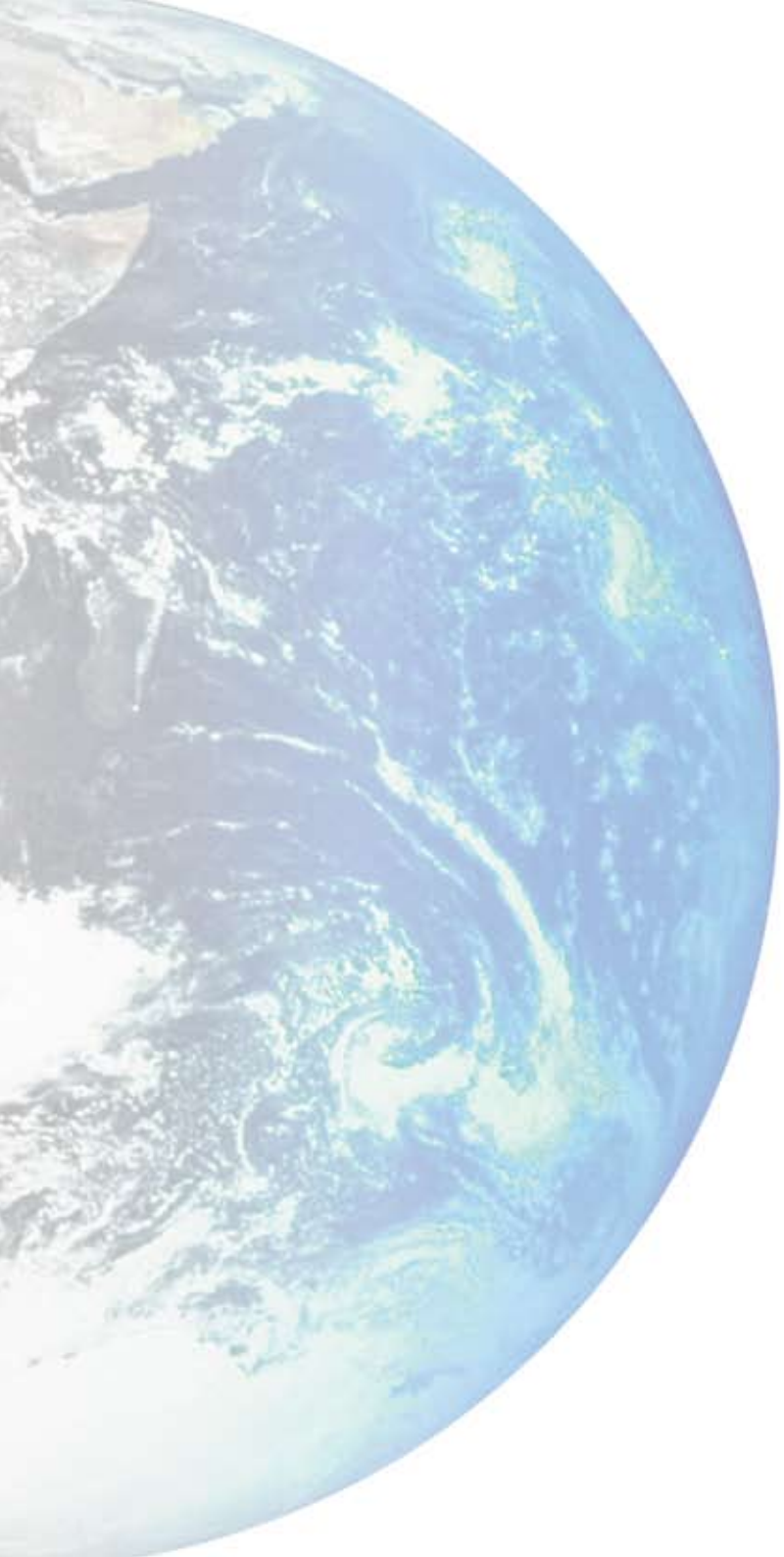




Green <sup>25 Years</sup> and beyond  
Productivity  
25年開拓綠色生產力



Hong Kong  
Productivity Council  
香港生產力促進局



GREEN PRODUCTIVITY 25 YEARS AND BEYOND 25年開拓綠色生產力

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# Message from the Chairman

## 主席獻辭



**The Hon. Andrew Leung, SBS, JP**  
Chairman  
Hong Kong Productivity Council

**梁君彥太平紳士**  
香港生產力促進局主席

A quarter of a century ago, when “green productivity” was just an emerging phenomenon in the West and almost unheard of locally, it was the Hong Kong Productivity Council (HKPC) that pioneered this concept with the launch of the first-ever environmental support service for businesses in Hong Kong. We began with laboratory testing in 1981, and our portfolio of services has been expanding ever since.

Today, with growing environmental concerns and regulations across the world, green productivity is taking on increasing importance, resulting in the rapid development of the environmental technology industry. The need for environmental support services is especially pronounced in the Pearl River Delta (PRD), where serious pollution

has resulted from over three decades of rapid industrialization. There, air quality continues to deteriorate, rivers become increasingly polluted and clean water is in short supply. It is high time these problems are being addressed – and green productivity is the only way forward.

HKPC, with professional competence built up over the past 25 years, is well positioned to support the development of the local environmental industry and assist enterprises in their green drive both locally and in the PRD.

In the coming years, HKPC looks forward to sustained collaboration with the business sector to preserve the environment and deliver a better quality of life for all.



四分一世紀之前，綠色生產力的觀念才剛於西方興起，而香港更絕少人談論。香港生產力促進局率先在當時為工商企業推出全港首創的環保支援服務，成為本地推廣綠色生產力概念的先驅。由1981年的實驗室分析服務開始，本局的服務範圍不斷與時俱進。

今天，隨著全球對環保日益關注，加上眾多的環保法規，使綠色生產力日受重視，更推動環境科技工業迅速發展。與此同時，三十多年的快速工業化，為珠三角地區帶來嚴重的污染問題，對環保支援服務的需求尤其迫切。區內的空氣質素惡化、河道污染嚴重、清潔水源短缺等問題亟待正視。只有實踐綠色生產力，才是長遠的出路。

過去，生產力局累積了雄厚的技術及專業知識，全力協助企業在香港及珠三角實踐環保，促進本地環保工業的發展。

展望未來，生產力局將會積極與業界攜手合作，保護環境，締造優質生活。



# Message from the Executive Director

## 總裁獻辭



**Mr. Wilson Fung**  
 Executive Director  
 Hong Kong Productivity Council  
 馮永業先生  
 香港生產力促進局總裁

Blue skies, clean air, clear seawater ... To us, they are not just beauties of the nature, but essential qualities to which all world great cities aspire.

Unfortunately, our environment has fallen victim to perennial neglect with pollution of various forms that brings lasting and debilitating impact on our living environment. Many governments around the world have come round to recognize the fact that pollution is not necessarily the price to pay for prosperity and economic development. Governments with vision and key stakeholders alike are pitching in heavily not just to preserve a more sustainable world for our future generations but also to make their cities a much more attractive place to live and invest. All these environmental initiatives require heavy investment in research and technology development. In the local context, HKPC has an extremely important role to play.

For a quarter of a century, HKPC has been providing environmental services for manufacturers and enterprises in pursuit of greener production. In helping businesses achieve compliance with increasingly stringent environmental regulations and effective utilization of resources, we have invested heavily in the development of

various forms of environmental technology and played a pivotal role in marrying such technology with everyday application.

With our strong professionalism gained from our 25 years of experience, we are better equipped than ever to meet the green needs of our business community as well as those of our society as a whole. Our wide spectrum of services range from green manufacturing and waste management to environmental system development and pollution-related testing, just to name but a few of them.

Our services are of particular relevance to the green initiatives launched by the HKSAR Government, and in particular the Action Blue Sky Campaign. Among many other initiatives, we are organizing a conference on “Technological Solution Leading to Blue Sky” in January 2007 to explore technological solutions to air pollution. We are also expanding our services throughout the Pearl River Delta region to help more and more HK factories carry out cleaner production.

With a firm policy steer and support from the HKSAR Government, HKPC will continue to contribute and I am hopeful that Hong Kong would once again be remembered by its blue sky and beautiful harbour.

藍天白雲、青山綠水不單是賞心悅目的自然美景，更是所有國際大都會均渴求的環境素質。

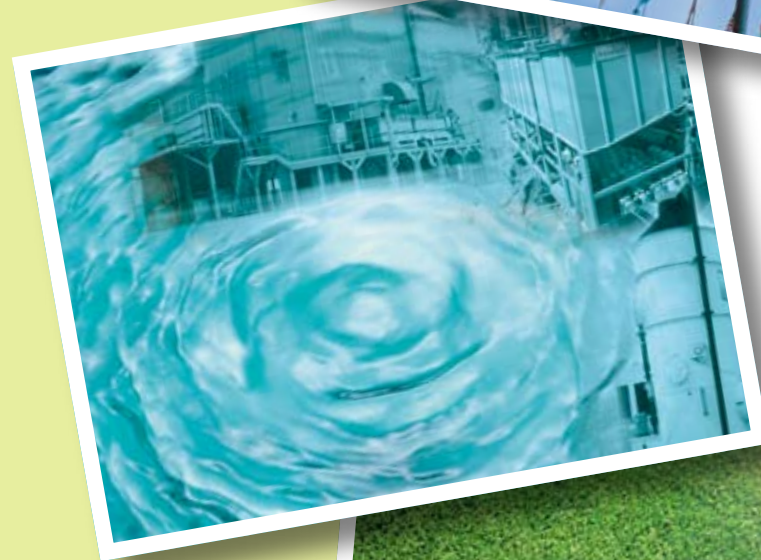
香港備受各類污染破壞，為我們的生活環境帶來深遠的影響。環顧全球，各國政府已認識到污染並非經濟繁榮的必然代價，而具遠見的政府及有關機構，不單致力為下一代建設可持續發展的社會，更要透過改善生活環境，提高其城市對投資者的吸引力。這些環保工作有賴投入更多資源進行技術研發。在這方面，生產力促進局一直在香港擔當重要的角色。

過去二十五年來，生產力促進局不斷為製造業及其它企業提供環保服務，實踐綠色生產力。本局積極開發環保技術及推廣其普及應用，以協助企業符合日益嚴格的環保法規，並有效地運用資源。

憑著多年累積的專業知識，生產力促進局提供全面的環保支援服務，涵蓋綠色製造、廢料管理、環保系統開發及環境分析測試等多個範疇，以回應商界及社會對加強環保的需求。

本局一直緊密配合香港特區政府的環保政策及工作，例如為改善香港空氣質素的「藍天行動」，本局將全力支持並推展一系列項目，包括於2007年1月舉辦「創造藍天的技術方案」會議，探索控制空氣污染的科技。本局亦會加強在珠三角的支援服務，協助更多廠商推行清潔生產。

在政府的政策指引及支持下，生產力促進局將繼續為促進香港的環保作出貢獻。我有信心，藍天碧海，將再成為香港人生活的一部份。





To provide support to the business and manufacturing sectors to achieve:

- Reduction of environmental pollution to meet regulatory requirements
- Effective utilization of resources and energy
- Compliance with emerging environmental requirements in international business and trade

To provide support to the environmental industry through environmental product innovation

## Missions 使命

支援工商業界：

- 改善及減少環境污染
  - 加強資源及能源之有效應用
  - 協助工商業滿足國際貿易之環保要求
- 支援本地環保工業發展創新環保產品

## Roadmap and Milestones of HKPC's Green Productivity 生產力局開拓綠色生產力之里程

GREEN PRODUCTIVITY

1980 >>

1982 >>

1984 >>

1986 >>

1988 >>

1990 >>

1981 >>

1983 >>

1985 >>

1987 >>

1989 >>

Launch of services in pollution control for tanning & leather dressing industry & electroplating industry  
為皮革及電鍍行業提供污染控制服務

Launch of technical support services for Hong Kong SMEs in pollution control  
向中小企提供環保技術支援

Design of locally fabricated cost-effective pollution control systems  
設計本港製造的高效益污染控制設備

Launch of Indoor Air Quality (IAQ) services  
提供室內空氣質素改善服務

Launch of laboratory services  
提供化驗分析服務

Building of the first flue gas desulfurization (FGD) system in Hong Kong  
建造第一台煙氣除硫裝置

Establishment of Centre of Environmental Technology for Industry  
成立工業環境技術中心

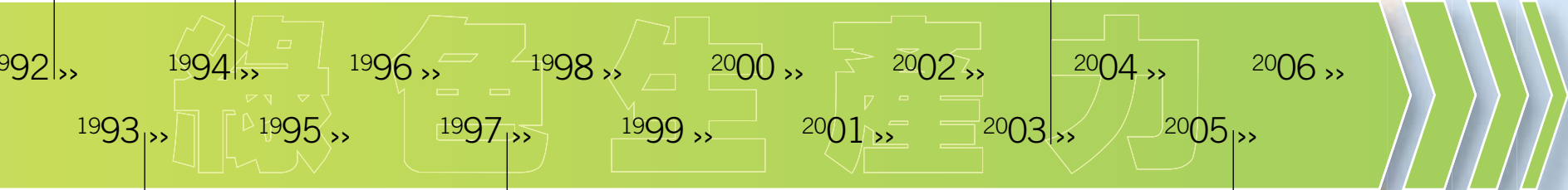
Launch of supporting services for infrastructure development projects  
為基礎建設項目提供支援



Launch of environmental compliance supporting services for Hong Kong-Linked factories in PRD  
協助珠三角港商符合環保法例

Introduction of ISO14000 Environmental Management Standard  
引進ISO14000 環境管理標準

**Environmental Technology Innovation and Commercialization**  
• Handy Toilet Waste Disinfection System  
• Wastewater Treatment System for Construction Site (AquaSed)  
• Automatic Wheel Tyre Washing System (EnviroWash) System  
• STS treatment system for temporary offices on construction sites  
**環保科技創新及產業化**  
• 輕便廁所消毒系統  
• 工地泥水處理系統(AquaSed)  
• 自動輪胎清洗系統(EnviroWash)  
• STS工地臨時辦公室污水處理系統



Development of Cleaner Production Technology  
發展清潔生產技術

Introduction of "Energy Performance Contracting" service  
引進節能成效合約服務

**Launch of Green Manufacturing Supporting Services:**  
• Design for Environment  
• EU RoHS/WEEE compliance  
• EuP compliance  
• China RoHS  
**綠色生產支援服務：**  
• 環境設計  
• 歐盟RoHS/WEEE法例  
• EuP法例  
• 中國RoHS



Support to Business and  
Manufacturing Sectors To  
Reduce Environmental Pollution

Over the past 25 years, HKPC has been working very closely with the business and manufacturing sectors to help them reduce environmental pollution and achieve compliance with environmental regulations both in Hong Kong and the PRC.

The types of supporting services we provide include:

- (i) identification and quantification of pollution sources;
- (ii) assessment of compliance status;
- (iii) evaluation of alternative compliance schemes;
- (iv) design of cost-effective pollution control systems;
- (v) supervision of installation, commissioning and performance evaluation of pollution control systems.

Examples of projects we have undertaken for different sectors are:

香港生產力促進局在過去二十五年一直緊密協助工商界減少環境污染，以符合本港及內地環保法規的要求。

生產力局所提供之支援服務包括：

- (i) 確定及量化污染源
- (ii) 評估符合法例要求之差距
- (iii) 驗證不同之達標方案
- (iv) 設計具成本效益之污染控制系統
- (v) 污染控制工程監督、系統調試及效果測試

過往替各行業所承辦之環境項目的例子如下：

支援工商界  
減少環境污染

# Air Quality Improvement 空氣質素改善



## METAL PRODUCT INDUSTRY 金屬製品工業

**[1]** A venturi scrubber system for treating metallurgical fumes and fluoride emissions was installed at an aluminium remelting factory.

在一間鋁材工廠所安裝之一台文丘里式氣體洗滌系統以處理含金屬及氟化物之氣體。

**[2]** A pulse-jet bag filter system for treating metallurgical fume emissions from a hot-dip zinc galvanizing operation was developed. Similar system was installed in 5 hot-dip galvanizing factories in Hong Kong.

特別為處理從熱浸鋅過程所產生之含金屬微塵廢氣而發展的一個由脈衝氣流反洗之袋式過濾系統，該系統已經安裝在香港五間熱浸鋅工廠。



## FOOD INDUSTRY 食肆及食品製造業

**[3]** For food preparation, HKPC developed an effective oil mist control system based on electrostatic precipitation technology. More than 300 such systems have been installed in restaurants.

生產力局以靜電除油煙技術為食品行業所發展之油煙處理系統。超過三百台設備已經安裝在不同之食肆中。

## AUTOMOBILE REPAIR WORKSHOPS 汽車維修工場

**[4]** For small and medium vehicle repair workshops, HKPC developed a VOC control system based on activated carbon adsorption technology.

生產力局特別為中小型汽車維修工場所發展之活性碳吸附系統。該系統有效地處理含揮發性有機物氣體之排放。





# Air Quality Improvement 空氣質素改善



## MOTOR VEHICLE EXHAUST EMISSIONS

### 汽車尾氣排放

[5] Diesel oxidation catalysts (DOC) were installed on heavy goods vehicles for reducing vehicular emissions.

在重型貨車排氣喉安裝催化式的柴油尾氣氧化裝置以減少尾氣排放。

[6] Monitoring of vehicular emissions from gasoline cars using remote sensing techniques.

以遙距感應技術對汽車尾氣排放監測。



### AIR QUALITY MEASUREMENT AND MONITORING 空氣質素量度及監測

[7] Measuring the level of toxic substances in stack emissions from crematoria.

在煙道中監測從火化場排出廢氣所含之有毒有害物質之濃度。

[8] HKPC provided ambient air monitoring in relation to the levels of pollutants including particulates, heavy metals, dioxins and PCBs.

生產力局提供監察大氣中微塵、重金屬、二噁英及多氯聯苯之測量服務。

[9] Comprehensive indoor air quality evaluation service in an office.

全面評估辦公室的室內空氣質素服務。



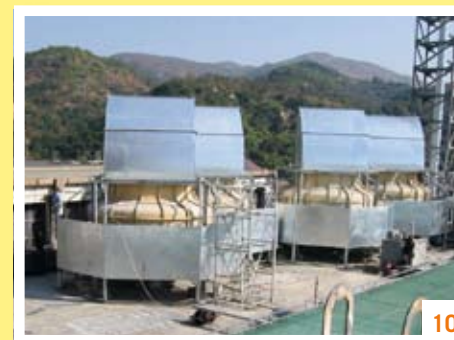
## Preserving a Quiet Environment 保持清靜之環境

[10] A noise barrier and silencers for cooling towers were designed and installed in a local factory.

為本地工廠的水塔而設計及安裝的靜音系統。

[11] A noise control system was designed and installed in the water pumping system of a building.

為一間樓宇之供水泵系統設計及安裝的靜音系統。





# PROTECTING WATER RESOURCES

## 保護水資源



15

### ELECTROPLATING AND METAL FINISHING INDUSTRY

#### 電鍍及金屬表面處理業

[12] S-IX selective ion exchange systems developed by HKPC are now widely used in the electroplating and printed circuit board manufacturing industries for heavy metal removal. The first S-IX system was installed in 1997.

特別為去除廢水中所含之重金屬而發展之 S-IX 選擇性離子交換系統一直被電鍍及表面處理業廣泛應用。本圖顯示在 97 年中所安裝的第一台設備。

[13] A compact S-IX system (2m<sup>3</sup>/hr) was installed to treat metal-bearing wastewater from a small electroplating workshop.

為一間小型電鍍廠安裝之 S-IX 系統，該系統每小時可處理 2 立方米含重金屬廢水。



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### PRINTED CIRCUIT BOARD MANUFACTURING

#### 印刷線路板業

[14] A 3,000-m<sup>3</sup>/day S-IX system was installed in a multi-story factory building in Hong Kong to remove heavy metals from printed circuit board manufacturing wastewater.

在香港多層工業大廈的某一間印刷線路板公司所安裝的 S-IX 系統，該系統可每天處理 3,000 立方米含重金屬廢水。

[15] A state-of-the-art wastewater treatment plant (8,000-m<sup>3</sup>/day) built in the basement of a modern multi-story factory building of a printed circuit board manufacturer in Shekou, PRC. The system consists of a S-IX system and a SuperOxy system for removing heavy metals and reducing the COD of the wastewater respectively.

在蛇口一間印刷線路板廠所安裝的高科技污水處理系統，該系統包括 S-IX 重金屬去除設備及 SuperOxy COD 去除技術，每天可處理 8,000 立方米廢水。





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## ELECTRONICS INDUSTRY 電子工業

**[16]** A sophisticated wastewater treatment plant (3,000-m<sup>3</sup>/day) using HKPC-patented advanced chemical oxidation (SuperOxy) technology and biological submerged aerated filters (SAF) was installed to treat the wastewater discharged from a semiconductor factory in Shenzhen, PRC.

在深圳一間半導體工廠安裝了一個污水處理系統，該系統應用了SuperOxy高級化學氧化技術及SAF潛水式曝氣生物過濾技術，每天可處理3,000方立方米污水。

**[17]** An enhanced biological SBR (Sequential Batch Reactor) was developed and installed for a microelectronics factory to reduce the COD of wastewater of high soldering flux content from 200,000 mg/l to <60 mg/l.

在一間微電子廠設計及安裝了一套強化的批序式生物反應系統，該系統將高濃度助錒劑廢水之COD由200,000毫克/升減低至少於60毫克/升。

## FOOD & BEVERAGE INDUSTRY 食品及飲料業

**[18]** To support a potato chip manufacturer to establish a new factory in Shantou, PRC, we designed and built a new wastewater treatment plant (180-m<sup>3</sup>/day) in 2005. The plant employs our unique biological submerged aerated filter (SAF) to reduce the wastewater COD. A similar system had been installed at the client's Hong Kong factory earlier.

在2005年，為一家薯片製造商在汕頭之新工廠設計及安裝一個日處理量180立方米之污水處理系統，該系統應用獨特之SAF潛水式曝氣生物過濾技術。該客戶早前亦在香港之工廠安裝了一個類似的系統。

**[19]** A 400-m<sup>3</sup>/day comprehensive wastewater treatment system consisting of chemical coagulation device, a submerged aerated filter (SAF) and rotating biological contactor (RBC) was installed for treating the high-strength organic wastewater discharged from a bakery factory in Hong Kong.

為本港一家麵包製造廠設計一個日處理量達400立方米之高濃度廢水處理系統。該系統包括化學沉澱，SAF潛水式曝氣生物過濾技術及生物轉盤技術。



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## BLEACHING & DYEING INDUSTRY 漂染業

**[20]** A 550-m<sup>3</sup>/day wastewater treatment system consisting of a chemical precipitation device and a biological submerged aerated filter (SAF) was installed for a bleaching & dyeing factory in Hong Kong.

為本港一間漂染廠設計及安裝一個日處理量為550立方米之污水處理系統，該系統包括SAF潛水式生物過濾技術及化學沉澱。

**[21]** A high temperature cooling tower was designed and installed for a bleaching and dyeing factory in Hong Kong to reduce the temperature of the wastewater before discharge.

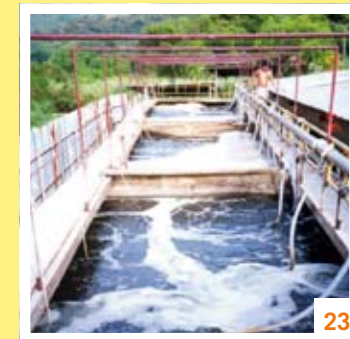
為一家本港漂染廠設計及安裝的高溫冷卻塔，用以將燙熱的廢水降溫後排放。



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23

## PIG FARMS 養豬業

**[22]** Technical support service was provided to about 20 local pig farms to renovate and upgrade malfunctioning treatment plants to achieve compliance. 為本港20家養豬場提供技術支援服務以改善及提高舊有之污水處理系統之效能。

**[23]** A 60-m<sup>3</sup>/day biological wastewater treatment system was modified and upgraded to properly treat high-strength wastewater from a pig farm in Hong Kong.

為一家本地豬場改造一個日處理為60立方米之污水處理系統，以提升其處理效能。





24

## TOY MANUFACTURING 玩具業

**[24]** A 3,000-m<sup>3</sup>/day wastewater treatment system based on SAF technology was installed to treat the dormitory sewage, canteen wastewater and industrial wastewater from a toy manufacturer in Panyu, PRC.

為一家位於番禺之玩具廠設計及安裝一個日處理量為3,000立方米之污水處理系統，該系統應用了SAF潛水式曝氣生物過濾技術，可有效地處理由工人宿舍、食堂及工廠排出之污水。

**[25]** Chief Executive, Mr. Donald Tsang (first from left), and Secretary for Environment, Transport & Works, Ms. Sarah Liao (second from left) visited the wastewater treatment plant.

香港特區政府行政長官曾蔭權（前排左一）及環境運輸及工務局局長廖秀冬（左二）參觀該污水處理系統。



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## CHEMICAL INDUSTRY 化工業

**[26]** A 55-m<sup>3</sup>/day wastewater treatment system including cyanide oxidation unit, chromium reduction unit and batchwise chemical oxidation unit was designed and installed to reduce the cyanide, hexavalent chromium and COD of the wastewater of a chemical manufacturer in Shanghai, PRC.

為一家在上海之化工廠設計及安裝一個日處理量55立方米之污水處理系統。該系統包括破氰、六價鉻還原處理與及化學氧化去除COD。

**[27]** A 5-m<sup>3</sup>/day high-strength wastewater treatment system carrying out advanced chemical oxidation and chemical decomplexing processes was installed to remove organic pollutants and complexed toxic metals from concentrated chemical wastes of a chemical supplier in Hong Kong.

為一家化工原料供應公司安裝一個日處理量5立方米之高濃度廢水處理系統。該系統應用高級化學氧化流程與及化學脫絡物技術去處理有機物及絡合重金屬。

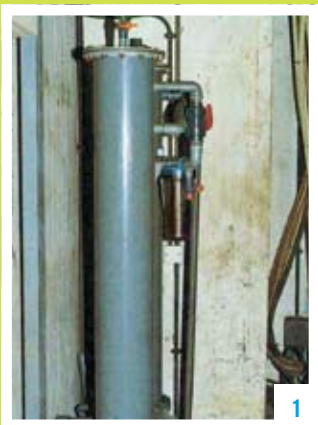




A pro-active approach to reducing environmental pollution is to achieve a highly efficient utilization of resources, including raw materials, water and energy through conservation, reuse and recycling. In doing so, the enterprise can enjoy the benefit of reduced consumption and at the same time produce less environmental pollution. Examples of the projects we have carried out include:

在源頭減少及循環再用原材料、水及能源，是一個減少環境污染的最佳方案。企業除可減少環境污染外，還可以減低物料消耗。生產力局過去在這方面的工作包括：

Effective Utilization of  
Resources and Energy  
資源及能源的有效使用



1



2



3

## REUSE AND RECYCLING OF WASTE CHEMICALS 再用及回收廢料工業化學品

**[1]** Installation of a gold recovery system for a jewellery shop. The system recovers dissolved gold from the wastewater.

在珠寶工廠安裝了一個金回收系統，該系統可吸取在廢水中的可溶解金離子而加以回收。

**[2]** A pilot scheme for 11 electroplating workshops to recover nickel from wastewater for reuse.

一個替11家電鍍工場從廢水中回收鎳之試驗計劃。

**[3]** Recycling System developed for the recovery and reuse of hexavalent chromium.

一個六價鉻之回收系統。

**[4]** An Acid Recovery System designed and installed in an aluminium anodizing factory. The system recovers spent acid from wastewater for reuse.

為一家陽極氧化工場設計及安裝的酸回收系統，可以將廢酸回用。



4



## REUSE AND RECYCLING OF WATER

### 污水循環再用

**[5]** A 400-m<sup>3</sup>/day wastewater recycling system consisting of a selective ion exchange system (S-IX) and a Dual Membrane System (DMS) units was installed to recycle the wastewater from an electroplating factory in Shenzhen, PRC for production use.

為一家深圳電鍍廠而設計的污水回收系統。該系統應用S-IX離子交換技術及DMS雙重透膜技術，每天可回收400立方米污水作為工業用途。

**[6]** A 5,000-m<sup>3</sup>/day Dual Membrane System (DMS) was installed for a printed circuit board manufacturer in Dongguan, PRC to recycle 70% of their industrial wastewater for production use.

為一家位於東莞之印刷線路板廠設計及安裝的DMS雙重透膜系統，可回用約百分之七十工業廢水，每天產量為5,000立方米，作為工業用途。

**[7]** The domestic sewage discharged from a factory in Panyu, PRC was treated by our SAF system so that the treated effluent could be reused for gardening and toilet flushing.

利用了SAF潛水式曝氣生物過濾技術替番禺一家工廠將宿舍污水回用到園林灌溉及沖廁。







8



9

## ENERGY SAVING AND EFFICIENCY

### 節約能源及效益

[8] An air-to-air hot water heat pump for a recreation club in Hong Kong was installed to save energy.

為本港一間消閒會所安裝了一台空氣對空氣式的熱泵系統，用節省能源之方法製造熱水。

[9] An automatic control system for chiller plants for an industrial building in Hong Kong to reduce energy consumption.

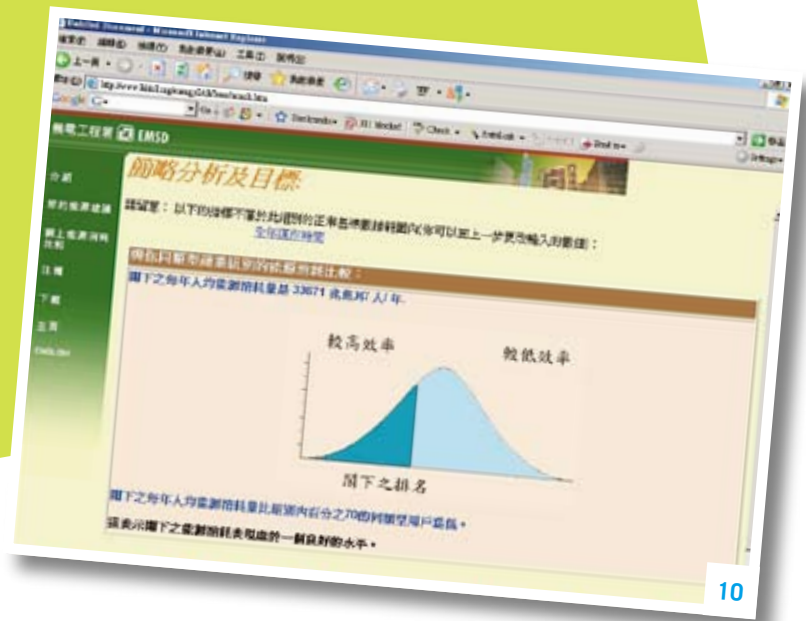
在一工業大廈之冷水機安裝了自動控制系統達致節能效果。

[10] HKPC participated in the development of an energy benchmarking model and on-line web-based benchmarking software for office buildings, commercial buildings, shopping centres, hotels, universities, etc. for the HKSAR Government. The programme was the first of its kind in promoting energy conservation awareness and tools for assessing energy performance.

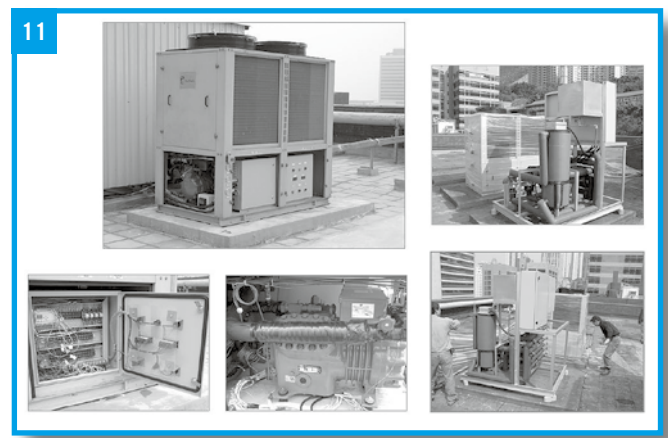
生產力局參與了發展一套能源消耗之基準模型及網上評核軟件，該軟件為本港首個可適合評估各類建築物包括辦公大樓、商場、商業大廈、酒店、大學等之能源效益。

[11] HKPC participated in the development of an integrated heat pump system for reducing energy consumption.

生產力局參與了整合式的熱泵節能技術發展。



10



11

With the increasing importance placed on environmental protection, major companies across the world are imposing various mandatory or voluntary environmental requirements regulating production methods and product specifications on their trading partners and suppliers. HKPC has been devoting its resources and expertise to assist Hong Kong-based companies in the PRD to meet these new challenges.

國際商界對環境保護越來越重視，亦對它的貿易夥伴及供應商的生產方法及產品規格作出不同的強制性或是自願性的環保要求。生產力局一直投放資源及技術去協助在珠三角地區的廠家迎接這些挑戰。



*Meeting the Emerging  
Environmental Requirements in  
International Business and Trade*  
符合國際商業及  
貿易的未來環保要求



Cleaner Production Manuals compiled for different industry sectors  
為不同行業編寫的清潔生產手冊

## CLEANER PRODUCTION 清潔生產

[1] Cleaner Production is about changing products or production processes to achieve the conservation of raw materials, water and energy, elimination of toxic and dangerous raw materials, and reduction in the quantity and toxicity of all emissions and wastes at source. HKPC, with funding support from the Government, has published Cleaner Production Manuals for different industry sectors covering metal finishing, printed circuit board manufacturing, textile bleaching and dyeing, food and beverage, as well as tannery.

清潔生產是透過產品及生產流程的改動來達致節約原料、水及能源，清除使用有毒有害物料，減少污染排放。生產力局透過政府撥款，出版了一系列針對不同行業的清潔生產手冊，包括金屬表面處理、印刷線路版、漂染、食品及皮革業。



## COMPLIANCE WITH EUROPEAN UNION DIRECTIVES 符合歐盟法例

The “Waste Electrical and Electronic Equipment” (WEEE), the “Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipment” (RoHS) and the “Framework for the setting of Eco-design Requirements for Energy-using Products” (EuP) are three EU Environmental Directives on electronic and electrical products.

HKPC has launched an one-stop solution, “Green Manufacturing Express”, to support the manufacturers to meet the new requirements. Services include training, information support, consultancy services as well as provision of tools and testing.

歐盟針對電器及電子產品訂立了三條環保指令：「關於報廢電子電器設備指令(WEEE)」，「關於在電子電器設備中限制使用某些有害物質指令(RoHS)」及「成立有關耗能產品的環保設計要求的框架(EuP)」。

生產力局開創了「綠色製造幹線」提供一站式服務，支援生產商滿足新的要求，服務包括培訓、資訊分享、顧問服務及產品測試等。



[2] “Green Manufacturing Express” was developed as an one-stop solution to help industry meet the global green manufacturing trend.

「綠色製造幹線」提供一站式服務協助工業滿足環球綠色生產要求。

[3] HKPC operates the Green Manufacturing Network (GMN), providing an integrated channel to supply the latest information related to green manufacturing to the industry.

生產力局組織了「綠色製造網絡」，為業界提供一個發放最新綠色製造資訊之綜合渠道。

[4] Awareness and capability-building seminars or training courses are regularly organized.

QC 080000 IECQ HSPM consultancy services have also been launched to assist industry implement hazardous substance process management (HSPM) in accordance with international specifications.

定期舉辦認知及能力提升之研討會及培訓課程。

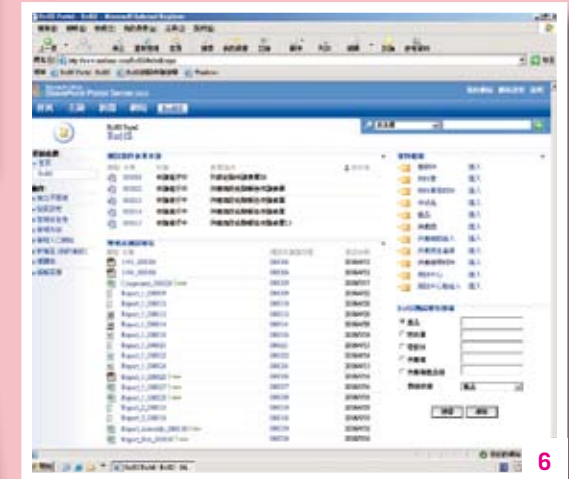
我們亦開展了「QC080000 IECQ HSPM」顧問服務，協助廠商符合有害物質流程管理的國際要求。

[5] A RoHS Reference Guide was published as a handy reference for industry.

印製了一本RoHS參考指南給工業界參考。

[6] Microsoft RoHS Portal®, as a useful tool for RoHS data management.

與微軟發展RoHS Portal®作為RoHS資料管理的實用工具。



17 Elements of ISO 14001  
ISO 14001標準內的17項條文

### Management Review 管理評審

#### Checking & Corrective Action

- Monitoring and Measurement
- Evaluation of Compliance
- Nonconformity, Corrective Action and Preventive Action
- Control of Records
- Internal Audits

#### 檢查和糾正措施

- 監測與測量
- 合規性評價
- 不符合、糾正措施及預防措施
- 記錄控制
- 內部審核

#### Implementation & Operation

- Resources, Roles, Responsibility & Authority
- Competence, Training and Awareness
- Communication
- Documentation
- Control of Documents
- Operational Control
- Emergency Preparedness and Response

#### 實施與運行

- 資源、角色、責任及職權
- 能力、培訓與意識
- 信息交流
- 文件
- 文件控制
- 運作控制
- 應急準備和回應

## Continual Improvement 持續改善

### Environmental Policy 環境方針

#### Planning

- Environmental Aspects
- Legal & Other Requirements
- Objectives, Targets and Programme(s)

#### 策劃

- 環境因素
- 法例及其他要求
- 目標、指標及方案

## ISO14001

HKPC has been a pioneer in introducing the ISO14000 series of environmental management standards to the industry and commercial sectors.

In 1995, one year before the official issuance of the international standard, HKPC had already launched a Pilot Programme to assist 11 local companies to develop the environmental management systems to meet the emerging ISO14001 standard. This pilot programme was the first of its kind in Asia.

生產力局一直是引進ISO14000系列標準給本港工商業的先驅者。早在1995年(比正式實施標準早一年)，我們已經開展了試驗計劃，協助十一間公司發展環境管理系統，符合有待實施之ISO14001標準，該計劃是亞洲首創的。

[7] Through organizing training courses, publishing guidance manuals and tools, and consultancy projects, HKPC has successfully assisted about 90 organizations to achieve ISO14001 certification and over 30,000 participants have benefitted from the various training events.

生產力局透過培訓課程，出版指南及工具再加上顧問服務，已經成功協助了90家公司/組織拿到ISO14001認證，同時超過3萬學員獲得了各類相關之培訓。

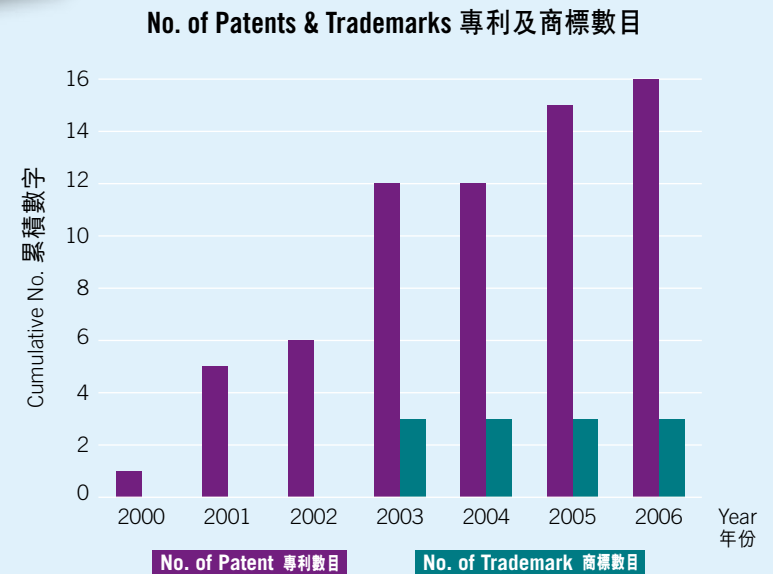




Environmental Product  
Innovation and Support to  
Environmental Industry  
環保產品創新及  
支援環保工業

Environmental problems are often highly complex involving various media. Innovative methods or approaches are needed to develop cost-effective solutions to these problems. Over the past 25 years, HKPC has been working very closely with academic and private sectors to identify cost-effective, affordable, and innovative technological solutions to different environmental problems. The numbers of patents and trademarks for environmental technologies and systems we obtained between 2000 and 2006, are as shown below.

環境問題往往是高度複雜，往往需要利用創新的方法及技術來發展具成本效益之解決方案。生產力局在過去二十五年一直與學術界及私人企業緊密地工作去發展創新、可負擔及具成本效益的技術，解決各種不同的環境問題。在2000至2006年期間，生產力局成功地取得下列各種不同之技術專利及產品商標：







In order to foster the development of the environmental industry, we push for the transfer of our patented systems and technologies to the private sectors for commercialization, sales and marketing. Examples of our developed technologies and systems follow.

為了加速環保工業之發展，生產力局致力將各專利系統及技術轉移給私人企業，進行商品化、市場推廣及營銷。在過去，我們發展之技術及系統包括：

### AIR POLLUTION CONTROL 空氣污染控制

[1] A Pulsed Jet Bag Filter System for the Treatment of Metallurgical Fume Emissions

高壓脈沖反洗袋式除塵系統可處理金屬冶煉工序排出的微塵

[2] 'CrystalVent' Electrostatic precipitator for the removal of oily fumes emitted from food preparation.

「除煙寶」靜電除油煙裝置可有效去除由煮食過程排出來的油煙。

[3] Indoor Air Disinfection System (IADS) able to reduce the concentration of bacteria in indoor air by at least 90%.

IADS室內消毒系統可除去最少90%室內空氣之細菌含量。

[4] Microwave/Plasma Air Purification System for disinfection of indoor air.

微波/等離子空氣淨化器可有效地對室內空氣進行殺菌消毒。

[5] "Qian Yin" Smokeless Joss Paper Furnace for reducing smoke emission during the burning of joss paper at temples.

「清煙」化寶爐可有效地減少由廟宇化寶所產生之煙塵。

[6] Product Disinfection System (PDS) for the removal of bacterial contamination on product surfaces.

PDS產品消毒系統可有效地將任何產品表面殺菌消毒。



## WATER POLLUTION CONTROL 水污染控制

**[7]** S-IX System for removing heavy metals from wastewater.

S-IX系統可有效地去除在廢水中的重金屬。

**[8]** SuperOxy Chemical Oxidation System for reducing the COD in wastewater.

SuperOxy化學氧化系統可降低廢水中之化學需氧量。

**[9]** DMS Dual Membrane System for Water Recycling.

DMS 雙重透膜水回收系統。

**[10]** E-Flot System for grease and oil removal from kitchen water.

E-Flot系統可去除酒樓食肆廢水中之油脂。

**[11]** BM-COMBO Membrane Bioreactor for treating high-strength organic wastewater.

BM-COMBO膜式生物反應器可處理高濃度有機廢水。

**[12]** BM-COMBO system was awarded "2005 HONG KONG AWARDS FOR INDUSTRIES – MACHINERY AND EQUIPMENT DESIGN AWARD".

BM-COMBO膜式生物反應器得到了2005年香港工商業獎之機械及設備設計獎。

**[13]** SAF Biological Treatment Method for organic wastewater.

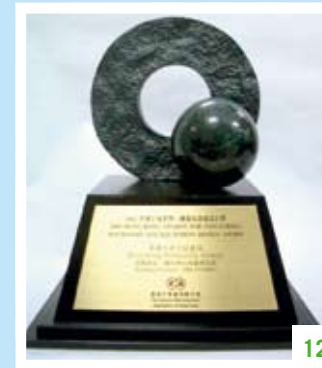
SAF生物處理系統可處理有機廢水。

**[14]** AquaSed System for the treatment of wastewater discharged from construction sites (successfully transferred to private sector).

AquaSed系統處理工地排出來的污水(已成功將技術轉移到私人企業)。

**[15]** STS system for the treatment of wastewater discharged from the temporary offices on construction sites (successfully transferred to private sector).

STS系統可處理工地之臨時辦公室排放之污水(已成功將技術轉移到私人企業)。







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### OTHERS 其他創新

[16] A Food Waste to Fertilizer Conversion System for transforming organic waste into fertilizer.

廚餘轉化系統可有效地將食物殘餘轉變為肥田料。

[17] Hospital Toilet Waste Disinfection System for reducing the bacteria level in the toilet waste and to lower the risk of transmission of infectious diseases via drainage.

醫院廁所消毒系統可將病人排泄物殺菌消毒，有效地降低傳播的風險。

[18] Gold Recovery System for recycling the dissolved gold in wastewater discharged from plating and jewellery workshops.

金回收系統可從電鍍及珠寶工場廢水之中回收貴重金屬。

[19] Nickel Recovery System for recycling the nickel contained in wastewater.

鎳回收系統可將廢水中含有的鎳回收再用。

[20] Chromium Recovery System for recycling the hexavalent chromium contained in wastewater.

鉻回收系統可將廢水中含有的六價鉻回收再用。

[21] Acid Recovery System for recycling and reusing used acids.

酸回收系統可將廢酸循環再用。

[22] A Handy Toilet Waste Disinfection System which can be readily retrofitted to any toilet to control the transmission of infectious diseases (successfully transferred to private sector).

輕便式廁所消毒系統可容易地安裝到任何廁所，將排泄物殺菌消毒以減低病菌傳播機會(已成功將技術轉移到私人企業)。

[23] An Automatic Wheel Washing System for Construction Sites to control the carryover of mud and dust from construction sites onto roads (successfully transferred to the private sector).

自動輪胎清洗系統可有效地控制從工地車輛輪胎所帶出之泥塵(已成功將技術轉移到私人企業)。



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Over the past 25 years, HKPC has been working very closely with various sectors to ensure Hong Kong is on its way to sustainable development through the integration of environmental, social and economic considerations.

生產力局在過去二十五年與社會各界都緊密合作，邁向融和環境、社會及經濟的可持續發展道路。

*Support to Sustainable  
Development of Hong Kong*

支援香港之可持續發展



## ENVIRONMENTAL WORK IN INFRASTRUCTURE DEVELOPMENT PROJECTS

### 曾參與基建項目的環境工作

We have participated in many major infrastructure development projects in the territory through the provision of technical consultancy services. Examples of these are as follow.

生產力局曾提供環保技術顧問服務之重要基建工程：

**[1]** For the design and planning of the Tsing Yi Chemical Waste Treatment Centre, HKPC assessed the amount of chemical waste generated annually in Hong Kong. Since the centre began operation, HKPC has been monitoring its emissions.

在發展青衣化學廢物處理中心初期提供廢物數量評估及在中心運作後提供環境監測服務。

**[2]** Carrying out pilot treatability tests for the landfill leachates during the development of the three strategic landfill sites.

在發展三個大型堆填區時進行處理滲透液之試驗。

**[3]** Setting up the Centre of Environmental Technology for Industry under the sponsorship of the Hongkong Bank Foundation.

在匯豐銀行基金資助下參與成立工業環境技術中心。

**[4]** Acting as an independent environmental checker for the development of the centralized slaughter house in Sheung Shui.

作為一個獨立環境審核員參與上水中央屠宰發展工作。

**[5]** Air Quality Measurement for the Firework Display at Disney Theme Park.

香港迪士尼主題公園煙花匯演時之空氣質素測定。





Carrying out environmental monitoring and auditing for the following projects :

參與下列各項目之環境監察及審核：

**[6]** Lantau Airport Railway Project

大嶼山機場鐵路項目

**[7]** KCRC West Rail – Tai Lam Tunnel Project

九廣西鐵 – 大欖隧道項目

**[8]** Ma On Shan Rail – Tai Wai Station Project

馬鞍山鐵路 – 大圍站項目

**[9]** Lok Ma Chau Spur Line Project

落馬洲鐵路支線項目

**[10]** Kai Tak Airport Decommissioning and Decontamination Project

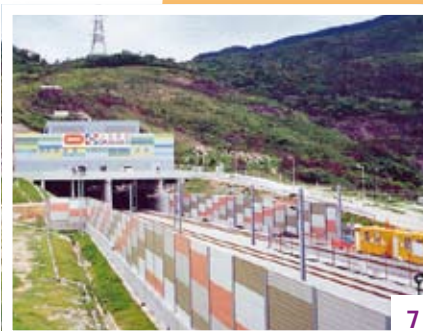
啟德機場清除污染項目

**[11]** Tsing Yi North Coastal Road Project

青衣島北沿海公路項目



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## FACTS

- About 1,000 environment-related training programmes have been organized.
- More than 25,000 participants have been trained to upgrade their environmental knowledge and technical know-how.

## 資料

- 曾舉辦1,000個環境課程。
- 逾25,000名人士接受培訓，提升環保知識及技術。

1,000  
Programmes

25,000  
Participants

## Human Capital Development 人力資源發展

Development of human capital is a key to achieving green productivity. In view of this, HKPC has continually been providing environmental training programmes in the form of seminars, conferences, workshops, training courses and study missions over the past 25 years. With its environmental training services started in the early 1980s, HKPC is one of the earliest environmental training course providers in Hong Kong. In the 1980s, we offered a number of pollution control courses, covering air, water, noise, waste treatment and energy saving.

發展人力資源是達致綠色生產力重要的開始。生產力局有見及此在過去二十五年一直不斷地安排各種不同之環保培訓計劃，包括專題討論、會議、工作坊、培訓課程及考察。早在80年代，生產力局已經是有數最早開始安排環保培訓課程之機構，範圍包括空氣、水及噪音之污染控制、廢物處理及節省能源。

In the 1990s, our training programmes expanded to include cleaner production technologies and technical aspects of individual business sectors such as construction, electronics, textile and garment, and electroplating. World-class experts were identified and invited by HKPC to come over to Hong Kong for experience sharing with the Hong Kong's business and industry. Owing to the tightening of pollution control legislation, HKPC also tailor-made training courses on legal compliance and best practices in environmental protection for individual companies to suit their specific needs.

進入90年代，生產力局之培訓課程已擴展到清潔生產技術及特別為個別行業如建築、電子、製衣、電鍍等提供技術培訓，國際專家亦被邀請到香港與本港工商界分享經驗。為了協助企業滿足更嚴格之法例要求，生產力局亦替個別公司安排針對符合有關法例及最佳工作指引之課程以滿足不同的需要。



Eco-Business Award  
Presentation Ceremony  
環保企業獎頒獎禮

At the same time, HKPC has been actively participating in the award schemes in Hong Kong to give recognition to companies with excellent performance in environmental management. We have been involved in the Eco-Business Award since its official launch in 1999. In addition, HKPC has taken part in the design of the Wastewi\$e Scheme, which aims to aid Hong Kong businesses in adopting measures to reduce the amount of waste generated within their establishments or through the services and products they provided by their operations.

Today, HKPC's environmental training programme continues to progress with the changing times. Focus is placed on the eco-design of products, eco-efficiency, and high value-added environmental technologies such as renewable energy applications, with an aim to lead industry and business toward sustainable development.

同時，生產力局亦致力參與組織及推動不同的獎勵計劃，表彰各公司之優越環境管理表現。自1999年起，我們一直參與組織香港環保企業獎。此外亦參與明智減廢計劃的設計以幫助本港商界減少由業務營運所產生之廢物。

進入新的紀元，生產力局之環保培訓活動亦會與時並進，未來之焦點是著眼於產品之綠色設計，生態效益及高增值之環保技術應用例如再生能源等，目的是協助工商業走向持續發展。



Wastewi\$e Scheme  
Award Presentation  
Ceremony  
明智減廢計劃頒獎禮



Environmental Technologies & Products

# A Dedicated Team with A Clean Vision

## 一個專業及擁有共同綠色願景的團隊





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