

CLP Internship Programme 2021

Project Outline - Mechanical Engineering

Project Code	ME_SAND_01	
Project Detail	Internship Category	Sandwich
	Internship Period	June 2021 to May 2022
	Preferred Discipline	First Preference: Mechanical Engineering Other Preference: N/A
	Project Name	CCGT D2 - Mega Project / E&M Plant Design Management
	Business Objective(s)	<ul style="list-style-type: none"> • The D2 Project at the Black Point Power Station facility will provide an additional high-efficiency, modern, combined cycle unit as extension to the existing nine units at the location and will assist in meeting CLP's commitments to reduce Carbon Dioxide (CO2) emissions as from 2024. • While the Project will be merely executed on an Engineering, Procurement and Construction (EPC) basis, the D2 Project Team as the Owner's representative is obliged to ensure that all the technical, safe, and quality functionality of the works by the Contractor comply with CLP specifications/ requirements.
Project Description	<ul style="list-style-type: none"> • CLP is committed to the continual improvement of high standards of Quality on all its construction sites. Quality of construction projects, as well as project success, can be regarded as the fulfillment of expectations of the project participants. The construction of D2 CCGT is specially designed for the specific purpose, therefore, attainment of required quality level is challenging both to specify and to monitor. The successful candidate will join the CCGT D2 Technical Services Branch. The Technical Services Branch comprises the core activities of design management and construction management in 2021-2022 period. He/ she will be tasked the associated work activities to provide the following support to the Branch: <ul style="list-style-type: none"> ○ Review of technical submissions from Contractor including process flow, P&ID, layout, etc to ensure compliance with contract specification requirements and good safe system design ○ Contribute in formal design review activities at critical stages ○ Contribute in hazard identification, assessment, operability, safety in design workshops 	

		<ul style="list-style-type: none"> ○ Solicit inputs from stakeholders like the BPPS O&M Team as asset owner on the above activities; ○ Attend to site construction activities associated with the above
	Project Deliverable	<ul style="list-style-type: none"> ● The contract specifications are compiled with by the Contractor on the required functionality and safety in design requirements. ● The successful candidate will develop the skill to undertake design review and engineering management of power plant project.
	Required Skills	<ul style="list-style-type: none"> ● Able to comprehend technical drawings ● Good at numerical ● Excellent communication skills ● Able to multi-task as priorities change ● Able to use initiative and work independently
	Learning	-

CLP Internship Programme 2021

Project Outline - Mechanical Engineering

Project Code	ME_SAND_02	
Project Detail	Internship Category	Sandwich
	Internship Period	September 2021 to August 2022
	Preferred Discipline	First Preference: Engineering field Other Preference: N/A
	Project Name	Generating Unit Performance Data Visualization
	Business Objective(s)	<ul style="list-style-type: none"> • Enhance generating unit performance • Optimum plant operational expense
	Project Description	<ul style="list-style-type: none"> • Generating unit alarm management: participate in alarm management project to enhance the alarm system • Numerous data in thermal power generating unit is useful when these data are visualized • Analysis the data can help front line engineers to adopt best practice for optimum plant performance • Candidate has to suggest and design data automation and/or process improvement for increasing data efficiency and effectiveness • Candidate will involve in plant performance review and meetings, cope with front line engineers and present the analyzed performance reports • Power plant familiarization course (both classroom & simulation training) will be provided to the candidate for understanding the process of generating unit operation and startup/ shutdown
	Project Deliverable	<ul style="list-style-type: none"> • Develop a report for reliability study (coal milling unit) • Develop a report for plant air emission performance study • Develop a report for plant operational expense analysis (water consumption)
	Required Skills	<ul style="list-style-type: none"> • Excellent in Microsoft Excel (specifically Macro) • Proficiency in using query languages such as SQL
Learning	<ul style="list-style-type: none"> • Enhanced communication skill and presentation skill • Application of theoretical engineering knowledge into practical and industrial horizon 	

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Project Outline - Mechanical Engineering

Project Code	ME_SAND_03	
Project Detail	Internship Category	Sandwich
	Internship Period	September 2021 to August 2022
	Preferred Discipline	First Preference: Engineering-Mechanical Other Preference: Engineering-Electrical, Electronic or IT
	Project Name	Power Plant Generation Efficiency & Reliability Monitoring
	Business Objective(s)	<ul style="list-style-type: none"> • To monitor electricity generation power plant condition and performance, improve generating unit reliability & availability • To review the existing processes and provide improvement suggestion • To develop effective tools to streamline and improve the upstream data processing
	Project Description	<ul style="list-style-type: none"> • The candidate will have a comprehensive on the job training on: <ul style="list-style-type: none"> ○ EtaPRO - Asset Performance and Condition Monitoring System, build up model and monitor power station to improve asset performance, recognize anomalies sooner, decrease unplanned downtime, and manage data effectively ○ Analyze generation statistic data to propose recommendation to manage unit efficiency and availability in order to meet our station Key Performance Index target ○ Generation Efficiency Monitoring System (GEMS), which monitor the electricity generation & fuel consumption ○ Generation Statistics & Availability Reporting (GSAR) System, which monitor generation unit reliability and availability measures
	Project Deliverable	<ul style="list-style-type: none"> • The candidate is expected to go through existing processes, analyze generation statistic data and support in proposing recommendation to improve station efficiency and availability • Candidate can learn from the relationship between fuel and generation efficiency by fuel consumption analysis
Required Skills	<ul style="list-style-type: none"> • Modeling and programming skill • Excellent in Excel VBA • Advance Excel User • Analytical & critical thinking 	

		<ul style="list-style-type: none">• Sound technical and engineering skill• Good computing knowledge
	Learning	<ul style="list-style-type: none">• Power plant basic operation, performance monitoring and workflow• Interpersonal and communication skill• Time management

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Project Outline - Mechanical Engineering

Project Code	ME_SAND_04	
Project Detail	Internship Category	Sandwich
	Internship Period	June 2021 to May 2022
	Preferred Discipline	First Preference: Mechanical Engineering Other Preference: Building Services Engineering
	Project Name	CPPS Water Management Facilities Enhancement Project
	Business Objective(s)	<ul style="list-style-type: none"> To enhance Castle Peak Power Station's water management facilities to ensure normal operation of the power station after return of Tsang Tsui West Ash Lagoon to the government
	Project Description	<ul style="list-style-type: none"> A brown field project to modify the existing process water and storm water management systems in Castle Peak Power Station The construction scope of work includes: <ul style="list-style-type: none"> Coal Contaminated Stormwater Treatment Circuit <ul style="list-style-type: none"> Modify the west coal stockyard and the associated drainage system Install filters in the coal contaminated stormwater circuit Modify two existing water tanks for contaminated stormwater storage Process Water Treatment Circuit <ul style="list-style-type: none"> Install a new water tank for process water Install a new process water treatment plant After construction, the whole system will undergo 4 months test and commissioning before the system can be put into operation
Project Deliverable	<ul style="list-style-type: none"> Assist in develop test and commissioning plan and execute the plan for a sub-system/ an equipment of the project via collaboration with relevant stakeholders like contractor, station O&M engineers etc. Consolidate O&M manual for a sub-system up to the standard of Asset Owner (CPPS) with the support of project team Compile punch list and clear portion of punch list items of the project after test and commissioning phase [while the exact works will be subject to the quantity and complexity of the punch list items] Assist Project Manager to delivery the project on time, within budget, up to the quality required and safely 	

		<ul style="list-style-type: none"> • Arrange meetings among contractors and consultant, summarise the outstanding actions from the meeting and ensure proper follow-up actions will be taken
	Required Skills	<ul style="list-style-type: none"> • Technical knowledge in mechanical engineering/ building services engineering • Microsoft Word, Excel, Powerpoint, Projects • Project management skills • Fluent in English, Mandarin and Cantonese
	Learning	<ul style="list-style-type: none"> • Apply academic knowledge in executing practical project • Experience engineering project management Experience test and commissioning activity • Understand the work environment in power industry • Gain interpersonal skills including communication, coordination, presentation etc.

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Project Outline - Mechanical Engineering

Project Code	ME_SAND_05	
Project Detail	Internship Category	Sandwich
	Internship Period	June 2021 to May 2022
	Preferred Discipline	First Preference: Mechanical Engineering Other Preference: N/A
	Project Name	<ol style="list-style-type: none"> 1. Gas Turbine Upgrade (GTU) Project 2. Project Management Governance System (PMGS)
	Business Objective(s)	<ul style="list-style-type: none"> • GTU Project - To improve unit efficiency and reduce NOx emission, while delivering an incremental increase of unit capacity. The system would also have improved fuel flexibility, lower turndown and an extended maintenance inspection interval. • PMGS -To effectively monitor a portfolio of over 1,000 projects in SHE, Cost, Schedule & Technical aspects. <ul style="list-style-type: none"> ○ Strengthen Communication and Collaboration ○ Enrich Project Control and Monitoring ○ Promote Information Accuracy, Sharing and Learning
Project Description	<ul style="list-style-type: none"> • GTU Project will solve the obsolete issue of the Dry-Low NOx (“DLN”) 2.0 version which was indicated by OEM that the combustion systems of all its fleets would be upgraded from to 2.6+ version. The project is estimated to be more than HK\$200 million. The project scope includes upgrades of: <ul style="list-style-type: none"> ○ Gas turbine to 9FA.03 (compressor and turbine rotor sections) ○ Combustion system to DLN2.6+ with dual fuel capability • The PMGS system consists of project categorization, a project lifecycle with defined decision and review points and a governance system to review and manage project development and execution. This system is to be function supported by training in project management skills to enable successful project execution. The next work focus and enhancement in PMGS is: <ul style="list-style-type: none"> ○ To conduct health check of the PMGS ○ To ensure / improve the document workflow systems and ○ To enhance Project Manager / PMGS System Database 	

	Project Deliverable	<ul style="list-style-type: none"> • Major deliverables of the GTU Project in the internship period are: <ul style="list-style-type: none"> ○ Develop a data analytics system for Gas Turbine upgrade performance ○ Feasibility study of new exhaust casing installation on future upgrade • Major deliverables of PMGS in the internship period are: <ul style="list-style-type: none"> ○ Develop Health Check program & enhance the questionnaire ○ Analysis the Health Check results ○ Streamline the work process on capex cost analysis and traffic light analysis
	Required Skills	<ul style="list-style-type: none"> • Basic project management concept • Analytical mind set • Computer skills (e.g. Word, Excel, Power Point)
	Learning	<ul style="list-style-type: none"> • Interpersonal skills & team work • Presentation skills • Project management skills in SHE, Cost, Schedule & Technical perspectives • Skills in conducting system review

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Project Outline - Mechanical Engineering

Project Code	ME_SAND_06	
Project Detail	Internship Category	Sandwich
	Internship Period	July 2021 to June 2022
	Preferred Discipline	First Preference: Mechanical Engineering Other Preference: Civil Engineering
	Project Name	Hong Kong Offshore LNG Terminal Project
	Business Objective(s)	<ul style="list-style-type: none"> • Engineering support to the HKOLNG Terminal Project • Construction and Commissioning of the HKOLNG Terminal Project
	Project Description	<ul style="list-style-type: none"> • Hong Kong Offshore LNG Terminal Project will be in execution phase which will involve offshore jacket installation, topside platform fabrication, subsea pipeline installation to BPPS and BPPS GRS construction. • Part of the project scope (jetty) will involve a JV with Hong Kong Electric. • Commissioning of the facilities will involve significant interface management between FSRU, Project Team, BPPS and LPS.
	Project Deliverable	<ul style="list-style-type: none"> • Completion of detail design for all facilities / equipments / systems associated with the project • Successful commissioning of the project facilities which includes the offshore jetty, BPPS pipeline, BPPS GRS • Maintain the high standards of CLP HSSEQ requirement throughout all stages of project
	Required Skills	<ul style="list-style-type: none"> • Sound engineering basics and practices • Good technical writing and communication skills • Fundamental knowledge on HSSEQ management • Project management basics
Learning	<ul style="list-style-type: none"> • Project management • Gas technologies and market development knowledge • HSSEQ management in power industry 	

CLP Internship Programme 2021

Project Outline - Mechanical Engineering

Project Code	ME_SAND_07	
Project Detail	Internship Category	Sandwich
	Internship Period	June 2021 to August 2022
	Preferred Discipline	First Preference: Mechanical Other Preference: Other engineering
	Project Name	Operation and maintenance readiness of new power projects
	Business Objective(s)	<ul style="list-style-type: none"> • Reliability Availability and Maintainability study of Combined Cycle Gas Turbine (CCGT) project • Setting up O&M infrastructure and business systems for new CCGT project • Spares selection for new projects • Operational performance reporting and benchmarking
	Project Description	<ul style="list-style-type: none"> • To support supervisor to review implementation of Asset Management Standards at new power projects to achieve operational readiness in advance of startup • Involve in review of plant design & layout in terms of operability and maintainability of large gas turbine power project (CCGT) • Involve in identification and selection of spare parts of new build and inventory optimization of existing power plants • Involve in preparation of Information Technology Plan and road-map for new projects • To collect key performance indicators of operational plants and prepare annual reports and carry out benchmarking
	Project Deliverable	<ul style="list-style-type: none"> • Operational readiness program for a LNG project • Operational readiness program for an Closed Cycle Gas Turbine project • Detailed Plans for IT and Business System, O&M Infrastructure for new projects • Selected spare parts list of new gas turbine project (CCGT) • Report of CCGT design review from O&M standpoint • Collection of data and benchmarking of 2020 operational performance
Required Skills	<ul style="list-style-type: none"> • Good at basic computer skills: Microsoft Excel, Power Point and MS Words • Report writing • Preparing presentations • Preferable- MS Project 	

		<ul style="list-style-type: none">• Able to read and understand engineering drawings
	Learning	<ul style="list-style-type: none">• Learn about Asset Management standards• Learn about Gas Turbine O&M preparation aspects• Learn about LNG project O&M preparation aspects• O&M Key Performance Indicators• Overview of power plants and understanding of O&M management• How to set up O&M of new build• Exposure to master drawing and design of power plant from operation and maintenance perspective