能源效益及相關事項通訊
A Newsletter on Energy Efficiency and Related Matters

智能 EnergyWits

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全民節能2019 - 慳神重新校驗大比拼
Energy Saving For All 2019 — RCx Competition for Organsations

Climate Ready@HK 氣候變化香港行動

全民節能 慳神有計
Energy Saving For All

機電工程署 EMSD

全民節能2019 - 慳神重新校驗大比拼
Energy Saving For All 2019 – RCx Competition for Organsations

氣候變化是一項跨界別、跨範疇的議題，對世界各地社會、經濟、人文影響深遠。作為地球村的一分子，香港需要積極作出回應並作好準備，幫助應對氣候變化。政府在制定應對氣候變化政策時，都特別關注現有建築物的節能減排，並支持以「重新校驗（RCx）」作為提升能源效益的重點措施。

環境局及機電工程署舉辦的「全民節能2019 - 慳神重新校驗大比拼」，就是希望透過比賽活動鼓勵各持份者，包括業主、物業管理公司、設施管理公司和重新校驗服務提供者等，帶頭規劃和實施「重新校驗（RCx）」，在提高既有建築物能源效益的同時，亦可以分享他們在RCx工作中識別和實施節能機會（ESOs）的經驗和創科理念。

是次「慳神重新校驗大比拼」共收到85份參賽申請。經過初步評審和實地評估後，入圍大廈的參賽團隊被邀請參加2020年4月20日評審委員的最終面試，並由評審委員選出各獎項的得獎大廈，名單如下：

Climate Change is a cross-sector, cross-domain subject which has far reaching socio-economic and cultural impacts across the globe. As a member of the global village, Hong Kong needs to respond positively and ready itself for making greater effort to combat climate change. Recognizing the need to step up climate actions and to draw up long-term policies, the Government has been promoting the enhancement of building energy efficiency in buildings to help combat climate change with the implementation of Retro-Commissioning (RCx).

Jointly organised by the Environment Bureau (ENB) and the Electrical and Mechanical Services Department (EMSD), the Energy Saving for All 2019 – RCx Competition for Organsations is to encourage more parties from different sectors, including developers, property managements, facility managements and service providers, etc., to take the lead to plan for and implement RCx for enhancing energy efficiency of existing buildings and sharing their experience and Innovation and Technology (I&T) ideas in identifying and implementing the energy saving opportunities (ESOs) during their RCx works.

The competition received an encouraging response with a total of 85 entries. With the assessment to the submissions and site evaluation, representatives of the shortlisted buildings were invited to a finalist interview with the Judging Panel on 20 April 2020. The award winning buildings are as follow:

全民節能2019 — 慳神重新校驗大比拼獎項 Energy Saving For All"2019 – RCx Competition for Organsations Awards	得獎大廈 Building Name
重新校驗(實施階段)慳神大獎 Hanson Grand RCx (Implementation) Award	電燈大樓 Electric Tower
重新校驗(實施階段)優秀獎 Outstanding RCx (Implementation) Award	港島東中心 One Island East
	交易廣場第一、第二、第三座及富臨閣 One, Two & Three Exchange Square and the Forum
	太古廣場 Pacific Place
重新校驗(規劃階段)優秀獎 Outstanding RCx (Proposal) Award	港威大廈二期 Gateway II
	鷹君中心 Great Eagle Centre
	香港中華煤氣總部大樓 Towngas Headquarters Building

全民節能2019 — 慳神重新校驗大比拼獎項 Energy Saving For All"2019 – RCx Competition for Organsations Awards	得獎大廈 Building Name
重新校驗持續發展獎 RCx Continuous Enhancement Merit	力寶中心 Lippo Centre
重新校驗特別挑戰獎 RCx Special Challenge Merit	庇理羅士女子中學 Belilios Public School
重新校驗優異技術獎 RCx Technical Approach Merit	花園道三號 Three Garden Road
重新校驗慳神優異獎 RCx Merit Award	Mikiki
	新鴻基中心 Sun Hung Kai Centre
	國泰城 Cathay City
	海運大廈擴展 Ocean Terminal Extension
	海洋中心 Ocean Centre

這次活動得以順利完成有賴各參賽團隊的支持和積極參與。在推動節約能源和提升能源效益的共同目標下，他們在規劃和實施「重新校驗（RCx）」的努力也很值得我們參考和效法。我們期望這次活動除了可以向大眾展示「重新校驗」的榜樣，讓大家了解多樣性的節能機會之外，更希望在社會各界通力合作下，繼續為香港締造一個健康、宜居及可持續發展的環境。

有關「全民節能2019」活動的詳情和「慳神重新校驗大比拼」的更多資訊，可瀏覽以下活動網站:
https://www.energysaving.gov.hk/eschampion2019/tc/scheme/index.html

中文版

All participating organisations are congratulated for their effort in exploring ESOs and implementing RCx and the campaign cannot be more successful without their contributions and sharing. We sincerely hope that by sharing their invaluable experience and ideas in RCx to the community, we all, as a member of the global village, can learn and continue to play an indispensable role in contributing to a more efficient use of energy in buildings. We also look forward to the concerted efforts of the Government and the community in promoting a healthy, liveable and sustainable environment in Hong Kong.

For details of the Energy Saving for All 2019 Campaign and the RCx Competition for Organisations, please visit the campaign website:
https://www.energysaving.gov.hk/eschampion2019/en/scheme/index.html

English

環境局和機電工程署於2019年7月5日啟動「全民節能2019 - 慳神重新校驗大比拼」。環境局局長黃錦星先生（前排右四）、署理機電工程署署長賴漢忠（前排左四）及評審委員主席盧偉國博士工程師（前排右三）與一眾嘉賓在典禮合照。

The Environment Bureau and the Electrical and Mechanical Services Department launched the Energy Saving for All 2019 Campaign on 5 July 2019. Picture shows the Secretary for the Environment, Mr Wong Kam-sing (front row, fourth right), the Acting Director of Electrical and Mechanical Services, Mr Harry Lai (front row, fourth left), and the Judging Panel Chairman, Ir Dr Hon WK LO (front row, third right), with guests at the ceremony.

特別鳴謝:

評審委員主席

- 盧偉國博士工程師，立法會議員

評審委員成員

- 鄭偉能工程師，香港工程師學會 — 屋宇裝備分部
- 陳家龍博士工程師，英國屋宇裝備工程師學會（香港分會）
- 吳俊麟工程師，美國供暖製冷及空調工程師學會（香港分會）
- 余建浩博士工程師，美國能源工程師學會（香港分會）
- 丁燦球工程師，屋宇設備運行及維修行政人員學會
- 何世景工程師，香港能源工程師學會
- 余光輝工程師，能源學會（香港分會）
- 陳浩廷工程師，躍動菁專

Special Thanks to:

Judging Panel Chairman

- Ir Dr Hon WK LO, Legislative Council

Judging Panel Members

- Ir Brian WL CHENG, The Hong Kong Institution of Engineers – Building Services Division
- Ir Dr Raymond KL CHAN, Chartered Institution of Building Services Engineers (Hong Kong Branch)
- Ir Jacky CL NG, American Society of Heating, Refrigerating and Air-Conditioning Engineers (Hong Kong Chapter)
- Ir Dr Conson KH YU, Association of Energy Engineers (Hong Kong Chapter)
- Ir Chris TING, Building Services Operation and Maintenance Executives Society
- Ir HO Sai King, Hong Kong Association of Energy Engineers
- Ir YEE Kwong Fai, Energy Institute (Hong Kong Branch)
- Ir Ambrose CHEN, LEAPS

提高獨立式（窗口式）空調機、抽濕機及緊湊型熒光燈（慳電膽）的能源效益評級標準

Upgrading of Energy Efficiency Grading Standards of Single Package Type (Window Type) Room Air Conditioners, Dehumidifiers and Compact Fluorescent Lamps (CFLs)

強制性能源效益標籤計劃（強制性標籤計劃）第三階段已於2019年12月1日起全面實施，以涵蓋電視機、儲水式電熱水器和電磁爐。同時，現行蓋的兩類產品亦擴大適用範圍：空調機已加入其供暖功能；洗衣機則已加入額定洗衣量超過7公斤但不超過10公斤的型號。強制性標籤計劃目前所涵蓋的八類電器總共佔每年住宅用電量約七成。第三階段全面實施後，估計整個計劃每年可協助消費者節省約六億二千五百萬度電，相等於每年可減少排放約44萬公噸二氧化碳。

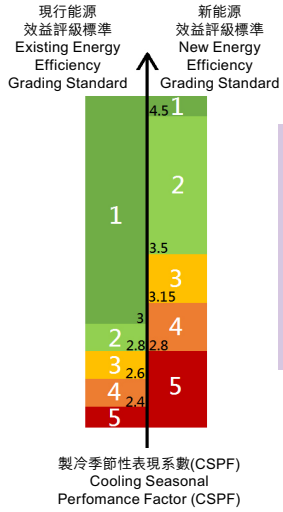
為進一步提升能源效益，機電工程署於2020年6月5日發布了《產品能源標籤實務守則2020》（下稱《守則》），提高獨立式空調機（窗口機）、抽濕機及緊湊型熒光燈（慳電膽）的能源效益評級標準。《守則》於2020年12月31日生效，由2021年12月31日起全面實施，屆時在市場供應的該三類訂明產品，必須附有新能源效益評級標準的能源標籤。新標籤的樣式與現行標籤不變，唯須在原有的參考編號前加上[U2-]，以作區別；

The third phase of the Mandatory Energy Efficiency Labelling Scheme (MEELS) has been fully implemented since December 1, 2019 to include televisions, storage type electric water heaters and induction cookers. The scope of two existing prescribed products has also been extended, such that room air conditioners have also included their heating functions, and washing machines have also included those with a rated washing capacity of more than 7 kilograms but not exceeding 10 kilograms. The eight products currently covered under MEELS altogether account for about 70 per cent of the annual electricity consumption in the residential sector. After the third phase is fully implemented, MEELS is expected to help consumers save about 625 million kilowatt hours a year, equivalent to a reduction of annual carbon dioxide emissions of about 440,000 tonnes.

To further enhance energy efficiency, the Electrical and Mechanical Services Department (EMSD) published the Code of Practice on Energy Labelling of Products (CoP) 2020 on 5 June 2020, which sets out the upgraded energy efficiency grading standards of single package type room air conditioners, dehumidifiers and Compact Fluorescent Lamps (CFLs). The CoP will take effect on 31 December 2020 and be fully implemented on 31 December 2021, 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 "U2-" will be added in front of the reference number on the new energy label for differentiation:

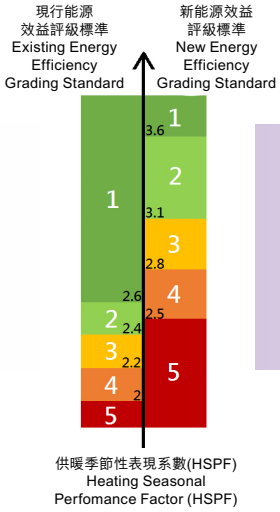
產品 Product	現行評級標準的能源標籤 Energy Label of Existing Grading Standard	新評級標準的能源標籤 Energy Label of New Grading Standard
獨立式空調機（窗口機） Single Package Type Room Air Conditioners	U1-C190123	U2-C190123
抽濕機 Dehumidifiers	D190123	U2-D190123
緊湊型熒光燈（慳電膽） Compact Fluorescent Lamps (CFLs)	L190123	U2-L190123

現行及新能源效益評級標準的比較
Comparison of existing and new grading standards



■ *製冷季節性表現系數愈大，表示空調機在製冷方面的能源效益愈高。*

Higher CSPF indicates a room air conditioner with higher energy efficiency in cooling.



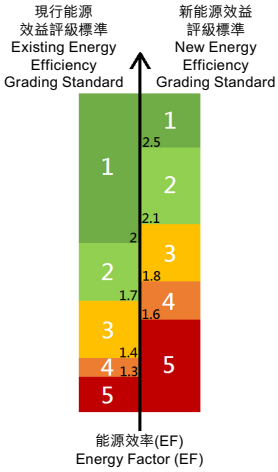
■ *供暖季節性表現系數愈大，表示空調機在供暖方面的能源效益愈高。*

Higher HSPF indicates a room air conditioner with higher energy efficiency in heating.

■ 獨立式空調機（窗口機）
Single Package Type Room Air Conditioners

在新評級標準下，獲第一級能源標籤的獨立式空調機(只提供製冷功能)的能源效益較現行評級標準提升了約50%。

Under the new grading standard, single package type room air conditioners with cooling function only which obtain Grade 1 energy labels are about 50% more energy efficient than those under the existing standard.



■ *能源效率愈大，表示抽濕機的能源效益愈高。*

註：以上平均能源效率是根據不同抽濕量而計算所得。有關評級釐定的詳情，請參閱《產品能源標籤實務守則2020》。

Higher EF indicates a dehumidifier with higher energy efficiency.

Note: The average EFs above are calculated according to different levels of dehumidifying capacity. For details of the grading determination, please refer to the Code of Practice on Energy Labelling of Products 2020.

■ 抽濕機
Dehumidifiers

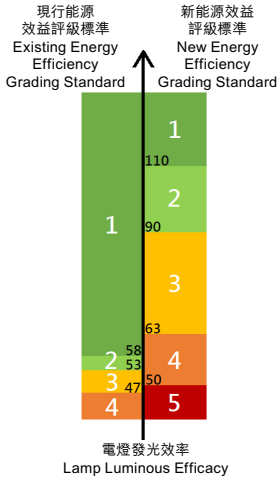
在新評級標準下，獲第一級能源標籤的抽濕機的能源效益較現行評級標準提升了約25%。

Under the new grading standard, dehumidifiers which obtain Grade 1 energy labels are about 25% more energy efficient than those under the existing standard.

■ 緊湊型熒光燈(慳電膽)
Compact Fluorescent Lamps (CFLs)

在新評級標準下，獲第一級能源標籤的慳電膽的能源效益較現行評級標準提升了90%，使慳電膽的能源效益評級標準提升至與自願性能源效益標籤計劃中發光二極管燈的能源效益標準相同的水平（即採用相同的電燈發光效率評級標準）。

Under the new grading standard, CFLs which obtain Grade 1 energy labels are 90% more energy efficient than those under the existing standard, upgrading the energy efficiency grading standard of CFLs to the same level as that of light emitting diode (LED) lamps under the Voluntary Energy Efficiency Labelling Scheme (i.e. adopting the same grading standard of lamp luminous efficacy).



■ *電燈發光效率愈大，表示慳電膽的能源效益愈高。*

註：電燈發光效率是量度出的電燈發光效率(Em)或額定電燈發光效率(Er)，兩者中以較低者來釐定。

Higher lamp luminous efficacy indicates a CFL with higher energy efficiency.

Note: Lamp luminous efficacy is either the measured lamp luminous efficacy (Em) or rated lamp luminous efficacy (Er), whichever is smaller.

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:

2019年模範太陽能光伏系統安裝選舉
Solar Photovoltaic System Installation Role Model Election 2019

機電工程署致力鼓勵個人及機構在香港安裝太陽能發電系統，攜手發展可再生能源，特別在2019年9月24日舉辦「2019年模範太陽能光伏系統安裝選舉」，挑選已於2019年11月30日或之前完成安裝，並參加了「上網電價」的高質素太陽能發電系統，以供大眾參考，共同打造宜居、綠色的香港。

The Electrical and Mechanical Services Department (EMSD) is dedicated to promote renewable energy by encouraging individuals and organisations to install solar energy generation systems. For this reason, EMSD launched the "Solar Photovoltaic System Installation Role Model Election 2019" on 24 September 2019 to give recognition to high quality solar energy generation systems that had completed and joined "Feed-in Tariff" by 30 November 2019, thereby setting good examples for creating a greener, more pleasant living environment in Hong Kong.

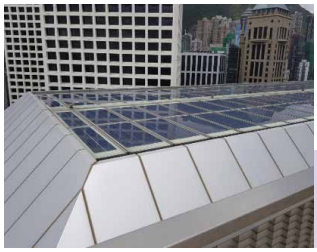
評審團成員包括機電工程署、香港工程師學會(屋宇裝備分部)、香港太陽能學會、香港能源工程師學會、中華電力有限公司及香港電燈有限公司代表。評審團在2020年1月審視所有參選項目，選出高質素項目進行實地考察。實地考察在2020年3月進行。選舉結果已於2020年6月3日上載至「可再生能源網」 (https//re.emsd.gov.hk)。項目獲獎名單如下:

Adjudicating Panel comprised representatives of EMSD, The Hong Kong Institution of Engineers - Building Services Division, Solar Energy Society of Hong Kong, The Hong Kong Association of Energy Engineers, CLP Power Hong Kong Limited and The Hongkong Electric Company, Limited. In January 2020, the adjudicating panel examined all participated projects, and screened out high quality projects for site visits in March 2020. The results of election were uploaded to HK RE Net (https//re.emsd.gov.hk) on 3 June 2020. The list of elected projects is as follows:

項目名稱 Project Name	獎項 Award(s)
海港城港威大廈 (一及二期) 第一、二及六座 Tower 1, 2 and 6 of Gateway I & II, Harbour City	模範獎、最佳設計、最佳安裝、最佳保養 Role Model, Best Design, Best Installation, Best Maintenance
香港迪士尼樂園度假區 Hong Kong Disneyland Resort	模範獎、最佳物料 Role Model, Best Materials
遮打大廈 Chater House	模範獎 Role Model
南控 - 興卓（大埔社山村 村屋） Namkoo-Hugowise (village house in She Shan Tsuen, Tai Po)	模範獎 Role Model
銀映III（元朗大井圍 村屋） Dia Soleado III (village house in Tai Tseng Wai, Yuen Long)	模範獎 Role Model


■ *海港城港威大廈 (一及二期) 第一、二及六座*
Tower 1, 2 and 6 of Gateway I & II, Harbour City

■ *香港迪士尼樂園度假區*
Hong Kong Disneyland Resort


■ *遮打大廈*
Chater House

■ *南控 - 興卓（大埔社山村村屋）*
Namkoo-Hugowise (village house in She Shan Tsuen, Tai Po)



■ *銀映III (元朗大井圍 村屋)*
Dia Soleado III (village house in Tai Tseng Wai, Yuen Long)

LED燈具設計比賽
LED Lantern Design Competition

機電工程署與香港照明學會、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、香港理工大學和香港高等教育科技學院合辦了一個LED燈具設計比賽。舉辦目的是希望透過比賽促進家用LED燈泡的使用、宣傳及介紹LED 燈泡的優點，以提高公眾對 LED 燈泡的認識，使大家在選購 LED 燈泡時能選擇貼有香港自願性能源效益標籤的LED 燈泡。

比賽分為學生組和公開組。學生組參賽者須為大學/大專學生，所修科目不限，可以個人名義或最多3名學生組隊參與比賽；公開組歡迎任何有興趣之人仕參加，接受以個人或機構名義參賽，每組人數不可多於3人。比賽將於2020年12月21日截止報名。是次比賽分為兩個階段，第一階段是設計方案，參賽者可以就特定的家居範疇提交比賽設計方案，獲選進入第二階段比賽的參賽者會根據其第一階段所提交的設計方案製作1:1燈具模型，競逐各組別的冠軍、亞軍、季軍及優異獎，比賽亦特設創意獎表揚最具創意作品，得獎單位將獲頒發獎狀及現金券/購物券以作嘉許。

參賽作品須切合比賽的六個設計要求，包括LED技術應用、環保節能、創意和獨創性、美觀、功能和實用性以及安全性。獲選進入第二階段比賽的參賽者將獲邀向評審委員會展示及講解他們的參賽作品。參賞者為我們帶來創新的意念之餘，比賽亦為他們提供一個設計、實踐和分享的學習機會。

The LED Lamp Lantern Design Competition is jointly-organised by the Electrical and Mechanical Services Department of the Hong Kong Special Administrative Region, CIE (Hong Kong) Limited, Hong Kong Interior Design Association (HKIDA), Caritas Bianchi College of Careers, Hong Kong Design Institute, Hong Kong Polytechnic University, and Technological and Higher Education Institute of Hong Kong (THEi). The Competition aims to promote household LED lamps usage, introduce the merits of LED lamp and increase public awareness on selection of LED lamps with The Hong Kong Voluntrary Energy Efficiency Labelling scheme during light bulb procurement.

The Competition is divided into Student Category and Open Category. Student category is for individual student or any team with no more than 3 full-time students in any discipline from post-secondary education institutions. The open category welcome anyone interested. Individuals, groups or organisations (maximum 3 persons) may apply to this category and application must be submitted on or before 21 Dec 2020.

The Competition consists of 2 stages: The first stage requires a Design Proposal for specified household applications. Those participants qualified to the second stage shall work out a 1:1 scaled LED model based on their submitted proposal in stage 1 and run for the Champion, 1st runner up, 2nd runner up and Merit Award(s) of their category. In addition, Creativity Award will be presented with Certificates and Cash / Gift vouchers to recognize the most creative design.

Entries shall fulfil 6 design criteria of the competition, including LED technology application, energy efficiency and conservation, creativity & originality, aesthetics, functionality & practicality, as well as safety. Participants who entered the second stage will be invited to present their designs and exhibit their design prototype in front of the judging panel in stage 2 assessment. The competition provides a precious learning platform for participants to design, implement and share their innovative ideas.

比賽詳情可參閱以下網頁：
Please visit the following website for further information:

重新教驗培訓課程及註冊計劃
Retro-commissioning (RCx) Trainings and Registration Scheme

自重新校驗培訓課程及從業員註冊計劃於去年11月正式推出，香港綠色建築議會已經舉辦多場重新較驗培訓課程，藉此提升重新校驗專業人才的整體技術水平。完成課程及通過考試後，符合指定要求的人可以申請註冊為「重新校驗從業員（級別一）」、「重新校驗從業員（級別二）」及/或「重新校驗專家」。

議會得到政府和業界鼎力支持，現已有超過六百位業界人士符合申請資格。成功註冊的人士將會在註冊計劃網站的重新校驗目名錄上顯示。

與此同時，本計劃的重新校驗服務供應商亦現已開始接受登記，此類供應商主要為業界提供重新校驗的相關技術服務。

議會希望提升業界專業人才及服務供應商的重新校驗標準，並推動業界採納重新校驗為既有建築的主流節能方案。重新校驗服務供應商的註冊旨在提供具有重新校驗專業知識及經驗的公司列表，以作為一個可靠的平台讓客戶搜索相關資訊。有興趣而又符合業務性質和人員要求的機構可以通過本計劃的線上平台申請成為重新校驗服務提供商！ 成功註冊後，重新校驗服務供應商的資訊息也會在本計劃網站的重新校驗名錄中顯示。

詳情請瀏覽本計劃網站：http://retro.hkgbc.org.hk

相關資訊如最低註冊要求現已上載到本計劃網站。

With the official launch of the RCx Training and Registration Scheme in November last year, the HKGBC have organised a number of RCx trainings which are designed to elevate the skill levels of RCx professionals. Upon completing the training and passing the examination, potential applicant is eligible to apply for the registration of RCx Practitioner (Level 1), RCx Practitioner (Level 2) and/or RCx Professional with fulfilment of the corresponding requirements.

The HKGBC received overwhelming support from the Government and industry. Over 600 industry practitioners are now eligible to apply for the registration. Successful registrant will be shown on the RCx directory of the Scheme's website.

Meanwhile, RCx Services Provider, a company with RCx Practitioners / Professionals for providing relevant technical services to the industry, is now ready for registration.

The Scheme aims at enhancing RCx standards of industry professionals and service providers, as well as encourage the industry to adopt RCx as a primary energy conservation solution for existing buildings. Registration of RCx Services Provider aims to provide a list of company with RCx specialty and therefore serves as a reliable platform for potential user to search for such information. Interested parties who fulfilled the requirements of business nature and staff force are eligible to apply as a RCx Services Provider via the online platform of the Scheme! Upon successful registration, information of the registered RCx Services Provider will also be shown on the RCx Directory of the Scheme website.

For details, please visit the Scheme website here: http://retro.hkgbc.org.hk.

Relevant information such as minimum registration requirement is uploaded to the Scheme website.

重新校驗培訓課程及從業員註冊計劃網站
RCx Training and Registration Scheme official website

新增區域供冷系統
Additional District Cooling System at the Kai Tak Development

區域供冷系統是一個大型空調系統，在中央供冷站製造冷凍水，並透過地下喉管網絡輸送到用戶建築物作空調之用。使用者只需向區域供冷系統營運者支付冷凍水費用即可，不需再單獨安裝製冷機組。

區域供冷系統是具能源效益的空調系統，與傳統氣冷式空調系統和使用獨立冷卻塔的水冷式空調系統比較，可分別節省35%和20%的用電量。在新發展區或重建區建設區域供冷系統較符合成本效益，因為可以在不影響現有道路和建築物使用者的情況下敷設管道。基於上述原因，我們在啟德發展計劃早期發展階段已決定採用區域供冷系統。

現有區域供冷系統的製冷量是在2008年啟德發展計劃發展初期設計。我們之後一直密切監察有關的新發展，並在2017年確定現有區域供冷系統將不足以應付用戶建築物對製冷量預計需求增長，包括新急症醫院；在《2017年施政報告》中公布因提升發展密度而增加約400,000平方米的商業樓面總面積；以及啟德體育園。

新增的區域供冷系統估計製冷量約為178 兆瓦，預算可服務的新增公共和私人非住宅總空調面積約為811,000平方米。

在啟德發展計劃提供新增的區域供冷系統，將帶來顯著的環保效益。估計在整個工程計劃全面投入服務後，每年節省的用電量5,300萬度電，相當於每年減少排放37,000公噸二氧化碳。

新增的區域供冷系統除了節約能源外，更會帶來以下效益:

(a) 由於無需在用戶建築物裝設製冷機組，用戶可節省的前期建設費用；

(b) 用戶建築物的設計更具彈性 ；

(c) 由於用戶建築物無須設置空調機組的散熱器和製冷機組，可減少啟德發展區內的熱島效應，並可避免這些機組運作所引致的噪音和震動；以及

(d) 區域供冷系統較獨立空調系統更靈活，個別建築物無須進行大型改建或加裝工程，都可因應其空調需求而調節製冷量。

現時，工程項目正處於招標階段。建造與營運暫定分別於2020年底和2022年底開始。

新增區域供冷系統廠房外觀
Additional District Cooling System Plant Building at the Kai Tak Development

District Cooling System (DCS) is a large scale centralised air-conditioning system which produces chilled water at the central chiller plants and distributes the chilled water to user buildings through an underground water piping network for air-conditioning purpose. Individual user purchases chilled water for their building from the district cooling system operator and do not need to install their own chiller plants.

DCS is an energy-efficient air-conditioning system, consuming 35% and 20% less electricity as compared with traditional air-cooled air-conditioning systems and individual water-cooled air-conditioning systems using cooling towers respectively. It is more cost-effective to develop a DCS in a new development or redeveloped area, as its pipe network may be laid without disrupting existing road and building users. For these reasons, the use of DCS was adopted for the Kai Tak Development (KTD) at the early stage of its development.

The cooling capacity of the existing DCS was designed during the initial development of KTD in 2008. Since then, we have been monitoring closely new developments, and decided in 2017 that the existing DCS would not be able to meet the growth in projected cooling demand of user buildings including the New Acute Hospital; the addition of total commercial floor area of about 400,000 m^2 arising from the increase in development intensity of KTD as announced in the 2017 Policy Address; and the Kai Tak Sports Park.

The estimated cooling capacity of the additional DCS is about 178 megawatt of refrigeration (MW) which can serve an estimated total additional public and private non-domestic air-conditioned floor areas of about 811 000 m^2.

The additional DCS at the KTD will bring about significant environmental benefits. Upon full utilisation, the project is estimated to save about 53 million kilowatt-hour of electricity a year, corresponding to an annual reduction of about 37,000 tonnes of carbon dioxide emission.

Apart from energy saving, the additional DCS will also bring about the following benefits :

(a) reduction in users' upfront capital cost, as chiller plants are not required at user buildings;

(b) more flexible building designs for user buildings;

(c) reduced heat island effects at KTD, and no noise and vibration arising from the operation of heat rejection equipment and chillers of air-conditioning plants, as such equipment will not be required in user buildings; and

(d) a more adaptable air-conditioning system as compared to individual air-conditioning systems. Individual buildings can adjust their cooling capacity to meet air-conditioning demands without having to carry out extensive modification or retrofitting works.

The project is currently at tendering stage. The construction and operation of the additional DCS plant will commence in late 2020 and late 2022 respectively.

新增區域供冷系統廠房外觀
Additional District Cooling System Plant Building at the Kai Tak Development

淡水冷卻塔操作及維修的良好作業
Good Operation and Maintenance Practice of Fresh Water Cooling Towers

機電工程署提供用戶實務守則及簡要的指引，就淡水冷卻塔操作及維修的良好作業，檢查及妥善保養冷卻的器件工作，達致較佳的能源效益及運作性能，確保公共衞生及安全及減低對公眾造成的滋擾。

冷卻塔是透過蒸發式的冷卻作用，以降低水溫的一種散熱裝置，通常應用於冷卻系統。在該裝置內，由抽進的外間空氣與流水接觸以吸收熱量再排出大氣中。圖1展示典型冷卻塔的構造及其主要配置。

操作及維修

操作及維修工作主要包括例行檢查及妥善保養冷卻的器件和相關冷卻塔設備、水處理、清洗、除淤及消毒。冷卻水應定期泄放及以補給水替換。

例行檢查及預防性維修

冷卻塔裝置應定期檢查及妥善維修，檢查應包括冷卻塔、相關機械設備、水處理設施及水箱等。

每週例行檢查

應每週檢查冷卻塔冷卻水的情況及冷卻塔相關設備。亦應檢查水處理投藥設備的運作情況，確保足夠化學劑存量和運作安全。

每月例行檢查

應每月檢查冷卻塔冷卻水的清晰度、氣味、水面雜物、水藻及溫度及化學處理裝置妥善投放殺菌劑於冷卻水中，亦應檢查冷卻塔內部的情況，是否積有水垢、銹蝕、淤泥及生物薄膜，並進行擦洗及清潔。 還應檢查冷卻塔的噴灑、配水板、水盤、冷卻塔結構、填料及收水器。

每季例行檢查

調較潤滑風扇、水泵、電動機的軸承、潤滑閥門可移動的部件和清洗配水管道包括噴嘴。

有關淡水冷卻塔操作及維修的良好作業的資料，可瀏覽以下網頁：

https://www.emsd.gov.hk/filemanager/tc/content_296/Good_OnM_Practice_of_Fresh_Water_Cooling_Towers_for_Air-conditioning_Systems.pdf

典型冷卻塔
A typical cooling tower

EMSD provides concise guidelines on good operation and maintenance practice of fresh water cooling towers for users carrying out routine checking and the upkeep of conditions of components of cooling towers and associated equipment of the installation to achieve better energy efficiency and operational performance that assured public health and safety and minimize nuisance to the public.

A cooling tower is a heat rejection device that generally used in a cooling system for lowering the temperature of water by evaporative cooling in which the ambient air is drawn in to contact with the falling water to absorb heat before discharged into the atmosphere. A typical configuration of cooling tower with major components is shown in Figure 1.

Operation and maintenance (O&M) work

It comprises routine checking and the upkeep of conditions of components of cooling towers and associated equipment of the installation, water treatment, and cleaning, desludging and disinfection of cooling towers. Cooling water should be regularly bled off and replaced with make-up of cooling water.

Routine Inspection and Preventive Maintenance

Cooling tower installations should be regularly inspected and properly maintained. Inspection should include cooling towers and their associated mechanical equipment, water treatment facilities and water tanks, etc.

Weekly routines

Carrying out weekly routines check on the condition of cooling water and the operation condition of associated equipment. Also, to check operation condition of water treatment dosing equipment for ensuring adequacy of chemical and safety operation.

Monthly routines

Check cooling water for clarity, odour, surface debris, algae and temperature and ensure that the cooling water be properly dosed with chemical treatment devices; and check the internal surface condition of cooling towers for scale, rust, sludge, and biofilm accumulation, in particular the water basin by scrubbing and cleaning ; also to check the sprays, distribution deck, water basin, structure, fills and drift eliminators of the cooling towers.

Quarterly routines

Adjust and lubricate fans, pumps, motors bearings and all moving parts of valves; and clean the water distribution pipework including nozzles.

For the details of Good Operation and Maintenance Practice of Fresh Water Cooling Towers , please visit the following website:

https://www.emsd.gov.hk/filemanager/en/content_296/Good_OnM_Practice_of_Fresh_Water_Cooling_Towers_for_Air-conditioning_Systems.pdf