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

# EnergyWits 智能

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## 本期內容 Contents



機電工程署
EMSD

# 主席的話 Message from the Chairman

## 能源諮詢委員會主席潘樂陶先生的話
## Message from Ir Otto POON, Chairman, Energy Advisory Committee

能源諮詢委員會於1996年成立，主要負責就能源供求、能源效益和節約能源方面的政策及其他相關事宜，向政府提供意見。

能源的運用對本港及全球的環境均有直接影響，也是很多國家實行的可持續發展策略的一個重要環節。若要推廣能源效益及節約能源，私營和公營機構內有關人士的參與和支持至為重要。能源諮詢委員會為學術界、專業團體、商會和商界代表及當局提供一個討論園地，以便就能源政策和策略向政府提供意見。

提高能源效益和實行節能措施並非單屬理想，事實上，我們相信能源效益及節能措施能夠帶來有形及無形的利益。節省能源費用是屬於即時及有形的利益；至於減少溫室氣體的排放和對可持續發展的貢獻，雖然並非即時可以見到，但對人類的未來福祉卻是非常重要。

本人欣悉當局已公佈各決策局和部門在2003/04至2006/07財政年度內在減少能源及紙張耗用量方面所定的目標。為協助各決策局和部門達至其節約能源的目標，機電工程署已出版了一本小冊子，並曾舉辦多個簡介會。只要各決策局和部門能改變使用能源的習慣、推行節能措施和進行能源審核，節能目標必可達到。雖然在開始實行部分節能措施時須支付一筆費用，例如改裝照明及空氣調節裝置等，但回本期通常只需數年，因此可視之為一項優良的投資。

對於節約能源，當局有相當大的決心及有效的方法，加上累積的知識和技術，相信能在社會上起著帶頭作用。我希望私營機構亦會透過他們各自定出的計劃，進一步把能源消耗量減低。我知道很多公司現時正朝這方向進發，但我認為在這方面我們應更加積極，加倍努力，所付出的必定能得到回報。

節能措施未能被廣泛採用，其中一個原因是缺乏有關的資訊和技術。因此，機電工程署不斷把節能資料上載至其網頁，以便與各界人士分享其專門知識和經驗。該署出版本通訊，目的就是令有關知識得以廣泛傳播，而我相信這是一個很有效的方法。

最後，我在此呼籲私營機構多些透過研討會及其他渠道，與我們分享他們在節能方面的知識和經驗。我深信，只要當局和私營機構攜手合作，共同努力，香港在推廣能源效益和節約能源方面必定會獲得更大的成就。

The Energy Advisory Committee (EnAC), established in 1996, plays a key role in advising the Government on energy policy in supply and demand, energy efficiency and conservation, as well as other related matters.

Consumption of energy has a direct impact on the local and global environment and is one of the significant components in the sustainable development strategies of many economies. The pursuit of energy efficiency and conservation is therefore an issue that calls for the participation and contribution from all stakeholders in the private and public sectors. The EnAC provides a forum for the eminent representatives from the academia, professional bodies, trade associations, business community and the Administration to lend their support in advising the Government on energy policies and strategies.

Implementation of energy efficiency and conservation is not an ideal detached from reality. As a matter of fact, we believe energy efficiency and conservation measures will bring tangible and intangible benefits. Saving on the energy bills is immediate and tangible while reduction of greenhouse gas emissions and contribution to sustainable development are not so immediate but may be even more important to the long-term well-being of the humankind.

I am delighted to learn that the Administration has announced voluntary targets on reduction of energy and paper consumption for bureaux and departments for fiscal years 2003/04 to 2006/07. To assist bureaux and departments to attain their energy saving targets, the Electrical and Mechanical Services Department (EMSD) has published a booklet and conducted a number of briefings. It can be expected that bureaux and departments will achieve the savings by improving their energy use practices, implementing energy saving measures and conducting energy audits. Some energy saving measures will require front-end expenditures, such as retrofitting of lighting and air-conditioning installation, but the payback periods are often just a few years, which in today's terms is good return on investment.

The Administration has the determination, the means, the know-how to save energy and is taking the lead. I do hope that the private sector will also participate through their own initiatives to further cut down on energy consumption. I know that many companies are already doing so, but it is time we should all do it with even greater vigour. Such effort will definitely pay off in dollars and cents.

One impediment to the wider adoption of energy saving measures is, to some, the lack of information and know-how. The EMSD has been putting up information on energy saving measures on the web to share their expertise and experience with others; and this knowledge has to be widely spread. This newsletter is one of the means to achieve this aim and I believe it will serve the purpose well.

Finally, I would also like to encourage the private sector to share their knowledge and experience in energy conservation through seminars and other channels, more frequently and with clear focus. With the Administration and the private sector joining force, I am sure Hong Kong can make big strides in achieving energy efficiency and conservation.

## 焦點題目 Focus Topic

# 可再生能源 Renewable Energy

國際間對「可再生能源」未有一個公認的統一定義。

歐洲是廣泛應用可再生能源的地方。根據歐盟界定，「可再生能源」為可再生的非化石燃料能源，包括風能、太陽能、地熱能、波浪能、潮汐能、水力發電、生物質能、堆填區沼氣、污水處理廠沼氣、生物氣等。生物質能則包括農林和相關工業的產品、 廢物和殘渣中可生物降解的部分，以及工業及城市廢物中可生物降解的部分。因此，歐盟亦視一些廢物轉化能源為可再生能源。

在「香港使用可再生能源的可行性研究」中，可再生能源泛指供應穩定且用之不竭，沒有藏量耗盡問題的能源資源。

There is no unified definition of "renewable energy" across the world.

Europe is a place where renewable energy is extensively used and according to the European Union (EU), "renewable energy sources" are defined to mean renewable non-fossil energy sources, including wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases. Biomass is in turn defined as the biodegradable fraction of products, waste and residues from agriculture, forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste. Therefore, some forms of energy from waste are included in this EU definition of renewable energy.

The "Study on the Potential Applications of Renewable Energy in Hong Kong" has adopted the general working definition that renewable energy sources refer to those energy sources that are secure and inexhaustible, in the sense that there is no problem of reserve being depleted.

## 「香港使用可再生能源的可行性研究」第一階段已完成
## Completion of Stage 1 of the "Study on Potential Applications of Renewable Energy in Hong Kong"

「香港使用可再生能源的可行性研究」第一階段已經完成。當完成灣仔政府大樓的「附設於建築物上光伏系統」的數據搜集及分析工作後，整項研究便會於 2004 年中完成。至於第一階段研究的研究摘要和研究報告，可在本署網頁的「最新消息」部份下載：http://www.emsd.gov.hk 。

Stage 1 of the "Study on the Potential Applications of Renewable Energy in Hong Kong" has already been completed in end 2002. The whole study will be fully completed by mid-2004, upon gathering and analysing the data from the BIPV installation at Wanchai Tower. The Executive Summary and Final Study Report for Stage 1 Study are available for download from the "What's New" section of our website: http://www.emsd.gov.hk .

## 第一階段研究報告公眾諮詢工作
## Public Consultation of the Stage 1 Report

我們已就「香港使用可再生能源的可行性研究」第一階段的研究結果和建議諮詢公眾意見。諮詢期已於 2003 年 4 月 6 日結束。機電工程署現正協助有關決策局審核所收到的眾多意見書，我們會作出分析和檢討，在制定香港日後應用可再生能源的策略前，仔細考慮公眾及有關人士的意見。

Public consultation on the findings and recommendations of Stage 1 Report of the "Study on the Potential Applications of Renewable Energy in Hong Kong" was completed on 6th April 2003. EMSD is now assisting the bureaux to examine the submissions received so as to consider the views of the public and relevant stakeholders carefully before formulating any strategies on the future application of renewable energy in Hong Kong.

機電工程署 EMSD

## 焦點題目 Focus Topic

# 環境事務委員會委員參觀灣仔政府大樓的「附設於建築物上光伏系統」

# Visit to the "BIPV Installation" at Wanchai Tower by Members of the Panel on Environmental Affairs

灣仔政府大樓的「附設於建築物上光伏系統」於去年12月投入運作。立法會環境事務委員會的委員曾於2003年2月4日參觀該系統，並於數天後的委員會會議上討論可再生能源的發展。參觀的五位委員包括蔡素玉議員、何秀蘭議員、何鍾泰議員、羅致光議員及胡經昌議員。本署副署長何光偉先生與工程人員一起陪同各委員參觀，並向委員詳細講解該系統的運作情況。

介紹窗外的光伏系統
Introducing the PV sub-system outside the windows

# 參觀紅海灣風力場

# Visit to the Honghaiwan Wind Farm

部份參與考察的人士
Some of those joining the visit

在廣東省沿岸已有多個風力發電場投入運作。其中，紅海灣風力場位於汕尾，是省內最大的風力發電場之一。

整個風力場分兩期興建。第一期工程於2002年動工，包括裝設25台額定功率為660千瓦的風車。為瞭解區內策劃和興建風力發電場的過程，本署副署長何光偉先生及能源效益事務處的人員於2003年2月22日前往紅海灣風力場作實地考察。

在參觀期間，15台風車已開始運作，並連接至電網。另外之26台風車將於第二期裝設，屆時，風力場的總發電量會達至34.5兆瓦。該風力場的投資總額將約為3,250萬美元，估計回本期為10年。這次參觀所得的資料將有助本港日後發展風能計劃。

(背景照片) 紅海灣風力場遠觀
(Background Photo) Panoramic view of Honghaiwan Wind Farm

介紹天臺的光伏系統
Introducing the PV sub-system on the roof

The "Building-integrated Photovoltaic (BIPV) Installation" at Wanchai Tower was commissioned in December last year. Members of the Panel on Environmental Affairs of the Legislative Council paid a visit to the installation on 4th February 2003. The visit was made a few days prior to the Panel Meeting during which the issue of renewable energy development was discussed. Five Panel Members, including Hon S.Y CHOY, Hon S.L. HO, Hon C.T. HO, Hon C.W. LAW and Hon K.C. WU, joined the visit. Project officers led by our Deputy Director, Mr. K.W. HO, accompanied the Members during the visit and explained to them about the details of the installation.

在入口大堂光伏系統前留影
Taking photo in front of the PV sub-system on the entrance hall

Along the coast of the Guangdong Province, a number of wind farms are already in operation. The Honghaiwan Wind Farm located in Shanwei is one of the largest wind farms in the province.

The whole wind farm is being developed in two phases. The first phase of the development commenced in 2002 and involved the installation of 25 wind turbines, each rated at 660 kW. In order to learn more about the experience of planning and constructing wind farms in this region, our Deputy Director, Mr. K.W. HO, and staff from the Energy Efficiency Office visited the Honghaiwan Wind Farm on 22nd February 2003.

During the time of the visit, 15 wind turbines have already been commissioned and connected to the electricity grid. A further 26 wind turbines will be installed in the second phase, and by that time the total generating capacity of the wind farm will reach 34.5 MW. The total capital investment of the project will be about USD32.5 million and the payback period is estimated to be 10 years. The information obtained from the visit will be useful for developing future wind energy projects in Hong Kong.

新聞 News

# 向各部門講解節能方法
# Briefings to Departments on Energy Saving


新履任的署理助理署長〔能源效益〕佘少權先生（中）主持答問環節
Mr. SHE Siu-Kuen, new Assistant Director/ Energy Efficiency (Ag.), (centre) chairing Q&A

**為了協助政府部門節約能源及達到節能目標，機電工程署分別於2003年4月28日、5月15日、6月5日及6月9日舉辦了4節簡介會，講解「節能小錦囊」的內容，並向來自各決策局和部門的參與人員介紹各類不同的節能措施，當中有簡單而又容易實行的方法，亦有需要投資及技術支援方可達至較高節能效益的建議。各簡介會均座無虛席，共約有1,000人參與。會後聽眾提出了不少問題，並由機電工程署代表一一作答。**

**In order to assist all government departments to save energy and to achieve their saving targets, EMSD organised four briefing sessions on Energy Saving Tips on 28th April, 15th May, 5th June and 9th June 2003 respectively. The audience from various bureaux and departments were introduced with different energy saving measures and examples. Some are simple and easy to do while others involve certain investment and technical support but with higher saving return. All briefing sessions were in full house with about 1,000 participants. After the presentations, EMSD staff also answered many questions raised by the audience.**

每場簡介會都坐無虛席
There were very few empty seats in all briefings.

# 能源效益及節約能源論壇成功舉行
# Forum on Energy Efficiency and Conservation Successfully Held

黎署長頒發紀念品予劉吳惠蘭女士
Our Director presenting souvenir to Mrs. Rita LAU

由機電工程署舉辦的「能源效益及節約能源論壇」已於2003年1月14日成功舉行，出席人數超過200人，分別來自本港及海外地區。不少中港及海外的專家，分別在論壇上發表專題演說，範圍包括能源政策及能源效益、新能源及可再生能源、能源展望及能源數據。環境運輸及工務局常任秘書長（環境）劉吳惠蘭女士為論壇致開幕辭，而能源諮詢委員會主席潘樂陶先生則主持演講及討論環節。不少參加者均為能源及能源效益界別的佼佼者，是次論壇能讓他們聚首一堂，誠為一大盛事。

The "Forum on Energy Efficiency and Conservation" organised by EMSD was successfully held on 14th January 2003, with over 200 overseas and local participants. Presentations were made by renowned local, mainland and overseas experts with topics covering the areas of energy policy and energy efficiency, new and renewable energy, energy outlook and energy data. Mrs. Rita LAU NG Wai-lan, Permanent Secretary for the Environment, Transport and Works (Environment), delivered the opening speech while Mr. Otto POON, Chairman of the Energy Advisory Committee, chaired the presentation session and the discussion session. Many of the participants were distinguished representatives in the field of energy and energy efficiency, and the forum offered a remarkable occasion for them to share the views on different issues.


講者及台下展開討論
Discussion amongst speakers and floor

機電署同事在展覽及遊戲攤位前留影
EMSD colleagues in front of the exhibition and game booths

# 新地環保聯合大行動 2003
# 2003 SHKP Environmentally Friendly Joint Action

「新地環保聯合大行動2003」由新鴻基地產聯同其他機構舉辦，目的為推廣能源管理，本署透過參與督導委員會及其各項活動，作出行動上的支持。該環保推廣行動今年的重點是節省能源，並計劃進行大型的節約能源運動，所有由新鴻基地產管理的物業均會參與。是次活動的開幕儀式於2003年3月15日舉行，當日本署聯同環境保護署在沙田新城市廣場設立展覽及遊戲攤位，以推廣能源效益及可再生能源。私人機構在推廣能源效益和節約能源方面的努力，在是次行動中可見一斑。

EMSD supported the "2003 SHKP Environmentally Friendly Joint Action" campaign by participating in the steering committee and activities under the Joint Action. The campaign involves Sun Hung Kei Properties (SHKP) and other organisations with the objective of promoting energy management. The Joint Action plans a massive energy saving campaign in which all the properties under SHKP management will take part in. An opening ceremony was held on 15th March 2003, in which EMSD also set up exhibition and game booths at Shatin City Hall Plaza in conjunction with EPD to promote energy efficiency and renewable energy. The Joint Action illustrates the effort of our private sector in promoting energy efficiency and conservation.


開幕儀式
Opening Ceremony

# 於「第一屆國際能源效益及節約研討會」及「綠色建築物研討會」的演講
# Presentations at the "First International Conference on Energy Efficiency and Conservation", and "Green Building Seminar"



梁建民博士（右）及李子傑先生（上）發言中
Dr. LEUNG (right) and Mr. LEE (up) making presentations

能源效益事務處的梁建民博士及李子傑先生在「第一屆國際能源效益及節約研討會」(2003年1月15至16日)及「綠色建築物研討會」(2003年2月24日)中總共發表了三篇有關以表現為本的建築物能源守則及能源消耗基準的文章。

Dr. K.M. LEUNG and Mr. C.K. LEE of the Energy Efficiency Office presented three papers on the subject of performance-based building energy code and energy consumption benchmarking in the "First International Conference on Energy Efficiency and Conservation" (15th and 16th January 2003) and the "Green Building Seminar" (24th January 2003).

# 為業界舉辦能源效益標籤計劃講座
# Talk on Energy Efficiency Labelling Scheme to Trade Representatives


在2003年3月3日舉行的「能源效益標籤計劃講座」，是首個以家庭電器製造商、進口商及分銷商為對象的推廣活動。講座旨在加強業界人士對能源效益標籤計劃的認識，特別是需要具備有關知識和意識，以便在市場引入合適節能產品的供應商，以及需要在推銷產品時介紹相關資料的零售僱員。是次講座共有55名製造商、代理商、進口商、供應商、分銷商和業界代表出席。

The "Talk on Energy Efficiency Labelling Scheme (EELS)" held on 3rd March 2003 was the first promotional function targeted the manufacturers, importers and distributors of household appliances. The talk aimed to strengthen the understanding of EELS among trade members, in particular suppliers who need to have the knowledge and concern for introducing suitable energy-efficient products into the market, and retail staff who need to explain product information during sales promotions. 55 representatives from the manufacturers, agents, importers, suppliers, distributors and the business community attended the talk.

## 為教師和學生舉辦講座
## Talks for Teachers & Students

科學講座 Science talk

教育統籌局為教師舉辦了連串科學講座，而能源效益事務處的同事主持了其中一個以「如何善用能源以締造更美好的將來」為題之講座。該次活動於2003年2月28日假香港科學館舉行，共有超過250名教師和學生出席。

此外，為了向中學生推廣能源效益及節約能源的訊息，能源效益事務處於2月中至5月舉行了一連串學校講座。至今我們已經探訪了20間中學，共有約7,000名學生參與。學界的熱烈反應顯示了我們的下一代對環保的課題深感興趣。

Staff from the Energy Efficiency Office addressed on the topic of "How to Use Energy for a Better Future" in one of the Science Talks organised by the Education and Manpower Bureau for teachers. The talk was held on 28th February 2003 at the Science Museum with over 250 participants attended.

參與學校講座的同事
School talk team

In addition, with the objective of promoting energy efficiency and conservation to students, the Energy Efficiency Office has conducted a series of talks in secondary schools from mid-February to May. So far, 20 secondary schools have been visited and about 7,000 students have participated in the talks. The positive response from the students demonstrated the interest of our next generation on the issue of protecting the environment.

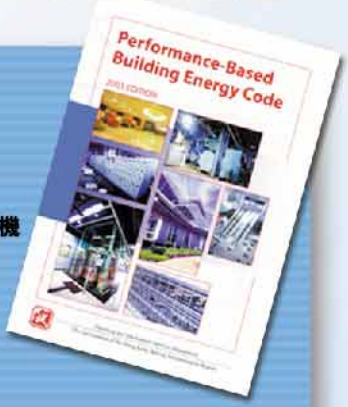
學校講座 School talk

## 節能空調系統的蒸發式冷卻塔廣泛使用淡水先行性計劃
## Pilot Scheme for Wider Use of Fresh Water in Evaporative Cooling Towers for Energy-efficient Air-conditioning Systems

**自跨部門工作小組於 2002 年 12 月宣佈將這個先行性計劃的實施範圍擴大至 45 個地區後，參加計劃的宗數大增，本署接獲的申請由 17 宗增加至 44 宗，涉及的非住宅樓面總面積亦由 600,000 平方米增至 1,370,000 平方米。當這些使用蒸發式冷卻塔的水冷式空調系統落成後，估計每年可節省 1,640 萬度電，相當於大約 3,500 住戶的年均耗電量。**

**Since the announcement by the Inter-departmental Working Group in December 2002 in expanding the scope of the Pilot Scheme to cover 45 designated areas, there has been a remarkable increase in the number of participants of the Scheme. The total number of applications received by EMSD has risen from 17 to 44, and the total non-domestic floor area covered by the applications has increased from 600,000 $m^2$ to 1,370,000 $m^2$. We estimate that annual electricity saving of 16.4 million kWh of electricity, equivalent to the average annual consumption of about 3,500 households, can be achieved upon completion of these water-cooled air-conditioning systems using evaporative cooling towers.**

# 以表現為本的建築物能源守則
# Performance-based **Building Energy Code**




以表現為本的建築物能源守則已於2003年4月15日推出，並在香港建築物能源效益註冊計劃下推行。該守則由機電工程署聯同一個專責小組制訂，小組成員共17人，分別來自專業團體、商會、學術界及政府決策局和部門。

這份守則規定了對建築物整體能源表現的要求。要達至守則的規定，建築物除了要符合一些基本要求外，其按每年用電量計算的能源表現亦必須比假設的「參考建築物」為低。 守則亦容許建築物的不同部份及系統在節能方面互補不足。詳細資料可瀏覽機電工程署網頁，亦可以電郵進行查詢：hkeersb@emsd.gov.hk。

The Performance-based Building Energy Code was launched on 15th April 2003 under the Hong Kong Energy Efficiency Registration Scheme for Buildings. The Code was developed by EMSD in conjunction with an ad-hoc task force comprising 17 members from professional institutions, trade organisations, academia, and government bureaux and departments.

The Code stipulates the requirements of overall energy performance of buildings. In compliance with the Code, besides meeting a certain basic requirement, a building's energy performance in terms of its annual energy consumption must be less than that of a hypothetical "reference building". The Code also allows energy trade-offs to be made between different components and systems of a building. More information is available from the EMSD website. Enquiries can be made by email to hkeersb@emsd.gov.hk .

又一城屋頂的冷卻塔
Cooling towers on the roof of Festival Walk

# 又一城改用水冷式空調系統
# Conversion to **Water-cooled Air-conditioning System (WACS)** at Festival Walk

又一城將其氣冷式散熱器改為蒸發式冷卻塔（即水冷式系統）的工程，已於2003年4月完成。本署代表於2003年5月19日參觀了這個位於九龍塘又一城的水冷式空調裝置，並與太古地產管理有限公司的張定國先生、馮德榮先生及鄭志光先生會面。馮先生估計是次改裝的回本期為4.6年。

The conversion from air-cooled radiators to evaporative cooling towers (i.e. water-cooled) at Festival Walk was completed in April 2003. On 19th May 2003, EMSD staff visited this water-cooled air-conditioning installation at Festival Walk in Kowloon Tong, and met Mr. Teddy CHEUNG, Mr. T.W. FUNG, and Mr. C.K. CHENG of Swire Properties Management Ltd. Mr. FUNG estimated the payback period of the conversion to be 4.6 years.

**以下為又一城空調裝置的一些資料：**
**Here are some information about the air-conditioning installation at Festival Walk:**

| | |
|---|---|
| 總樓面面積<br>Gross Floor Area | 150,000 平方米<br>150,000 $m^2$ |
| 製冷量<br>Cooling Capacity | 裝機製冷量 27,414 千瓦<br>Installed 27,414 kW |
| 新冷卻塔設備<br>New Cooling Tower Equipment | 12 台 2,285 千瓦的冷卻塔<br>12 x 2,285 kW cooling towers |


新的互動網頁「能源資訊園地」
New Interactive Website **"EnergyLand"**

我們剛推出一個互動的網頁「能源資訊園地」，內有大量有關能源及能源效益的有用資料，以及各種有助建築物及車輛節約能源的建議。我們更設計了不少有趣的遊戲，讓一家大小能從遊玩中學習節能知識，樂在其中。

We have recently launched an interactive website EnergyLand which features a lot of useful information about energy and energy efficiency, plus energy saving tips for buildings and vehicles. A lot of fun stuff has been added in which different family members can enjoy while learning smart hints on energy efficiency.

歡迎瀏覽「能源資訊園地」：
Come and visit EnergyLand at
http://www.EnergyLand.emsd.gov.hk

機電工程署
EMSD

報告 Reports

# 九龍灣室內運動場壁球場所使用的感應式電燈

# Induction Lamps in Squash Court at Kowloon Bay Indoor Games Hall

2003年年初，我們為九龍灣室內運動場2號壁球場的照明系統進行改裝工程。

該處原先的照明系統由6組250瓦的金屬鹵化物高位照明器組成。新的感應式照明系統則包括4組高位照明器，每組均裝有2x150瓦感應式電燈，並配上電子鎮流器。

這些感應式電燈其實就是沒有電極的熒光燈，由於沒有電極，這種電燈非常耐用，因此照明器的壽命長短主要取決於鎮流器的壽命(即60,000小時)。

現場測試結果初步顯示，壁球場的用電量由1.65 千瓦降至1.25千瓦，而平均照明度亦由470勒克斯增至710勒克斯。新感應式照明系統的其他好處尚包括無閃動即時亮燈、顯色指數較高 (>80)、光量衰減較低，以及由於燈的壽命較長，故維修次數相對亦較少。

以每日運作六小時計算，上述壁球場每年可節省近九百度電。感應式電燈不單適用於上述場館，亦同樣適用於其他運動場地及工商業地方。

In early 2003, we retrofitted the lighting system in Squash Court No. 2 at Kowloon Bay Indoor Games Hall with induction lamps.

The previous lighting system was made up of 6 sets of 250 W metal halide high-bay luminaires. The new induction lighting system consists of 4 sets of high-bay luminaires, each equipped with 2x150 W induction lamps and electronic ballasts. These induction lamps are in fact fluorescent lamps without electrodes. Being rid of electrodes, induction lamps have extremely long life. Therefore, the lifetime of the luminaire is determined primarily by that of the ballast (i.e. 60,000 hours).

Preliminary on-site test results indicated that the power consumption of the squash court was reduced from 1.65 kW to 1.25 kW and the average illumination level increased from 470 lux to 710 lux. Other advantages of the new induction lighting system include: instant flicker-free starting, higher colour rendering index (>80), lower luminous depreciation, and less maintenance required due to much longer lamp life.

It is estimated that the new induction light system in the aforementioned venue can bring about an annual energy saving of almost 900kWhr, based on a daily operation of 6 hours. In fact, the induction lamps are not only suitable for application of squash court but also in other sports venues and commercial or industrial premises.

安裝於壁球場的新感應式照明系統
The new induction lighting system in the squash court

我們就制定能源消耗量指標及基準進行了一項研究，上一期「智能」已簡介了商業類別的結果，今期我們則會重點介紹私家車的研究結果。(研究範圍雖然包括了輕型貨車，但我們不會在本文討論。)

這項研究按引擎容量將私家車細分為不同組別，顧問公司向加油站的車輛進行了實地調查，蒐集調查對象車輛的有關細節、行車情況及使用者意識等資料，並使用回郵表格來收集入油記錄及哩數錶資料。這項研究共收到超過5,900份有效的油耗數據，我們利用有關資料，找出耗油量與引擎容量、環境溫度、車齡、車身類別及傳動裝置類別的關係。

根據利用調查結果作出的迴歸分析顯示，私家車的耗油量主要受引擎容量、環境溫度、車身類別及車齡影響。在道路交通較暢順的新界區，耗油量亦受傳動裝置類別，以及車輛為兩輪或四輪驅動這因素影響。研究亦發現在路上行走的大引擎容量車輛 (例如四輪驅動車輛及多用途客貨車) 的數目正不斷上升。

為了方便私家車駕駛者將其車輛的耗油量水平與其他車輛比較，我們設計了一套基準軟件工具。使用者只需輸入簡單的資料，例如引擎容量、車輛類別、車齡、行車哩數、兩次入油間的油耗等，基準工具便會計算車輛的耗油量，並得出一個與本港同類車輛比較，代表此車輛效能的百分比數字。軟件亦會向使用者提出節省燃料的建議，並告知如何選購節能車輛。

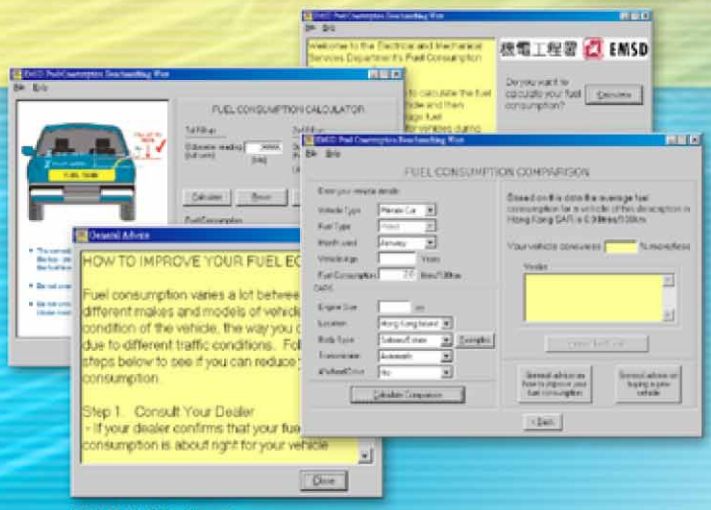
In the last issue of "Energy Wits" we gave a brief summary of the commercial sector results from the study on the development of energy consumption indicators and benchmarks. In this issue, we continue to look at the transport sector results, focusing on private cars. (Light goods vehicles are also covered by the study, but will not be discussed here.)

In the study, private cars were divided into sub-groups according to engine size. Intercept surveys were conducted at petrol stations to capture data on details of vehicles being surveyed, as well as trip-making and user-awareness information. Mail-back forms were used to collect fuelling records and odometer data. A total of over 5,900 sets of valid fuel consumption data were obtained from the survey.

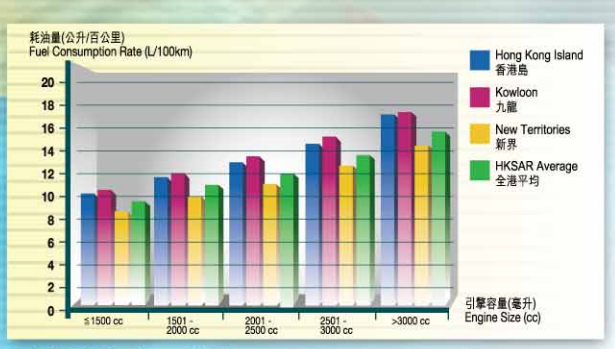
According to the results of regression analysis performed on the collected data, fuel consumption rate of a private car is mainly affected by engine size, ambient temperature, body type and vehicle age. In the New Territories where the roads are less congested, fuel consumption is also affected by transmission type and also whether the car is a two-wheel drive or four-wheel drive one. The study also revealed that the number of large engine size vehicles (e.g. four-wheel drive vehicles and multi-purpose vans) running on the roads has been increasing.

To facilitate private car drivers to compare the fuel consumption levels of their cars with others, we have developed a benchmarking software tool. Users only need to input simple data like engine size, vehicle type, vehicle age, distance travelled, fuel consumed between two fuel intakes, etc. The tool will then calculate the fuel consumption rate of the vehicle and give a percentage figure representing how efficient or inefficient the vehicle is as compared to similar vehicles in Hong Kong. Users will also be given some fuel-saving tips as well as hints on how to buy a fuel-efficient vehicle.

# 私家車能源消耗量指標及基準
# Energy Consumption Indicators & Benchmarks for Private Cars




耗油量基準軟件工具
Fuel consumption benchmarking software tool




本港私家車的全年平均耗油量
Annual average fuel consumption rate of private cars in Hong Kong

基準軟件工具載於機電工程署網頁：**http://www.emsd.gov.hk/emsd/chi/pee/ecib.shtml**，供市民下載使用。
The benchmarking software tool is available from the EMSD website:
**http://www.emsd.gov.hk/emsd/eng/pee/ecib.shtml** for public use.

機電工程署 EMSD

# 節能小錦囊 Energy Saving Tips

**為了向各行各業人士提供一些實用而有效的措施，有助節約能源及減省電費開支，今期「智能」特別就公司「內務管理」方面詳列一些簡單的守則，希望能助各機構的節能計劃邁出第一步。**

**To give useful and practical tips for everyone in any organisation to conserve energy and achieve cost savings, "Energy Wits" would like to give you some simple measures regarding "Housekeeping" so as to kick-start your energy efficiency programme.**

## 空調設備

### 減低用電量

- 在設施／房間使用完畢後立即關掉空調設備，並在出口附近貼上「節約能源」的標貼以作提示。
- 盡可能使用通風設備或風扇，尤其是在較涼的季節。
- 盡可能移走被太陽直射的座位，以免不必要地調低空調溫度，浪費能源。
- 每周舉辦「便服日」，並在便服日略為調高空調溫度。

### 善用能源

- 將空調設定於攝氏24度及合適的送風速度，並定時檢查室溫，確保不會低於攝氏24度。
- 定期清洗空調設備及隔塵網。
- 定下維修計劃，確保空調系統能有效率地運作。
- 視乎需要，以更省電的貼有第1級或第2級能源標籤的新型號／系統取代舊冷氣機。

### 減低能源流失

- 在空調設備開動時，關上門窗以減少外界空氣滲入。
- 在夏季時放下百葉簾或窗簾，避免陽光直射室內。

## 照明設備

- 凡沒有人使用的地方，均應關掉照明設備，並在開關掣附近貼上「節約能源」的標貼以作提示。
- 凡靠近窗邊且有足夠天然光線照射的地方，均應關掉或調暗照明設備。

## 辦公室設備

- 在辦公時間內將所有電腦及辦公室設備設定為節能模式，用完便即關掉。
- 設備使用完畢後，應將其充電器及變壓器由插座拔除。
- 找出及更換運作欠佳的設備，例如不正常閃動的燈、嘈吵的風扇和冷氣滲水，這些設備耗電量通常較大。
- 視乎情況，以較省電的液晶體(LCD)顯示器取代陰極射線管(CRT)顯示器。
- 視乎情況，以貼有能源標籤的節能電器及辦公室設備取代舊型號。
- 安排最遲離開的員工檢查及關掉所有空調、照明和辦公室設備。

## 升降機及自動梯

- 鼓勵員工在上落一兩層樓時使用樓梯，而非乘搭升降機，並在升降機附近貼上「節約能源」的標貼以作提示。
- 在非繁忙時間關掉部分升降機及自動梯。
- 升降機處於備用／閒置模式時關掉裡面的照明設備及通風扇。

## Air Conditioning (AC)

### Minimise Energy Use

- Turn off AC in the facility/room right after use. Affix "Save Energy" stickers near the exit as a reminder.
- Use ventilation or fans where possible, especially during cool seasons.

- Re-locate where possible seats under direct sunlight that require strong AC for thermal comfort.
- Organise "Dress Casual Day" on a weekly basis where the AC is adjusted to a slightly higher temperature.

### Use Energy Efficiently

- Set AC at about 24° C and adjust to an appropriate fan speed. Regularly check the room temperature to ensure it does not fall below 24° C.
- Clean AC and dust filter regularly.
- Establish a maintenance programme to ensure AC is operating efficiently.
- Replace as necessary room coolers with new, more energy efficient models/systems affixed with Grade 1 or Grade 2 Energy Label.

### Minimise Energy Loss

- Keep windows and doors closed to minimise air infiltration when AC is running.
- Lower window blinds to reduce direct sunlight during summer time.

## Lighting

- Turn off unnecessary lighting when the area is not in use. Affix "Save Energy" stickers near the switch as a reminder.
- Turn off or dim lighting in perimeter area sufficiently lit by natural daylight.

## Office Equipment

- Set all computers and office equipment to energy saving mode during office hours. Turn them off after use.
- Unplug equipment chargers and adapters from socket outlets when not in use.
- Identify and replace equipment that is not operating well e.g. fickle lights, noisy fans and leaking water from air-conditioners. They usually consume more energy.
- Replace, where appropriate, CRT monitors with more energy-efficient LCD monitors.
- Replace, where appropriate, electrical appliances and office equipment with more energy-efficient models affixed with Energy Label.
- Arrange for the last-man-out to check and turn off all AC, lighting and office equipment.

## Lifts and Escalators

- Encourage using the stairs (for one or two floors up or down) rather than taking the lift. Affix "Save Energy" stickers near lifts as a reminder.
- Shut down some of the lifts and escalators during non-peak hours.
- Switch off the lighting and ventilation fan inside the lift car when the lift is in standby / idle mode.



**聯絡資料 Contact**

任何人士如欲就本通訊提出意見或詢問，請與我們聯絡，資料如下：
香港銅鑼灣禮頓道 111 號 11 樓機電工程署能源效益事務處
電話：(852) 2881 1651　傳真：(852) 2890 6081　電郵：eepublic@emsd.gov.hk

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