

15 December 2014

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 published another 49 case reports on the Programme website in December 2014 (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 **2 January 2015**.

5. Should you need further information/clarification, please contact the Secretariat at +852-27885059.

The Secretariat - Cleaner Production Partnership Programme

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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. 秘書處已於 2014 年 12 月在本計劃網頁上，公佈另外 49 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 **2015 年 1 月 2 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 5059，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-D101 (11D0195)	電鍍前處理除油液再生與回用 On-site recycling of degreasing wastewater with absorbing oil separator filtration system for an metal products factory to save water and reduce waste chemical in production	使用油脂分離器除油液再生回用系統處理及回用除油廢水，以節約用水和減少生產過程中產生的廢化學品。電鍍生產工序產生的除油廢水會以特定流動方式通過過濾媒介（即過濾纖維錦）去除油脂，經處理後的除油液會在線回用到再生液槽。不單能減少用水及化學品（除油劑）的用量，亦可大大降低污水處理廠的負荷或由具資質的回收商回收的高污染除油廢水量。 An absorbing oil separator filtration system will be used to treat and recycle degreasing water to save water and reduce waste chemical in production. The degreasing wastewater from electroplating process will be filtered to remove oil by passing it through the filter media (i.e. filter fiber) through a defined flow pattern and the treated degreasing solution will be on-site recycled back to the degreasing tanks. It reduces not only water and chemical (detergent) consumption. It also greatly reduces the loading of wastewater treatment plant or the amount of contaminated degreasing wastewater to be collected by the authorized recycler.
CP-D102 (12D0273)	優化 CNC 機床電箱冷卻系統以改善能源效益 Replacement of multiple point-of-use cooling systems for CNC machines to centralized cooling system with variable speed drive technology and automatic monitoring/control to match the load demand for achieving optimal efficiency of cooling system and saving energy	安裝具有變頻變速技術和自動控制的中央冷卻系統，取代現時安裝在 31 台壓鑄機的獨立冷卻系統，以達到最佳運作效率及節省能源。中央系統會按實際負載需求自動控制一台冷水機和四台冷水泵，達致最佳的運作效率。 A centralized cooling system with variable speed drive technology and automatic control will be installed to replace existing 31 point-of-use cooling systems of CNC machines to achieve optimal efficiency and save energy. Under the centralized system, one chiller and 4 chiller pumps are controlled to match the load demand for achieving optimal efficiency of cooling system.
CP-D103 (12D0279)	安裝納濾振動膜過濾系統回用印刷油墨混合缸清洗水及油墨 Printing ink tank wash wastewater recycling Ink and wastewater recovery with a NF vibrating membrane filtration system for a printing ink manufacturing plant	於印刷油墨製造廠安裝納濾振動膜過濾系統，在線回用印刷油墨混合缸清洗廢水以節約用水，以及回用廢油墨以減少化學廢物的產生。系統採用超高頻的振動膜，於薄膜的表面產生極高剪力，有效防止傳統薄膜容易產生的結垢及堵塞的問題。清液含有少量剩餘無色樹脂但已去除其它污染物，可再次回用作混合缸清洗水，而濃液則含有不同顏色油墨，會被回用作為黑色油墨。 A NF Vibrating Membrane Filtration System will be used to on-site recycle wash wastewater from printing ink blending tank to save water and recover waste printing ink for a printing ink manufacturing plant. By applying ultra-high vibratory frequency on membrane to produce extremely high shear on the surface of the membrane, vibrating membrane filtration system can prevent colloidal fouling and clogging as in traditional membranes. Permeate with some residual colorless resin but without other contamination will be reused as tank wash water while the concentrate with mixed different color inks will be recycled as black ink.
CP-D104	中水回用作冷卻塔或宿舍用水	安裝具有離子交換和超濾的水回用系統，回用經生物處理後的污水作機器冷卻及其它用途。經現有系統處理後的廢水會作進一步深化處理（包括離子交換、超濾等等），去除固體懸浮物、溶解鹽及微生物。由於自來水的含鹽量於鹹潮期間處於較高的水準，因此會安裝離子交換系統去除鹽及減少管道結垢。經超

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(12D0257)	Installation of water recycling system with ion-exchange +ultrafiltration to recycle the biological treated wastewater effluent for machines cooling and other uses	<p>濾後產生的清液主要回用於不同生產工序，包括有機廢氣噴淋塔和機器冷卻系統。</p> <p>A water recycling system with ion-exchange +ultrafiltration will be installed to recycle the biological treated wastewater effluent for machines cooling and other uses. Wastewater from the existing treatment will be further treated to remove the suspended solids, dissolved metals and biome (including ion-exchange, ultra-filtration, etc). For high salinity level of tap water during salt tide period, an ion-exchange will be installed to remove salts and reduce scale formation in pipelines. Permeate reclaimed by the UF system will be mainly reused in production processes such as VOC scrubber and cooling for various types of machines.</p>
CP-D105 (10D0183)	<p>高效濕法高速混合制粒和沸騰乾燥代替槽型制粒及箱式乾燥的節能項目</p> <p>Installation of high shear rapid mixer granulator with fluidized bed dryer to replace traditional oscillating granulator with tray-dryer to enhance operation efficiency and reduce energy consumption</p>	<p>項目以高效濕法制粒機及沸騰乾燥機取代傳統的槽型制粒及箱式乾燥機，以提高運作效率和降低能耗。高效濕法制粒機可以更好地混合和控制顆粒大小，以提升製粒速度、改善質量及減少不良品的產生，從而提高生產力並降低經營成本。高效節能的沸騰乾燥機會把濕顆粒進行乾燥，沸騰乾燥較傳統箱式乾燥可顯著地降低乾燥時間和能源的消耗。</p> <p>A high shear rapid mixer granulator with fluidized bed dryer will be installed to replace traditional oscillating granulator with tray-dryer to enhance operation efficiency and reduce energy consumption. High shear rapid mixer granulator facilitates better mixing and closed control of granule size leads to faster tableting speeds with improved quality and least rejections, thus resulting in lower operating cost along with higher productivity. Subsequently, the wet granules are dried by energy-efficient fluidized bed dryer which significantly reduces drying time and energy consumption compared with conventional tray dryer.</p>
CP-D106 (11D0203)	<p>30 噸鋅合金爐環保除塵器</p> <p>Installation of pulse-jet baghouse filters for zinc melting furnaces to control particulate emissions and recover zinc oxide for reuse</p>	<p>於鋅熔煉爐口安裝具備袋式脈衝射流過濾器的抽氣系統，以收集和循環再用溶煉煙霧中的氧化鋅。項目會於爐口位置安裝抽氣罩去收集含塵氣體，所收集的氧化鋅顆粒會保留在濾袋表面的外側，當粉塵的厚度達到一定的水平，便透過注入脈衝壓縮空氣使之與濾袋分離，並收集到灰爐回收箱。各袋室過濾器將會輪流在過濾或清洗模式之間進行切換，以確保能進行連續過濾。安裝袋式過濾器後，預計可回收及再用 99% 熔煉煙霧中的氧化鋅。</p> <p>A venting system with pulse-jet baghouse filters will be installed to collect and recycle zinc oxide in melting fumes from zinc melting furnace. Hoods will be employed around the furnace openings to collect dust-laden gases. Zinc oxide particles are retained on the outside surface of the bag and then released into the ash collection bin by short burst of compressed air injected through the filter when the dust layer thickness reaches a certain level. Pulse-jet baghouse filters in separate chambers will be operated alternately in filtering/cleaning mode to ensure continuous filtering. With baghouse filters, over 99% of zinc oxide in the melting fumes from melting furnaces can be collected and recycled.</p>
CP-D107 (11D0211)	<p>環保型碳氫真空超聲波清洗乾燥設備</p> <p>Solvent/vapour degreasing system with automated solvent recovery system using alternative hydrocarbon solvent to completely eliminate the emission of trichloroethylene</p>	<p>安裝具備自動溶劑回收系統的蒸氣除油系統，並採用環保替代碳氫溶劑，徹底消除三氯乙烷的使用及排放。系統主要由超聲波蒸氣除油缸、烘乾設備和透過蒸餾和冷凝方式運作的自動溶劑回收系統構成。</p> <p>A solvent/vapour degreasing system with automated solvent recovery system using alternative hydrocarbon solvent will be installed to completely eliminate the emission of trichloroethylene. It mainly consists of ultrasonic vapour degreasing chambers, drying unit and automatic solvent recovery unit by distillation and condensation.</p>
CP-D108	空壓機熱能回收利用節能工程	為食品製造廠壓縮空氣站內的 3 台空壓機加裝餘熱回收系統，

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(11D0233)	Waste heat recovery of compressed air systems to recover rejected heat and produce hot water for production use	吸收空壓機高溫冷卻油餘熱產生熱水供生產工序(清洗)使用。現時，生產工序熱水是以柴油鍋爐提供。 Heat recovery units will be retrofitted to 3 air compressors in the same compressed air station to recover rejected heat from compressed air systems and produce hot water for production use (cleaning) for a food manufacturing plant. Currently, the hot water is provided by diesel boiler.
CP-D109 (10D0182)	中水回收反滲透方案回收二級處理後的工業污水 Installation of a dual filtration and Reverse Osmosis (RO) system to recycle the biological treated wastewater effluent for manufacturing processes use to save water and reduce wastewater discharge cost.	安裝雙過濾(過濾袋及微濾)和反滲透膜技術中水回用系統，把已作生物處理的廢水回用到生產過程中。反滲透系統可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，從而減少新鮮水的用量和廢水排放的成本。 A unit of dual filtration+Reverse Osmosis (RO) system consisting of filter bag/microfiltration units and RO unit will be installed to recover the biologically treated wastewater for reuse in the manufacturing processes for a textiles factory. The RO system will reclaim rinse water (permeate) to the manufacturing process and assure that effluent concentrate will be below its discharge limits to account for normal operational variations. By recycling the process effluent, tap water use and wastewater discharge will be reduced, resulting in cost saving associated with reduced fresh water use and wastewater discharge cost.
CP-D110 (10D0149)	電鍍除油水 - 震動膜過濾技術 On-site recycling of degreasing wastewater with vibrating membrane filtration system for an electroplating factory to save water and reduce waste chemical in production.	使用可攜式超濾振動膜過濾系統處理和回用除油水，達致節約用水和減少化學廢物產生的目的。系統採用超高頻的振動膜，於薄膜的表面產生極高剪力，有效防止傳統薄膜容易產生的結垢及堵塞的缺點。電鍍除油廢水將會被過濾，滲透出來的除油化學品會現場回用到除油罐中。 A portable UF Vibrating Membrane Filtration System will be used to treat and recycle degreasing water to save water and reduce waste chemical in production. By applying ultra-high vibratory frequency on membrane to produce extremely high shear on the surface of the membrane, Vibrating Membrane Filtration System can prevent colloidal fouling and clogging as in traditional membranes. The degreasing wastewater from electroplating process will be filtered and the permeate with degreasing chemical will be on-site recycled back to the degreasing tanks.
CP-D111 (10D0167)	空壓機熱能利用為除油缸製造工藝用熱水取代天然氣節能工程 Waste heat recovery retrofit of existing compressed air systems to recover rejected heat and produce hot water for degreasing process.	於同一壓縮空氣站內的 5 部現有空壓機 (2x50hp、30hp、2x20hp) 加裝餘熱回收系統，吸收空壓機高溫冷卻油餘熱產生熱水供除油過程使用。現時，除油熱水是以天然氣熱水器加熱提供。 5 heat recovery units are be retrofitted to the five existing air compressors (2x50hp, 30hp, 2x20hp) in the same compressed air station to recover rejected heat from compressed air system and produce hot water for degreasing process (currently provided by natural gas boiler).
CP-D112 (11D0197)	多層線路板行業沉鎳浸金生產線沖洗水的省水及回用水系統 In-line process water saving and recycling system for an electroless nickel immersion gold (ENIG) process line of a PCB manufacturing plant	於線路板生產過程化學鍍鎳浸金 (ENIG) 生產線安裝 5 套具有反滲透 (RO) 和自動生產用水節約裝置的在線生產用水節約及循環回用系統，以回用工業生產用水及減少用水量。透過於池內安裝在線電導率分析儀監測生產用水的水質，並以自動生產用水節約裝置去控制新鮮水的供應，可以盡量減少新鮮水的用量。此外，廢水會分開收集以避免交叉污染。最後以在線反滲透 (RO) 膜系統回收滲透液作為生產用水，達至點到點式的處理及回用。 5 sets of in-line process water saving and recycling system with reverse osmosis (RO) units and automatic process water saving devices will be installed for recycling industrial process water and minimizing water consumption in an electroless nickel immersion gold (ENIG) process line for a PCB manufacturing plant. On-line conductivity analyzer for monitoring process water quality is

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		installed for each process tank to properly control fresh water supply with automatic process water saving devices to minimize fresh water consumption. The waste/rinsing water streams are being collected under a well-defined segregation mechanism to avoid cross-contamination. The in-line RO units polish and reclaim permeate as process water and facilitate point-to-point treatment/recycling.
CP-D113 (11D0204)	能源管理系統 Installation of energy management system (EMS) to automatically and centrally monitor energy facilities for optimizing energy performance and operating condition to save energy for an enameled wire factory	於漆包線廠安裝能源管理系統 (EMS)，自動地中央監控耗能設備，使之能作出能效評價和制訂良好的管理措施，以優化耗能表現和設備運行狀況，從而節省能源消耗。EMS 包含軟體、數據採集硬件及通信系統，透過收集、分析和顯示工廠的運行情況，幫助工廠採取適當的控制和補救措施，以減少能源的使用和成本。 Energy management system (EMS) will be installed to automatically and centrally monitor energy facilities to facilitate benchmarking analysis and good management practice for optimizing energy performance and equipment operating conditions to save energy for an enameled wire factory. EMS is a combination of software, data acquisition hardware, and communication systems to collect, analyze and display factory operating information to aid factory in making necessary controls and remedial actions to reduce energy use and costs.
CP-D114 (11D0206)	漆包線烘爐替換工程 Use of hot-air re-circulating wire enameling ovens with catalytic combustion to replace electric-heated wire enameling ovens to reduce VOC emissions and energy consumption	以兩台催化燃燒熱風迴圈漆包線烘爐取代現有電加熱漆包線烘爐，以減少揮發性有機化合物的排放和能源消耗。在催化劑的燃燒下，塗層所揮發的溶劑會被轉化成無害的二氧化碳和水蒸汽；燃燒所產生的高溫氣體會經循環風機於烘爐回用，從而減少烘爐的能源需求。 Two existing electric-heated wire enameling ovens will be replaced by two hot air re-circulating wire enameling ovens with catalytic combustion to reduce VOC emissions and energy consumption. The evaporated solvents from the liquid coating will be converted into harmless carbon dioxide and water vapour by combustion in the catalyst. The high temperature gas produced by catalytic combustion is then recycled into the enameling oven by the circulation fan. Therefore, this amount of energy can be saved from the energy requirement of the oven, resulting in reduction in the oven energy demand.
CP-D115 (11D0207)	沼氣回收與綜合利用節能減排項目 Installation of a biogas steam boiler utilizing renewable energy of biogas from wastewater treatment plant as fuel stock to save energy and reduce emissions	項目將安裝一台沼氣蒸汽鍋爐，使用污水處理廠產生的沼氣作為輔助燃料，以節省能源。沼氣蒸汽鍋爐會和現有的柴油蒸汽鍋爐共同運作，並以負載平衡系統控制以達致最佳運作效率。從污水處理廠收集的沼氣會加壓到工作所需的壓力，然後會送到防腐蝕燃燒器燃燒。控制系統會密切監察燃燒過程，以確保系統安全及有效運作。通過利用廢棄沼氣從而能節省燃油和減少污水處理廠燃燒沼氣時所排放的污染物。 A biogas steam boiler will be installed to utilize renewable energy of biogas from wastewater treatment plant as fuel stock to save energy. The biogas steam boiler works together with the existing diesel steam boiler controlled by a load balancing system for optimal operation at given total load. Biogas collected from wastewater treatment plant is pressurized to the working pressure and then feed into anti-corrosive burner for combustion. The combustion process will be closely monitored by control system to ensure safe and efficient operation of the system. By utilizing waste biogas, the retrofit can save fuel oil and reduce emissions that result from flaring of biogas from wastewater treatment plant.
CP-D116	節能無極燈取代傳統金鹵燈以節省能源	安裝 102 組 165W 節能無極燈來取代 400W 金鹵燈，並能提供同等光亮度。與金鹵燈比較，節能無極燈產出較高流明但消耗較少能源，亦具備其它優勢，包括更佳的光通維持率、使用壽命

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(12D0264)	Electroless induction lamps for replacing metal halide lamps in high-bay lighting application for an electrical appliance manufacturing plant	更長以及可以即時開關的特點。 102 sets of 400W metal halide lamps will be replaced by 165W induction lamps with luminaires, providing comparable level of illumination. Compared with metal halide lamps, induction lamps generate more lumens output with less energy consumed and offers other advantages such as better lumen maintenance, longer service life and the ability of instantly start and shut off.
CP-D117 (11D0212)	燃燒生物質顆粒燃料鍋爐取代重油燃料鍋爐 Installation of renewable biomass boiler in a textile factory to save fossil fuel and reduce air pollutants emissions	以可再生生物質蒸氣鍋爐取代傳統的燃重油鍋爐，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 heavy fuel oil 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.
CP-D118 (12D0275)	建立密封式真空噴塗設備以取代傳統常壓開放式噴塗技術 Installation of automatic enclosed vacuum coating system replacing the conventional manual spraying operation to save paint/solvent and reduce VOC emissions	安裝一套密封式全自動真空噴塗系統以取代傳統的手工噴塗操作，節省油漆/溶劑及減少揮發性有機化合物(VOC)的排放。塗料於低壓(~200kPa)下被霧化及推動，改善了塗料從被塗物表面反彈出來的情況。自動噴塗亦可以確保噴塗均勻性和生產質量，減少廢品率、翻修次數及油漆/溶劑浪費，從而大大節省成本。此外，整個真空噴塗工序於密閉室內進行，並以其專利技術回收廢油漆和天拿水(溶劑)，實現總揮發性有機化合物(TVOC)零排放。 An automatic enclosed vacuum coating system will be installed to replace the conventional manual spraying operation to save paint/solvent and reduce VOC emissions. Under low pressure (~200kPa) environment, paint can be aerosolized and propelled at lower air pressure, thus reducing overspray and blowback. Automatic coating can also ensure consistent paint distribution and high production performance to minimize paint/solvent wastage, re-work or scrap rate, resulting in big cost saving. Furthermore, the entire vacuum coating process is conducted inside the enclosed chamber and waste paints and thinner (solvent) can be recycled with (pending) patent technology to achieve zero TVOC emission.
CP-D119 (11D0213)	電壓力煲取代傳統電煮食爐以省電及提升烹調效率 Installation of energy efficient electric pressure cooker to increase productivity and reduce heat lost to save energy	安裝一台高效節能的工業電壓力煲，提高生產效率及降低熱量散失，以節約能源。此高速烹煮系統配備組合蒸鍋，能在同一台壓力煲內同時烹煮不同食物而互不影響，其加壓烹煮技術可縮短烹調時間，並增加每台設備每次生產批量，從而達致設備的最佳能效及生產效率。 A unit of energy efficient electric pressure cooker will be installed to increase productivity and reduce heat lost to save energy. This high-speed system features a combi-steamer to simultaneously cook several components in one appliance with various cooking times without taste transfer and pressurized cooking mechanism to shorten cooking time to increase the number of possible batches per appliance, thus achieving optimal appliance capacity and energy efficiency.
CP-D120	環保型自動式碳氫超聲波清洗乾燥設備	安裝具備自動溶劑回收系統的密封蒸氣除油系統，並採用環保替代碳氫溶劑，減少揮發性有機化合物(VOC)的排放。系統主要由超聲波蒸氣除油缸、烘乾設備和透過蒸餾和冷凝方式運作的自動溶劑回收系統構成。

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(12D0281)	Enclosed solvent/vapour degreasing system with automated solvent recovery system using alternative hydrocarbon solvent to reduce VOC emissions	An enclosed solvent/vapour degreasing system with automated solvent recovery system using alternative hydrocarbon solvent will be installed to reduce VOC emissions. It mainly consists of ultrasonic vapour degreasing chambers, drying unit and automatic solvent recovery unit by distillation/condensation. Furthermore, the applicant will switch to an alternative hydrocarbon solvent.
CP-D121	線路板工業廢水再生成半純水及純水循環回用技術	採用超濾和反滲透雙膜過濾系統，回用經生物處理後的廢水，並配以離子交換系統製造生產用純(DI)水，以節約用水及減少廢水排放的成本。經生物處理後的廢水會先作進一步處理（包括pH值的調整、共沉澱法、超濾、紫外線等），去除懸浮固體、可溶性金屬、有機殘留物和生物群落，防止薄膜受到有機物污染、礦物質結垢和被化學降解。部份反滲透系統清液會被回收直接回用到漂洗工序，其餘的則會以離子交換系統作深化處理，去除殘餘溶解鹽或離子，產生低電導率的純淨水回用到生產中。
(11D0242)	Reclamation of biological treated PCB wastewater to produce industrial water of different grades by membrane and ion-exchange unit processes to save water and reduce wastewater discharge	The biological treated wastewater effluent will be recycled by a cascading filtration system with ultrafiltration+reverse osmosis followed by an ion-exchange system to produce deionized (DI) water for manufacturing processes reuse to save water and reduce wastewater discharge cost. Wastewater from the existing treatment will first be further treated to remove the suspended solids, dissolved metals, organic residues and biome (including pH adjustment, coprecipitation, ultra-filtration, UV, etc) to protect the membrane against organic fouling, mineral scaling and chemical degradation. Part of the permeate reclaimed by the RO system will be reused for rinsing process directly while the remaining will be further polished by an ion-exchange system to remove residual dissolved salts or ions to produce pure water with low conductivity for manufacturing processes reuse.
CP-D122	天然氣蒸汽鍋爐替代 4t/h 燃煤蒸汽鍋爐	以節能天然氣蒸汽鍋爐替代傳統的燃煤蒸汽鍋爐，以節約能源及減少空氣污染物的排放。由於天然氣的氮及硫含量較低，燃燒天然氣燃料可以減少空氣污染物如二氧化硫、氮氧化物及二氧化碳的排放。
(11D0217)	Use of energy efficient natural gas-fired steam boiler to replace coal-fired steam boiler in a textile factory to save energy and reduce air pollutants emissions	The conventional coal-fired steam boiler will be replaced by an energy efficient natural gas-fired steam boiler to save energy and reduce air pollutants emissions. For its low nitrogen and sulphur contents, burning natural gas fuel can reduce air pollutants emissions such as SO ₂ , NO _x & CO ₂ .
CP-D123	電鍍除臘水回用技術項目	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，處理和回收除臘廢水，以節約用水和減少化學廢物的產生。系統採用超高頻的振動膜，於薄膜的表面產生極高剪力，有效防止傳統薄膜容易產生的結垢及堵塞的缺點。電鍍除臘廢水將會被過濾，隨清液滲透出來的除臘化學品會現場回用到除臘罐中。
(11D0224)	On-site recycling of de-waxing wastewater with vibrating membrane filtration system for an electroplating factory to save water and reduce waste chemical in production	A UF Vibrating Membrane Filtration System will be used to treat and recycle de-waxing water to save water and reduce waste chemical in production. By applying ultra-high vibratory frequency on membrane to produce extremely high shear on the surface of the membrane, Vibrating Membrane Filtration System can prevent colloidal fouling and clogging as in traditional membranes. The de-waxing wastewater from electroplating process will be filtered and the permeate with de-waxing chemicals will be on-site recycled back to the de-waxing tanks.
CP-D124	應用高頻電解吸附式水處理器處理空調循環冷卻水項目	安裝兩台在線電磁除垢系統，以提高空調系統冷卻塔的熱傳遞效率。電磁設備所產生的磁場，有利於自身的表面形成結垢，從而減少了水垢於熱交換器的表面形成，避免減少熱交換器傳遞熱量的能力。在線電磁除垢系統比化學處理更有效地抑制水垢形成，從而提高製冷系統的整體效能。

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(11D0225)	Installation of inline electromagnetic scale control system to replace traditional chemical softening system to enhance heat transfer efficiency of cooling tower of air-conditioning system	Two units of inline electromagnetic scale control systems will be installed to enhance heat transfer efficiency of the cooling towers of the air-conditioning systems. The electromagnetic device generates magnetic field which facilitates the formation of scale on its own surface. As a result, it reduces the scale formation on the heat exchange surface, which would otherwise reduce the ability of the heat-exchanger to transfer heat. By inhibiting scale more effectively than chemical treatment, inline electromagnetic scale control system can improve the overall chiller system performance.
CP-D125 (11D0230)	包縫機伺服直驅節能電機項目 Installation of direct-drive type servo-controlled overlock sewing machines to save energy for textiles industry	以 180 台伺服直驅電機包縫機取代傳統的包縫縫紉機，以節約能源和提高生產力。高效節能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。 180 sets of traditional overlock sewing machines will be replaced by direct-drive type servo-controlled overlock sewing machines to save energy and enhance productivity. Servo motors are using electronic control logic to control the speed of motors for any speed requirement of sewing process and save energy during standby mode of the sewing machines.
CP-D126 (11D0231)	以節能照明 LED 日光燈取締傳統 T5 光管 Replacement of fluorescent tube with energy efficient LED lighting tube for general lighting application to save energy in a metal products factory	以 2756 套 LED 照明系統取代位於相同生產線下的傳統螢光燈管，提供相當照明的水平。比較螢光燈照明系統，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）。 2756 sets of conventional fluorescent light tubes in workshops of the same production line are replaced by LED lightings, 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.
CP-D127 (11D0234)	壓鑄機電熱保溫替代柴油加熱保溫方案 Use of electric zinc melting and holding furnace to replace diesel-fired furnace for zinc die-casting process to save energy and reduce direct air pollutant emission	為 15 台壓鑄機安裝電熱保溫爐，取代傳統的柴油保溫爐，以節省能源及消除車間的空氣污染物排放，並提供更佳的車間工作環境。比較傳統的燃燒式熔爐，電爐具較高的熱效率，大幅減少能源消耗，並消除車間由燃燒化石燃料所產生的空氣污染物，如二氧化硫、氮氧化物、一氧化碳、碳氫化合物。 Electric zinc melting and holding furnaces will be installed to replace conventional diesel-fired furnaces for 15 die-casting machines to save energy and help eliminate air pollutant emission in the factory for better working environment in the factory. Thermal efficiency in electric furnace is high compared to conventional burner-type furnaces, resulting in great energy consumption reduction. Furthermore, the airborne emission of air pollutants at the factory can be minimized by totally eliminating air pollutants such as SO ₂ , NO _x , CO, HC from fuel combustion.
CP-D128 (11D0238)	鍍電鍍漂洗廢水鍍在線回收系統 Installation of inline nickel plating solution recovery system to recover nickel plating chemicals and purified water from spent rinses for process re-use to reduce waste chemical and water consumption in production	安裝鍍電鍍漂洗廢水鍍在線回收系統，回用鍍鍍化學品及純淨水於生產中，以減少生產過程中的化學品和清洗水量。採用兩段薄膜過濾系統對稀釋漂洗液內的電鍍化學品進行濃縮，滲透液則會以反滲透(RO)系統作深化處理，回用約八成的漂洗廢水。 An on-site nickel plating solution recovery system will be installed to recover nickel plating chemicals and purified water from spent rinses for process re-use to reduce waste chemical and water consumption in production. Two-stage membrane filtration will be adopted to concentrate plating chemicals from a dilute rinsing solution, while the permeate will be further polished by reverse osmosis (RO) so that about 80% of rinsing wastewater will be reclaimed as clean water for rinsing process.
CP-D129	氨氮治理改造工程	將現有的污水處理系統改造為厭氧-缺氧-好氧生物工藝，去除印染污水中的氨氮和化學需氧量(COD)，再經深化處理後回用作生產用水。通過生物硝化/反硝化或厭氧-缺氧-好氧(A ₂ /O)工藝實現脫氨氮，轉化成氮氣排放或於廢污泥中去除。A ₂ /O 工藝可

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(11D0239)	Removal of nitrogen and COD from printing & dyeing ammonia-rich industrial effluent by anaerobic/anoxic/oxic (A2/O) biological process to facilitate recycling of the after-treatment water for production use	去除污水內大部分的有機物及氨氮，然後再作深化處理回用至生產中，減少自來水的消耗。 The existing effluent treatment system will be retrofitted with anaerobic-anoxic-oxic biological process to remove nitrogen and COD from printing & dyeing effluent and to facilitate recycling of the after-treatment water for production use. Biological removal of ammonia in the influent wastewater is achieved with biological nitrification/denitrification or anaerobic-anoxic-oxic (A2/O) processes and ammonia is subsequently removed from the process as a result of nitrogen gas and sludge wasting. Most of the organics and ammonia-nitrogen can be removed after the A2/O process. The treated effluent can be further polished and returned to the production process for reuse, resulting in reduction of tap water consumption.
CP-D130 (11D0240)	五金製品污水中水回用 Metal hardware manufacturing process wastewater recycling by a cascading filtration system with ultrafiltration and reverse osmosis (RO) for manufacturing processes reuse to save water and reduce wastewater discharge cost	安裝超濾和反滲透(RO)雙薄膜過濾系統，回用經生物處理的五金廢水作生產用水，以減少用水及排放污水費用。五金廢水含有固體懸浮物和溶解鹽，系統採用超濾去除殘餘固體懸浮物/生物群落以防止反滲透薄膜淤塞，而反滲透膜可去除溶解鹽，使清液的水質能夠符合生產回用水的要求。 A cascading filtration system with ultrafiltration and reverse osmosis (RO) will be installed to recycle the biological treated wastewater effluent of a metal hardware manufacturing factory for manufacturing processes reuse to save water and reduce wastewater discharge cost. Industrial effluent discharged from metal hardware manufacturing contains suspended solids and dissolved salts. The cascading filtering system is designed with an ultrafiltration to remove the residual suspended solids/biome for protecting the membrane against fouling and a RO membrane to remove dissolved salt so that the permeate can meet the water requirement for reuse in the production process.
CP-D131 (11D0243)	能源信息化管理系統方案 Installation of energy management system (EMS) to automatically and centrally monitor energy facilities for optimizing energy performance and operating condition to save energy for a stainless steel foundry	於不銹鋼廠安裝能源管理系統(EMS)，自動地中央監控耗能設備，使之能作出能效評價和制訂良好的管理措施，以優化耗能表現和設備運行狀況，從而節省能源消耗。EMS包含軟體、數據採集硬件及通信系統，透過收集、分析和顯示工廠的運行情況，幫助工廠採取適當的控制和補救措施，以減少能源的使用和成本。設計中會於14個熔爐及其他主要耗能設備安裝共50個智能電錶。 Energy management system (EMS) will be installed in a stainless steel foundry to automatically and centrally monitor energy facilities to facilitate benchmarking analysis and good management practice for optimizing energy performance and equipment operating conditions to save energy. EMS is a combination of software, data acquisition hardware, and communication systems to collect, analyze and display factory operating information to aid factory in making necessary controls and remedial actions to reduce energy use and costs. A total of 50 smart meters will be installed in 14 furnaces and other major energy consuming equipment.
CP-D132 (12D0249)	自動定量噴藥機取代傳統浸藥工藝 Installation of automatic chemical (resin) spraying systems to replace traditional inefficient chemical dipping baths for denim garment resin finishing process to reduce chemical consumption and wastewater discharge	為牛仔服裝樹脂吸收工序安裝2台自動定量化學品(樹脂)噴藥系統，取代傳統低效率手工浸泡藥水工藝，減少化學品消耗和廢水排放。傳統浸泡藥水需要定期更換作廢水排放。自動噴藥系統則由微處理器準確控制噴藥量、轉速、噴藥速率及化學反應時間，達致最佳效率及化學品利用率，從而減少化學品的消耗和廢水排放。 2 units of automatic chemical (resin) spraying systems will be installed to replace traditional inefficient chemical dipping baths for denim garment resin finishing process to reduce chemical consumption and wastewater discharge. Currently, contaminated resin solution will be periodically discharged as wastewater. Automatic chemical spraying system is controlled by a

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		microprocessor to accurately meter the exact amount of chemicals and to control the rotation time, spray rate and process time for optimizing reaction efficiency and chemical utilization, thus achieving reduction in chemical consumption and wastewater discharge.
CP-D133 (12D0260)	採用脈衝式進水及組合式雙環填料的上流式厭氧污泥床及其它生化處理回用塑料清洗污水 Retrofitting existing effluent treatment system with upflow anaerobic sludge blanket (UASB) technology adopting an innovative dynamic pulse feeding unit and sludge retention packing to enhance COD removal efficiency for high COD industry effluent to reduce the loading in the subsequent recovery system for process water reuse	於現有廢水處理系統安裝一套採用創新脈衝式進水及組合式雙環填料的上流式厭氧污泥床(UASB)，以加強對高化學需氧量(COD)工業污水的 COD 去除效率，減少其後中水回用系統的負荷。新增上流式厭氧污泥床採用創新脈衝式進水及組合式雙環填料，提高污泥層內的混合程度及促進厭氧污泥與進水中基質的充分接觸，提高處理效率。經上流式厭氧污泥床及生物接觸曝氧工藝後，可以去除大部份的 COD 和有機物，並回用到生產過程中。 The existing effluent treatment system will be retrofitted with UASB technology adopting an innovative dynamic pulse feeding unit and sludge retention packing to enhance COD removal efficiency for high COD industry effluent to reduce the loading in the subsequent recovery system for process water reuse. The UASB adopts an innovative dynamic pulse feeding process and packing material to achieve a better mix of biomass with the feed and a homogeneously distribution of COD loaded in the bioreactor bottom layers thus improving the quality of the operation in bioreactor. Most of the COD and organics can be removed after the UASB and aeration process bio-contact. The treated effluent can then be returned to the production process for reuse.
CP-D134 (12D0270)	無水脫皂技術 An innovative anhydrous process to remove soap impurity in crude edible oil to reduce water and energy consumption in edible oil refinery	對原有水洗脫皂工序進行工藝改造，採用兩段式工藝，包括以無水吸附方式進行脫色及複脫色，除去食用油中的殘皂及色素。此工藝利用經複脫色後白土的剩餘吸附脫色能力進行預脫色，然後加入適量新鮮白土進行複脫色。系統以過濾器把複脫色後的白土與經處理的食油分離，部份白土會回用到預脫色工序中，大大降低白土的用量。無水脫皂可以降低白土及新鮮水用量，亦減少污水排放。 The water extraction/deodour process is replaced by a 2-step processes, including anhydrous adsorption, decoloration and post-decoloration, to remove soap impurity from crude edible oil. The decoloration process adopts a filter to separate used activated earth from post-decoloration process which will be reused to adsorb a large portion of soap impurity in the crude oil. Fresh activated earth in proper proportion is replenished in the post-decoloration process to get rid of the remaining soap residual. This alternative production process can reduce activated earth consumption, fresh water consumption and wastewater discharge in edible oil refinery.
CP-D135 (12D0278)	石墨污水處理回用系統項目 Graphite particles recovery and process wastewater recycling from battery manufacturing wastewater by plate-and-frame filter press and a cascading filtration system with ultrafiltration and reverse osmosis (RO) to recover materials and to save water	安裝板框壓濾機和雙薄膜(超濾及反滲透)過濾系統處理電池生產廢水，回收石墨顆粒及回用水，以回用物料及節省用水。電池生產廢水含有石墨和難降解的有機物，經沈澱的污泥會以板框壓濾機脫水及回收石墨，而經過生物處理後的廢水，會進一步以超濾及反滲透雙薄膜過濾系統處理，去除溶解鹽使清液能達到生產回用水的要求。 Plate-and-frame filter press and a cascading filtration system with UF and RO will be installed for graphite particles recovery and process wastewater recycling from battery manufacturing wastewater to recover materials and to save water. Industrial effluent discharged from battery manufacturing contains graphites and refractory organics. Plate-and-frame filter press is used to dewatering liquid-solid slurry sludge from sedimentation to recover graphites. Effluent after biological treatment is further treated by cascading filtering system with UF and a RO membrane to remove dissolved salt so that the permeate can meet the water requirement for reuse in

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		production process.
CP-D136 (10D0139)	蒸氣鍋爐高溫凝結水回收節能系統 Pressurized condensate return system to recover heat from steam condensate at a textiles manufacturing plant.	現有的傳統間接排氣冷凝水回收系統將被改裝為高溫冷凝水回收系統，取代原有間接開放式冷凝水回收系統，通過省煤器回收鍋爐排氣廢熱後直接重回鍋爐，以節省能源。 An existing conventional vented indirect condensate return system will be retrofitted to a direct condensate return system which return steam condensate directly to the boiler after passing through the boiler economizer to recover waste heat from the boiler flue gas.
CP-D137 (10D0179)	污泥乾燥燃燒工程技術改造方案 Retrofitting coal-fired boiler with biofuel co-firing system utilizing biomass from low-temperature sludge drying system as supplementary feedstock to reduce fossil fuel consumption and energy use	現有的燃煤鍋爐會改造為生物質燃料混燒系統，利用由低溫污泥乾燥系統所產生的生物質燃料作為輔助燃料，以減少化石燃料的消耗和能源的使用。低溫污泥乾燥系統回收鍋爐尾氣餘熱把污水處理廠的濕污泥乾燥，利用特殊設計的氣旋乾燥室把濕污泥轉換成乾燥度達 70% 的生物質燃料，然後會被送入已改造的鍋爐作為輔助燃料。 The existing coal-fired boiler will be retrofitted with biofuel co-firing system utilizing biomass from low-temperature sludge drying system as supplementary feedstock to reduce fossil fuel consumption and energy use. The low-temperature sludge drying system makes use of waste heat recovered from the exhaust gas of boiler to dry the sewage sludge which is composed mainly of settled filter from the wastewater treatment plant in a special-designed cyclonic drying chamber and converts into high-yield biomass fuel with dryness of about 70%. The combustible biomass fuel is then fed into the retrofitted boiler as supplementary feedstock.
CP-D138 (11D0208)	高速環保 UV 局部上光機（下擺式） Energy-efficient ultraviolet (UV) coating system for printing products finishing to enhance productivity, save energy and reduce VOC emissions	採用高能效紫外線（UV）上光油系統，以提高生產力、節約能源和減少揮發性有機化合物的排放。由於 UV 光油只含有很少甚至完全沒有揮發性溶劑，UV 上光系統較傳統溶劑型覆膜機可以大幅減少揮發性有機化合物的排放。此項目以一套具有更高性能（如更高生產效率、更節電、更高質量及更低的單位產品成本）的 UV 上光系統取代現有 UV 上光系統，能更全面地發揮 UV 上光技術的節能及減少揮發性有機化合物排放的效果。 An energy-efficient ultraviolet (UV) coating system for printing products finishing will be installed to enhance productivity, save energy and reduce VOC emissions. Compared to traditional solvent-based coating, this UV coating system eliminates the emission of VOC when cured because UV coatings contain very few or no volatile solvents. This project will replace the existing UV coating system with another energy-efficient system which has enhanced performance (e.g. higher productivity, save electricity, higher quality compared with the existing product, resulting in lower per-unit consumption cost) to take full advantage of the energy saving and VOC emission reduction effects of UV coating technology.
CP-D139 (11D0219)	採用纖維束過濾及活性炭吸附進行深度處理提高污水回用率 Installation of fiber bundle filtration system to boost up the recycle rate of the biological treated wastewater effluent for paper manufacturing processes reuse to save water and reduce wastewater discharge cost	安裝由紫外線消毒、活性炭吸附和可控孔徑的纖維束過濾器組成的先進纖維束過濾系統，提升經生物處理後的廢水回用率至 95%（原為 77%）。經現有廢水處理系統處理的廢水將作進一步處理，產出高質素及適合於在生產過程中回用的回用水。通過提高回用率可進一步減少自來水的使用和廢水的排放及其成本。 An advanced fiber-bundle filtration system consisting of UV sterilization, activated carbon absorption and pore-controllable fiber-bundle filter will be installed to increase the recovery rate of the biological treated wastewater from 77% to 95% for process reuse. Wastewater from the existing treatment will be further polished and converted into high-quality reclaimed water suitable for reuse in the manufacturing process. By using more recycled water, tap water usage and wastewater discharge would further be reduced, resulting in cost saving associated with reduced fresh water use and

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
		wastewater discharge cost.
CP-D140 (11D0221)	採用印刷水斗液循環過濾系統以減少廢水斗液排放、酒精用量及 VOC 排放 Installation of a dampening solution filtration system for sheet-fed offset printing which facilitates extending dampening solution cycle and reducing ratio of isopropyl alcohol (IPA) in order to reduce VOC emission and waste chemical disposal in production	於平張柯式印刷機安裝一套潤版液過濾系統，過濾廢潤版液並重用於印刷工序中，有助延長潤版液的使用週期及減少異丙醇 (IPA) 的比例，從而減少揮發性有機化合物的排放及生產過程中的廢化學品產生量。高效過濾系統有效延長潤版液的使用週期由一星期提升到大約半年，大幅減少新鮮潤版液使用量及廢液處理的成本。 A dampening solution filtration system for sheet-fed offset printing will be installed to filter used dampening solution and re-introduce into the printing cycle which facilitates extending dampening solution cycle and reducing ratio of isopropyl alcohol (IPA) in order to reduce VOC emission and waste chemical disposal in production. Efficient filtration extends the dampening solution cycle from 1 week to about half year and the costs of disposal along with the need for fresh additives are reduced drastically.
CP-D141 (11D0222)	半導體晶圓切割研磨工序廢水回用及硅粉回收 Installation of on-site silicon recovery system to recover silicon particles from wafer dicing/backgrind wastewater and to facilitate reuse of process water in order to reduce water and materials consumption in production	安裝一套在線硅粉回收系統回收晶圓切割或研磨廢水中硅粉，並以現有反滲透系統（註：反滲透部份不包括此資助申請內）回用生產用水，以減少生產過程的用水及物料消耗。系統設微濾循環迴路，以微濾分離廢水中的懸浮固體（即硅粉），硅粉於循環迴路中得以濃縮，並定期排出作脫水和回收。清液則以反滲透系統作回收和回用。 An on-site silicon recovery system will be installed to recover silicon particles from wafer dicing/backgrind wastewater and to facilitate reuse of process water by existing reverse osmosis system (Note: RO units are not included in this funding application) in order to reduce water and materials consumption in production. Microfiltration membrane filter will be adopted to separate the suspended solids (i.e. silicon particles) from wastewater. During operation, clear filtrate permeates through the membrane, while the suspended solids retained in the re-circulation loop are periodically purged for further de-watering and recovery. The filtrate can then be directed to reverse osmosis for recycling and reuse.
CP-D142 (11D0227)	採用球磨機精密料位感測及入料控制系統取代人手控制以提高產能及節約能源 Installation of wireless high precision filling level sensor and high performance fuzzy-expert control system for ball mill of a cement manufacturing plant to maintain the mill operating at optimum level to save energy and enhance productivity	於水泥廠安裝一套無線高精度球磨機料位感測器和高效能模糊專家控制系統，以節省能源和提高生產力。結構傳聲感測器會直接安裝在旋轉機體的外殼，避免受到其他球磨機或附近機器所產生的噪音干擾。信號將以無線傳輸方式傳送至模糊專家系統，穩定地及自動地控制和驅動球磨機在最佳水平運作。從而可以降低能耗，改善水泥和生料的均勻性，提高球磨機的生產量。 A set of wireless high precision filling level sensor and high performance fuzzy-expert control system for ball mill will be installed in a cement manufacturing plant to save energy and enhance productivity. A structure-borne sound sensor is attached directly on the shell of the rotating mill to avoid interference from noise produced by other mills or machines in the vicinity. The signals are transmitted wireless to the Fuzzy-Expert-System which control and drive the ball mill constantly and automatically at optimum level. As a result, system can reduce the energy consumption, improve uniformity of cements and raw meals, and enhance throughput of the mill.
CP-D143	60 噸/天中水回用系統	安裝超濾和反滲透(RO)雙薄膜過濾系統，回用經生物處理的皮革加工（不包括制革工序）廢水作生產用水，以減少用水及污水排放費用。皮革加工廢水含有固體懸浮物和溶解鹽，系統採用超濾去除殘餘固體懸浮物/生物群落以防止反滲透薄膜淤塞，而反滲透膜可去除溶解鹽，使清液的水質能夠符合生產回用的要求。

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(11D0241)	Leather processing wastewater recycling by a cascading filtration system with ultrafiltration and reverse osmosis (RO) for manufacturing processes reuse to save water and reduce wastewater discharge cost	A cascading filtration system with ultrafiltration and reverse osmosis (RO) will be installed to recycle the biological treated wastewater effluent of a leather processing (no tanning process) factory for manufacturing processes reuse to save water and reduce wastewater discharge cost. Industrial effluent discharged from leather processing contains suspended solids and dissolved salts. The cascading filtering system is designed with an ultrafiltration to remove the residual suspended solids/biome for protecting the membrane against fouling and a RO membrane to remove dissolved salt so that the permeate can meet the water requirement for reuse in the production process.
CP-D144	能源節約系統 – 自耦調壓器	安裝一個採用自耦調壓器的能源節約系統，以提升功率因素、保持三相電壓及平衡、消除及過濾高次諧波及減少啟動/停頓的消耗。
(11D0245)	Installation of power saving system employing self-coupling transformer to stabilize voltage and achieve energy saving in a metal products manufacturing plant	This project will install a power saving system employing self-coupling transformer for power factor correction, phase voltage reduction and balancing, eliminating higher power harmonics and frequent start-stop losses.
CP-D145	吸附回收銅項目 – 離子交換樹脂	在線路板廠安裝在線離子交換及電解組合系統，處理已作分流的線路版稀釋沖洗廢水，以離子交換除去銅離子後回用生產用水，並以電解方式從離子交換再生液中回收銅作生產回用。離子交換及電解組合系統對稀釋沖洗廢水中的銅作出分離、濃縮及回用，離子交換亦有助回流部分沖洗液從而減少繼後廢水處理的負荷。此外，通過減少進入污水處理系統銅含量，大大減少污水處理過程所產生的污泥量，這類污泥通常須作有害廢物外運。
(11D0246)	Accomplishment of metal rinse treatment, wastewater recycling and copper recovery by an in-line ion-exchange+electrowinning process for a PCB manufacturing plant	An in-line ion-exchange+electrowinning combination system will be installed to remove copper from segregated dilute spent rinses of a PCB manufacturing plant for process water recycling and to regenerate copper from ion-exchange regenerating solution for production re-use. The combination of ion exchange/electrowinning can separate, concentrate and recover copper from dilute rinse streams while the ion exchange offers the ability to close-loop some dilute rinses thus reducing the need for downstream treatment. Furthermore, reducing the quantity of copper entering the waste treatment system greatly reduces the quantity of wastewater treatment sludge generated, which is typically shipped off-site as hazardous waste.
CP-D146	服裝洗水深化處理中水循環回用工程	安裝超濾和反滲透(RO)雙薄膜過濾系統，回用經生物處理的針織廢水作生產用水，減少用水及污水處理成本。針織工業廢水含有固體懸浮物和溶解鹽，系統採用超濾去除殘餘固體懸浮物/生物群落以防止反滲透薄膜淤塞，反滲透膜可去除溶解鹽，使清液的水質硬度能夠符合生產回用水（如需加入軟化毛料所用軟化劑的洗水工序）的要求。
(11D0248)	Knit-wear wastewater effluent recycling by a cascading filtration system with ultrafiltration and reverse osmosis (RO) for manufacturing processes reuse to save water and reduce wastewater discharge cost	A cascading filtration system with ultrafiltration and reverse osmosis (RO) will be installed to recycle the biological treated wastewater effluent of a knit-wears manufacturing factory for manufacturing processes reuse to save water and reduce wastewater discharge cost. Industrial effluent discharged from knit-wears manufacturing contains suspended solids and dissolved salt. The cascading filtering system is designed with an ultrafiltration to remove the residual suspended solids/biome for protecting the membrane against fouling and a RO membrane to remove dissolved salt so that the permeate can meet the water hardness requirement for reuse in the production process (e.g. washing with softeners).
CP-D147	中水分類處理和 2 級反滲透(RO)中水	安裝兩級超濾及反滲透(RO)系統（即第二級反滲透系統對第一級反滲透系統濃液再作處理）回用沖洗廢水，以進一步提高線路版廠的整體廢水回用率。第二級反滲透系統對第一級反滲透系統產出的濃液作進一步深化處理，使整體回用率由 50%（單

參考編號 Reference No.	示範項目技術 Demonstrated Technologies	內容 Description
(12D0253)	Introduction of a two-stage RO systems (i.e. 2nd stage RO to further polish 1st stage RO concentrate) with UF pre-filtration to recycle the general rinse effluent and boost up the overall wastewater recycle rate for a PCB manufacturing plant	<p>級設計) 增加到 62.5%。第二級反滲透系統所產出的高污染濃液會排至現有污水處理系統，以先進 Fenton 氧化及生物處理工藝作出處理後達標排放。</p> <p>A two-stage RO system with UF pre-filtration (i.e. 2nd stage RO to further polish 1st stage RO concentrate) will be installed to recycle the general rinse effluent and boost up the overall wastewater recycle rate for a PCB manufacturing plant. The 2nd stage RO will be used to further polish RO concentrate from the 1st stage RO to increase the overall process water recovery rate from 50% (single-stage design) to 62.5%. Subsequently, high polluted concentrate from the 2nd stage RO will be discharged to the existing wastewater treatment plant for treatment by advanced Fenton oxidation+biological treatment to meet the discharge standard.</p>
CP-D148 (12D0254)	燃氣快速鋁棒加熱爐改造項目 Retrofit of conventional aluminium ingots preheating furnaces with energy efficient nozzle design and heat recovery for improving the overall thermal efficiency to save energy and reduce air pollutants emissions	<p>為 10 台現有傳統鋁錠預熱爐進行改造，利用高效節能的噴嘴及熱回收設計，改善整體的熱效率以節約能源及減少空氣污染物的排放。改造後，爐體及門會更密封並有更佳隔熱效能，熱煙氣會被回收及回流作加熱鋁錠以減少熱損失。此外，獨有的噴嘴設計更有效地對鋁錠直接加熱以減少熱損失並增加保熱時間提升熱利用效率。因此，改造後可降低能源消耗和溶損，並提高生產效率及產品質素，同時可以減少燃料燃燒所產生的空氣污染物排放。</p> <p>10 existing conventional aluminium ingot preheating furnaces will be retrofitted with energy efficient nozzle design and heat recovery for improving the overall thermal efficiency to save energy and reduce air pollutants emissions. The furnace body and door are sealed and insulated well to reduce heat loss. Hot flue gas is recovered and re-circulated to heat the ingots to avoid heat loss. Furthermore, the nozzle is specially-designed to emit fuel gas at angle targeted on the ingots directly to avoid heat wastage and increase the heat retaining time in order to maximize the heating efficiency. As a result, it reduces energy consumption and melt loss while increases production efficiency and improves quality. Furthermore, air pollutant emissions associated with the combustion of fuel can be reduced.</p>
CP-D149 (12D0256)	高級氧化反應工藝 Installation of a new advanced oxidation system working in combination with biological treatment for effective dye degradation to enhance colour and COD removal for a textile manufacturing plant	<p>於紡織染廠安裝高級氧化系統配以生物處理技術，能有效降解染料，提高色度及化學需氧量(COD)的去除效率。紡織漂染水含有高色度及 COD，會先經生物化學處理，再以高級氧化系統作深化處理，進一步去除色度及 COD，最後以離子交換系統去除溶解鹽，產出符合生產用水水質要求的回用水。</p> <p>A new advanced oxidation system will be installed and worked in combination with biological treatment for effective dye degradation to enhance colour and COD removal for a textile manufacturing plant. Textile effluent containing high COD and colour will be treated by chemical+biological treatment and the biological-treated wastewater will be further treated by advanced oxidation system for further COD/colour removal. Subsequently, the treated water will be polished by ion-exchange removing dissolved salt to meet the water requirement for reuse in the production process.</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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