Role definition

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| Job title: | Graduate Electrical Engineer - HV |
| Reports to: | Office Lead, Power  |
| Direct reports: | N/A |
| Business unit: | Baker Hicks Limited | Location: | London |

Summary

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| Baker Hicks have grown rapidly in the Transmission & Distribution sector over the last five years and have been successful in winning a number of major projects within the UK. As the demand to deliver exceptional engineering design from our clients continue to grow, and opportunity has arisen for a Graduate Electrical Engineer.  |

Key objectives

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| The Graduate Electrical Engineer – HV Cables role will be reporting to the Senior / Principal Engineer – Power and will be responsible to ensure the quality and consistency of the team’s output in the production and control of drawings and technical documents. You will also work with the Sector Director - Power to assist during the bid process in order to secure further work.  |

Principal responsibilities and accountabilities

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| The candidate will gain experience (depending on role) in the production of all designs, calculations, reports & drawings associated with the new or modification of EHV projects from 11kV – 400kV covering EHV cabling, primary design, secondary design and protection & control. This will cover the production of bonding line diagrams, cable rating calculations, induced voltage calculations, short circuit force calculations, thermo-mechanical thrust calculations, pulling tension calculations, production of material specification lists. The candidate must have a reasonable level of maths and science, preferably from a power engineering background and have good communication skills. In the role they will manage the production through a robust checking process but must also develop drawing office standards, mentor and train the CAD technicians and when work dictates support the actual delivery of the outputs.The candidate must be enthusiastic, mature enough to operate in a diverse team and work without full time supervision. This role can lead to many of the career paths for the employee as they develop through Baker Hicks |
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Person specification

Qualifications and training

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| * Minimum BEng/Bsc in Electrical Engineering with Power/HV background
* Ideally MEng/Msc in Electrical Engineering with Power/HV background
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Technical skills and experience

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| You will be trained and working with fellow HV Senior, Principal & Associate Engineers and develop skills to deliver the following key technical tasks:1. HV Cable Design:

 Delivering project cable system design requirements, but not limited to:* + Current ratings (IEC60287)
	+ Forced ventilation design for cable tunnels
	+ Impressed voltage calculations
	+ Emergency, Cyclic & Short term overload ratings
	+ Cable crossing ratings
	+ Producing Bonding diagrams
	+ Producing Material Schedules & Technical specifications
	+ Thermo-mechanical design calculation
	+ Effective thermal resistivity calculations
	+ Induced voltage calculations
	+ Cable pulling tension calculations
	+ Short circuit current rating and electromotive force calculations
	+ Producing Joint bay, trench, CSE, cable routing designs (concept & detailed)
	+ SVL (Sheath Voltage Limiter) sizing
	+ EMF plots
1. Primary Design:

 Delivering primary design requirements, but not limited to:* + Primary layouts for substation
	+ Transformer, shunt reactors, NER’s, Reactive & Capacitive compensation
	+ GIS & AIS switchgear
	+ Earth Switches, CT’s VT’s, Surge Arrestors, Circuit Breakers, post insulators, Disconnectors, etc
	+ Step & touch potentials
	+ Impressed voltage studies
	+ Earthing study & earth return
	+ Busbar short circuit forces
	+ Insulation coordination
	+ Type registration
	+ FAT of equipment
	+ Writing technical specifications for procurement
	+ Calculations & Technical reports
1. Secondary and P&C Design:

 Delivering primary design requirements, but not limited to:* + Secondary layouts for substation
	+ System modelling
	+ First main protection
	+ Second main protection
	+ Backup protection
	+ Overall protection
	+ Busbar protection
	+ CT sizing
	+ DAR lockout – Cable unit protection
	+ Fault calculations
	+ Site electrical interlocking calculations
	+ CT sizing calculations
	+ Protection discrimination studies
	+ Writing technical specifications for procurement
	+ Calculations & Technical reports
* Preparation and checking of feasibility studies, outline and detailed design technical reports and other written documents.
* Design and checking of detail construction design drawings.
* Production of design concepts, drawings, specifications and other technical documents.
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| * Delivery of work to programme, budget and specification.
* Take part in Design & HAZID (hazards in design) reviews as appropriate.
* The adherence to and control of documents and drawings in accordance with Baker Hicks management procedures.
* Design input/output within the designated risk management process.
* Development of team specific standards to ensure the consistency of the output.
* Support in the development of the team CAD technicians.
* Accept ownership of work to be done (i.e. being required to undertake specific actions within an agreed job boundary, the execution of a delegated task, activity or process).
* Providing programme updates to the Lead Engineers for the duration of the project life.
* Highlighting any quality and delivery risks.
* Provide a technical interface with 3rd parties.
* Understanding of IEC standards.
* Experience in software packages such as MathCAD, CYMCAP, COMSOL, ETAP, DigSilent, ERACS, etc.
* Experience in guiding CAD technician working in packages such, Microstation, Revit, AutoCAD, etc.
* Be proficient with associated cable technical specifications from clients such as National Grid, SSE, Scottish Power, UKPN, WPD, ENWL, etc.
* Good computer and report writing skills.
* Good interpersonal skills and the ability to work well within a team.
* Good attitude to obtaining new skills and capable at transferring existing skills to overcome new challenges.
* Must be competent at creating and laying out quality drawings that contractors, suppliers and fabricators can understand
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