CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_01	
Project Details	**Internship Period**	June 2024 to May 2025
	Preferred Disciplines	Electrical Engineering
	Project Name	Process flow enhancement in Trainee Programmes
	Business Objective(s)	Review and digitalise process flows in Trainee Programmes in order to align company direction such as digitalisation and de-carbonisation and enhance the efficiency and effectiveness of trainee programmes. The intern will be provided with opportunity to understand more about the Power Supply Systems and experience some training contents of our trainee programmes during the review process, which would be an advantage for his/her career development in Power Industry.
	Project Description	Assist to review the CLP Power Learning Institute (CLPPLI) Trainee Programmes and the involved process flows, propose and develop digital solutions to streamline daily operations, performance management, data accuracy and reporting, etc. By using PowerApps, Power Automate, SharePoint, etc. • to digitalise and automate manual processes • to store and analyse data for reporting
	Required Skills	• Basic computer programming / coding knowledge (If required, basic training for PowerApps, Power Automate, SharePoint would be provided)

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_02	
Project Details	**Internship Period**	June 2024 to May 2025
	Preferred Disciplines	Electrical Engineering
	Project Name	Development of Transmission & Distribution Technical Curriculum
	Business Objective(s)	To develop series of courseware in order to enhance effectiveness of training on CLP Power System network and plant equipment design, operation and maintenance.
	Project Description	• To develop a series of training materials in different format such as video, animation, eLearning to enhance the engineering training for technical staff and trainees especially for those new joins • Training scope to cover planning, design, construction, operation and maintenance activities for Transmission & distribution systems • To facilitate the development of multi-media training materials • To develop digital assessment for trainees
	Required Skills	• Electrical Engineering knowledge • Good knowledge in multi-media design would be an advantage • Proficiency in English and Chinese

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_03	
Project Details	**Internship Period**	July 2024 to June 2025
	Preferred Disciplines	**First Preference:** • Electrical Engineering **Second Preference:** • Electronics Engineering
	Project Name	WENT Landfill Gas Power Generation Project-Phase-II and CPA Re-provisioning project
	Business Objective(s)	To support the testing & commissioning phase of WENT Phase-2 project and detail engineering design review for new 3.3 KV package substation under CPA Re-provision project works (including contractor management & site work coordination).
	Project Description	• Provide support on installation of additional 2 X 2MW generator sets under WENT Phase-2 project with plan to put in operation by Q3 2024 • Provide support on CPA power plant re-provisioning works of installation of new 3.3KV Package substation to facilitate retirement of coal fire generation in future • Apply use of new engineering technology, use of international engineering standards like IEC, various aspects of project management including engineering & construction management, contractor management, stakeholder management, communication management, management reporting aspects etc. by productive engagement and use of project management tools like MS project scheduling, use of BIM software etc
	Required Skills	• Basic Engineering knowledge on Electrical/Mechanical System/Installation • Basic Project management concept • Analytical mindset • Computer skills (e.g. Word, Excel, Power Point) • Knowledge of BIM software would be advantageous

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_04	
Project Details	**Internship Period**	June 2024 to August 2025
	Preferred Disciplines	**First Preference:** • Electrical Engineering **Second Preference:** • Environmental or Sustainability related degree
	Project Name	Utility Scale Battery Energy Storage System
	Business Objective(s)	• To provide primarily support to the engineering team in the design review process and take ownership of certain tasks in the development of battery energy storage system for integration to the Hong Kong grid. • To provide support to the project controls team in the reporting and controls, lessons learned and co-ordination of project management activities.
	Project Description	The intern will join the project development engineering team. Exact role will be dependent on the status of the project development at the time of the internship, but in general the activities could involve assisting the engineering team to: • prepare scopes of work for engineering studies and oversee the output from the studies • check existing plant parameters for the integration of BESS (e.g. power, controls, grid integration, system communications, etc) • reviewing front end engineering designs and preparation of specifications • organise workshops and prepare presentations in the interests of stakeholder engagement
	Required Skills	• Relevant computer software and tools encompasses drafting software like AutoCAD, data visualization and analysis tools such as Power Bl, and process streamline applications like Power Automate. • Having proficiency in both English and Mandarin would provide an added advantage

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_05	
Project Details	**Internship Period**	June 2024 to May 2025
	Preferred Disciplines	Electrical Engineering
	Project Name	Research & Study of application strategy of cable condition monitoring technology
	Business Objective(s)	• To explore in market new condition monitoring technologies for cables • To understand the concern from network / asset health prospective and identify the applicable technologies in addressing the concerns • To evaluate the identified technologies in terms of practicality, effectiveness and cost consideration and summarize overall application strategy
	Project Description	Power cable is an essential component to link up different parts of the power system. However, unlike other components, cables, especially transmission cables, are buried deep underground thus not cost effective to replace. This project is to explore condition monitoring technologies in the market, identify the ones to address both common failure reasons or CLP specific concerns from past experience, and recommend an overall application strategy for cable asset condition monitoring. From this project, student will understand power system operation, pain point and early development of solutions for power systems in Hong Kong, and how to apply technical knowledge and analytical skills to solve problem and make convincing presentation to put forward an idea, which are critical attributes to look for in professional assessment of an engineer.
	Required Skills	• Basic knowledge of power system • Good communication skills in spoken and written English and Chinese

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_06	
Project Details	**Internship Period**	June 2024 to June 2025
	Preferred Disciplines	**First Preference:** • Electrical Engineering **Second Preference:** • Engineering • Science
	Project Name	Intelligent tool in optimizing fault statistics analysis and outage orders validation
	Business Objective(s)	To develop an effective tool which optimize the analysis process over performance and fault statistics in power systems, in order to enhance data accuracy and process automation.
	Project Description	Based on given statistical data in power systems, (e.g. Fault statistics, Performance indices etc.), to develop a tool which aid the team to analyse outage cases in order to identify correlations between cases and derive insights for enhancing reliability performance reporting.
	Required Skills	• General understanding of electrical power systems • Capability in performing logical and data analysis • Knowledge in Power BI and programming technique would be a plus

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_07	
Project Details	**Internship Period**	June 2024 to May 2025
	Preferred Disciplines	Electrical Engineering
	Project Name	Transmission & Distribution Overhead Line Fault Location Technology
	Business Objective(s)	• To explore technologies for detection and location of transient and permanent faults in overhead line system • To identify fault location systems available in the market, evaluate their features, performance, limitations and suitability to CLP
	Project Description	Fault on overhead lines may cause supply interruption and voltage dip. Fault location system can greatly improve the response time of repair crew who can retrieve fault data and location remotely through intranet or 4G/5G network and clear the fault for supply restoration promptly. This project is to evaluate different types of fault location systems and identify the most suitable one for CLP by exploring various emergent technologies and preparing specifications to incorporate both technical and cyber security requirements. The intern will acquire the skills to define a problem, use technology knowledge to find out viable solutions with analytical reasoning, and present a convincing proposal, which are all crucial for the future professional development.
	Required Skills	• Basic knowledge of power system and overhead line system • Knowledge in MS Office and presentation skill • Good command of both spoken and written English and Chinese • Knowledge of cyber security, IT and cloud system is preferred

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_08	
Project Details	**Internship Period**	August 2024 to July 2025
	Preferred Disciplines	• Electrical Engineering • Data science
	Project Name	Study of integrated impact with electric vehicle, load categories, and distributed generation on CLPP network
	Business Objective(s)	• To understand characteristic of electric vehicle (EV) chargers distributed in different load categories, i.e. residential, commercial, and industrial loads • To develop load models and study system impact considering EV chargers and distributed generation (DG) for different load categories • To provide reference in network planning with fast spread EVs and DGs in safety and cost-effective aspects
	Project Description	Load characteristics varies by location, season, and customer attributes, etc. Three basic load categories, i.e. residential, commercial, and industrial loads are commonly used to describe load characteristics. The fast spread of EV, as a new load type, is adding more complexity to understanding load characteristics, since it is not geographically distributed independently, but is superimposed on each existing load category. Integration of large number of EV could significantly change load characteristics and its system impact in some areas. Also, DG could change some electricity consumers to prosumers, which cause reverse power flow in some power distribution networks, especially in rural areas where the network is relatively weak. The increasing DG penetration level poses new requirement in network planning. The intern shall mainly engage in developing integrated models of different load categories, EVs, and DGs in some selected areas, and study the system impact on CLPP network.
	Required Skills	• Study in electrical engineering or data science • Good programming skills (preferably in MATLAB, Python and PSS/E) • Good knowledge of data analysis and power system analysis • Basic research methods

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_09	
Project Details	**Internship Period**	May 2024 to April 2025
	Preferred Disciplines	Electrical Engineering
	Project Name	11kV Network Security Review
	Business Objective(s)	• Identify any weaknesses of the 11kV network • Establish contingency plan for the weak point • Issue project scheme to tackle the weak point
	Project Description	P&D branch will conduct a review concerning the contingency plan for the potential loss of a single Primary Substation. By identifying any weaknesses of the 11kV network, the aim was to propose suitable measures for enhancing the contingency arrangements and ensuring a robust power supply infrastructure capable of withstanding unforeseen incidents while minimizing service disruptions.
	Required Skills	N/A

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_10	
Project Details	**Internship Period**	June 2024 to June 2025
	Preferred Disciplines	**First Preference:** • Electrical Engineering **Second Preference:** • IT or other disciplines
	Project Name	Digital Transformation and Management of Distribution Construction Projects
	Business Objective(s)	• Enabling the Digital Transformation on managing the Distribution Construction Projects • Enhancing reliability of Power Systems by better managing and implementing the Distribution Construction Projects
	Project Description	• Developing Digital Solutions on better management of Distribution Construction Projects - End-to-End Project Lifecyle Monitoring Systems - Dashboards for Project Monitoring and Contractor Management - Mobile Apps to enhance Contractor Management • Supporting the team and have opportunity to be at the forefront to commission new Equipment in the Distribution System - Installation, Pre-commssioning and Commissioning of new Substations - Installation, Pre-commssioning and Commissioning of new Plant (Transformer, Switchgear, etc…) - Installation, Pre-commssioning and Commissioning of new Overhead Line and Cable - Preparation of the outage, switching logs and safety documents. • Making recommendations or innovation ideas to improve the project in efficiency, safety standards, cost effectiveness and performance
	Required Skills	• Fundamental electrical engineering knowledge • Familiar with data analytics and MS Power Platform, including Power BI, Power Apps and Power Automate

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_11	
Project Details	**Internship Period**	June 2024 to May 2025
	Preferred Disciplines	**First Preference:** • Information Technology • Electrical Engineering **Second Preference:** • Electronic Engineering
	Project Name	Distribution Management System (DMS) Enhancement for Smart Grid
	Business Objective(s)	To enhance the DMS functionalities to cope with the CLP Smart Grid development along the Utility of the Future (UoF) journey.
	Project Description	DMS is a critical Operational Technology (OT) system utilized for monitoring and controlling the Distribution Power Network to ensure safe, reliable, and economic operations: • To enhance and develop the functionalities of DMS catering to the latest and future CLP's Smart Grid operation such as Distributed Energy Resources Management, Smart Meter data application, digitalization & automation of critical processes, etc • To strengthen the OT cyber security protection through the application design and implementation including customization, interfaces, conversion & reporting, and cater for the evolving cyber security requirements • To extend the life of DMS by upgrading the software and hardware
	Required Skills	• Critical Thinking • Software engineering and programming skills (including Windows & Linux Servers, Oracle database, PowerShell, Linux shell script, C++, Visual Basic, Power BI, etc.) • Good English writing skills

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_12	
Project Details	**Internship Period**	June 2024 to June 2025
	Preferred Disciplines	**First Preference:** • Electrical Engineering **Second Preference:** • Energy Engineering • Electronic Engineering
	Project Name	Power System Security Studies
	Business Objective(s)	To enhance transmission and distribution network security and ensure power delivery in a secure and reliable manner.
	Project Description	• Identify transmission and distribution network improvement areas • Conduct system security assessment, including load flow and fault level studies by using different simulation tools • Formulate contingency plans for power systems • Conduct studies on renewable energy management, smart grid technologies and load forecast practices • Recommend improvement actions
	Required Skills	• Proficiency in both spoken and written Chinese and English • Being customer-oriented, self-motivated, good team player, analytical, and able to work under pressure and tight schedule • Strong sense of responsibility with good interpersonal and communication skills • Proficiency in Microsoft Office, Visual Basic for Applications (VBA), Power BI, Power Automate and Python, etc.

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_13	
Project Details	**Internship Period**	July 2024 to June 2025
	Preferred Disciplines	**First Preference:** • Electrical Engineering **Second Preference:** • Electronic Engineering
	Project Name	Modern Power System Protection: Adaptive Protection System Development
	Business Objective(s)	• Study adaptive protection initiatives which can improve traditional protection system in system reliability and security. Monitor and analyse the performance of protection equipment and verify its integrity • Enhance the protection system operation and maintenance by digitalizing on-line data platform. Support engineers on power system fault investigation and formulate corrective actions
	Project Description	• Study different types of protection scheme to enhance the reliability and security of protection system • Involve in investigation and fault analysis of protection systems to facilitate front-line staff and policy makers to perform operation, maintenance and asset management activities • Assist engineers to conduct laboratory tests for various types of protection equipment
	Required Skills	• Good team player and highly adaptable to change • Active and dynamic approach to work and getting things done • Proficiency in MS Word, PowerPoint & Excel etc. • Experience in programming (e.g. VBA/Microsoft Power Platform/Python)

CLP Internship Programme 2024

Project Outline: Sandwich – Electrical Engineering

Project Code	E1_SAND_14	
Project Details	**Internship Period**	June 2024 to June 2025
	Preferred Disciplines	**First Preference:** • Electrical Engineering **Second Preference:** • Electronic Engineering
	Project Name	Power Quality Analysis, Mitigations and Applications
	Business Objective(s)	• To conduct research study on new industrial products / applications for effective power quality mitigations and evaluate their performance with the consideration of customer equipment and power supply arrangement. • To assist the annual voltage dip analysis and ad-hoc power quality studies after the familiarization with various power quality monitoring systems.
	Project Description	• The intern will be given a full year to explore CLP's supply network and customers equipment with a focus on power quality. The adoption of advanced equipment, which are susceptible to power quality issues, results in rising concern of power quality. Our team works with customers for cost-effective mitigations to tackle the operational inconvenience due to power quality issues. • The intern will learn the common power quality issues in Hong Kong and the corresponding mitigations. With deeper understanding on the mitigation rationale and power quality standards, he/she will be guided to research on new options for mitigation followed by a technical evaluation, which facilitates our team to offer prudent recommendations to our customers. • Hands-on experience on the improvement projects of our power quality information systems will be expected. And ad-hoc assignments may be given considering the operational needs.
	Required Skills	• General knowledge in power system arrangement • Basic knowledge in power quality and electronics circuit design • Basic programming skills • Experience on analytic tools / platforms is preferred • Hands-on experience on power testing equipment is preferred