

EnergyWits

智能

第三十一期 ISSUE NO.

31

本期內容 Contents

重新校驗(RCx)的 發展里程碑

Development Milestone of Retro-commissioning

重新校驗(RCx)的發展里程碑
Development Milestone of Retro-commissioning

本署助理工程師榮獲建造業議會「可持續建築大獎—年青從業員卓越獎」
Our Assistant Engineer awarded the Excellent Award of Young Practitioner

上網電價及可再生能源證書
Feed-in Tariff and Renewable Energy Certificate

太陽能光伏系統安裝指南
Guidance Notes for Solar Photovoltaic (PV) System Installation

《建築物能源效益守則》和《能源審核守則》2018年版
Building Energy Code & Energy Audit Code 2018

致力為香港規劃大型環保基建—區域供冷系統
Dedication to Planning of Large-scale Environmental Infrastructure for Hong Kong – District Cooling Systems

「智識揀」LED燈—自願性能源效益標籤計劃
Wise selecting LED lamps - Voluntary Energy Efficiency Labelling Scheme

強制性能源效益標籤計劃第三階段將於2019年12月1日全面實施
Full Implementation of Mandatory Energy Efficiency Labelling Scheme Phase 3 on 1 December 2019

重新校驗 (RCx) 的發展里程碑

Development Milestone of Retro-commissioning

機電工程署早於2016年已制定了重新校驗技術指引草稿供業主、大廈運行人員及其他持份者參考。多所不同規模、用途、樓齡及能源年耗量的政府建築物被選為試點項目以試行《重新校驗技術指引》草稿。隨著《重新校驗技術指引》於2017年推出初版後，機電署獲得了各方專業團體及持份者的意見及資訊，更新了重新校驗技術指引，並於2018年12月發布《重新校驗技術指引2018》(TG-RCx 2018)。

TG-RCx 2018 中引入了新的部分和主題，其中包括重新校驗事前準備、數據管理和中央控制管理系統 (CCMS) 要求，以及用於持續校驗的關鍵效能指標 (KPI)。另外，執行測量和驗證 (M&V) 方法的內容也得變得更詳細豐富，而且亦發布了關於RCx補充信息的新單獨小冊子。補充小冊子提供了各方面的實用背景信息，包括選擇合適的RCx服務供應商，屋宇設備系統的問題診斷技術指導說明和中央控制管理系統 (CCMS) 數據範本。

TG-RCx 2018 可以從新的RCx資源中心網站 (<https://www.rcxrc.emsd.gov.hk>) 下載，該網站於2018年11月推出。新的RCx資源中心將會是香港RCx的新焦點，它是RCx持份者分享經驗和知識的平台，大廈業主和公眾可以從資源中心找到節能機會 (ESO) 提示，有用的鏈接和RCx服務提供商。RCx從業者可以從RCx網站獲取最新的技術指南，培訓和研討會信息以及成功案例的資料。

本年亦有另一個RCx發展里程碑，機電署更進一步於2018年11月15日與多個來自本港、澳門、大灣區及其他內地城市的機構，簽署《粵港澳大灣區建築物重新校驗（再調適）合作備忘錄》，以推廣重新校驗至大灣區。

環境局局長黃錦星先生在備忘錄的簽署儀式上致辭時表示，對抗極端天氣，節能及減碳刻不容緩，事在必行。中年大廈(25年以上樓齡)佔全香港的建築物超過六成，樓宇的屋宇設備系統，未必維持在最節能的運作狀態。重新校驗是為樓宇「驗身」的措施，既符合成本效益，又可讓物業管理人員以至業主知道節能妙法。根據機電署就六座不同樓齡的政府建築物進行的

As early as 2016, the Electrical and Mechanical Services Department has developed a draft retro-commissioning (RCx) technical guide for buildings' owners, operators and other stakeholders. A number of government buildings of different sizes, uses, ages and energy consumption were selected as pilot projects and reference for the draft Retro-commissioning Technical Guidelines (TG-RCx). Following the launch of the first edition in the TG-RCx in 2017, the EMSD received feedback and information from various professional bodies and stakeholders, updated the TG-RCx and issued the Retro-commissioning Technical Guideline 2018 (TG-RCx 2018) in December 2018. New topics were added in the TG-RCx 2018.

New sections and topics are introduced in the TG-RCx 2018, which include the preparation of RCx, data management and CCMS requirements on RCx and KPIs for continuous monitoring. The content in the M&V methodology is also enriched. Furthermore, a new separated booklet on the RCx supplementary information is issued. The supplementary booklet provide practical background information to facilitate the RCx from the service provider engagement, technical guidance note for building services system diagnosis and Central Control Management System (CCMS) data sample.

The TG-RCx 2018 can be downloaded from the new RCx Resource Centre website (<https://www.rcxrc.emsd.gov.hk>), which was launched in November 2018. The new RCx Resource Centre is a focal point on the RCx in Hong Kong. It is a platform for RCx stakeholders to share their experiences and knowledge. Building owners and public can find the Energy Saving Opportunity (ESO) tips, useful links and RCx service providers from the resource center. RCx practitioner can obtain latest technical guidelines, training & seminar information and successful cases from the RCx website.

We also have another milestone for the RCx development in this year. EMSD signed a Memorandum of Co-operation on Retro-commissioning (RCx) of Buildings in the Guangdong-Hong Kong-Macao Greater Bay Area with various RCx organizations in Hong Kong, Macau and Mainland at the "Co-creating a Smart Future" Symposium on 15 November 2018 to promote the development and application of retro-commissioning (RCx) of buildings in the Guangdong-Hong Kong-Macao Greater Bay Area.

Addressing the signing ceremony of the memorandum, the Secretary for Environment, Mr. WONG Kam-sing said that it is imperative to fight against extreme weather by energy conservation and carbon reduction. The "Middle-aged Building" (more than 25 years old) accounts for over 60% of all buildings in Hong Kong. The building services system may not be maintained in the most energy efficient operation. RCx is a cost effective way to periodically check an existing building's energy performance in order to identify areas for operational improvement that can save energy. With this "health checkup", building owners make known their building systems and equipment so that they can operate at optimal efficiency. According



先導計劃及香港綠色建築議會的ACT-SHOP 多個實戰經驗,重新校驗可為樓宇慳電約5%至6%。

合作備忘錄的簽署,標誌 多個來自本港、澳門、大灣區及其他內地城市的機構進一步合作,把重新校驗推廣為提升建築物能源效益的務實新方案。此合作備忘錄亦提供堅實基礎,讓各簽署機構分享知識、經驗和專長,以至培養相關能力。在知識及應用方面積累更多經驗後,機電署便會積極聯同各簽署機構研究把重新校驗這個方案推廣至內地其他城市。有關TG-RCx 2018 的技術指引可於以下網站下載: <https://www.energysaving.gov.hk/file-manager/template/common/pdf/rcx/EMSD-TG-RCx-Main-Content-Chi.pdf>



to the 6 RCx pilot projects lead by EMSD and experience from "ACT-Shop" Programme by Hong Kong Green Building Council, RCx can save up to 5% to 6% building energy.

The signing of the MOC embodies further collaboration between various organizations in Hong Kong, Macau, the Greater Bay Area and other Mainland cities to promote RCx as a pragmatic new solution for achieving higher building energy efficiency. The MOC also offers a solid foundation for the parties to build capacity through sharing their knowledge, experience and expertise. With a wider experience gained in applications, EMSD will actively work with all signing parties to share and promote RCx knowledge and practices to other cities in the Mainland. The technical guidelines of TG-RCx 2018 can be downloaded from the website at <https://www.energysaving.gov.hk/filemanager/template/common/pdf/rcx/EMSD-TG-RCx-Main-Content-Eng.pdf>



本署助理工程師榮獲建造業議會

「可持續建築大獎 一年青從業員卓越獎」

Our Assistant Engineer awarded the Excellent Award of Young Practitioner



◀ 發展局局長黃偉綸太平紳士(左)為羅婷丰女士頒發獎項。

Mr. WONG Wai-lun, Michael, Secretary for Development, Government of the HKSAR presented the Excellent Award to Ms. Michelle Law

為推廣業界環保，貫徹可持續發展概念，建造業議會於今年舉辦了首屆「建造業議會可持續大獎」，旨在發掘及表揚推廣創新科技及環保方面表現卓越的機構和從業員。而大會更特別設立了「年青從業員」獎項，以表揚一眾創意年輕新一代的傑出表現。透過評估工作成果、協同合作、創意指數、概念及活力等四大方面，本署的助理屋宇裝備工程師羅婷丰女士在「年青從業員」類別中榮獲「卓越獎」，並於2018年10月26日舉行的建造業議會頒獎典禮上獲頒獎項。

羅女士憑著「啟德區域供冷系統」項目節省大量能源，得到今次獎項。她透過參與啟德區域供冷系統的設計、建設、安裝、測試及調試階段等工作，從中提出多項建議以改善區域供冷系統的可持續發展。當中包括採用較高效能的製冷機、變頻器、環保雪種、建築信息模擬-資產管理(BIM-AM)等等，從而符合現時可持續發展的需要。她亦與現有啟德區域供冷系統營運商溝通和合作，修改了供電安排的設計和設備的選材等等的要求。此舉不但能夠配合運

To raise the industry awareness on sustainable construction, the Construction Industry Council (CIC) organized the first CIC Sustainable Construction Award to recognize the best practices on sustainability among organizations and practitioners, in particular the young generation in the construction industry. Ms. Michelle Law, the assistant building services engineer from EMSD, received the Excellent Award of Young Practitioner during the award ceremony held on 26 October 2018. Her excellent performances on achievement, collaboration, creativity and idea & energization were recognized.

Ms. Law spent many efforts on saving energy in the project of District Cooling System (DCS) at Kai Tak Development (KTD). Ms. Law provided advices to improve the sustainability of the DCS during the design & build, construction, installation and Testing & commissioning stages. She improved the sustainable requirements on higher chiller COP, variable frequency drive, environmental friendly refrigerant and BIM-AM, etc. Based on her previous coordination with DCS operator, she modified the requirements on power arrangement, equipment materials and selection, etc. As a result, this enhanced and optimized the operation performance and maintained continuous improvements in sustainability and energy saving.



▲ 羅婷丰女士(右1)在台上參與專題討論
Ms. Michelle Law (Right 1) participated in the discussion panel.

作需要,更能夠優化系統性能,於可持續性和節能方面得到改善。

除此以外,羅女士亦不斷與各政府部門和區域供冷系統客戶合作,透過緊密的合作和主動溝通,在工程項目的早段已經能夠確定建造的詳情,減少建築時期的改動,從而減少建築廢料。

工作以外,羅女士亦熱心服務於本地工程師學會ASHRAE,並出任該會青年分部的主席。除了有機會與其他學會合作舉辦活動以外,她亦透過出席不同機構或工程學會所舉辦的研討會、未來工程師計劃工作坊等等的機會,向市民大眾介紹各個可持續發展建築項目,例如本署的啟德區域供冷系統。她亦經常協助本署舉辦不同公眾教育活動,例如教育徑導覽、廠房參觀、開放日等等。她期望繼續同時以公職同義務的身份為可持續發展出一分力,積極回饋部門及社會。

▶ 一眾機電署同事包括署長薛永恆太平紳士(右5)、助理署長潘國英先生(右4)和總工程師/能源效益B陳柏祥先生(左4)亦有到場支持羅婷丰女士(左5)。

EMSD colleagues including DEMS Mr. Alfred Sit (right 5), AD/EE Mr. Raymond Poon (right 4) and CE/EEB Mr. PC Chan (left 4), came to the ceremony to show their supports to Ms. Michelle Law (left 5)

In addition, Ms. Law proactively coordinated with different government departments and DCS consumers at early stage. Throughout the close communications and making use of latest information, it minimized the additional and modification of works in order to reduce the waste of construction materials.

Apart from work, Ms. Law also demonstrates her passion and contributions to the local engineering society ASHRAE, she is the chairlady of YEA (Young Engineers in ASHRAE). She takes the opportunities to promote DCS and other sustainable developments to the public while organizing events with other engineering societies. Nevertheless, she always assists EMSD to organize the public education events such as Education Path, DCS Plant visit and Open Day. In the future, Ms. Law aims at contribute to sustainable development and the society as both civil servant and volunteer.



上網電價及可再生能源證書

Feed-in Tariff and Renewable Energy Certificate

為鼓勵私營界別發展可再生能源，在「上網電價計劃」下，由可再生能源系統（太陽能光伏系統及風力發電系統）產生的電力可以高於一般電費水平的價格售予電力公司，因而幫助私營界別收回投資在可再生能源系統和發電的成本。為提供足夠誘因鼓勵潛在的可再生能源發展者，計劃將採用「總

上網電價」計算，即每度由可再生能源系統產生的電力，均可獲得上網電價。

中華電力有限公司(中電)的申請表格和相關信息現已上載到中電網站和其應用程式，成功申請人可於2018年10月1日起開始收取「上網電價」。香港電燈有限公司(港燈)的申請表格及相關信息已上載到港燈網頁和其應用程式，成功申請人可於2019年1月1日開始收取「上網電價」。

除政府機構外，所有電力公司的客戶，計劃於其處所內安裝不多於一兆瓦(1MW)分布式可再生能源系統，並接駁到供電該區域的電力公司電網，即合資格向該電力公司申請，按該系統產生的電量，根據指定的價格收取上網電價。容量超過一兆瓦的可再生能源系統，將根據個別情況考慮。

詳情請參閱機電署網頁(https://re.emsd.gov.hk/tc_chi/fit/int/fit_int.html)，如有查詢，可致電機電署熱線：6395 2930



To encourage the private sector to develop renewable energy (RE), the power generated by RE systems (solar photovoltaic (PV) system and wind power system) can be sold to the power companies at a rate higher than the normal electricity tariff rate under the Feed-in Tariff Scheme. This can help the private sector to recover the costs of

investment in the RE systems and generation. To provide sufficient incentives to potential RE developers, “gross FiT” will be adopted whereby FiT will be paid for all units of electricity generated by the RE systems.

For CLP Power Hong Kong Limited (CLP), application forms and information are now available on CLP's website and CLP app. Successful applicants can start receiving FiT from 1 October 2018. For The Hongkong Electric Company, Limited (HEC), application forms and information are now available on HEC's website and HEC app. Successful applicants can start receiving FIT from 1 January 2019.

Except for government bodies, all customers of the power companies who plan to install distributed RE systems with a generating capacity of up to 1 MW at their premises in the respective power company's supply area are eligible for prescribed FiT rates from that power company based on the units of electricity generated, as long as the distributed RE systems are connected to the grid of the relevant power company. RE systems with a generating capacity exceeding 1 MW will be considered on a case-by-case basis.

Details can be found on EMSD's website (https://re.emsd.gov.hk/english/fit/int/fit_int.html). For enquiries, please call EMSD's hotline 6395 2930.

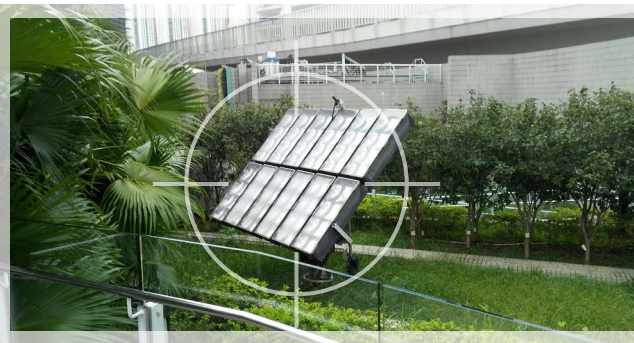
「可再生能源證書」代表由電力公司所產生或購買的產自本地可再生能源的電力單位，由電力公司出售。中電及港燈的「可再生能源證書」定價為每度電港幣5角，以100度電為單位。可再生能源證書於2019年1月1日起可供選購

RE Certificates represent units of electricity from RE sources either purchased or generated locally by the power companies and will be sold by the power companies. For CLP and HKE, the price of each unit of electricity generated by renewable energy sources under the RE Certificates scheme will be HK\$0.5 and measured in blocks of 100 units. The certificates will be available from 1 January 2019.



太陽能光伏系統 安裝指南

Guidance Notes for Solar Photovoltaic (PV) System Installation



特首在今年10月發表的《施政報告》中，提及政府會繼續帶頭發展可再生能源，並利用已預留的十億元為政府建築物（包括官立學校）、場地和設施裝置可再生能源設施，以推動可再生能源的發展，減少碳排放，以及減緩氣候變化的影響。此外，政府亦會適度放寬在新界豁免管制屋宇（即「村屋」）天台安裝太陽能光伏系統的限制，讓市民可在響應環保之餘，繼續享用天台作合法用途。

隨著政府推動可再生能源和2018年推出的「上網電價」計劃，太陽能光伏在市場上越來越受歡迎。為了讓公眾更了解有關安裝太陽能光伏系統的事宜和申請上網電價的程序，環境局於2018年成立一個由不同政府部門包括屋宇署、消防處、機電工程署、地政總署和規劃署組成的工作小組，負責編製《太陽能光伏系統安裝指南》。

機電工程署於2018年10月15日，在本署網站「香港可再生能源網」（<https://re.emsd.gov.hk>）上發布了指南。指南為安裝太陽能光伏系統的準買主、擁有人及安裝者提供一般指引，讓他們了解與安裝、操作和保養太陽能光伏系統的有關規定及申請上網電價的程序。

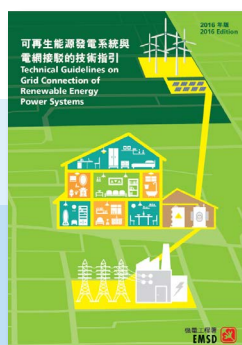
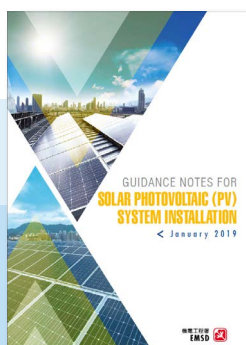
準買主、擁有人及安裝者亦可參閱《可再生能源發電系統與電網接駁的技術指引》的內容。該技術指引介紹有關小型可再生能源裝置與電網接駁的技術事宜和申請程序。該技術指引可於機電工程署網站下載，網址為www.emsd.gov.hk/filemanager/en/content_299/TG_Grid_Connection_Renewable_Energy_Power_Systems.pdf。

In the “Policy Address” which was published in October 2018, Chief Executive mentioned that the government would continue to take the lead in developing Renewable Energy (RE) and deploy the earmarked \$1 billion for the Government to install RE facilities in government buildings (including government schools), venues and facilities so as to promote the development of RE, reduce carbon emissions and mitigate the impact of climate change. Moreover, one of the highlights of the event was suitably relax the restrictions in relation to installation of solar photovoltaic (PV) systems at the rooftop of New Territories Exempted Houses (village houses) such that residents may continue to use their roofs for legal purposes while supporting the environmental protection cause.

With the government promotion of RE and the launching of “Feed-in Tariff” (FiT) schemes in 2018, Solar Photovoltaic (PV) become more popular in the market. Environment Bureau (ENB) formed a Working Group with members from Buildings Department (BD), Fire Services Department (FSD), Electrical and Mechanical Services Department (EMSD), Lands Department (LandsD) and Planning Department (PlanD) in 2018 to develop the “Guidance Notes for Solar Photovoltaic (PV) System Installation” (hereinafter referred to as “the Notes”) so as to assist the public to better understand the issues related to solar PV system installations and the FiT application procedures.

On 15 October 2018, the EMSD published the Notes in EMS website “HK RE Net” (<https://re.emsd.gov.hk>). The Notes provides general guidelines for intending purchasers, owners and installers of solar PV systems to understand the installation requirements and FiT application procedures associated with the installation, operation and maintenance of such systems.

The intending purchasers, owners and installers may also make reference to “Technical Guidelines on Grid Connection of Renewable Energy Power Systems” which explains the technical issues and the application procedures relating to grid connection of small-scale renewable energy installations. The technical guidelines can be downloaded from the website of the EMSD at www.emsd.gov.hk/filemanager/en/content_299/TG_Grid_Connection_Renewable_Energy_Power_Systems.pdf.



《建築物能源效益守則》和 《能源審核守則》2018年版

Building Energy Code & Energy Audit Code 2018

機電工程署於2018年11月16日按照《建築物能源效益條例》第40條，刊憲頒布《屋宇裝備裝置能源效益實務守則》（又稱《建築物能源效益守則》）和《建築物能源審核實務守則》（又稱《能源審核守則》）2018年版，進一步提升建築物的能源效益，以助應對氣候變化。

為配合於2012年全面實施的條例，《建築物能源效益守則》和《能源審核守則》於同年首次頒布，並需要每三年檢討這兩份實務守則。其首次全面檢討，已於2015年完成。而本次全面檢討為第二次，並於2017年中啟動及在2018年底完成。

在修訂有關標準時，機電署檢視了相關技術的最新發展及參照國際公認和普遍應用的同類型能效標準，也同時兼顧業界的意見。機電署聯同各主要持份者，包括專業機構、工程商會、業界專家、從業人員、學術界和相關政府部門等，制訂此2018年版的實務守則。相關修定針對提升技術及改進業界作業水平。

機電署推出的最新《建築物能源效益守則》全面提升各屋宇裝備裝置包括空調、電力、照明及升降機和自動梯裝置的能源效益要求，較第一份2012年版的守則整體提升超過18%的節能效果。預計至2028年，該條例可為本港所有新建建築物和現有建築物節省約270億度電，相當於約580萬個家庭一年的耗電量總和，減少排放1900百萬公噸二氧化碳。

兩份最新實務守則頒布後將有6至9個月的適應期。《建築物能源效益守則》2018年版對新建建築物和現有建築物的規範，將分別於2019年5月16日和8月16日生效，而《能源審核守則》2018年版將於2019年8月16日生效。

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《條例》網頁：www.emsd.gov.hk/beeo

The Electrical and Mechanical Service Department (EMSD) gazette the 2018 editions of the Code of Practice for Energy Efficiency of Building Services Installation (Building Energy Code (BEC)) and Code of Practice for Building Energy Audit (Energy Audit Code (EAC)) on 16 November 2018 in pursuance of section 40 of the Building Energy Efficiency Ordinance (BEEO), with a view to further enhancing the energy efficiency of buildings and to help combat climate change.

The BEC and EAC were first promulgated in 2012 following the enactment of the BEEO. The codes shall be reviewed every three years as per the ordinance. The first comprehensive review was completed in 2015, while the second comprehensive review for 2018 editions was commenced in mid 2017 and completed by late 2018.

During the review process, EMSD examined the latest technology developments and the energy efficiency standards adopted by worldwide professional bodies and authorities. Feedback and suggestions from the relevant trades were also taken into account. EMSD has also collaborated with relevant stakeholders including professional institutions, trade associations, experts, practitioner, academia and relevant government departments to formulate the final version of 2018 editions of BEC and EAC. The incorporated enhancements are in light of advances in technology and improvements to practices.

The new edition of the BEC uplifts the energy efficiency standards and requirements of air-conditioning, electrical, lighting, and lift and escalator installations resulting in an over 18% improvement comparing with the 2012 edition. By 2028, the implementation of the BEEO is expected to bring about energy saving of about 27 billion kWh from both new buildings and existing buildings in Hong Kong, equivalent to the total annual electricity consumption by about 5.8 million households or reduction in carbon dioxide emissions of about 19 million tonnes.

The BEC 2018 Edition will apply to newly constructed buildings with effect from 16 May 2019 and to existing buildings with effect from 16 August 2019 after a grace period of six to nine months respectively. The EAC 2018 Edition will take effect on 16 August 2019.

For more details about the Ordinance and the two Codes of Practice, please visit the EMSD webpage of the Ordinance: www.emsd.gov.hk/beeo



致力為香港規劃大型環保基建—區域供冷系統

Dedication to Planning of Large-scale Environmental Infrastructure for Hong Kong – District Cooling Systems

區域供冷系統構造

The Configuration of District Cooling System (DCS)

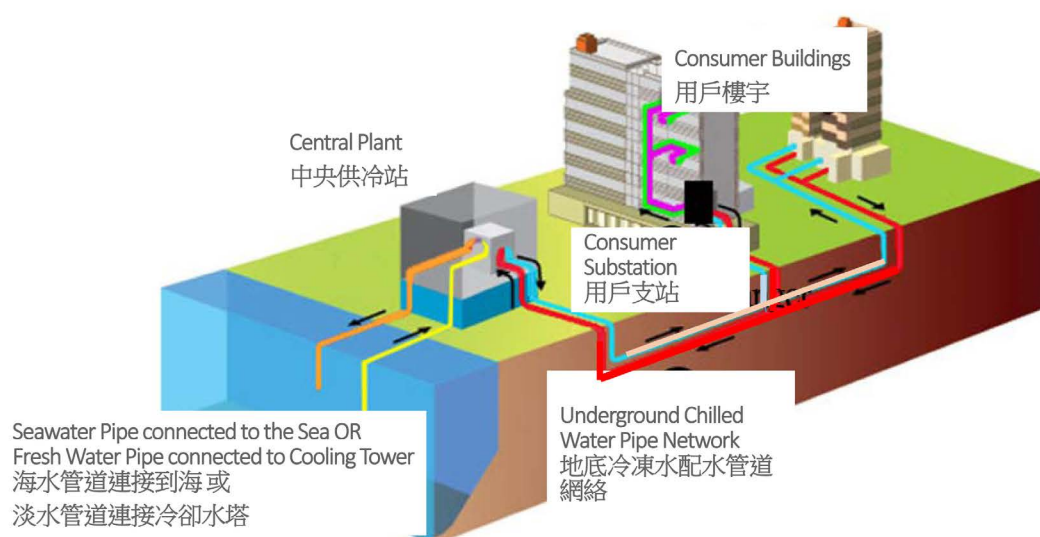


Fig. 1 (圖 1)

區域供冷系統是大型環保基建項目，亦是一個利用海水或水塔散熱方式製造冷水的大型中央空調系統，通過配水管網絡把冷凍水輸送到新發展區的用戶樓宇作空調之用。區域供冷系統的構造包含中央供冷站廠房、海水管道或淡水冷卻水塔、地底冷凍水配水管道網絡和用戶支站(圖1)。相對於傳統的冷氣式空調系統，區域供冷系統的能源效益較高，一年可節省約35%電力。系統除節能外，更會為用戶大樓帶來多樣好處，包括節省在樓宇裝設製冷機組的前期建築費用。另外，用戶無須為樓宇裝設獨立的製冷機組和相關機電設備，樓宇設計可更具彈性，還有區域供冷系統的建築物無須裝設空調機組的散熱器和製冷機組，因此減少區內的熱島效應，亦可避免機組運作所引致的噪音及震動。近年隨著施政報告中的新發展區計劃，當中已建議發展包括開拓洪水橋新發展區、古洞北新發展區及東涌新市鎮擴展計劃等等的基建項目，為推動節約能源，將考慮提供區域供冷系統在該新發展區，機電工程署的能源效益事務處榮幸地接受委任，負責訂立區域供冷系統規劃及發展綱領，致力為香港規劃該新發展區的區域供冷系統。

自2009年起，能源效益事務處經過十年努力，

The District Cooling System (DCS) is a large-scale environmental infrastructure. In fact, it is a large scale centralized air-conditioning system. DCS utilizes seawater or cooling tower as the heat discharge method to produce chilled water at the central plant; and distributes the chilled water to consumer buildings in the New Development Area (NDA) through the underground chilled water piping network. The configuration of DCS comprises of central chiller plant, seawater pipes or fresh water cooling tower, underground chilled water distribution piping network and consumer substations (Fig. 1). DCS consumes up to around 35% less electricity as compared to traditional air-cooled air-conditioning systems. Apart from energy saving, DCS would also bring many benefits to the consumers including reduction in upfront capital cost for installing chiller plants at their buildings, more flexible building designs for consumer buildings as they do not need to install their own chillers and the associated electrical equipment in their buildings, mitigation of heat island effects; and elimination of noise and vibration arising from the operation of heat rejection equipment and chillers of air-conditioning plants in buildings. In recent years, following the announcement in the Policy Address of the development of NDAs in HK, infrastructure projects of NDA are being planned including the Kwu Tung North (KTN) NDA and Tung Chung New Town Extension (TCNTE). To enhance energy saving, the provision of DCS in these NDAs will also be considered. Energy Efficiency Office (EEO) of EMSD is proud of being commissioned responsible for formulating planning and development framework for the implementation of DCS in NDAs.

規劃中區域供冷系統的新發展區 The New Development Area Under Planning of DCS)

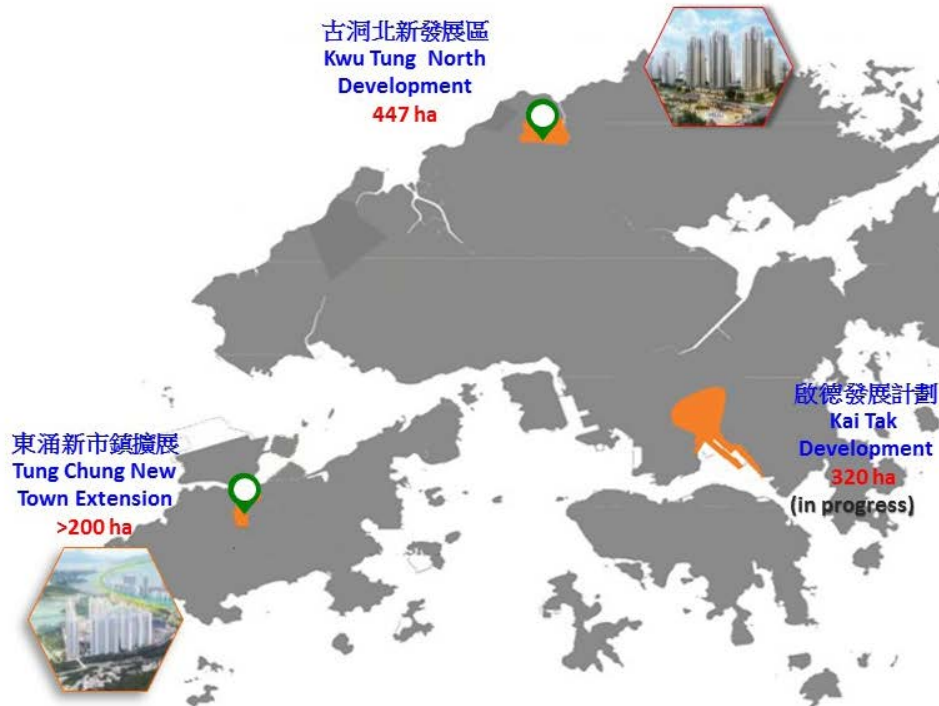


Fig.2 (圖 2)

已為啟德發展計劃建成區域供冷系統，並陸續投入使用中，啟德發展計劃的總規劃面積超過320公頃，已規劃的公共和私人非住宅發展項目空調樓面面積合共約170萬平方米，所需供冷量約為284兆瓦。啟德發展計劃為香港設立區域供冷系統提供良好基礎，預計包括兩個中央供冷站的現有啟德區域供冷系統在2025年全面落成及使用後，每年可節省高達8,500萬度電，相當於減少排放59,500公噸二氧化碳。除此之外，因應啟德發展區2017年落實的最新發展情況（當中包括啟德區發展密度有所提高，啟德體育園的設計有改變及新急症醫院規模擴大等），對供冷量需求亦大幅增加，我們現正計劃為啟德發展區新增一個供冷量約為178兆瓦的區域供冷系統，為這些額外新增的供冷量需求提供供冷服務。除了啟德發展計劃外，能源效益事務處正為其他新發展區研究或設計區域供冷系統，規劃總面積超過967公頃(圖2)，面對巨大挑戰，能源效益事務處會繼續努力不懈，致力規劃新發展區的區域供冷系統，為節能和減排作出貢獻。

Since 2009, over ten years strive working on DCS, EEO has progressively implemented the service for consumer buildings in Kai Tak Development (KTD) where development project spanning a total area of over 320 hectares. The cooling capacity of the DCS is about 284 megawatt of refrigeration (MWr) for serving the non-domestic air-conditioned floor area of about 1.73 million m². DCS in KTD has well established a foundation for facilitating the development of DCS in HK. Approximately, with its high energy efficiency and upon its full completion and full utilisation in 2025, the implementation of DCS at KTD will achieve estimated annual saving of 85 million kilowatt-hour (kWh) in electricity consumption, with a corresponding reduction of 59,500 tonnes of carbon dioxide emissions per annum. In addition, according to the latest development at KTD as at 2017 (including increase in development intensity of the Kai Tak District, the latest design of the Kai Tak Sports Park and the expanded scope of the New Acute Hospital), the cooling demand is also increased significantly. We are planning to build an additional DCS, with cooling capacity about 178 MWr, to meet the additional cooling demands from such development sites. Apart from KTD, there are other NDAs being under feasibility study or design for provision of DCS. The total development project will span a total area of over 967 hectares (Fig 2). In view of a big challenge, EEO would make every best endeavor for dedication to planning of large-scale environmental infrastructure of DCS for HK ; and would make best contribution on energy saving and carbon reduction.

「智識揀」LED燈 - 自願性能源效益標籤計劃

Wise selecting LED lamps - Voluntary Energy Efficiency Labelling Scheme

我們經常聽到LED照明，但我們對它的認識有多少呢？LED照明代表利用「發光二極管」為發光體，以下是幾項LED燈的要點：

- 亮度：LED照明以「流明」，而不是以「瓦特」為衡量單位。LED燈膽每1瓦特可輸出約100流明，以下對應表可作參考。

選購LED燈的考慮因素 Considerations for procurement of LED lamp	LED燈膽 LED Lamp	緊 型熒光燈泡(慳電膽) compact fluorescent lamp (CFL)	白熾燈(鎢絲燈膽) Incandescent lamp (ILB)
選購LED燈的考慮因素 Wattage	8	12	60
選購LED燈的考慮因素 Output Lumen	770	700	710
選購LED燈的考慮因素 Average lamp life (hours)	15,000	8,000	1,000

- 壽命：以壽命為15,000小時的LED燈膽作為例子，如果每天燃點6小時，該LED燈膽可使用長達7年，較一般慳電膽長壽約一倍，更較鎢絲燈膽長壽越十倍。
- 調光：部分LED燈具可以提供調光功能，而調光方法包括脈波寬度調變（PWM）或恆流減少（CCR）技術。
- 色溫：按光線具有不同色溫（K-Kelvin），以K為單位。
- 能效：與傳統白熾燈及緊 型熒光燈泡（即慳電膽）相比，能效比白熾燈高接近十倍，亦比慳電膽高接近一倍。現時市場上已有多達60多款型號的LED燈在自願性能源效益標籤計劃下註冊。該計劃採用「級別式」能源效益標籤（見下圖），把LED燈的能源效益分為五級，第1級的能源效益為最高，第5級則為最低，以方便市民挑選具能源效益的燈具及提升市民對節約能源的意識。

We often heard about LED lightings, but how much do we know about it? LED (light-emitting diode) light is a two-lead semiconductor light source. The main features of LED lighting are listed as follow:

- Brightness
"Lumen" is the measuring unit for LED lightings rather than the unit in "Watt". In general, one "Watt" of LED lamp could deliver 100 Lumen, the following table could be served as a reference.

- Lamp life
Taking a LED lamp with life of 15,000 hours as an example, if it lit for 6 hours daily, the operation of LED lamp could be last up to 7 years, which is in twice of CFL's life and ten times of incandescent ILB's life.
- Dimming
Some LED lamps have the dimming function by the method of Pulse Width Modulation (PWM) or Constant Current Reduction (CCR).
- Color Temperature
The temperature of light source from LED lamp is expressed in Kelvin, using the symbol K.
- Energy efficiency
As compared with incandescent lamps (ILBs) and compact fluorescent lamps (CFLs), LED lamps are almost ten times in efficiency than ILBs and about twice in efficiency than CFLs.

In the aspect of energy efficiency, more than 60 models of LED lamp are currently registered under the Voluntary Energy Efficiency Labelling Schemes (VEELS) which adopting energy efficiency grading (see below diagrams). The grading of LED lamp is classified into 5 grades. Grade 1 representing the most energy efficient while Grade 5 representing the least energy efficient. It could facilitate the public in choosing the energy efficient LED lamps and raise the public awareness on energy saving.

For details of VEELS for LED lamps, please visit the website of https://www.emsd.gov.hk/en/energy_efficiency/voluntary_energy_efficiency_labelling_scheme/scheme_documents/index.html

有關LED燈自願性能源效益標籤計劃的詳情，請瀏覽以下網址
https://www.emsd.gov.hk/tc/energy_efficiency/voluntary_energy_efficiency_labelling_scheme/scheme_documents/index.html



強制性能源效益標籤計劃第三階段將於 2019年12月1日全面實施

Full Implementation of Mandatory Energy Efficiency Labelling Scheme Phase 3 on 1 December 2019

強制性能源效益標籤計劃第三階段經已於2018年6月1日起正式生效，計劃涵蓋了三種新電氣產品，包括電視機、儲水式電熱水器及電磁爐，亦擴展了計劃內兩類現有產品的涵蓋範圍，包括同時涵蓋供暖和製冷功能的冷暖空調機及洗衣量超過7公斤但不超過10公斤的洗衣機。估計在第三階段計劃下每年可節省約1.5億度電，相當於每年減少排放105,000公噸二氧化碳。

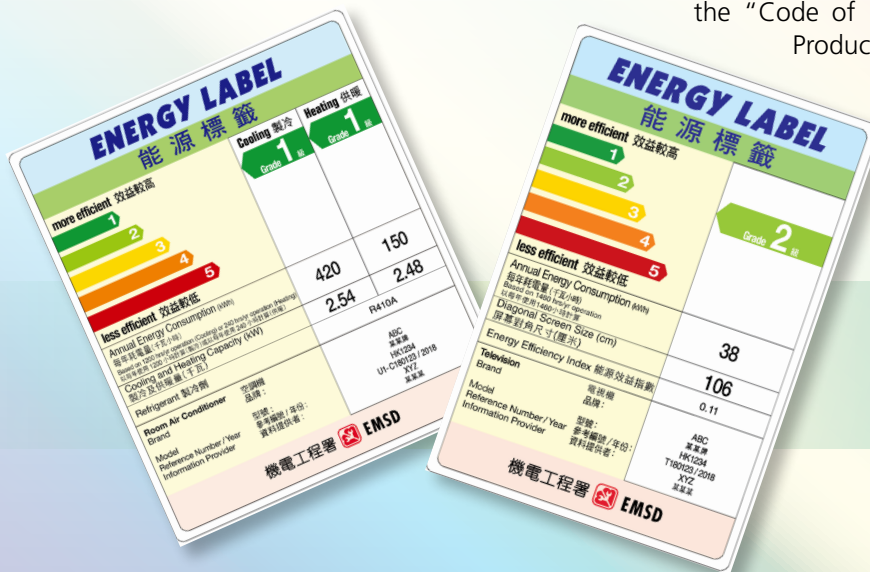
為了讓業界作好準備，強制性能源效益標籤計劃的第三階段設有18個月寬限期，並於2019年12月1日起全面實施。在寬限期後，本地製造商或進口商必須在產品貼上指定格式的能源標籤，而零售商及批發商亦須確保供應的產品附有能源標籤，才可在本港供應產品。因此所有供應商須及早準備安排貼上能源標籤的事宜。

如欲瞭解強制性標籤計劃的詳情，可瀏覽機電工程署的「能源標籤網」，網址為<https://www.emsd.gov.hk/energylabel>。如本地製造商或進口商希望查閱有關各類訂明產品能源標籤的規定和技術細則，也可參考已上載於「能源標籤網」的《產品能源標籤實務守則2018》。

The third phase of Mandatory Energy Efficiency Labelling Scheme (MEELS) has commenced on 1 June 2018 and has extended the coverage to three more prescribed products, namely televisions, storage type electric water heaters and induction cookers. The scope of two types of existing prescribed products has been expanded to include reverse cycle type room air conditioners (both cooling and heating performance) and washing machines with rated washing capacity from not exceeding 7kg to not exceeding 10kg. It is estimated that the potential annual electricity saving arising from the third phase of MEELS will be around 150 million kWh, which is equivalent to annual reduction of carbon dioxide emissions of 105,000 tonnes.

In order to allow sufficient time for the trade to make necessary preparation, there is an 18-month grace period, and MEELS Phase 3 will be fully implemented on 1 December 2019. After the 18-month grace period, local manufacturers or importers are required to affix energy labels in specified format on the prescribed products where as retailers and wholesalers are required to ensure energy labels are affixed before supplying them in Hong Kong. All suppliers should be prepared that energy labels are displayed on the products by that time.

For details of MEELS, please visit the EMSD's "Energy Label Net" at <https://www.emsd.gov.hk/energylabel>. Local manufacturers and importers can also obtain technical details and requirements of the energy labels for the prescribed products from the "Code of Practice on Energy Labelling of Products 2018", which is also available at the "Energy Label Net".



聯絡資料 Contact Information

任何人士如欲就本通訊提出意見或查詢，請透過以下方式與我們聯絡：

香港九龍啟成街3號機電工程署能源效益事務處

電話：(852) 2808 3465 傳真：(852) 2890 6081 電郵：eepublic@emsd.gov.hk

Anyone wishing to offer comments or make enquiries on this newsletter can contact us at:

Energy Efficiency Office, Electrical and Mechanical Services Department, 3 Kai Shing Street, Kowloon, Hong Kong

Tel: (852) 2808 3465 Fax: (852) 2890 6081 Email: eepublic@emsd.gov.hk