

4 June 2013

To: All Registered Environmental Technology Services Providers

Cleaner Production Partnership Programme
Promulgation of information on Environmental Technology Service Providers in
the Case Reports of Completed Demonstration Projects

The following is the existing arrangements to promulgate the information of registered Environmental Technology Service Providers (ETs) in the case reports of demonstration projects completed under the Cleaner Production Partnership Programme (the Programme):

- (i) those ETs who implemented the demonstration projects will be reported in the case reports; and
- (ii) all registered ETs will be to apply for inclusion of their names and contacts in the case reports if they have the capabilities to supply the demonstrated technologies and/or provide available alternative technologies/solutions which are similar to the technologies demonstrated under the projects.

2. By way of background, the Secretariat of the Programme publishes case reports on completed demonstration projects funded by the Programme in order to widely promote the specific cleaner production (CP) technologies/practices adopted in the demonstration projects. These case reports are uploaded onto the Programme website for sharing the project findings and experience amongst interested parties. To facilitate factories interested in the technologies demonstrated under the Programme in approaching relevant ETs conveniently for further information of the technologies, the Project Management Committee (PMC) of the Programme endorsed the arrangements for promulgation of the information of relevant ETs in the case reports of demonstration projects as described in the first paragraph of this letter above.

3. To implement the arrangements, the Secretariat will –

- (a) prior to publishing the case report of a completed demonstration project, invite all registered ETs to advise on their interest and their capabilities to supply the demonstrated technologies and/or provide available alternative technologies/solutions which are similar to the technologies demonstrated. The interested ETs will need to submit relevant information, project reference, etc as listed in Appendix A, for review by the Secretariat;
- (b) approach the project clients as referred by the ETs in their submissions to confirm the implementation details of the projects and the performance of the concerned CP technologies. The Secretariat will only review applications with requested information submitted in full; and
- (c) notify the concerned ETs on whether their submissions are accepted so that their information will be included in the case report, along with those ET(s) who implemented the project.

Arrangement for the published case reports

4. The Secretariat will publish another 40 case reports on the Programme website in July 2013 (the details of the demonstrated technologies in the case reports are listed in Appendix A). The Secretariat now invites interested ETs who are capable of supplying the demonstrated technologies and/or providing available alternative technologies/solutions which are similar to the technologies demonstrated to apply for inclusion of their information in these case reports. Interested ETs should provide the relevant information as listed in Appendix B on or before **30 June 2013**.

5. Should you need further information/clarification, please contact the Secretariat at +852-27885588.

The Secretariat - Cleaner Production Partnership Programme

(This is a computer printout, no signature is required)

Encl.

致：已登記的環境技術服務供應商

清潔生產伙伴計劃
於已完成示範項目技術報告
公布環境技術服務供應商資料之安排

以下為關於「清潔生產伙伴計劃」(計劃)各示範項目的技術報告中公開已登記環境技術服務供應商(服務供應商)資料的現有安排：

- (i) 執行示範項目的服務供應商資料會於技術報告中發布；及
- (ii) 若其他已登記之服務供應商，可提供與示範技術相同，及／或提供相類同之技術／方案，可申請在技術報告內納入公司名稱及聯絡方式。

2. 計劃秘書處為計劃資助下完成的示範項目編製技術報告，以推廣示範項目所採用的清潔生產技術／方案。這些報告將上載於計劃網站，與各方分享項目成果及經驗。為方便對示範技術有興趣的廠商，與相關的服務供應商聯繫，計劃項目管理委員會通過，於技術報告內公布服務供應商相關資料。

3. 為執行有關安排，秘書處會：

(一) 在編製已完成示範項目的技術報告前，邀請所有已登記的服務供應商，如有提供與示範技術相同，及／或相類同的技術／方案，可申請把有關資料納入報告內。有意申請之服務供應商需提交相關資料、工程案例等(詳情列於附件一)予秘書處；

(二) 聯絡服務供應商所提供的有關客戶，以了解工程的執行情況及清潔生產技術成效。秘書處只會處理資料齊全的申請；

(三) 通知服務供應商，會否接納申請，把資料納入技術報告內。

編製個案報告安排

4. 秘書處將於 2013 年 7 月在本計劃網頁上，公佈另外 40 個技術報告(有關技術報告中的示範技術內容詳見附件一)。秘書處現接受申請，服務供應商若能提供與示範技術相同，及／或相類同的技術／方案，可申請要求把有關資料納入報告內。有興趣申請的服務供應商可於 **2013 年 6 月 30 日** 或之前，提交列於附件二中的資料。

5. 若有任何問題，可致電+852-2788 5588，與秘書處聯絡。

清潔生產伙伴計劃秘書處

(此為電腦列印文件毋須簽署)

[附件]

附件一
Appendix A

將發布的示範項目技術報告所涉及的示範技術
Demonstrated Technologies in Case Reports to be Published

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
CP-D041 (09D0125)	空氣壓縮機廢熱回收以供應生活熱水的節能技術 Waste heat recovery of rejected heat from compressed air systems to produce hot water for dormitory use	於空壓機加裝餘熱回收系統（空壓機非由計劃資助），吸收空壓機高溫冷卻油餘熱產生熱水供宿舍使用。現時，宿舍熱水是以電熱水器加熱提供。 A heat recovery unit will be installed in a new air compressor (Note: the compressor is not funded under this project) to recover rejected heat from compressed air system and produce hot water for dormitory use. Currently, the hot water for dormitory use is provided by electric heater.
CP-D042 (09D0128)	油盅式移印機取代傳統油盤式移印機的減排技術 Installation of sealed ink cup rotary pad printer replacing the traditional open ink trough pad printer to save ink/solvent and reduce VOC emissions	於同一生產線安裝封閉式油杯移印機來替代開放式油盤移印機，以減少油墨消耗及 VOC 排放。由於油墨儲存在封閉的油杯內，減低了溶劑的揮發，因而能維持油墨質素穩定，提高產品質素及使用週期。此外，系統亦減少了油墨於移印過程中的飛濺及更容易調節每次加油墨的份量，有效避免廢油產生及浪費。 10 sets of rotary open ink trough pad printers in the same production line are replaced by 6-color sealed ink cup rotary pad printers to save ink/solvent and reduce VOC emissions. By containing ink in an inverted closed cup, solvents cannot evaporate from the cup and the condition of ink is more stable, which ensures a high quality products could be printed over extended periods. Furthermore, ink spillage during process can be prevented and the amount of ink added can be easily adjusted to prevent excess waste ink production.
CP-D043 (10D0141)	減少電鍍污水排放及污水循環利用的技術 In-line ion-exchange system to process, recycle and reuse industrial process water in an electroplating plant to save water use	於 12 條鉻酸洗水生產線安裝離子交換現場回收系統，以節約用水並減省污水處理成本。為提高處理效率，系統結合使用離子交換樹脂和活性炭。污水會先經過過濾，並轉移到離子交換組件（以及在某些生產線中的活性炭過濾器）去除金屬物質。經過濾後成為生產用水，並回用到生產線中，預計可減少七成的漂洗用水。 12 sets of in-line ion-exchange systems will be installed for chromic acid rinse water recycling to save water and wastewater treatment cost. To enhance the efficiency of the treatment process, a combination system consisting of ion-exchange resin and activated carbon will be used. Effluent will first be filtered by microfiltration and transferred to ion-exchange units (and activated carbon filter in some production lines) for metal removal. Treated effluent will then be filtered again before recycling to the production line as process water. By recycling treated effluent to production process, it is expected to reduce rinsing water by 70%.

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
CP-D044 (10D0142)	熔鑄爐的再生床蓄熱節能技術 Use of regenerative combustion system for aluminium furnace to reduce fuel consumption and improve the overall thermal efficiency	於現有鋁熔爐加裝蓄熱式燃燒系統，以減少燃料消耗並提高系統整體效率。系統採用高耐熱性的球型陶瓷蓄熱器，把進氣預熱至接近熔爐的溫度，較傳統金屬式換熱器更有效地回收熱量。 The existing aluminum furnace will be retrofitted with a regenerative combustion system to reduce fuel consumption and improve the overall thermal efficiency. Using ceramic ball-type regenerator, which has strong endurance for high temperature, the temperature of preheated air is brought to a level close to the temperature of furnace gases, thus resulting in an extremely efficient recovery of heat when compared with the performance of a conventional metal-type heat exchanger.
CP-D045 (08D0008)	選用節能衣車代替傳統平縫機的節能示範項目 Replacing traditional sewing machines by single needle direct drive straight lock stitcher with thread trimmer for improving energy efficiency for textiles industry	安裝電腦直接驅動式伺服電機及自動切線縫紉機以節省電耗。伺服電機採用電子伺服控制方法，適應不同的車縫要求，減低待機耗電。 Traditional sewing machines will be replaced by sewing machines with built-in AC servo motors and thread trimmers to save energy. Servo motors are using electronic control logic to control the speed of motors for achieving substantial energy saving.
CP-D046 (08D0025)	採用誘導蒸發冷氣及即熱冷媒熱水機提供冷氣及熱水的節能技術(個案 1) High efficiency air-conditioner with heat recovery (Case 1)	採用高效冷氣回收冷凝水預冷降溫、回收廢熱製造熱水、改善工作環境空氣質素及降溫。 This project will install a high efficiency air-conditioner that uses the low-temperature condensate to pre-cool the return air and recovers heat from superheated refrigerant to produce hot water. This system can improve thermal comfort and air quality of working environment, as well as provide pre-heated hot water for electrolysis process.
CP-D047 (08D0044)	誘導蒸發冷氣及熱回收製生活熱水的節能技術(個案 2) High efficiency air-conditioner with heat recovery for hot water production (Case 2)	採用高效冷氣回收冷凝水作循環預冷降溫提供現場冷卻，並回收空調廢熱製造熱水。 This project will install a high efficiency air-conditioner that uses the low-temperature condensate to pre-cool the return air for spot cooling and recovers heat from superheated refrigerant to produce hot water.
CP-D048 (10D0145)	生物質蒸汽鍋爐替代燃煤蒸汽鍋爐的減排示範項目 Installation of renewable biomass boiler in a textile factory to save fossil fuel and reduce air pollutants emissions	以可再生生物質蒸汽鍋爐取代傳統的燃煤鍋爐，以節約化石燃料和減少空氣污染物排放。由於一般生物質燃料含氮及硫量較低，故可減少空氣污染物如二氧化硫和氮氧化物的排放。此外，使用碳中和的可再生生物燃料可以減少整體燃燒時所排放的二氧化碳。 The conventional coal-fired boiler will be replaced by a renewable biomass steam boiler to save fossil fuel and reduce air pollutants emissions. For its low nitrogen and sulphur contents, burning biomass fuel can reduce air pollutants emissions such as SO ₂ and NO _x . Furthermore, CO ₂ emission associated with the combustion of coal fuel can be greatly reduced with the replacement of carbon-neutral renewable biomass fuel.

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
CP-D049 (08D0045)	工廠空調採用水冷式誘導蒸發冷氣的節能技術 High efficiency air-conditioner that uses the low-temperature condensate for pre-cooling the return air	採用高效冷氣回收冷凝水作循環預冷降溫，取代傳統水冷櫃機。 This project will install a high efficiency air-conditioner that uses the low-temperature condensate for pre-cooling the return air to replace traditional water cooling cabinet air conditioner.
CP-D050 (08D0080)	注塑機加裝電機變頻器的節電技術 Variable speed drive (VSD) controller for plastic injection moulding machine to save energy	注塑機定量泵通過注塑機專用變頻器改造，自動調節液壓泵空載時運行功率，達到節能目的。 Plastic injection moulding machines will be retrofitted with VSD controllers, which will adjust the input frequency of power supply to the hydraulic pump in order to vary its speed of operation to match load conditions.
CP-D051 (08D0078)	注塑機加裝節能控制系統的節能技術 Energy Saver for injection machine utilizing of voltage and current phase angle regulation and thyristor firing control technology	於 2 台注塑機（分別有 2 個及 3 個液壓泵馬達）安裝 5 台節電器，節電器能因應負荷需求來提供適當的電壓/電流，在不影響馬達轉速的情況下盡量減少相角或提升功率因素，達致節電效果。 5 sets of energy savers are used to reduce energy consumption of 2 high tonnage plastic injection machines (one with 2 motors and another with 3 motors) of the applicant factory. The energy savers will monitor the load changes of motor to supply the most appropriate voltage/current and minimize the phase angle of a piece of mechanical equipment without reducing the motor speed to save energy.
CP-D052 (09D0106)	注塑機炮筒加熱系統的節能技術 Using energy efficient induction heating coil for plastic injection machine to save energy	於 21 部注塑機安裝電磁加熱系統，系統透過在炮桶管的金屬產生渦流電流加熱，從而減低能源消耗。這種節省能源的方法適用於各種注塑機並能直接取代傳統的加熱器。 The electromagnetic induction heater systems are installed on 21 injection moulding machines to reduce energy consumption of plastic injection machines of the applicant factory. The system turns the steel barrel itself into a resistance heater by generating electrical eddy currents in the metal near the outer surface of the barrel tube. This energy saving technology is applicable to different types of injection machine and can replace conventional electric heater bands directly.
CP-D053 (09D0115)	太陽能及空氣能源熱泵加熱系統的節能技術 Evacuated tube solar water heating system to heat water for electroplating process to save energy	於天台安裝 3200 套太陽能真空管吸收太陽能加熱熱水儲存於保溫熱水箱，供電鍍工序使用以節約能源。為確保全天候供應熱水供車間生產使用，系統整合四套高效能熱泵作為輔助加熱設備。利用再生能源可減少製造熱水的能源及成本，也減少對化石燃料的依賴。 3200 evacuated tube solar collectors will be installed on the roof to collect sunlight energy for heating water for electroplating processes to save energy. Hot water will be stored in a well-insulated storage tank. To ensure that hot water can be provided all year round, the system integrates 4 sets of energy efficient heat-pumps as back-up heaters to meet additional hot water requirements. By making use of renewable solar energy, it reduces hot water heating energy/cost and contributes to a lower dependence on expensive diesel energy.

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
CP-D054 (10D0146)	以雙薄膜技術回用二級處理後的 PCB 污水 Installation of a dual membrane system (Ultrafiltration+Reverse Osmosis) to recycle the biological treated wastewater effluent for manufacturing processes reuse to save water and reduce wastewater discharge cost	安裝超濾和反滲透雙膜系統，把已作生物處理的廢水回用到生產過程中。現有已處理的廢水將會得到進一步處理，以去除當中的懸浮固體、溶解性金屬及生物群落（包括進行 pH 值的調整、共沉澱、超濾、紫外線等），保護薄膜以防止形成生物、有機物、礦物污垢和被化學降解。反滲透系統回用沖洗水到生產過程，並確保濃液的濃度低於排放限制值。通過回收生產過程所產生的污水，可減少自來水用量和廢水排放量，從而減少新鮮水使用和廢水排放的成本。 A unit of ultrafiltration and Reverse Osmosis dual membrane system will be installed to recover the biological treated wastewater for reuse in the manufacturing processes. Wastewater from the existing treatment will be further treated to remove the suspended solids, dissolved metals and biosolids (including pH adjustment, coprecipitation, ultra-filtration, UV, etc) to protect the membrane against biological / organic fouling, mineral scaling and chemical degradation. The RO system reclaims rinse water (permeate) to the manufacturing process and assures that effluent concentrate is below its discharge limits to account for normal operational variations and production extension needs. By recycling process effluent, tap water use and wastewater discharge would be reduced, resulting in cost saving associated with reduced fresh water use and wastewater discharge cost.
CP-D055 (10D0147)	沼氣入爐摻燒系統 Retrofitting circulating fluidized bed boiler with biogas co-firing system utilizing renewable energy of biogas from wastewater treatment plant as fuel stock to save energy	現有的循環流化床鍋爐將加裝沼氣摻燒系統，以廢水處理廠所產生的沼氣作為輔助燃料，以節省能源，並減少由於廢水處理廠直接釋放或燃燒沼氣所排放的空氣污染物。 A circulating fluidized bed boiler is retrofitted with biogas co-firing system utilizing renewable energy of biogas from wastewater treatment plant as supplementary fuel stock to save energy and reduce emissions that result from flaring or direct releasing of biogas from wastewater treatment plant.
CP-D056 (10D0150)	以高效複合折流板厭氧工藝提升印染污水氧處成效 Use of hybrid anaerobic baffled reactor (HABR) to enhance COD removal efficiency of anaerobic treatment system for a dyeing factory	此項目是把原折板厭氧反應器(ABR)改造為複合折板厭氧反應器 (HABR- Hybrid Anaerobic Baffled Reactor)，以提高厭氧處理單元的 COD 去除效率。COD 去除率從目前的 10-15% 提高到 25-40%，從而減少往後好氧曝氣費用和混凝投藥費用。HABR 技術是通過對 ABR 反應器進行結構改進和優化形成的新型厭氧反應器，其獨特的結構有效使顆粒狀污泥得以形成和保存，從而提高反應室空間負荷，以及厭氧反應器處理的效果。HABR 以最節能的厭氧方式大幅度去除 COD 和色度，並且去除印染廢水中難好氧生化降解的有機物物質，顯著提高廢水的可生化分解性。 The existing aerobic wastewater treatment system will be retrofitted with a hybrid anaerobic baffled reactor (HABR) to enhance the COD removal efficiency. It is expected that with HABR can enhance the COD removal efficiency from the 10-15% (existing) to 25-40%, and

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		consequently reduce the electricity and chemical use in the subsequent treatment process. The HABR is an energy effective treatment process that can be decompose a large portion of organic stuffs (COD & color) in dyeing wastewater and increase the wastewater biodegradability for further aerobic biological treatment.
CP-D057 (10D0156)	以震膜系統回收染料及污水 On-site recycling of indigo dye and wastewater with vibrating membrane filtration system for a yarn dyeing factory to save water and reduce waste chemical in production	使用包含超濾振動膜過濾系統及反滲透 (RO) 的薄膜過濾系統，處理和回收靛藍染料，以節約用水和減少化學廢物的產生。靛藍染料漂染水會被分離，經氧化的靛藍染料會以振動薄膜作濃縮，回收後作為染色過程中補充。最後，經染料分離後污水會使用反滲透系統，從而達致循環回用水以減少用水。 A Membrane Filtration System mainly consisting of UF Vibrating Membrane Filtration System & an RO is used to treat and recycle indigo dye to save water and reduce waste chemical in production. Rinsing water stream with solely indigo dye is separated and oxidized indigo dye stuff is concentrated by the vibratory membrane, that can replenish in the dyeing process. Furthermore, after dye stuff is separated from wastewater, water can be reused after RO polishing.
CP-D058 (10D0157)	以生物質氣化鍋爐取代燃煤鍋爐的減排技術 Retrofitting coal-fired boiler with biogas co-firing system utilizing gaseous fuel from biomass gasification system as supplementary feedstock to reduce fossil fuel consumption and air pollutants emissions	現有的燃煤鍋爐將被改造為氣油混燒系統，系統會以生物質氣化系統所產生的氣體作為輔助燃料，以減少化石燃料的消耗和空氣污染物的排放。生物質燃料於密封和高溫的條件下會轉化為含一氧化碳、氫氣和甲烷等的氣體燃料，收集後作為鍋爐的輔助原料。 The existing coal-fired boiler is retrofitted with biogas co-firing system utilizing gaseous fuel from biomass gasification system as supplementary feedstock to reduce fossil fuel consumption and air pollutants emissions. The biomass gasification system converts biomass into gaseous fuel basically by heating the biomass granules in an enclosed chamber under high temperature to produce combustible gases such as CO, H ₂ and CH ₄ which are recovered and burned in the existing boiler as supplementary feedstock.
CP-D059 (10D0158)	圓形熔鋁爐替代方形反射式熔鋁爐的節能技術 Replacement of conventional rectangular furnace with energy efficient top-feed cylindrical aluminium furnace with pre-heating and new nozzle design to improve the overall thermal efficiency and save energy	傳統方形反射式熔鋁爐將會被節能圓形熔煉爐所取代，圓形熔煉爐具有空氣預熱系統和特別設計的切向噴嘴，可提高熱使用效率，而頂部進料設計可以減少加料時的熱力損失，而熱煙氣更會用作預熱進入熔爐的空氣，達致節省能源的效果。 The conventional rectangular furnace is replaced by an energy efficient cylindrical top-feed furnace with an air-preheating system and a re-designed tangential nozzle to improve the thermal efficiency. Top charging design can minimize the heat loss during scraping and hot flue gas is recovered to preheat the air entering the furnace to save energy.
CP-D060 (10D0159)	壓縮空氣變量控制系統的節能技術 Retrofitting compressed air system with Intelligent Flow Controller (IFC) for demand side control to save energy	現有用於鍋爐吹灰器的壓縮空氣系統將加裝一台智能流量控制器 (Intelligent Flow Controller, IFC)，分隔供應方和需求方的控制，透過儲存過剩的壓縮空氣並於較後時間釋放以滿足需求之餘，又能達致節約能源的效果。

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		The compressed air system for ash blower of a boiler is retrofitted with an Intelligent Flow Controllers (IFC) which separates the demand-side from the supply-side by storing surplus compressed air and releasing later to meet the demand to save energy.
CP-D061 (10D0160)	封閉式全自動噴塗設備取代人手噴塗的減排技術 Installation of automatic enclosed paint spraying line replacing the conventional manual spraying operation to save ink/solvent and reduce VOC emissions	<p>安裝一台封閉式全自動噴塗機取代傳統的人手噴塗，以節省油墨及溶劑，從而減少揮發性有機化合物（VOC）的排放。全自動噴塗機可以確保噴塗均勻性和提升噴塗質量，減少塗料及溶劑的浪費，從而減少實際耗用量。此外，整個過程將於密封的噴漆室中進行，能達致最佳的噴塗效果和減少揮發性有機化合物於工作環境和大氣中排放。</p> <p>An automatic enclosed paint spraying line is installed to replace the conventional manual spraying operation to save ink/solvent and reduce VOC emissions. Automatic paint spraying can ensure consistent paint distribution and high production performance to minimize paint/solvent wastage and actual consumption. Furthermore, the entire process is conducted inside the enclosed paint spraying chamber, achieving the best painting results and minimizing the emission of VOCs to the working environment and the atmosphere.</p>
CP-D062 (10D0162)	封閉式全自動 UV 絲印設備取代人手操作絲印臺的減排技術 Installation of enclosed automatic screen printing machine to replace traditional screen printing machines to save ink/solvent and reduce VOC emissions	<p>以 6 套具有密封墨杯的封閉式全自動絲網印刷機取代傳統 50 台手動絲印機，以節省油墨及溶劑，並減少揮發性有機化合物（VOC）的排放。系統具自動控制的功能，能確保印刷的高精準度和提高生產效率，從而減少油墨及溶劑的使用和電力消耗。此外，整個絲網印刷及紫外線固定的過程會於密閉室裡進行，可集中抽氣並以廢氣處理系統進一步將揮發性有機化合物消除。</p> <p>6 sets of enclosed automatic screen printing machine with sealed ink cups are installed to replace 50 sets of manual traditional screen printing machine to save ink/solvent and reduce VOC emissions. Automatic control can ensure high printing accuracy and production efficiency resulting in reduction of ink/solvent and electricity consumption. Furthermore, the whole silk-screen printing and UV fixation process is now taken place inside an enclosed chamber which will be ventilated to an exhaust gas treatment system for further VOC removal.</p>
CP-D063 (10D0163)	高溫染色廢水廢熱回收節能技術 Heat recovery of used dye water from dyeing tank at a textiles manufacturing plant	<p>安裝廢熱回收系統以回收 20 台染缸排放廢水的餘熱，並為進水預先加熱。廢水會先由污水槽運送到熱交換器，廢水傳熱到補充水中，加熱後被運送到儲存缸內回用至洗染用途。換熱器經過特別設計，可以有效防止堵塞，並確保連續過濾運作。</p> <p>A heat recovery system is installed to recover waste heat from used dye water of 20 dyeing machines to preheat process water in the same production line of the factory. Waste water is drawn to a heat exchanger where heat is transferred from waste water to fresh secondary water in a recovery process tank for reuse in dyeing process. The heat exchanger is special-designed to prevent clogging and to ensure continuous filtering</p>

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
CP-D064 (10D0165)	工廠空調採用環保節能碳氫製冷劑 替代傳統含氟製冷劑 Replacement of refrigerant R22 by hydrocarbon refrigerant (HyChill Minus50) for a textile industry to reduce energy consumption and enhance cooling system efficiency	110 部（共 241 匹）空調中所使用的 R22 製冷劑會被替換為 Minus50 碳氫製冷劑，以減少能源消耗並提高冷卻系統效率。對比傳統的碳氫氟製冷劑，使用碳氫製冷劑可減少最多約百分之十五的能源消耗，還可減輕壓縮機的運作壓力及降低維修成本。 Refrigerant R22 of 110 (total 241 hp) air-conditioning units is replaced by Minus50 hydrocarbon refrigerant to reduce energy consumption and enhance cooling system efficiency. Hydrocarbon refrigerants use up to 15 percent less energy than traditional hydro-fluorocarbon refrigerants. They also put less stress on compressors and reduce maintenance costs.
CP-D065 (10D0168)	工廠空調採用環保節能碳氫製冷劑 替代傳統含氟製冷劑 Replacement of refrigerant R22 by hydrocarbon refrigerant (HCR22) for a printing and publishing industry to reduce energy consumption and enhance cooling system efficiency	中央空調機組（共計 450 千瓦）所使用的 R22 製冷劑會被碳氫製冷劑 HCR-22 取代，以減少能源消耗並提高冷卻系統效率。對比傳統的碳氫氟製冷劑，使用碳氫製冷劑可減少最多約百分之十五的能源消耗，還可減輕壓縮機的運作壓力及降低維修成本。 Refrigerant R22 of a central air-conditioning unit (total 450kw) is replaced by hydrocarbon refrigerant HCR-22 to reduce energy consumption and enhance cooling system efficiency. Hydrocarbon refrigerants use up to 15 percent less energy than traditional hydro-fluorocarbon refrigerants. They also put less stress on compressors and reduce maintenance costs.
CP-D066 (10D0169)	高效電熔鋁爐替換柴油爐 Use of electric central aluminum furnace to replace diesel-fired furnace for continuous melting aluminium ingot for aluminium diecasting process to save energy and reduce direct air pollutant emission	採用雙熔室（即熔解室及保溫室）電中央鋁熔爐，確保熔化效率及鋁湯質量，並減少能量消耗及空氣污染物排放，以達致最佳的工廠工作環境。 An electric central aluminium furnace with two chambers (i.e. melting chamber and insulated holding chamber), which can ensure good melting efficiency and product quality, is installed to save energy and help eliminate air pollutant emission in the factory for better working environment in the factory.
CP-D067 (10D0170)	室內 TVOC 的淨化處理 Installation of high energy ion purification system to the air-conditioning system to reduce VOC emission	於空調系統的回風管道安裝具靜電除塵器、高能離子淨化器及等離子催化技術的高能量離子淨化系統，於氣體排放前進行處理，以減少污染物的散播。等離子催化技術將有害物質分解成二氧化碳及水份等。在反應過程中所產生的自由基可以進一步產生連鎖反應，以抑制有毒物質。 A high energy ion purification system comprising electrostatic dust collector, high energy ion purifier and plasma catalytic technology is installed in the HVAC return air vents to treat the gas before discharge and minimize the widespread of pollutants. Plasma-catalytic technology decomposes hazardous substance into elementary compounds such as CO ₂ and H ₂ O. The free radicals produced in the reaction can undergo further chain reactions to suppress toxic substances.
CP-D068 (10D0171)	以八列顆粒包裝機取代傳統單列顆粒包裝機的節能項目 Installation of automatic servo-controlled eight-lane four-side seal bag making machine to replace	以自動伺服控制的八列式四邊封袋口機取代傳統的單列式封袋口機，以提高運作效率和減少能源消耗。該系統採用伺服電機驅動及具備先進光電傳感器控制系統，能精確地控制封切速度，並降低原料消耗及

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
	traditional single-lane bag sealing machine to enhance operation efficiency and reduce energy consumption.	提高生產效率。 An automatic servo-controlled eight-lane four-side bag sealing machine is installed to replace traditional single-lane bag sealing machine to enhance operation efficiency and reduce energy consumption. The system adopts servo motors in main drive and advanced photo-sensor control system to facilitate precise control of sealing and cutting speed to reduce material loss and enhance productivity.
CP-D069 (10D0172)	採用熱管式餘熱熱水器回收導熱油爐煙氣餘熱的示範項目 Retrofitting a heat-conducting oil boiler with heat-pipe waste heat recovery unit to reclaim waste heat from exhaust gas to produce hot water for production use at a textiles manufacturing plant	熱油爐的高溫煙氣通過熱管式熱交換器加熱清水產生熱水供生產使用。熱管具有高傳熱性能，通過密閉真空管殼內工作介質的相變來傳遞能量。 A unit of heat-pipe waste heat recovery boiler is installed to reclaim waste heat from the exhaust gas of heat-conducting oil boiler and produce hot water for production use in the factory. A heat pipe efficiently transports large quantities of heat through repeated evaporation/condensation cycle of the media in the heat pipe.
CP-D070 (10D0173)	蒸櫃熱回收系統的節能技術 Installation of electric steam cabinets with heat recovery system to reclaim waste heat from exhaust steam to save energy.	安裝 5 組具有蒸汽煙道換熱器的節能電蒸櫃，於排放的蒸汽中回收廢熱，以產生熱水並回用到生產之中，從而節省能源及用水。通過從排放的蒸汽中回收餘熱和回用熱冷凝水，該系統可以減少補充用水及節約能源。 5 units of energy-efficient electric steam cabinets with a flue-steam heat exchanger are installed to reclaim waste heat from the exhaust steam to produce hot make-up water and reuse in production to save energy. By recovering waste heat from exhaust steam and returning hot condensate, the system can reduce make-up water and save energy.
CP-D071 (10D0174)	自動化電腦門襟縫紉機節能項目 Installation of automatic front placket machine to replace manual cutting and sewing operation by traditional sewing machines to enhance operation efficiency and reduce energy consumption	安裝兩台自動化電腦門襟縫紉機（又稱開筒機）取代十二台電腦平車人手開筒操作，以提升生產效率及減少能源消耗。自動化電腦門襟縫紉機採用數字信號處理器(DSP)及三軸伺服聯動系統，自動控制及完成一次性門襟縫製和裁剪，確保生產質量和穩定性，以及提升生產效能，從而達致減少廢料/廢品及能源消耗。 2 sets of automatic front placket machine will be installed to replace 12 traditional sewing machines for manual cutting and sewing operation to enhance operation efficiency and reduce energy consumption. Automatic front placket machine is equipped with a computerized driving mechanism to drive the needle to perform closing seam successively and sew lines in different directions without human intervention. Automatic front placket machine can ensure consistent product quality and high production performance to minimize materials wastage and actual consumption.
CP-D072 (10D0175)	中央真空泵系統節能技術 Replacement of multiple point-of-use vacuum pumps with centralized vacuum system to achieve optimal efficiency and save energy	安裝中央真空泵系統去取代 60 台小型獨立真空泵，以達到最佳運作效率及節省能源。中央系統以可編程邏輯控制（PLC）系統數碼化控制 10 組真空泵，在保持足夠壓力的大前提下，能按照對空氣的需求而作出變化，有效地按序控制真空泵的啟動及操作。

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		A centralized vacuum system is installed to replace 60 point-of-use vacuum pumps to achieve optimal efficiency and save energy. Under the centralized system, 10 vacuum pumps are controlled digitally by programmable logic control (PLC) system, capable of maintaining adequate pressure while responding to changes in air demand and sequencing the vacuum pumps more efficiently.
CP-D073 (10D0177)	以閉式冷凝水回收系統回收鍋爐冷凝水的節能技術 Pressurized condensate return system to recover heat from steam condensate at a textiles manufacturing plant	安裝封閉式高溫冷凝水回收系統，回收經過生產設備後的閃蒸汽和高溫冷凝水，並通過省煤器回收鍋爐排氣廢熱後直接重回生物鍋爐，以節省能源。現時，廠方會把高溫冷凝水直接排放。 A pressurized direct condensate return system will be installed to recover the heat of the condensate and return steam condensate directly back to the biomass boiler after passing through the boiler economizer to recover waste heat from the boiler flue gas in order to save energy. Currently, the condensate collected is drained, resulting in wasting a lot of energy.
CP-D074 (10D0180)	自動集中供墨系統的減排降耗示範項目 Automatic central ink supply system for sheet-fed offset printing to enhance productivity and save ink, thereby reducing VOC emissions	安裝平張柯式印刷中央供墨系統把供墨自動化和中央化，以節省油墨和提高生產力，並減低揮發性有機化合物（VOC）的排放。同時填注所有墨斗能縮短印刷準備時間及提升生產效率，再加上墨斗可以完全地被清空，能夠減少了油墨的消耗和相關成本，也減少了浪費，並能減少揮發性有機化合物的排放。 A central ink supply system for sheet-fed offset printing will be installed for automation and centralization of the ink supply in the applicant's factory to enhance productivity and save ink, thereby reducing VOC emissions. Filling all ink fountains simultaneously shortens makeready times and enhances productivity. The fact that cartridges can be emptied completely reduces waste, cuts down on costs/ink consumption and minimizes the amount of VOC emission.
CP-D075 (10D0184)	注塑機烘料採用低壓式真空乾燥機取代傳統熱風乾燥機 Installation of low pressure resin dryer to replace traditional desiccant dryer for plastic injection moulding machine to save energy	注塑機烘料工序採用低壓式真空乾燥機取代傳統熱風乾燥機。真空乾燥利用低壓降低水的蒸發點，使原材料中的水份快速蒸發，大大加快膠料烘乾工序及減少能源耗用達五至八成。 A unit of low pressure dryer will be installed to replace traditional hot air dryer for plastic injection moulding machine in order to save energy. Low pressure dryer uses vacuum to significantly accelerate the resin drying process and reduce energy consumption by 50-80%.
CP-D076 (10D0185)	環保自動化封閉式油杯移印機 Installation of sealed ink cup rotary pad printer replacing the traditional open ink trough pad printer to save ink/solvent and reduce VOC emissions	於同一生產線安裝 3 台封閉式油盤移印機（2 套 4 色和 1 套單色移印機）來替代 6 台單色開放式油盤移印機，以減少油墨和溶劑的消耗，並減少揮發性有機化合物（VOC）排放。由於油墨儲存在封閉的油杯內，減低了溶劑的揮發，因而能維持油墨質素穩定，亦能夠於長時間的打印下保持產品的高品質。此外，該設備可以防止油墨於生產過程中溢出，並可容易地調整油墨的添加量，以避免多餘的廢油產生。 6 sets of one-color open ink trough pad printers in the

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		same production line are replaced by 3 sets of sealed ink cup rotary pad printers (2 sets of 4-color and 1 set of one-color machine) to save ink/solvent and reduce VOC emissions. By containing ink in an inverted closed cup, solvents cannot evaporate from the cup and the condition of ink is more stable, which ensures a high quality products could be printed over extended periods. Furthermore, ink spillage during process can be prevented and the amount of ink added can be easily adjusted to prevent excess waste ink production.
CP-D077 (10D0186)	全自動高速水性覆膜機 Installation of automatic water-based film laminating machine to eliminate the use of solvent and the emission of VOC	安裝全自動水性覆膜機，採用水性膠水替代溶劑型膠水，生產過程不再有天拿水的揮發及 VOC 的排放。複合後產品具有透明度高、立體感強、無毒、無氣味、無污染、粘合性能好。 An automatic water-based film laminating machine, which uses water-based solvent, will be installed to completely eliminate the emission of VOC. Other benefits include high transparency, strong stereoscopic feel, non-toxic, no odour, no pollution and good adhesion.
CP-D078 (10D0187)	重金屬廢水深化處理迴圈回用工程 In-line ion-exchange system to process, recycle and reuse industrial process water in a PCB plant to save water use	於傳統廢水處理工藝後安裝在線離子交換系統，淨化和循環利用從 PCB 線路版製造車間產生的沖洗水，以節約用水和減輕廢水處理成本。爲了提高處理效率，系統會結合離子交換樹脂和活性炭的應用。污水經過初步處理後，會先通過活性炭的過濾，並轉移到離子交換組件去除金屬物質，最後，已完成處理的再生水將被收集，並回用到生產過程中。通過回收及回用水到生產線，預計將可減少 75% 清洗水的使用。 In-line ion-exchange systems after the conventional wastewater treatment process will be installed for purification and recycling of rinse water in a PCB manufacturing plant to save water and wastewater treatment cost. To enhance the efficiency of the treatment process, a combination system consists of ion-exchange resin and activated carbon will be used. Treated effluent from the treated process will first be filtered by activated carbon and transferred to ion-exchange units for heavy metal removal. Polished effluent will then be collected for recycling to the production line as process water. By recycling treated effluent to production process, it is expected to reduce rinsing water by 75%.
CP-D079 (10D0190)	以 LED 燈取代傳統照明燈具的節能項目 Replacement of fluorescent tube with energy efficient LED lighting tube for general lighting application to save energy in a metal products factory	此項目採用 LED 照明系統替換傳統照明系統如白熾燈和熒光燈，同時能提供同等的照亮程度。比較熒光燈照明系統，LED 照明系統具有壽命長、能耗低的特點，能有效降低其生命週期的整體成本（包括能源、維修、更換）。 This project will replace conventional lighting including incandescent and fluorescent lamps by LED lamps, providing comparable level of illumination. With long life expectancy and relatively low energy consumption, LED lighting system reduces the total cost (including energy, maintenance, replacement) over the lifespan when compared to fluorescent lighting system.

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
CP-D080 (11D0198)	中央真空泵系統節能技術 Replacement of multiple point-of-use vacuum pumps with centralized vacuum system to achieve optimal efficiency and save energy	<p>安裝中央真空泵系統去取代 51 台小型獨立真空泵，以達到最佳運作效率及節省能源。中央系統以可編程邏輯控制（PLC）系統數碼化控制 3 組真空泵，在保持足夠壓力的大前提下，能按照對空氣的需求而作出變化，有效地按序控制真空泵的啟動及操作。</p> <p>A centralized vacuum system is installed to replace 51 point-of-use vacuum pumps to achieve optimal efficiency and save energy. Under the centralized system, 3 vacuum pumps are controlled digitally by programmable logic control (PLC) system, capable of maintaining adequate pressure while responding to changes in air demand and sequencing the vacuum pumps more efficiently.</p>

附件二
Appendix B

請提供與示範技術相同或相類同技術的項目資料

Please Provide Project Information Employing the Demonstrated Technology and/or Alternative Technology/solution Similar to the Technology Demonstrated

1. 完成案例 Completed Project
 - ✓ 客戶資料: 廠名、廠址、聯絡人、職位及聯絡電話 Client's information: factory name, address, contact person, post, and phone number
 - ✓ 項目執行時間 Project implementation period
 - ✓ 項目驗收副本 Project acceptance document (copy)
2. 項目資料 Project Information
 - ✓ 項目名稱 Project title
 - ✓ 項目報告書 Project report
 - ✓ 操作維修手冊 Operations & Maintenance manual of the technology demonstrated
 - ✓ 相關技術設備的現場照片 Photos showing the relevant technology and the equipment
 - ✓ 技術說明及設備規格 Technology description and equipment specification
3. 項目成效測試結果 Project performance verification result

註:

Note:

1. 清潔生產伙伴計劃秘書處會聯絡相關廠商核實項目的執行狀況及成效
2. 若在限期前環境技術服務供應商仍未能提供以上全部資料，秘書處將不會處理要求將環境技術服務供應商的資料包涵在示範專案報告書的相關申請。
 1. *The Secretariat of the Programme will call the factory to confirm the implementation of the project and the performance of the concerned technology*
 2. *If the above information cannot be supplied to the Secretariat in full before the deadline, the Secretariat will not process the request to include the contacts of the Environmental Technology Service Providers in the case reports of the demonstration projects.*

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