

Electrical Engineer – Power Distribution & Control Products (MV)

Position Summary

The Medium Voltage Electrical Engineer is responsible for providing technical leadership, engineering expertise, and product application support for medium voltage electrical power distribution, protection, and control solutions.

The position requires intermediate product and application knowledge across medium voltage power distribution systems, including:

○ Medium Voltage Metal-Clad Switchgear	○ Protection and Control Systems
○ Medium Voltage Metal-Enclosed Switchgear	○ Protective Relays
○ Medium Voltage Circuit Breakers	○ Metering and Power Monitoring Systems
○ Medium Voltage Load-Break and Disconnect Switches	○ Medium Voltage Motor Control Centers (MV MCCs)
○ Medium Voltage VFD and Soft Starter Systems	○ Integrated Power Racks/Skids
○ Automatic and Manual Transfer Schemes	○ Grounding Systems and Grounding Equipment
○ E-Houses and Power Distribution Centers (PDCs)	○ Capacitor Banks and Power Factor Correction Equipment

This position supports the design, application, analysis, testing, commissioning, and troubleshooting of medium voltage power distribution systems. Responsibilities also include equipment selection, proposal support, procurement assistance, vendor evaluation, and project execution. The Electrical Engineer collaborates with customers, suppliers, and cross-functional teams to deliver safe, reliable, code/standard compliant, and cost-effective electrical solutions.

Key Engineering Responsibilities

Product & Application Engineering

Serve as technical resource for medium voltage electrical power distribution, protection, and control products and systems.

- Review customer requirements, specifications, and project documentation to develop medium voltage power distribution solutions.
- Select and apply medium voltage equipment, including switchgear, transformers, motor control equipment, protective relays, and associated components.
- Determine equipment ratings and configurations in accordance with system requirements, applicable standards, and project objectives.
- Develop and review electrical drawings, technical documentation, and equipment layouts.
- Evaluate equipment and system designs for safety, reliability, maintainability, and code compliance.

Technical Support

- Provide engineering support for medium voltage power distribution systems, including switchgear, transformers, motor control equipment, protective devices, and packaged electrical systems.
- Review system voltage, load requirements, available fault current, equipment ratings, protection requirements, grounding methods, and coordination considerations.
- Perform or review power system studies, including short circuit, protective device coordination, load flow, arc flash, motor starting, and voltage drop analyses.
- Develop and review protection schemes for feeders, transformers, motors, buses, and other medium voltage equipment, including the application of protective relays, CTs, PTs/VTs, metering, and relay settings.
- Provide technical support for electrical distribution system design, equipment integration, reliability, maintainability, selectivity, and overall system performance.
- Support the integration of medium voltage switchgear, transformers, MV MCCs, VFDs, soft starters, protective relays, PLC/control systems, SCADA, metering, and communication networks.

- Review requirements for power monitoring, metering, remote operation, sequence of events recording, and communication systems.
- Provide technical support for the installation, startup, energization, testing, and commissioning of medium voltage electrical systems.
- Assist with troubleshooting equipment, including relay operations, nuisance trips, control system issues, communication failures, and other power system events.
- Coordinate with customers, field service personnel, equipment manufacturers, commissioning teams, and project stakeholders to resolve technical issues.
- Support the electrical engineering and design of E-Houses, Power Distribution Centers (PDCs), integrated power skids, modular substations, and other engineered-to-order medium voltage packaged systems.
- Define equipment interfaces, cable entry and exit requirements, grounding, interconnections, control architecture, and customer connection points.
- Coordinate electrical requirements with mechanical, structural, HVAC, fire protection, controls, manufacturing, and project engineering disciplines.
- Review equipment layout, ventilation requirements, electrical clearances, arc resistant equipment requirements, and environmental considerations associated with medium voltage installations.
- Review and approve third party engineering drawings, calculations, studies, and design packages for compliance with project requirements, applicable codes, industry standards, and sound engineering practices.

Protection, Control & Automation

- Develop and review medium voltage protection and control philosophies.
- Apply and review protective relay functions for feeder, transformer, motor, bus, and generator applications.
- Develop and review breaker control, interlocking, transfer, permissive, synchronization, and trip schemes.
- Review DC control power systems, including batteries, battery chargers, UPS systems, and associated control power distribution.
- Support integration of protective relays and intelligent electronic devices (IEDs) with PLC, SCADA, DCS, and power management systems.
- Review communication architectures and protocols, including Modbus, IEC 61850, DNP3, Ethernet/IP, and other project specific communication networks.
- Support development and verification of control narratives, sequence of operations, cause & effect matrices, and interlocking logic.
- Support testing, commissioning, and troubleshooting of protection, control, communication, and automation systems.

Codes, Standards & Compliance

- Ensure designs and product applications comply with applicable NEC/NFPA 70, NFPA 70E, IEEE, ANSI, NEMA, UL, and applicable customer specifications and local codes.
- Apply relevant requirements for medium voltage switchgear, circuit breakers, transformers, protective relaying, grounding, and packaged electrical equipment.
- Apply applicable IEEE C37 series requirements for medium voltage switchgear, circuit breakers, protection, and control equipment.
- Review equipment interrupting ratings, short time withstand ratings, momentary ratings, BIL, insulation levels, enclosure ratings, environmental requirements, and electrical clearances.
- Evaluate arc resistant equipment requirements and accessibility classifications where specified.
- Support compliance with utility interconnection requirements and project specific standards where applicable.
- Identify deviations, exceptions, and technical risks associated with customer specifications and proposed designs.
- Ensure equipment and systems meet applicable safety, reliability, testing, and certification requirements.

Power System Engineering Studies

- Review and interpret power system studies, including short-circuit, coordination, load flow, arc flash, motor starting, and voltage drop analyses.
- Evaluate study results to verify equipment ratings, protection requirements, and system performance.

- Review study recommendations and identify impacts to equipment selection, system design, and project requirements.
- Communicate study findings and coordinate required design changes with project stakeholders.

Project & Manufacturing Support

- Provide technical leadership throughout the project lifecycle from quotation and order entry through engineering, procurement, manufacturing, testing, shipment, installation, energization, and commissioning.
- Review and approve engineering drawings, bills of material, technical submittals, protection schemes, relay settings, equipment configurations, and vendor documentation.
- Coordinate technical requirements with switchgear, transformer, relay, MV drive, and other equipment suppliers.
- Support manufacturing teams in resolving technical and production issues.
- Participate in design reviews, Factory Acceptance Tests (FATs), customer inspections, relay testing, equipment functional testing, and technical meetings.
- Develop or review FAT procedures for MV switchgear, protection systems, controls, and packaged electrical assemblies.
- Support breaker functional testing, interlock verification, relay secondary injection testing, communication testing, and system functional testing as required.
- Investigate non-conformance, field issues, equipment failures, nuisance trips, protection issues, and application concerns and recommend corrective actions.
- Support root cause analysis and continuous improvement activities.

Customer & Commercial Support

- Support sales and proposal teams in the development of medium voltage power distribution solutions.
- Review customer specifications, one-line diagrams, utility requirements, and technical documentation.
- Provide technical input for quotations, equipment selection, system configurations, and risk assessments.
- Participate in customer meetings, technical discussions, and value engineering activities.
- Evaluate supplier proposals and support technical specification development.

Required Qualifications

- Bachelor's degree in electrical engineering or a closely related engineering discipline.
- Experience with medium voltage power distribution systems, including switchgear, substations, motor control, protection, or engineered electrical equipment.
- Demonstrated knowledge of medium voltage power distribution, protection, and control systems.
- Ability to develop, read, and review one-line diagrams, three-line diagrams, schematics, AC/DC control diagrams, wiring diagrams, equipment layouts, and technical specifications.
- Working knowledge of power system fundamentals, including short circuit calculations, protective device coordination, grounding, transformer applications, equipment ratings, and electrical protection principles.
- Familiarity with medium voltage switchgear, circuit breakers, protective relays, instrument transformers (CTs and PTs/VTs), transformers, and associated control systems.
- Familiarity with applicable industry codes and standards, including NEC, NFPA 70E, IEEE, ANSI, NEMA, and UL.
- Strong analytical, troubleshooting, and technical problem-solving skills.
- Ability to manage multiple assignments and engineering priorities in a fast-paced project environment.
- Effective written and verbal communication skills, with the ability to collaborate with customers, suppliers, utilities, manufacturing personnel, field service personnel, and multidisciplinary engineering teams.

Preferred Qualifications

- Experience with medium voltage power distribution systems (2.4 kV to 38 kV).
- Familiarity with switchgear, transformers, motor control, protective relays, and associated electrical distribution equipment.
- Working knowledge of power system studies, including short circuit, coordination, load flow, arc flash, and voltage drop analyses.

- Experience reviewing electrical drawings, specifications, and technical documentation.
- Familiarity with protection, control, SCADA, and communication systems.
- Experience with E-Houses, PDCs, modular substations, or other packaged electrical systems is preferred.
- Proficiency with engineering and power system analysis software.
- Experience supporting commissioning, troubleshooting, and field service activities.

Core Competencies

The successful candidate will demonstrate:

- Medium voltage power distribution knowledge.
- Electrical equipment application and system design capability.
- Protection, control, and power system fundamentals.
- Technical drawing and specification interpretation.
- Product and application engineering support.
- Problem solving and troubleshooting skills.
- Cross functional collaboration and communication.
- Commitment to quality, safety, and customer satisfaction.

Key Performance Expectations

Success in this position will be measured by the engineer's ability to deliver technically compliant, safe, reliable, selective, maintainable, and cost-effective medium voltage electrical solutions.

The engineer will be expected to ensure appropriate equipment ratings and protection schemes, reduce engineering and manufacturing errors, identify technical risks early, resolve technical and field issues efficiently, support project schedule commitments, and serve as a trusted technical authority for medium-voltage power distribution, protection, control, and packaged electrical systems.