



BUSINESS  
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商界環保協會

## Commemorative Case Sharing 經典案例分享

BEC Headquarters - First Commercial  
Building to achieve BEAM Plus Provisional  
Platinum Rating (Existing Buildings)

商界環保協會總部 — 首幢獲得  
綠建環評 (BEAM Plus) 暫定  
鉑金級認證的商業建築物 (既有建築)



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## About BEC

Business Environment Council Limited 商界環保協會有限公司 (“BEC”) is an independent, non-profit membership organisation established by the business sector in Hong Kong, and a charitable institution under section 88 of the Inland Revenue Ordinance. Since its establishment in 1992, BEC has been at the forefront of promoting environmental excellence by advocating the uptake of clean technologies and practices which reduce waste, conserve resources, prevent pollution and improve corporate environmental and social responsibility.

### BEC Headquarters

BEC Headquarters is situated at 77 Tat Chee Avenue, Kowloon and conveniently located near the Kowloon Tong MTR station and bus terminus. It has been home to BEC since September 1996.

The environmentally friendly building consists of 3 floors and a car park area on the lower ground, totalling an area of about 4,000 square meters. The building, when constructed in 1996, achieved “Very Good” rating under Hong Kong BEAM for New Office Designs Version 1/96.

### Building a Low Carbon Sustainable Built Environment

Hong Kong currently has over 40,000 existing buildings that account for 92% of total electricity demand in the territory<sup>1</sup>. In December 2012, the Hong Kong Green Building Council (“HKGBC”) launched the “HK3030” Campaign and put forth a roadmap to reduce the absolute electricity consumption of buildings in Hong Kong by 30% of the 2005 level by 2030<sup>2</sup>.

Certificate of Platinum Rating of Provisional Assessment under the BEAM Plus Existing Buildings (version 1.2)



獲得綠建環評既有建築 (1.2 版) 暫定鉑金級證書

## 商界環保協會簡介

商界環保協會有限公司 Business Environment Council Limited 是由香港商界成立的獨立非牟利會員機構，亦是根據《稅務條例》第 88 條規定的一間慈善機構。自 1992 年成立以來，商界環保協會一直是推動香港環保卓越的先驅，宣揚潔淨技術及措施，從而減少廢物、保護資源、防止污染，強化環保及社會企業責任。

### 商界環保協會總部

商界環保協會總部位於九龍達之路 77 號，佔地 4,000 平方米，包括 3 層辦公大樓和地下低層停車場，毗鄰九龍塘港鐵站和巴士總站，交通便利。建築物採用環保設計，在 1996 年 9 月竣工，並於同年獲得香港建築環境評估法 1/96（新建辦公建築）「極佳」評級。

### 營造低碳、可持續建築環境

香港目前擁有超過 40,000 座建築物，所消耗電力佔香港整體總電力需求的 92%<sup>1</sup>。2012 年 12 月，香港綠色建築議會發起「香港 3030」計劃，制定發展藍圖，目標是在 2030 年減少 30%（與 2005 年相比）的香港建築物絕對電力消耗<sup>2</sup>。

要實現「香港 3030」計劃減少耗電量的目標，有賴不同持份者(包括政府、發展商、建築物業主、建築專業人士及非政府組織)的共同努力。為體現 BEC 營造低碳、可持續建築環境的承諾，BEC 以取得綠建環評 [BEAM Plus] 鉑金級認證為目標，開展了提升總部成為綠色建築物的工程。

Joint efforts of different stakeholders, including the Government, developers, building owners, building professionals and non-governmental organisations, are essential for achieving the "HK3030" Campaign reduction targets. In order to demonstrate BEC's commitment to building a low carbon sustainable built environment, BEC has undertaken a project which aims to upgrade the BEC Headquarters to a hyper green building with BEAM Plus Platinum rating.

### First Commercial Building in Hong Kong to achieve BEAM Plus Provisional Platinum Rating (Existing Buildings)

After the upgrading work which included a number of green features and practices, the BEC Headquarters achieved the Platinum rating of Provisional Assessment under the BEAM Plus Existing Buildings (version 1.2) of HKGBC on 13 August 2014. It is the first commercial building in Hong Kong which has achieved the highest level of recognition under the BEAM Plus assessment for existing buildings.

1 Figure as at 2011. Hong Kong Energy End-use Data 2013, Electrical and Mechanical Services Department, Hong Kong SAR Government [[http://www.emsd.gov.hk/emsd/e\\_download/pee/HK&EUD2013.pdf](http://www.emsd.gov.hk/emsd/e_download/pee/HK&EUD2013.pdf)]

2 "HK3030" A Vision for A Low Carbon Sustainable Built Environment in Hong Kong by 2030, Hong Kong Green Building Council [[https://www.hkgbc.org.hk/upload/HK3030/Home/HK3030paper\\_eng.pdf](https://www.hkgbc.org.hk/upload/HK3030/Home/HK3030paper_eng.pdf)]

### 首幢獲得綠建環評暫定鉑金級認證的商業建築物（既有建築）

採用多個環保設施和營運措施後，商界環保協會總部於 2014 年 8 月 13 日獲得香港綠色建築議會頒發綠建環評既有建築（1.2版）暫定鉑金級認證，是香港首座根據綠建環評（既有建築）評級標準獲得最高等級認證的商業建築物。

1 數字截至 2011 年。香港能源最終用途數據（2013 年），香港特區政府機電工程署

[[http://www.emsd.gov.hk/emsd/e\\_download/pee/HK&EUD2013.pdf](http://www.emsd.gov.hk/emsd/e_download/pee/HK&EUD2013.pdf)]

2 "HK3030" A Vision for A Low Carbon Sustainable Built Environment in Hong Kong by 2030 · 香港綠色建築議會 [[https://www.hkgbc.org.hk/upload/HK3030/Home/HK3030paper\\_eng.pdf](https://www.hkgbc.org.hk/upload/HK3030/Home/HK3030paper_eng.pdf)]

（只有英文版本）



Ir Conrad Wong, HKGBC Chairman, presents the Certificate to Prof John Chai, BEC Chairman, at the BEC Anniversary Dinner held on 17 September 2014.

在 2014 年 9 月 17 日舉行的商界環保協會週年晚宴上，香港綠色建築議會主席黃天祥工程師向商界環保協會主席查逸超教授頒發證書。

## Major Upgrading Works Undertaken

### ENERGY SAVING

Annual reduction in energy use of the BEC Headquarters is expected to be at least 20% based on actual electricity billing/metering data. A reduction of 24.6% in energy consumption was recorded for the period of July 2014 to September 2014.

#### Chiller

An oil-free variable speed air-cooled chiller has been installed to replace the old air-cooled chiller. The new chiller consists of high energy efficiency compressors with magnetic bearings and variable speed permanent magnet motors.

#### Benefits:

- Reduce electricity consumption of the building
- Reduce maintenance cost



## 主要提升工程

### 節約能源

基於實際電費/電錶數據，商界環保協會總部每年的能源使用量預計可減少最少 20%。在 2014 年 7 月至 9 月期間，實際能源消耗減少了 24.6%。

#### 空調冷水機

安裝無油變速風冷式空調冷水機，以取代舊式風冷式空調冷水機。這座新型空調冷水機採用配備懸磁浮式軸承的高效能壓縮機，以及可變速永磁式電動機（冷卻扇）。

#### 優點：

- 減少建築物電力消耗
- 減少維修成本



## Weather Station

A weather station has been installed on the roof to collect weather data, including outdoor temperature, relative humidity, wind speed and direction.

### Benefits:

- Enhance efficiency control of the new chiller through the building management system
- Collect and display first hand, local weather information to building occupants for their reference

## Lighting System

LED panels have been installed to replace T8 fluorescent light tubes in BEC offices and all common areas.

### Benefits:

- Reduce electricity consumption by 58% compared to T8 fluorescent tubes
- Reduce future replacement and maintenance cost

## Light and Motion Sensors

Light sensors have been installed to detect the amount of natural light in the perimeter zones and the areas adjacent to the atrium of the building, enabling the LED panels installed at these areas to be dimmed according to the lux level detected.

Motion sensors have been installed in all washrooms and the corridor on the lower ground floor, enabling the lights in these areas to be switched on or off according to the movements detected.

## Smart Metering

24 units of power meters have been installed to track the power consumption of air conditioning, lighting and small power, as well as plumbing and drainage systems. They enable the building manager to take prompt and targeted actions to improve energy efficiency of specific facilities.

Chilled water meters have also been installed in areas used by other building users in order to evaluate their respective amounts of energy consumption associated with central air conditioning.

## WATER SAVING

### Rainwater Collection System

A 6,000-litre rainwater collection tank, together with filter components, ultraviolet light for sterilization and water pumps, have been installed to harvest rainwater.

### Benefits:

- Capable of harvesting 165,000 litres of rainwater annually
- Collected rainwater can be used for irrigation and cleaning purposes

### Washroom Facilities

Low flow water taps have been installed in the washrooms. Dual-flush systems have also been installed to replace the single-flush systems, without the need to replace the whole toilet.

### Benefits:

- Reduce fresh water consumption
- Reduce the volume of sewage discharged, thereby reducing the burden on municipal sewage treatment facilities

## 氣象站

在屋頂安裝氣象站以收集氣象資料，包括戶外溫度、相對濕度、風速和風向。

### 優點：

- 透過建築物管理系統，加強控制新型空調冷水機的效能
- 收集第一手的本地氣象資訊，並提供給建築物使用者參考

## 照明系統

安裝發光二極管（LED）天花板燈，代替商界環保協會辦公室和所有共用區域的 T8 熒光燈管。

### 優點：

- 與 T8 熒光燈管相比，可減少 58% 的電力消耗
- 減少將來的更換及保養成本

## 光度和動作感應器

安裝光度感應器，以偵測周邊區域和商界環保協會總部中庭附近區域的自然光線量。根據偵測到的流明等級，安裝在這些區域的 LED 天花板燈可自動調暗。

在所有洗手間和地下低層的走廊安裝動作感應器，使這些區域的照明設備可根據偵測到是否有使用者而自動開啟或關閉。

## 智能電錶

安裝 24 個功率表以追蹤空調、照明和小功率設備，以及排水系統的能源消耗情況。建築物管理人員可及時採取有針對性的措施，以提高特定設施的能源效率。

在其他建築物使用者使用的區域安裝空調冷水量計，以便評估各個建築物使用者與中央空調有關的能源消耗量。

## 節水

### 雨水收集系統

安裝 6,000 公升雨水收集缸以收集雨水，此收集缸配備過濾器配件、紫外線消毒裝置和水泵。

### 優點：

- 每年可收集 165,000 公升的雨水
- 收集的雨水可用於灌溉和清潔用途

### 洗手間設施

在洗手間安裝低流量水龍頭。另外安裝雙沖式系統以代替單沖式系統，而無需更換整個坐廁。

### 優點：

- 減少淡水消耗量
- 減少污水排放量，從而減輕都市污水處理設施的負擔



## FACILITIES AND MANAGEMENT PRACTICES

### Waste and Recycling Facilities

- Recycling bins for paper, aluminium cans, plastic bottles and glass bottles in prominent locations of the building
- A refuse chamber with an independent exhaust system and de-odourising device
- Continuous waste audit and waste management system with the quantity of waste and recyclables recorded

### Building Management System

- Regularly inspect and adjust the building management system in order to avoid wastage of energy throughout the lifetime of the building

### Monitoring of Indoor Air Quality (“IAQ”)

- Regularly monitor IAQ to identify if there is any presence of volatile organic compounds from any painting works or installation of new furniture, and to ensure that the mechanical ventilation and air conditioning systems are operating properly
- Regularly clean or replace air filters installed in the primary air units, air handling units and fan coil units in order to minimise the content of respirable suspended particles in the building

### Other Operational Practices

- Implemented ISO 14001 Environmental Management System for the operation of the building in collaboration with the building management
- Implemented an environmentally friendly purchasing plan, with the commitment of purchasing at least 70% environmentally friendly materials, products and equipment

## 設施及管理措施

### 廢物和回收設施

- 在建築物的顯眼位置放置廢紙、鋁罐、膠樽和玻璃瓶回收箱
- 配備獨立排氣系統和除臭裝置的垃圾房
- 透過持續廢物評估和廢物管理系統，記錄廢物和回收物品的數量

### 建築物管理系統

- 定期檢查並調整建築物管理系統，避免在建築物使用年內浪費能源

### 監測室內空氣質素

- 定期監測室內空氣質素以識別是否由於任何油漆工程或安裝新傢俬而出現揮發性有機化合物，並確保機械通風和空調系統正確運行
- 定期清潔或更換安裝在主要空氣裝置、空氣處理裝置和盤管式風機中的空氣過濾器，以便將建築物內的可吸入懸浮粒子含量減至最少

### 其他營運措施

- 與建築物管理公司合作，執行適合建築物營運的 ISO 14001 環境管理體系
- 執行環保採購計劃，承諾採購至少 70% 的環保材料、產品和設備



## BEAM Plus Credits

As a result of the green features and environmentally friendly operational practices introduced, the BEC Headquarters has achieved the Platinum Rating of Provisional Assessment under the BEAM Plus Existing Buildings (Version 1.2). The following table shows the credits in each environmental performance category.

| CATEGORY                     | WEIGHTING (%) | CREDITS ACHIEVED |
|------------------------------|---------------|------------------|
| Site Aspects                 | 18            | 16               |
| Materials Aspects            | 12            | 4.4              |
| Energy Use                   | 30            | 24.4             |
| Water Use                    | 15            | 10.7             |
| Indoor Environmental Quality | 25            | 19.2             |
| Innovations and Additions    | N/A           | 5                |
| Total credit                 |               | 79.7             |

## 綠建環評評分

採用環保設施和營運措施後，根據綠建環評既有建築(1.2版)評級標準，商界環保協會總部獲得暫定鉑金級。下表顯示每個環保績效類別的評分。

| 分類             | 評分比重(%) | 得分   |
|----------------|---------|------|
| 用地與室外環境 / 場地管理 | 18      | 16   |
| 用材             | 12      | 4.4  |
| 能源使用           | 30      | 24.4 |
| 用水             | 15      | 10.7 |
| 室內環境質素         | 25      | 19.2 |
| 創新             | 不適用     | 5    |
| 總評分            |         | 79.7 |

## Recognitions

BEC Headquarters has also obtained the following recognitions:

商界環保協會總部亦獲得以下殊榮：



Carbon "Less" 10% Certificate, Hong Kong Awards for Environmental Excellence  
減碳 10% 證書，香港環保卓越計劃



Indoor Air Quality Certificate (Good Class), Indoor Air Quality Information Centre of Environmental Protection Department, and Hong Kong Accreditation Service  
室內空氣質素檢定證書(良好級)，環境保護署室內空氣質素資訊中心及香港認可處



Certificate of Quality Water Recognition Scheme for Buildings, Water Supplies Department  
大廈優質食水認可計劃證書，水務署



Certificate of Flushing Water Plumbing Quality Maintenance Recognition Scheme, Water Supplies Department  
沖廁水系統優質維修認可計劃證書，水務署



ISO 14001 Certificate  
ISO 14001 證書

## Acknowledgements | 鳴謝

BEC is grateful for the generous support of various organisations and people for this Project.  
商界環保協會感謝各機構及人士對項目的支持。

The following companies have provided in-kind **sponsorship** for the Project.  
以下公司為項目提供實物**贊助**。

|   |   |   |
|---|---|---|
|  |  |  |
| Defond Electrical Industries Limited<br>德豐電業有限公司                                  | The Jardine Engineering Corporation, Limited<br>怡和機器有限公司                          | Neonlite Electronic & Lighting (HK) Limited<br>利安電光源(香港)有限公司                        |
| In-kind sponsorship of the LED panel light<br>贊助 LED 平板燈                          | In-kind sponsorship of the rainwater collection system<br>贊助雨水收集系統                | In-kind sponsorship of the LED panels and downlights<br>贊助 LED 天花板燈和筒燈              |



Schneider Electric (Hong Kong) Limited has provided **technical support** for installation of the chiller and smart metering device.  
施耐德電氣（香港）有限公司提供安裝空調冷水機和智能電錶的**技術支援**。

The following parties have offered valuable **professional advice** during the feasibility study stage of the Project.  
以下機構在項目的可行性研究階段提供寶貴的**專業建議**。



The BEC Headquarters **Transformation Task Force**, currently comprising the following key members, has provided strategic directions and professional opinions on the Project.

- Prof John CHAI (Fook Tin Technologies Limited) – Chairman of the Task Force
- Mr Robert ACKER (Jones Lang LaSalle Limited)
- Ir Cary CHAN (Swire Properties Limited)
- Mr Victor KWONG (The Hong Kong & China Gas Company Limited)
- Mr Wilson KWONG (The Jardine Engineering Corporation, Limited)
- Mr Paul LEECH
- Mr Penn YEUNG (The Jardine Engineering Corporation, Limited)

A BEC **project team**, consisting of the following BEC staff members, has been working for over a year to ensure timely and successful implementation of the Project.

- Ms Agnes LI, Chief Executive Officer
- Ir C.F. LEUNG, Director - Green Building & IAQ
- Ir Alan HUNG, Senior Manager - Green Building & IAQ
- Mr Nelson CHOI, Manager - Green Building & IAQ

商界環保協會總部**提升工程工作小組**（現時由以下主要成員組成）一直提供有關項目的策略指導和專業意見。

- 查逸超教授（福田科技有限公司）－ 工作小組主席
- Robert ACKER 先生（仲量聯行有限公司）
- 陳永康工程師（太古地產有限公司）
- 鄺超靈先生（香港中華煤氣有限公司）
- 鄺永銓先生（怡和機器有限公司）
- 李睿智先生
- 楊志強先生（怡和機器有限公司）

過去一年多，由以下商界環保協會職員組成的**項目團隊**緊密合作，致力確保及時和成功地執行項目。

- 李家慧女士－ 行政總裁
- 梁志峰工程師－ 綠色建築及室內空氣質素總監
- 洪松延工程師－ 綠色建築及室內空氣質素高級經理
- 蔡樂天先生－ 綠色建築及室內空氣質素經理





Representatives from organisations providing support to the Project (photo taken at the BEC Anniversary Dinner held on 17 September 2014)  
支持項目的機構代表於2014年9月17日舉行的商界環保協會週年晚宴上合照留念

## BEC Information

### Green Buildings and IAQ Advisory Services

BEC has a long history of promoting Green Buildings and IAQ to the Hong Kong business community, by helping companies implement the latest technologies to enhance energy efficiency, reduce operating costs and elevate the environmental performance of their buildings. Our areas of expertise include:

**BEAM Plus and LEED advisory | Energy cum carbon audits  
Environmental monitoring | IAQ improvement plan  
Sustainable building research and innovative design**

BEC IAQ Solutions Centre is one of the accredited IAQ certificate issuing bodies under the Hong Kong Inspection Body Accreditation Scheme. The Centre has the competency in providing quality and credible IAQ inspection and certification service under the IAQ Certification Scheme of the Environmental Protection Department.

### BEC Contact

To obtain professional advice on transforming an existing building to an energy efficient building fulfilling BEAM Plus requirement, please contact Ir C.F. LEUNG, Director - Green Building & IAQ, of BEC.

Tel: (852) 2784 3945 / E-mail: cfleung@bec.org.hk

### Disclaimer

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## 商界環保協會資料

### 綠色建築及室內空氣質素顧問服務

商界環保協會在為香港商界提供有關綠色建築及室內空氣質素的顧問服務方面有著悠久歷史。我們幫助不同機構採用最新技術以增強能源效益，減少營運成本，並提高建築物的環保績效。我們的專業範疇包括：

**綠環建評和 LEED 諮詢 | 能源及二氧化碳排放綜合審計  
環境監測 | 室內空氣質素改進計劃  
可持續建築物研究和創新設計**

商界環保協會有限公司室內空氣技術服務中心是根據香港檢驗機構認可計劃獲得認可的室內空氣質素證書發機機構之一。中心可根據環境保護署的室內空氣質素檢定制計劃提供優質和可靠的室內空氣質素檢驗與認證服務。

### 聯絡商界環保協會

如欲取得將既有建築提升為節能建築物，以及符合綠環建評要求的專業意見，請聯絡商界環保協會綠色建築及室內空氣質素總監梁志峰工程師。

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