新方案和研發成果。

環境及生態局局長謝展寰致開幕辭時，鼓勵與會者及持份者推動可再生能源和新能源發展，包括使用綠氫和其他低碳能源，把握氫能發展機遇，令香港成為國家推廣氫能產業和技術的樞紐，並推動香港綠色轉型，爭取香港在二〇五〇年前實現碳中和。

機電署署長潘國英致歡迎辭時表示，期望研討會能啟發新思維，令香港全力發揮作為內地與國際之間「超級聯繫人」和「超級增值人」的重要角色，為國家高質量及綠色城市發展作出貢獻。他呼籲與會者加強合作，優化城市管理，促進香港與大灣區深度融合發展。機電署作為政府的創新促成者，將繼續鼓勵研發工作，推展創科及人工智能應用，提升新質生產力。



The EMSD Symposium 2024, organised by the Electrical and Mechanical Services Department, was held on 16 December 2024. Photo shows the Deputy Director-General of the Department of Educational, Scientific and Technological Affairs of the Liaison Office of the Central People's Government in the Hong Kong Special Administrative Region, Mr Ye Shuiqiu (third left); the Secretary for Environment and Ecology, Mr Tse Chin-wan (centre); the Director of Electrical and Mechanical Services, Mr POON Kwok-ying, Raymond (third right); the Under Secretary for Development, Mr LAM Chi-man, David (second right); the Director General of Planning and Standard Research Institute of National Railway Administration, Mr Xie Xiaodong (first right); the Deputy Director of Energy Conservation and Technology Equipment Division of National Energy Administration, Mr Bian Guangqi (second left); and the Deputy Dean of School of Architecture of Tsinghua University, Professor Lin Borong (first left), at the symposium.

The EMSD Symposium 2024, organised by the Electrical and Mechanical Services Department (EMSD), was held on 16 December 2024. It is one of the events celebrating the 75th anniversary of the founding of the People's Republic of China. Officials from the National Energy Administration and the National Railway Administration and academics from Tsinghua University delivered keynote speeches under the theme "Empowering High-quality Development for a Green Future". Over 400 representatives of local, Mainland and overseas government departments, public organisations, electrical and mechanical (E&M) and innovation and technology (I&T) sectors, professional institutions and academics attended the symposium and shared innovative solutions and research and development (R&D) achievements related to new energy, smart E&M, green transport and efficient construction.

Delivering an opening address at the symposium, the Secretary for Environment and Ecology, Mr Tse Chin-wan, encouraged all participants, trade members and other stakeholders to promote the development of renewable energy and new energy, including green hydrogen and low-carbon hydrogen energy, seize opportunities in hydrogen development to establish Hong Kong as the country's hub for promoting hydrogen industry and technology, address the green transition, and achieve carbon neutrality before 2050.

In his welcoming speech, the Director of Electrical and Mechanical Services, Mr Raymond Poon, expressed hope that the symposium would inspire innovative thinking and reinforce Hong Kong's role as a "super-connector" and a "super value-adder" between the Mainland and the rest of the world, contributing to the high-quality green city development of the country. He called on participants to work together to optimise city management and promote in-depth integration and development of the Guangdong-Hong Kong-Macao Greater Bay Area. As the Government's innovation facilitator, the EMSD will continue to support R&D and promote the adoption of I&T and artificial intelligence to foster new quality productive forces.

「機電工程署研討會2024」於十二月十六日圓滿舉行。圖示中央人民政府駐香港特別行政區聯絡辦公室教育科技部副部長葉水球（左三）、環境及生態局局長謝展寰（中）、機電工程署署長潘國英（右三）、發展局副局長林智文（右二）、國家鐵路局規劃與標準研究院院長謝曉東（右一）、國家能源局能源節約和科技裝備司副司長邊廣琦（左二）和清華大學建築學院副院長林波榮教授（左一）於研討會合照。



■ 「機電工程署研討會2024」於十二月十六日圓滿舉行。圖示中央人民政府駐香港特別行政區聯絡辦公室教育科技部副部長葉水球（第一排右八）、環境及生態局局長謝展寰（第一排中）、機電工程署署長潘國英（第一排右七）、發展局副局長林智文（第一排右六）與研討會嘉賓合照。

The EMSD Symposium 2024, organised by the Electrical and Mechanical Services Department, was held on 16 December 2024. Photo shows the Deputy Director-General of the Department of Educational, Scientific and Technological Affairs of the Liaison Office of the Central People's Government in the Hong Kong Special Administrative Region, Mr YE Shuiqiu (first row, eighth right); the Secretary for Environment and Ecology, Mr TSE Chin-wan (first row, centre); the Director of Electrical and Mechanical Services, Mr POON Kwok-ying, Raymond (first row, seventh right); and the Under Secretary for Development, Mr LAM Chi-man, David (first row, sixth right), at the symposium with the guests.

機電工程署研討會 2024 - 區域供冷系統開放日

創新科技連結未來 啟發不同世代

EMSD Symposium 2024 – DCS Open Day

Leveraging innovative technology and inspiring different generations

機電工程署於二零二四年十二月十七日，即「機電工程署研討會2024」的第二日，在啟德區域供冷系統三號廠房順利舉辦「區域供冷系統開放日」。開放日活動以「營造智慧區域供冷 邁向永續香港未來」為主題，吸引了來自內地及本港政府部門、機電業界專業人士以及一群對科技充滿好奇的小學生(即「氫能洗街車命名及繪畫比賽」獲勝學生)，共同探索智慧區域供冷系統的應用與未來發展。活動內容包括參觀區域供冷系統三號廠房，展示多項創新技術，如智能監測系統、節能管理方案及優化維修技術。透過導賞團，專業人士可深入了解如何提升區域供冷系統的運作效率，而小學生則透過輕鬆有趣的導覽，認識更多有關區域供冷系統，過程中亦展示了他們對機電工程及不同創新科技應用的興趣。

Electrical and Mechanical Services Department (EMSD) successfully held the District Cooling System (DCS) Open Day on 17 December 2024, the second day of the EMSD Symposium 2024, at the Kai Tak District Cooling System Plant No. 3 (KTDCS-P3). The Open Day was themed "Unlocking a Sustainable Future by Smart Construction of Intelligent District Cooling System in Hong Kong". Engineering professionals from institutions in the Mainland and Hong Kong were invited to the guided tour of the plant which showcased innovative technologies such as smart monitoring system, energy saving solutions and enhanced maintenance technology while they have also gained an in-depth understanding on how they improve district cooling plant operation efficiency. In addition, winning students from EMSD's "Hydrogen Fuelled Street Washing Vehicle Naming and Drawing Contest" also visited the DCS Plant and Education Centre in that afternoon. Through vivid demonstrations and guided tours, students have demonstrated a strong interest in E&M related technology.

開放日當天，區域供冷系統用戶代表一啟德體育園及啟德大型商場AIRSIDE獲邀出席，並向在場人士分享使用區域供冷服務的經驗。開放日亦設有導賞團，由機電署的工程師帶領參加者參觀三號廠房，詳細介紹區域供冷系統的設備，以及廠房的節能設計。此外，機電署亦利用教育中心的設施，向參加者推廣碳中和的訊息。參觀過程中設有互動環節，讓小學生透過簡單展品體驗與問答，加深對機電工程的理解，期望為未來培育科技人才。

是次開放日成功促進了專業交流，同時讓年輕一代提早接觸智慧科技的應用，激發對機電工程的興趣。機電工程署期望透過此類活動，推動行業發展，並向公眾傳遞創新機電技術如何為城市帶來更高效、更環保的未來。



On the Open Day, representatives of DCS Consumers - Kai Tak Sports Park and Kai Tak large-scale shopping mall AIRSIDE - were invited to share their experience in using DCS with the audience. EMSD led the participants to visit KTDCS-P3, introduced DCS equipment and the energy-saving design of the plant building in detail. In addition to guided tours, EMSD also promoted the message of carbon neutrality to participants with the use of interactive exhibits and Q&A sessions in Education Centre and deepened their understanding of E&M engineering with the aim to cultivating scientific and technological talents for the future.

The Open Day successfully promoted professional exchanges, and at the same time exposed young generation to the application of smart technology early, stimulating their interest in E&M engineering. EMSD hopes to promote the development of the industry through such activities and convey to the public on how innovative E&M technologies can bring a more efficient and environmentally friendly future to the city.



機電工程署署長潘國英（前行右排左一）、副署長/規管服務陳柏祥（前行右排左二）、助理署長/1 姚德泰（前行右排左三）、助理署長/電力及能源效益江茂誠（前行右排左四）於區域供冷系統開放日與嘉賓合照。

Group photo of Mr. POON Kwok-ying, Raymond, Director of Electrical and Mechanical Services (front first left in right row), Mr. CHAN Pak-cheung, Deputy Director/ Regulatory Services (front second left in right row), Mr. YIU Tak-tai, Boris, Assistant Director/1 (front third left in right row), Mr. KONG Mau-shing, Marsden, Assistant Director/ Electricity and Energy Efficiency, with guests on Open Day.

「淡水冷卻塔和建築物能源效益的規管及實務」技術研討會2024-25 Technical Forum on Control and Practice of Cooling Towers and Building Energy Efficiency 2024-25

機電工程署於2025年2月14日在香港生產力促進局大樓會議廳舉辦了「淡水冷卻塔和建築物能源效益的規管及實務」技術研討會。是次活動反應十分熱烈，吸引了接近300名業界人士出席。當天，機電工程署與水務署分享了《淡水冷卻塔計劃》及申請供水、《建築物能源效益條例》的修訂和重新校驗的最新發展。此外，機電工程署邀請了香港空調及冷凍商會及其代表天成化工有限公司和香港中華煤氣有限公司的代表分別分享「淡水冷卻水塔線上即時監控水處理系統的應用」及「創新及節能的燃氣抽濕專案」的經驗和心得。希望透過是次研討會，鼓勵業界一起提升能源效益，幫助香港邁向碳中和。

EMSD organized a Technical Forum on Control and Practice of Fresh Water Cooling Towers (FWCT) and Buildings Energy Efficiency at the Conference Hall of Hong Kong Productivity Council Building on 14th February 2025. The event was highly anticipated and attracted nearly 300 industry professionals. During the forum, EMSD and WSD briefed attendees on the details of the "FWCT Scheme" and its application for water supply, the amendment of the "Buildings Energy Efficiency Ordinance" and the latest development of Retro-commissioning. Furthermore, EMSD invited the representatives from Hong Kong Air Conditioning and Refrigeration Association and its associate member, Tin Sing Chemical Engineers Limited, and The Hong Kong and China Gas Company Limited to share their experiences and insights on the "Application of Online and Real-Time Monitoring Water Treatment Systems for FWCT" and "Innovative Energy Project in Gas Dehumidification" respectively. Through participating in this seminar, the industry is encouraged to work together to enhance energy efficiency and help Hong Kong move towards carbon neutrality.



■ 助理署長/電力及能源效益江茂誠先生（左五）及總工程師/能源效益關偉明先生（左二）與受邀講者嘉賓合照留念。

Group photo of Mr. KONG Mau-shing, Marsden, Assistant Director/Electricity and Energy Efficiency (fifth from the left) and Mr. KWAN Wai-ming, Laurence, Chief Engineer/Energy Efficiency C (second from the left) with invited speakers.



■ 業界反應十分熱烈，接近 300 名業界人士出席。

The industry's response was enthusiastic, with nearly 300 professionals in attendance.

提高冷凍器具(雪櫃)、洗衣機及儲水式電熱水器的 能源效益評級標準

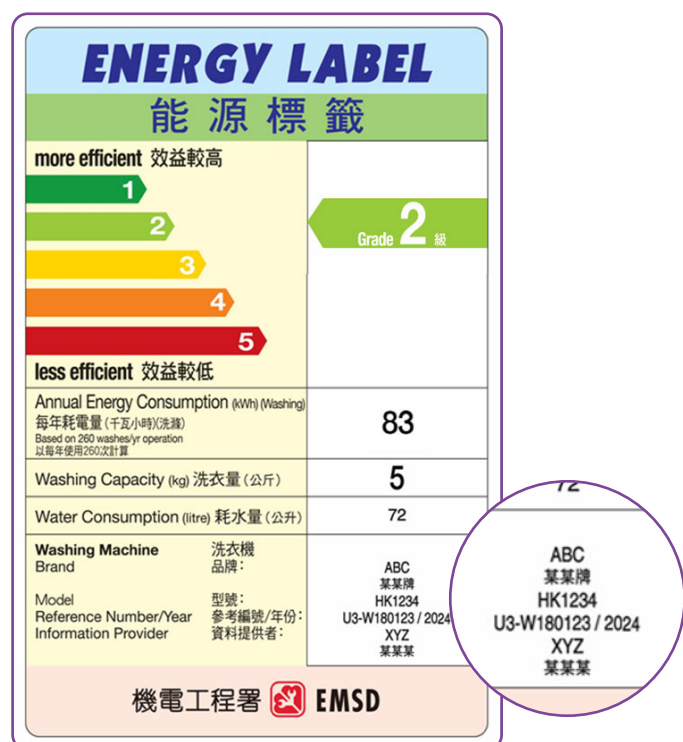
Upgrading of Energy Efficiency Grading Standards of Refrigerating Appliances, Washing Machines and Storage Type Electric Water Heaters

政府自2009年實施強制性能源效益標籤計劃(強制性標籤計劃)起,至今已發展至第四階段。過往三個階段,強制性標籤計劃主要涵蓋不同電氣產品。在2024年12月1日第四階段全面實施後,除了涵蓋發光二極管(LED)燈之外,範圍更擴展至氣體煮食爐和即熱式氣體熱水爐兩類氣體用具,使強制性標籤計劃涵蓋的訂明產品增至11類,包括空調機、冷凍器具(雪櫃)、緊湊型熒光燈(慳電膽)、洗衣機、抽濕機、電視機、儲水式電熱水器、電磁爐、LED燈、氣體煮食爐和即熱式氣體熱水爐。相關產品佔住宅總能源消耗量約8成。

為進一步提升能源效益,機電工程署已於2024年3月發布了《產品能源標籤實務守則2024》(下稱《守則》),提高冷凍器具(雪櫃)、洗衣機及儲水式電熱水器的能源效益評級標準。《守則》已於2024年6月30日生效,將於2025年9月30日起全面實施,屆時在市場供應的該三類訂明產品,必須附有新能源效益評級標準的能源標籤。新標籤的樣式與現行標籤不變,唯須在原有的參考編號前加上[U3-],以作區別:

Since the Government implemented the Mandatory Energy Efficiency Labelling Scheme (MEELS) in 2009, it has now developed into its fourth phase. In the past three phases, MEELS mainly covered different electrical products. After the full implementation of its Phase IV on 1 December 2024, in addition to covering light emitting diode (LED) lamps, MEELS has expanded to include two types of gas appliances, namely gas cookers and gas instantaneous water heaters, bringing the number of the prescribed products covered by the Scheme to 11 categories, including air conditioners, refrigerating appliances, compact fluorescent lamps (CFLs), washing machines, dehumidifiers, televisions, storage type electric water heaters, induction cookers, LED lamps, gas cookers and gas instantaneous water heaters. The appliances covered by MEELS account for about 80% of total residential energy consumption.

To further enhance energy efficiency, the Electrical and Mechanical Services Department (EMSD) published the Code of Practice on Energy Labelling of Products (CoP) 2024 in March 2024, which sets out the upgraded energy efficiency grading standards of refrigerating appliances, washing machines and storage type electric water heaters. The CoP took effect on 30 June 2024 and will be fully implemented on 30 September 2025, after which the three prescribed products to be supplied in the market must bear energy labels with the new energy efficiency grading standards. There will be no change in the layout of the energy labels except that the prefix "U3-" will be added in front of the reference number on the new energy label for differentiation:



產品 Product	現行評級標準的 能源標籤 Energy Label of Existing Grad- ing Standard	新評級標準的能 源標籤 Energy Label of New Grad- ing Standard
冷凍器具(雪櫃) Refrigerating Appliances	U1-R240001	U3-R240003
洗衣機 Washing Machines	U1-W240001	U3-W240001
儲水式電熱水器 Storage Type Electric Water Heaters	E240001	U3-E240001

現行及新能源效益評級標準的比較

1. 冷凍器具(雪櫃)

- 能源消耗指數愈少,表示冷凍器具的能源效益愈高。

在新評級標準下,獲第一級能源標籤的冷凍器具的能源效益較現行評級標準提升了約26%。

2. 洗衣機

- 特定耗電量愈少,表示洗衣機的能源效益愈高。

在新評級標準下,獲第一級能源標籤的洗衣機的能源效益較現行評級標準提升了約37至50%。

3. 儲水式電熱水器

- 能源消耗指數愈少,表示儲水式電熱水器的能源效益愈高。

在新評級標準下,獲第一級能源標籤的儲水式電熱水器的能源效益較現行評級標準提升了約27%。

Comparison of existing and new grading standards

1. Refrigerating Appliances

- Lower Energy Consumption Index indicates a refrigerating appliance with higher energy efficiency

Under the new grading standard, refrigerating appliances which obtain Grade 1 energy labels are about 26% more energy efficient than those under the existing standard.

2. Washing Machines

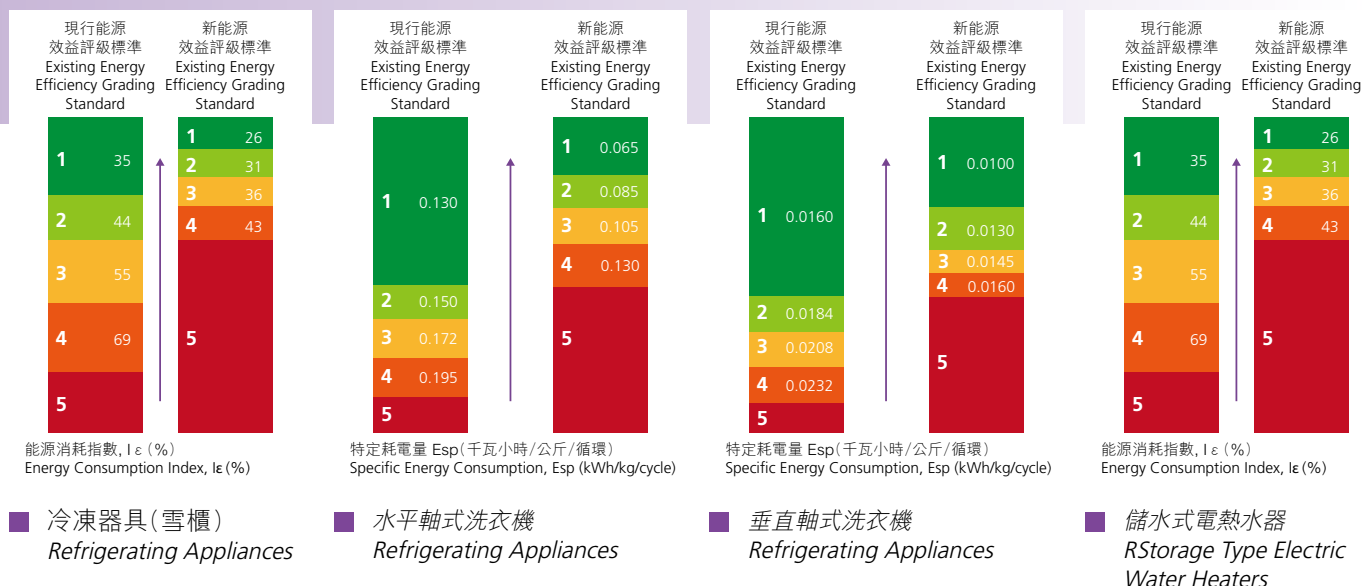
- Lower Specific Energy Consumption indicates a washing machine with higher energy efficiency

Under the new grading standard, washing machines which obtain Grade 1 energy labels are about 37% to 50% more energy efficient than those under the existing standard.

2. Storage Type Electric Water Heaters

- Lower Energy Consumption Index indicates a storage type electric water heaters with higher energy efficiency

Under the new grading standard, storage type electric water heaters which obtain Grade 1 energy labels are about 27% more energy efficient than those under the existing standard.



有關能源標籤及新能源效益評級標準的詳情,請瀏覽機電工程署的能源標籤網:

For details about energy labels and the new energy efficiency grading standards, please visit the EMSD's Energy Label Net:



樓宇機電安全及能源效益講座

Seminar on Building E&M Safety and Energy Efficiency for Property Management Sector

每年一度的「樓宇機電及能源效益講座」，已於2024年10月8日假香港中央圖書館成功舉行，並吸引了約百位業界代表參與。講座主題為「善用創新科技 活化物業管理」，內容涵蓋樓宇電力安全、氣體安全、升降機及自動梯裝置和能源效益及節能措施等範疇。

講座的内容十分豐富，並由機電工程署能源效益B部總工程師梁雪輝先生致開幕辭，鼓勵業界將機電安全及能源效益融入物業管理，同時有效善用創新科技，活化物業管理。本署的工程師於講座上詳盡分享了與樓宇機電安全和能源效益相關的內容，包括《建築物能源效益條例》的最新發展、升降機及自動梯數碼工作日志、樓宇電力及電氣產品安全、住宅大廈之氣體安全的法定要求及注意事項等。本署亦邀請了土地註冊處，向業界深入介紹「物業把關易」的服務。透過本次講座，相信物業管理行業的經營者對樓宇機電安全和能源效益有更深入的認識，並加以善用創新科技，推動和實現更智慧、更高效、更安全和可持續發展的物業管理營運。

The annual "Property Management Seminar (PMS) 2024" was successfully held on 8 October 2024 in the Hong Kong Central Library, attracting around 100 nos. representatives from industry. The theme of the Seminar was "Utilizing Innovative Technology to Revitalize Property Management Operations" covering topics such as electricity safety in building, gas safety, lifts and escalators systems, as well as energy efficiency and conservation measures.

The seminar was rich variety of content, with an opening speech by Mr. Wallace Leung, Chief Engineer/Energy Efficiency Division B of Electrical and Mechanical Services Department, who encouraged the industry to integrate building electrical and mechanical safety and energy efficiency into property management, while effectively utilizing innovative technology and revitalize property management operations. Our engineers provided detailed insights into topics related to building electrical and mechanical safety and energy efficiency, including the latest developments in the "Buildings Energy Efficiency Ordinance (BEEO)", Digital Log-books System for lifts and escalators, electrical safety in buildings and electrical products, and statutory requirements and considerations for gas safety in residential buildings, etc. Colleagues from the Land Registry was also invited to introduce the services of "Property Alert" to the industry. Through this Seminar, we believed that the property management operators could gain a deeper understanding of building electrical and mechanical safety and energy efficiency, and would leverage innovative technology to promote and achieve smarter, more efficient, safer, and sustainable property management operations.



■ 機電工程署能源效益B部總工程師梁雪輝先生為講座致開幕辭
Mr. LEUNG Suet-fai, Wallace, Chief Engineer/Energy Efficiency Division B of Electrical and Mechanical Services Department, delivered the opening speech for the Seminar.



■ 機電工程署能源效益B部總工程師梁雪輝先生與眾講者合照
Mr. LEUNG Suet-fai, Wallace, Chief Engineer/Energy Efficiency Division B of Electrical and Mechanical Services Department with the speakers

《建築物能源效益守則》及《能源審核守則》2024年版正式發布 The Official Launch of the 2024 Edition of Building Energy Code and Energy Audit Code

機電工程署於2024年11月22日按照《建築物能源效益條例》第40條，刊憲頒布《建築物能源效益守則》和《能源審核守則》2024年版，以提升屋宇裝備裝置的能源效益標準，推動建築物減少碳排放。

《建築物能源效益守則》訂定四類主要屋宇裝備裝置（即空調、電力、照明及升降機和自動梯裝置）的能源效益標準和規定，而《能源審核守則》則為條例下的能源審核訂定技術規定和細則。兩份守則每三年會作出檢討，在修訂時會檢視相關技術及國際普遍應用能效標準的最新發展，務求與時並進。

新發布的《建築物能源效益守則》2024年版全面提升屋宇裝備裝置的能源效益標準，較2015年版的守則整體提升超過20%，估計可在2035年為本港建築物每年節省約54億度電（與2015年相比），有助於2050年前實現《香港氣候行動藍圖2050》所定下的碳中和目標。

最新2024年版的《建築物能源效益守則》和《能源審核守則》將在9個月寬限期過後於2025年8月23日全面實施。

有關《建築物能源效益條例》和兩份實務守則的詳情，請參閱機電署網頁（<https://www.emsd.gov.hk/beeo/>）。

Pursuant to section 40 of the Buildings Energy Efficiency Ordinance, the Electrical and Mechanical Services Department gazetted the 2024 Edition of the Building Energy Code (BEC) and the Energy Audit Code (EAC) on 22 November 2024, aimed to enhance the energy efficiency standard of building services installations and promote decarbonisation of buildings.

The BEC regulates the energy efficiency standards and requirements of four type of building services installations including air-conditioning installation, electrical installation, lighting installation, as well as lift and escalator installation. The EAC set out the technical requirements and details for the energy audit under the Ordinance. The BEC and the EAC are reviewed once every three years. In the course of the review process, the EMSD examines the global development of relevant technology and energy efficiency standards to keep the Codes of Practice abreast of the times.

The newly launched BEC 2024 uplifts the energy efficiency standards with an improvement of more than 20 per cent as compared with the 2015 edition. By 2035, the estimated annual energy saving is expected to be around 5.4 billion kWh from buildings in Hong Kong (compared with 2015), which will help Hong Kong achieve the carbon neutrality target before 2050 as set out in the Hong Kong's Climate Action Plan 2050.

After 9-month of grace period, the new editions of BEC 2024 and EAC 2024 will be fully implemented on 23 August 2025.

For more details about the BEEO and the two Codes of Practice, please visit the EMSD's website (www.emsd.gov.hk/beeo/).



■ 《建築物能源效益守則》和《能源審核守則》2024年版正式發布。

The official launch of the 2024 editions of Building Energy Code and Energy Audit Code

第十九屆國際環保博覽

The 19th Eco Expo Asia

第十九屆國際環保博覽已於2024年10月30日至11月2日在香港亞洲國際博覽館順利舉行。博覽由香港貿易發展局主辦，並由環境及生態局協辦，為環保業界提供一個多元化的商貿平台。今屆博覽的主題為「推動綠色創科 實現雙碳目標」，重點展示世界各地在新能源、應對氣候變化和其他環境相關領域的最新發展及創科技術。

機電工程署在現場設置展覽攤位，向業界和市民分享及推廣本署在能源效益及節能減排方面的工作和成果，涵蓋多項計劃與項目，包括：強制性能源效益標籤計劃、建築物能源效益條例、香港氢能產業發展、區域供冷系統、機電裝備合成法、人工智能製冷機組優化系統、建築物機電系統重新校驗、綠色校園2.0-智能慳電及採電學社計劃、綠色社福機構計劃及創新節能科技等。

是次博覽為期四天，吸引了眾多業界人士和公眾參與。環境及生態局局長謝展寰先生親臨機電工程署攤位，由能源效益事務處同事介紹展覽內容。此外，署長潘國英先生、副署長／營運服務周厚強先生、時任助理署長／電力及能源效益姚德泰先生和助理署長／氣體及一般法例王磊先生亦到場支持。機電署宣傳大使「機智啱啱」亦現身與參觀人士互動，介紹香港邁向碳中和相關的工作。

環保博覽的最後一天為「公眾日」，免費開放予公眾人士入場參觀，推廣及鼓勵市民參與環保活動。當天，不少學校安排學生參觀機電署攤位，進一步了解機電署在節能減排相關工作的細節。

我們將繼續積極參與和舉辦相關宣傳活動，致力提高市民對節能減排的關注與認識，同時讓大眾知道政府推動節能減排的決心，將節能減排的理念廣泛推廣至社會各界，攜手向碳中和目標邁進。



The 19th Eco Expo Asia was successfully held from October 30 to November 2 in 2024 at the AsiaWorld-Expo in Hong Kong. Organized by the Hong Kong Trade Development Council and co-organized by the Environment and Ecology Bureau, the Expo provides a diversified business platform for the environmental protection industry. This year's theme, "Fostering Green Innovations for Carbon Neutrality", focusing on showcasing the latest developments and innovative technologies from around the world in the fields of renewable energy, climate change mitigation, and other environmental-related areas.

The Electrical and Mechanical Services Department (EMSD) set up an exhibition booth to share and promote the Department's efforts and achievements in energy efficiency and carbon reduction. The booth highlighted various projects and initiatives, including the Mandatory Energy Efficiency Labelling Scheme (MEELS), the Buildings Energy Efficiency Ordinance (BEEO), Hydrogen Development in Hong Kong, District Cooling Systems (DCS), the Multi-trade Integrated Mechanical, Electrical and Plumbing (MiMEP) Implementation, AI-based Chiller Plant Optimization System (AI ChillStream®), Retro-commissioning (RCx), Green Schools 2.0 – Energy Smart and Solar Harvest scheme, Green Welfare NGOs scheme, and innovative energy-saving technologies.

The four-day event attracted a large number of industry professionals and the public. Mr. TSE Chin-wan, Secretary for the Environment and Ecology, visited the EMSD's booth, where colleagues from the Energy Efficiency Office (EEO) introduced the Department's efforts. In addition, Mr. POON Kwok-ying, Raymond, Director of EMSD, Mr. CHOW Hau-keung, Vincent, Deputy Director/Trading Services, Mr. YIU Tat-tai, Boris, Former Assistant Director/Electricity and Energy Efficiency, and Mr. WONG Lui, Eric, Assistant Director/Gas and General Legislation, also attended to show their support. At the same time, the EMSD mascot "Witty Bear" interacted with visitors, introducing the government's efforts to support Hong Kong's journey towards carbon neutrality.

The final day of the Expo - "Public Day" was open to the public for free, promoting and encouraging participants to engage in environmental protection activities. On that day, many schools arranged students to visit the EMSD's booth to learn more about the Department's work related to energy saving and carbon reduction.

We will continue to actively participate in and organize related promotional activities to raise public awareness and understanding of energy saving and carbon reduction. At the same time, we aim to demonstrate the government's commitment to promoting energy saving, carbon reduction, and working together towards the goal of carbon neutrality.



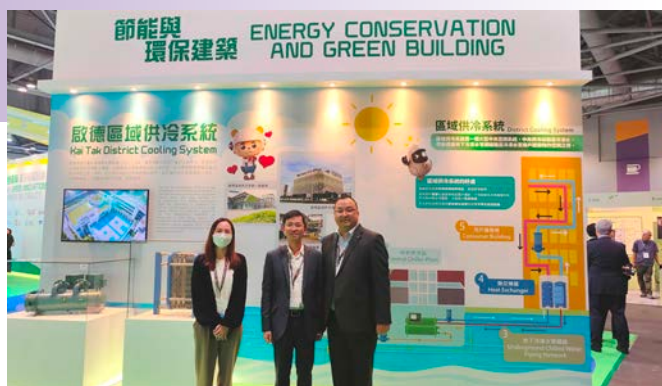
■ 環境及生態局局長謝展寰先生（右四）、機電工程署署長潘國英先生（右三）、副署長／營運服務周厚強先生（左一）、時任助理署長／電力及能源效益姚德泰先生（右二）、助理署長／氣體及一般法例王磊先生（右一）與機智啤啤拍照留念。

Mr. TSE Chin-wan (4th from right), Secretary for the Environment and Ecology, Mr. POON Kwok-ying, Raymond (3rd from right), Director of EMSD, Mr. CHAU Hau-keung, Vincent (1st from left), Deputy Director/Trading Services, Mr. YIU Tak-tai, Boris (2nd from right), then Assistant Director/Electricity and Energy Efficiency, and Mr. WONG Lui, Eric (1st from right), Assistant Director/Gas and General Legislation, took a photo with the EMSD mascot "Witty Bear".



■ 機電工程署署長潘國英先生（後排右六）、副署長／營運服務周厚強先生（後排右七）、時任助理署長／電力及能源效益姚德泰先生（後排右五）、助理署長／氣體及一般法例王磊先生（後排左六）、聯同宣傳大使機智啤啤為展覽團隊打氣。

Mr. POON Kwok-ying, Raymond (6th from right, back row), Director of EMSD, Mr. CHAU Hau-keung, Vincent (7th from right, back row), Deputy Director/ Trading Services, Mr. YIU Tak-tai, Boris (5th from right, back row), then Assistant Director/ Electricity and Energy Efficiency, Mr. WONG Lui, Eric (6th from left, back row), Assistant Director/Gas and General Legislation, and the EMSD mascot "Witty Bear" cheered for the exhibition team.



■ 時任助理署長／電力及能源效益姚德泰先生（中）及時任總工程師／能源效益C 江茂誠先生（右）為展覽團隊打氣。Mr. YIU Tak-tai, Boris (middle), then Assistant Director/Electricity and Energy Efficiency, and Mr. KONG Mau-shing, Marsden (right), then Chief Engineer/Energy Efficiency C cheered for the exhibition team.



■ 不少學生在「公眾日」到機電署的攤位參觀，更在攤位前踴躍與機智啤啤拍照。

Many students visited the EMSD's booth on "Public Day" and took photos with "Witty Bear".

Hong Kong Joint Symposium 2024「從提量、提速、提效、提質 探索區域供冷系統」演講

Presentation in "Delving into District Cooling System with Quantity, Speed, Efficiency and Quality" at Hong Kong Joint Symposium 2024

機電工程署(機電署)被邀請於去年11月19日舉行的Hong Kong Joint Symposium 2024中，分享有關區域供冷系統(DCS)工程建造及營運的心得。論文題為「從提量、提速、提效、提質探索區域供冷系統」，並由本署劉浩然工程師(工程師/能源效益C2/1)發表，推廣DCS的優點以達至碳中和目標，並探討如何在DCS項目中應用不同創新科技以提升生產力。

DCS是大型中央空調系統，利用規模經濟效益提供高效節能的供冷服務予區內的多座大樓。由於個別樓宇不需要獨立安裝製冷機組，DCS為用戶大樓帶來環境及經濟上的優勢。因此DCS廣泛地被應用於熱帶地區，包括中國內地、新加坡、中東及美國，而香港亦策略性地於新發展區推行DCS作為綠色基建項目。一些大型發展項目例如香港科技園亦有規劃及使用它們的DCS。

為了啟德區域供冷系統3號廠房能夠如期於2024年8月開始營運，機電署採用了新的建築技術：組裝合成建築法(MiC)及機電裝備合成法(MiMEP)。利用建築資訊模型(BIM)及三維掃描進行模組化設計，在工地以外的工廠生產預製多工合成的模塊，並運送到工地進行快速安裝以克服緊張的施工時間及狹窄的工地限制。此方法亦有效提升建築工程的安全、質量控制和工友的工作環境。機電署會進一步研究把MiC and MiMEP的技術應用擴展至其他DCS設施以盡量減省工地施工活動，讓DCS能配合其他基建和用戶大樓工程的施工順暢地進行。

由於DCS為區內多個用戶樓宇提供服務，DCS的需求量會隨著不同用戶樓宇的冷量峰值而不斷變化。製冷機組因應需求量而運行排序控制對DCS的能源效益至關重要，而適時的設備維護亦是保持DCS處於最佳運作的關鍵。機電署致力應用人工智能技術，讓控制系統能夠利用自身數據進行學習，預測需求量及選擇最佳的運作參數，以及重新編制維護的優先次序，利用預測性維護節省時間及營運成本。



EMSD was invited to share insights in the construction and operation of district cooling system (DCS) projects in Hong Kong Joint Symposium 2024, held on 19 November last year. The paper titled "Delving into District Cooling System with Quantity, Speed, Efficiency and Quality" was presented by Ir Wallace LAU (E/EEC2/1). This paper aimed in promoting the merit of DCS for achieving carbon neutrality and explore the application of innovative solutions in DCS projects to enhance productivity.

Leveraging the benefit of economics of scale, DCS provides a highly energy efficient centralized air-conditioning system to multiple buildings within a district. It brings environmental and economic benefits to the consumer by omitting chiller plants at individual building. While DCS has been widely be adopted in tropical regions/ countries such as mainland China, Singapore, the Middle East and the USA, it has also been strategically implemented as one of the green infrastructures for new development areas (NDAs) in Hong Kong. Some of the large scale developments such as HKSTP have also developed and implemented their own DCS.

In order to achieve the target commissioning date for operation of KTDCS Plant no.3 in Aug 2024, EMSD adopted new construction methods by MiC and MiMEP which integrated different buildings and building services installation components into modular design by 3D scanning and BIM model for off-site fabrication to tackle the very tight time schedule and site areas. It reduced construction time and site storage by carrying fabrication work in parallel at the off-site workshop. It also enhanced site safety, quality control and working environment of workers. EMSD will further explore to extent the application of MiC and MiMEP in other DCS components to minimize the amount of site work to smoothen the interfacing with other infrastructure works and DCS consumers.

Since DCS serves multiple buildings in a district, the operation of DCS plant would depend on the cooling demand from staggered loading peaks of various building usages, the sequencing control of chillers against the ever changing cooling production against load demand are crucial to the energy performance of DCS. Timely maintenance of equipment are also the key to upkeep the DCS plant operation in the optimal efficiency. EMSD strives to apply A.I. technology that the control system can learn (or be trained) from the past data itself to predict future cooling demand and select the optimal control settings as well as reprioritizes major maintenance activities to take care the defected equipment to achieve time and cost savings by predictive maintenance.

此外，DCS有龐大的地下管道網絡連接廠房及用戶樓宇。與其他公共事業一樣，這些地下管道容易受到地面沉降影響，尤其位於新填海區。地下管道附近的建築工程亦會產生地面移動需要長期進行監察。機電署引入創新的全球導航衛星系統(GNSS)和物聯網(IoT)感應器對區域供冷系統地下管道提供實時監察。與傳統測量方法相比，能夠節省時間及營運成本。

最後，劉工程師向參加者介紹未來會透過探索在使用蒸發式冷卻塔的DCS廠房中使用再造水及推動在現有及新建的DCS廠房使用低全球變暖潛能值的製冷劑，持續為達至碳中和及可持續發展作出貢獻。

Furthermore, DCS consist of a huge piping network between the DCS plant and the consumer buildings with most piping laid underground. Similar to other utilities, these underground piping are sensitive to ground settlement especially at the new reclaimed land. The construction work near DCS pipeline would generate significant ground movement that requires continuous monitoring on settlement level of DCS pipes. EMSD started to adopt innovative Global Navigation Satellite System (GNSS) and Internet of things (IoT) sensors to provide real time remote monitoring of underground DCS pipeworks which can save time and manpower cost as compared with conventional surveying method.

Finally, Ir LAU shed light on continuous contribution on achieving carbon neutrality and sustainable development in DCS projects by exploring the potential use of reclaimed water in the DCS plants adopting evaporative cooling towers and promoting the use of Low-GWP refrigerants in existing and new DCS plants in the future.



機電工程署劉浩然工程師(工程師/能源效益C2/1)於Hong Kong Joint Symposium 2024中發表論文。
Ir LAU Ho-yin, Wallace (E/EEC2/1) of EMSD presented the paper in the Hong Kong Joint Symposium 2024



籌備委員會頒發感謝狀予機電工程署劉浩然工程師(左1, 工程師/能源效益C2/1)及一眾講者。
Ir LAU Ho-yin, Wallace (first left, Engineer/Energy Efficiency C2/1) of EMSD and other speakers receiving Certificate of Appreciation from the organizer of The Hong Kong Joint Symposium 2024