

**For information**

**LEGISLATIVE COUNCIL  
PANEL ON ENVIRONMENTAL AFFAIRS**

**Cleaner Production Partnership Programme  
Progress Report for 2013/2014**

**PURPOSE**

This paper reports on the progress of the Cleaner Production Partnership Programme (the Programme) from 1 April 2013 to 31 March 2014.

**BACKGROUND**

2. The Environmental Protection Department (EPD) launched the Programme in April 2008 in collaboration with the Economic and Information Commission of Guangdong Province (GDEIC)<sup>[1]</sup>. The Programme aims at encouraging and facilitating Hong Kong-owned factories to adopt cleaner production (CP) technologies and practices to reduce emissions and energy consumptions.

3. In light of the environmental benefits brought by the Programme and positive feedback from the industry, EPD has extended the five-year Programme for two years from 1 April 2013 to 31 March 2015 with a funding support of \$50 million. The current programme covers the entire Guangdong Province with particular emphasis given to encourage the wider use of technologies and production processes that can reduce volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>).

4. The Programme comprises four key initiatives, namely –

- (a) technology promotion activities;
- (b) on-site improvement assessment for participating factories;

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<sup>1</sup> GDEIC is the lead department of the Guangdong Provincial Government for promoting voluntary cleaner production to enterprises in Guangdong.

- (c) demonstration projects on CP technologies and practices; and
- (d) third party verification on improvement projects implemented by participating factories at their own costs.

Annex A Brief introduction of the Programme are at **Annex A**.

## **MANAGEMENT OF THE PROGRAMME**

5. The Programme is implemented by the Hong Kong Productivity Council (HKPC). A Project Management Committee (PMC) comprising representatives from the four major trade and industry associations, namely, the Hong Kong General Chamber of Commerce, Federation of Hong Kong Industries, Chinese Manufacturers' Association of Hong Kong and Chinese General Chamber of Commerce, EPD, Trade and Industry Department as well as an academic was set up to oversee the implementation of the Programme. During the report period, the PMC held four meetings to provide steer to the operation of the Programme and scrutinise funding applications.

## **PROGRESS IN 2013/2014**

6. To arouse and sustain the interest of Hong Kong-owned factories in joining the Programme, we continued to carry out in conjunction with trade and industry associations and municipal authorities in the PRD on technology promotion and publicity activities in the past year. These included seminars, workshops, briefings, factory visits and exhibitions.

7. During the report period, we organised a total of 43 technology promotion activities with the participation of some 2 800 managerial and operational staff from factories. We also publicised the Programme widely through various channels including interviews and reports by the media, and participation in trade exhibitions. In addition, we have been operating a dedicated Programme website and an enquiry hotline to showcase success stories with a resources area for downloading CP related materials.

8. To encourage more factories to adopt the CP technologies demonstrated by the participating factories, 15 factory visits were organised for factory owners and staff to view on-site the completed demonstration projects and other successful CP technologies. We continued to collaborate with the

relevant trade associations, PRD municipal governments and ET service providers under the Programme to promote CP technologies and practices to factories in the region.

9. During the report period, a total of 267 funding applications were approved. These include 164 on-site assessments, 47 demonstration projects and verification services for 56 CP measures implemented by participating factories, which exceeded our targets (please refer to **Annex A** for details).

10. Among the 47 approved demonstration projects, 19 projects involved technologies mainly on abatement of air pollution, 9 projects on effluent control and reduction, and 19 projects on energy saving. Examples of the technologies tested in these demonstration projects include –

- application of electrostatic precipitation, low temperature plasma or ultraviolet (UV)-degradation technologies to reduce VOC emissions;
- adoption of selective non-catalytic reduction technology to reduce NO<sub>x</sub> emission;
- application of ozone induced plasma technology for discoloration of fabric and nano-bubble technology for fabric softening to reduce water and chemical consumptions; and
- use of grid-connected photovoltaic system as ancillary electricity supply and adoption of energy management systems to enhance energy efficiency, etc.

A summary of the types of technologies demonstrated under the Programme is provided in **Annex B**.

Annex B

## **PARTNERSHIP WITH ENVIRONMENTAL TECHNOLOGY (ET) SERVICE PROVIDERS**

11. ET service providers continued to play an important role in providing professional advice and technical services to the participating factories for conducting on-site assessments and demonstration projects under the Programme. During the report period, 17 new ET service providers joined the Programme while one was removed because it no longer met the registration criteria. As at 31 March 2014, the total number of ET service providers registered under the Programme reached 187. Amongst them, 104 were based in Hong Kong, 78 in Guangdong and five from other regions. HKPC has organised

briefings and experience sharing workshops to facilitate capacity building amongst the ET service providers. It has also conducted quality checks on the work of ET service providers to ensure quality services are provided to the participating factories.

## **COLLABORATION WITH MAINLAND AUTHORITIES**

12. We continued to work closely with the GDEIC and municipal authorities in Guangdong to reach out to Hong Kong-owned factories in the region. We have also developed joint action plans for taking forward the Programme taking into account of CP measures being spearheaded by the local authorities.

13. The two sides continued to organise the Hong Kong-Guangdong Cleaner Production Partners Recognition Scheme, with 85 Hong Kong-owned manufacturing enterprises, 16 ET service providers and 3 sourcing enterprises awarded commendation under the Scheme in 2013.

## **WAY FORWARD**

14. We will continue to implement the Programme in collaboration with various parties. We will also take stock of the results of the two-year extension programme and consider further effort in promoting cleaner production.

15. Members are invited to note the implementation progress of the Programme.

**Environmental Protection Department**  
**August 2014**

### Cleaner Production Partnership Programme

The objective of the Programme is to encourage and facilitate Hong Kong-owned factories in Guangdong Province and Hong Kong to adopt cleaner production technologies and practices, thereby making a positive contribution to a cleaner environment by reducing emissions of pollutants and energy consumption.

2. The Programme targets at eight industry sectors, i.e. textiles, non-metallic mineral products, metal and metal products, food and beverage, chemical products, printing and publishing, furniture and paper/paper product manufacturing.

#### Key Initiatives

3. The key initiatives of the Programme in the two-year extension period include –

- (a) *technology promotion to organise around 60 – 80 activities*, mainly to facilitate sharing of knowledge and successful experiences in adoption of CP technologies and practices. These activities comprise seminars, workshops, factory visits, conferences and exhibitions, in Hong Kong and cities in PRD region;
- (b) *on-site improvement assessment for about 250 factories* to identify and analyse the problems they face and propose practical improvement solutions. The Government will sponsor 50% of the assessment cost, subject to a ceiling of \$25,000;
- (c) *demonstration projects to support around 90 projects* to demonstrate the effectiveness of CP technologies through installation of equipment and/or modification of production processes. The Government will sponsor 50% of the project cost, subject to a ceiling of \$300,000; and
- (d) *verification of the effectiveness of 80 to 120 improvement measures* implemented by participating factories at their own costs. This service is provided free of charge to participants, subject to a ceiling of \$20,000 per project.

**Cleaner Production Technologies Demonstrated under  
the Cleaner Production Partnership Programme**

The key types of cleaner production technologies demonstrated under the Programme during the report period are summarised below.

(a) **Volatile organic compounds (VOC) reduction**

- application of electrostatic precipitation technology, regenerative carbon adsorption, and Dimethylformamide recovery system by condensation to recycle solvent/gaseous organics;
- use of enclosed automatic paint spraying line, digital ink-jet printer, ultraviolet (UV) cured coating system, or centralized dampening solution filtration system to reduce solvent consumption; and
- application of low temperature plasma, UV-degradation, bio-filtration, or activated carbon concentrator with catalytic oxidation technologies for treatment of VOC.

(b) **Other air pollutant emissions reduction**

- application of selective non-catalytic reduction technology to reduce NO<sub>x</sub> emission;
- use of enclosed scroll discharge filter centrifuge to reduce fugitive SO<sub>2</sub> emission;
- use of natural gas-fired steam boiler or electric heat-conducting oil heaters to replace conventional coal-fired boiler to reduce air pollutant emissions.

(c) **Effluent and pollutant reduction**

- application of ozone induced plasma technology for discoloration of denim fabric, nano-bubble technology for fabric softening, or conductive polymer direct metallization system to reduce water and chemical consumptions;
- use of reverse osmosis (RO) membrane filtration system, on-line ion-exchange with RO system, magnetic separator with cascading ultra-filtration system, vibrating membrane filtration system to recycle wastewater and/or production materials; and

- use of ammonia stripping and anaerobic-anoxic/oxic (A2/O) biological process, or electro-coagulation with membrane bioreactor to enhance treatment efficiency of wastewater.

(d) **Energy saving**

- use of grid-connected photovoltaic system as ancillary electricity supply;
- application of automatic monitoring or management systems to optimise the overall energy efficiency of factory;
- use of steam driven concentrator with steam regeneration unit, non-invasive electromagnetic scale control system, two-stage rotary screw air compressor, oil-free magnetic-bearing centrifugal compressor, thick film heaters, variable speed drive, high frequency switching-mode power supply, UV-LED printed circuit board exposure machine, turbulence suppressing and pressure boosting device on water pump, or cooling thermal storage units; and
- use of waste heat recovery systems on production machine or on exhaust system of boiler/furnace to reclaim waste heat

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