



Contract Number	4600010160
Contract Title	Provision of Integrated Maintenance and Project Services for Electrical and Instrument, Balance of Plant in Castle Peak Power Station (CPPS), and WE Station (2024-2029)
Project Location	Tuen Mun
Contract Type	NEC 4 Option C

Introduction

CLP Power Hong Kong Limited (CLP Power) operates a vertically integrated power supply business in Hong Kong, providing electricity with a world-class supply reliability of 99.999% to more than 80% of Hong Kong's population.

In this New Engineering Contract, ATAL is responsible for providing overall maintenance service for CLP Power within the Castle Peak Power Station (CPPS) and WE Station, including Regular Preventive Maintenance, Defect Rectification, Fault Repair, Minor Modification and Improvement Works. ATAL supplies manpower, supervision, equipment and materials to plan, schedule, implement and report on the service.

Castle Peak Power Station

This coal-fired power station, built in the 1980s. Apart from burning coal, it can burn natural gas or ultra low-sulphur diesel as backup fuels. To reduce power generation emissions, desulphurisation and nitrogen oxides reduction facilities are installed. It provides reliable and safe electricity to customers while improving air quality.

Landfill Gas Power Generation Units (WE Station)

It is Hong Kong's largest landfill gas power generation plant which comprises seven generation units with a total generation capacity of 14 megawatts (MW). Located at the West New Territories (WENT) Landfill, the units make use of the landfill gas produced locally for power generation and the power will be transmitted to CLP Power's electricity grid.



Performance and Outcomes

NEC's requirement to act in a "spirit of mutual trust and cooperation" has fostered a collaborative environment within the project team, driving towards a common goal. In line with NEC's principles of promoting innovation and flexibility, ATAL partners with CLP Power to not only meet its requirements but also adapt to evolving technologies, business functions, and operational volumes, striving for continuous improvement.

This project have achieved zero work accidents and lost-time injuries records, along with 100% work quality compliance at CLP Power's power plants. According to the latest annual NEC productivity outcomes, our team exceeded project's target by over 10%, reducing approximately 16,000 man-hours compared to the planned man-hours, and achieving cost savings of over HKD 1 million this year.

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Work Related Accidents

Zero lost-time injuries achieved through proactive safety measures

100%

Work Quality Compliance

Maintained reliable and safe power supply to Hong Kong

↑10%

Productivity Improvement

Achieving goals more efficiently and effectively

1M

Hong Kong Dollar Cost Saving

Combining innovation and technology deployment



Collaborative Spirit

Caring for people is one of the core values of CLP Power. The health and safety of all parties is always a top priority. ATAL has been working closely with CLP Power to ensure safety at work by leveraging advanced technology.



Innovation and Technologies



3D Scanning Tool

To enhance the effectiveness and the accuracy of work planning, the project are applied with 3D Scanning Tool to aid and facilitate engineers and the safety team during planning stage. The scanning tool delivers high-quality scans of the site environment and produces stunning 3D models and virtual tours. For example, spending 30 minutes for site scanning for preparing larger scale replacement with overhead crane. This provides a visualised real situation, the project team can formulate method statement, lifting plan before work commencement. It assesses and mitigates work risk and identify potential Serious Injury and Fatality (SIF) risks.



Building Information Modelling (BIM)

By implementing an as-built BIM model for remote sites, enabling us to simulate high risk lifting activities, critical equipment replacement, complex or heavy duty lifting.

This simulation allows all stakeholders, including clients, subcontractors, and safety teams, to visually review workflows and raise any concerns or suggestions. By assisting with project planning and risk assessment, the impact on normal operations is minimised. This results in efficient, fast, safe, and reliable high-quality engineering.



Artificial Intelligence Cameras

Additionally, by utilising AI cameras for monitoring unsafe behaviours on site. These cameras not only verify that workers are properly equipped with safety helmets and reflective vests, but also detect if anyone is using a mobile phone while walking. Using a mobile phone in this manner may cause distractions and increase the risk of accidents. For this reason, an in-house rule has been established to prohibit such behaviour. The AI cameras can be customised to meet specific needs, enhancing their effectiveness. For ease of use, they also allow real-time monitoring through a mobile application, enabling supervisors to stay updated on site conditions. This implementation not only enhances safety but also improves overall security.



RFID Tools Management System

The system utilises RFID technology to automate the tracking and management of assets and tools. It enhances efficiency by providing real-time visibility, reducing manual effort, and minimising errors associated with traditional tracking methods. Additionally, it offers an easier way to monitor calibration records, rental status, and stock levels.



360° AI Camera

In light of a recent reverse collision incident in the industry, the project team have proactively installed 360° AI cameras on heavy-duty vehicles to enhance safety measures. These cameras provide crane operators with real-time alerts when individuals enter the danger zone, significantly improving safety protocols, and workers' awareness.



Smart Watch System

A smartwatch system integrated with a Centralised Management Platform (CMP) has implemented for monitoring frontline workers' conditions in remote site areas, in response to the Smart Site Safety System (4S) promoted by the Hong Kong Special Administrative Region Government. These smartwatches monitor vital signs and locations of frontline workers, and are equipped with a one-click SOS emergency alarm. This innovative approach can closely monitor health and safety of workers, especially in hot weather.

Through the application of new technologies, we are confident that we can further enhance service quality and improve work efficiency, create receptive communication, eventually achieving continuous improvement in overall performance.



合約編號	4600010160
合約項目	青山發電廠、新界西堆填區堆填沼氣發電項目之電機、儀器及電廠輔助設備綜合維修服務(2024-2029)
項目位置	屯門
合約模式	新工程合約(第四版) 工程建造合約C選項

簡介

中華電力有限公司(中華電力)在香港經營縱向式綜合電力業務,為香港超過八成人口提供可靠度達 99.999% 的世界級電力。

安樂工程集團(安樂工程)負責為中華電力在青山發電廠及新界西堆填區的中電綠源提供全面維修服務,包括定期預防性保養、執漏及故障維修、以及小型改動及改善工程。安樂工程提供人力、監督、設備及材料,以規劃、安排、執行及匯報有關服務。

青山發電廠

青山發電廠於80年代建成,採用燃煤發電。當中兩台機組亦可採用天然氣或超低硫柴油作輔助燃料。為減少發電的排放,機組已安裝煙氣脫硫和除氮設備。中華電力致力為客戶提供可靠及安全的電力,同時改善空氣質素。

中電綠源(新界西堆填區堆填沼氣發電項目)

中電綠源為全港最大規模的堆填沼氣發電項目,設有七台發電機組,總發電容量為14兆瓦。項目位於新界西堆填區,採用堆填區產生的沼氣發電,並接駁至中電電網,實踐轉廢為能。



績效與成果

項目團隊恪守新工程合約要求,秉承互信與合作精神,在團隊內營造協作環境,推動大家朝共同目標邁進。新工程合約鼓勵創新與靈活工作,安樂工程與中華電力合作,不僅滿足合約要求,還結合不斷創新的技術、業務功能及運作需求,致力於持續提升和改進。

安樂工程在中華電力的發電廠實現零工傷事故及零損失工時,並完全滿足工作品質要求。

根據最新年度的新工程合約生產力報告,團隊超額完成所訂立目標逾10%,節省約16,000個工時,並於今年成功節省超過港幣100萬元。

實現 0 工傷事故

透過積極安全措施維持零損失工時

保持 100% 工作品質

維持香港可靠安全的電力供應

提升逾 10% 生產力

更高效且更有效率地實現目標

節省約 100 萬港元

為創新技術的應用提供更靈活現金流



團隊合作精神

以人為本是中華電力的核心價值之一，我們把各方的健康與安全時刻放在首位。安樂工程一直與中華電力緊密合作，運用先進技術確保安全工作



創新與技術



三維掃描工具

為提升工作規劃的有效性與準確性，應用了三維掃描工具，協助及便利工程師與安全團隊於規劃階段進行工作。該掃描工具提供高質素掃描，製作逼真的 3D 模型及虛擬導覽。例如，僅需 30 分鐘進行現場掃描，為使用高架起重吊機為複雜設備更換作準備。

透過虛擬實景視覺化工地的真實情況，制定施工方案及起重計劃書，在工作展開前更有效、準確地進行評估。藉此實施適當措施以消除危害及減低風險，並識別潛在嚴重傷害及致命風險。



建築信息模擬技術模型

安樂工程已為偏遠工地建立建築信息模擬技術模型，讓工程團隊在工作開始前模擬吊裝作業，例如團隊可以利用建築信息模擬技術模型協助安裝、設備更換及大型工件吊運。

此模擬讓所有相關夥伴包括客戶、分判商及安全團隊能以視覺方式檢視工作流程並提出任何疑問及建議。此技術有助協助項目規劃及風險評估，將對正常運作的影響減至最低。實現高效、快捷、安全、可靠的高質素完善工程。



智能工地攝影機

安樂工程利用攝影機監察工地上的不安全行為。這些攝影機不僅檢查工人有否正確配戴安全帽及反光背心，亦偵測工人是否有在步行時使用手機。不少意外都由分心引致，因此規定廠內禁止行走時使用手機。

攝影機可按特定需要自訂，提升其效能。為方便使用，我們亦支援透過手機應用程式進行實時監察，讓工地主管隨時掌握工地情況。此措施不僅提升安全，亦改善整體保安。



無線射頻識別資源管理系統

引入 RFID 資源管理系統進行自動化追蹤及管理資產與工具。系統提供實時情況、減少人手操作及傳統追蹤方法引致的錯誤，從而提升效率。此外，它提供簡便方式監察校準記錄、借用狀態及庫存水平。



360° 人工智能攝影機

鑑於近期業界發生的倒車碰撞事故，安樂工程主動在重型車輛安裝360°人工智能攝影機。如有人進入危險區域，攝影機能向吊車操作員發出實時警報提醒相關工人，大大提升工作安全及個人警覺。



智能手錶

安樂工程為響應香港政府推廣的智慧工地安全系統，為偏遠工地前線員工引入智能手錶系統，利用中央管理平台監測員工生命跡象及追蹤位置，並配備一鍵求救警報。

此創新方案有助監察工程人員健康及安全，尤其在酷熱天氣下。

透過應用新技術，我們有信心提供高質、高效、創新的工作水平，和創造良好的溝通環境，持續提升整體業績表現。