

Mechanical Engineer – Power Distribution & Control Products

Position Summary

The Mechanical Engineer is responsible for the design, packaging, integration, and structural development of low and medium voltage power distribution equipment and packaged electrical systems used in industrial, utility, renewable energy, mission critical, and data center applications.

This position supports the mechanical design and lifecycle execution of electrical equipment including:

○ Panelboards	○ Medium Voltage Metal Clad Switchgear
○ Switchboard/Switchgear	○ Medium Voltage Metal Enclosed Switchgear
○ Automatic/Manual Transfer Switches (LV/MV)	○ Medium Voltage Circuit Breakers
○ Disconnect Switches, Load Break Switches	○ Medium Voltage Load Break and Disconnect Switches
○ Transformers	○ E-House & PDC
○ Motor Control Center (MCC)	○ Integrated Power Rack/Skid (LV/MV)
○ VFD & Soft Starter Packaged Solutions (LV/MV)	○ Energy Storage

Primary responsibilities include enclosure design, equipment layout and integration, structural analysis, sheet metal and steel fabrication design, thermal management coordination, design-for-manufacturability, engineering documentation, code compliance support, and manufacturing support. The engineer will work closely with electrical engineering, manufacturing, quality, sourcing, project management, and customers to develop safe, reliable, cost effective, and manufacturable solutions.

The engineer will apply mechanical engineering principles and industry standards to support projects from concept development through manufacturing, testing, installation, and commissioning.

Key Engineering Responsibilities

Product & Application

Serve as a mechanical engineering resource supporting packaged electrical equipment and power distribution systems including switchboards, switchgear, MCCs, transformers, transfer switches, E-Houses, power skids, and battery energy storage systems.

- Review customer requirements, specifications, and equipment layout drawings to develop the voltage power distribution and motor control solutions.
- Develop equipment layouts considering:
 - Equipment accessibility
 - Maintenance clearances
 - Cable routing
 - Busway route
 - Arc-resistant requirements
 - Thermal performance
 - Transportation limitations
 - Installation requirements
- Perform structural calculations and engineering analysis for:
 - Dead loads
 - Operating loads
 - Seismic loading
 - Wind loading
 - Transportation loads
 - Lifting and rigging conditions

- Design support structures, internal partitions, equipment mounting systems, bus support structures, and enclosure reinforcement systems.
- Develop sheet metal assemblies and welded structural frames utilizing accepted fabrication practices and manufacturable design principles.
- Coordinate mechanical interfaces between electrical equipment, HVAC systems, cable management systems, fire detection/suppression systems, grounding systems, and auxiliary equipment.
- Design equipment mounting and operator mechanisms for medium voltage disconnect and load break switch assemblies, ensuring proper clearances, alignment, interlocking, and operating forces.
- Generate and maintain:
 - 3D models
 - Fabrication drawings
 - Assembly drawings
 - Installation drawings
 - Bills of Material (BOMs)
 - Engineering change documentation
- Apply GD&T (Geometric Dimensioning & Tolerancing) principles and tolerance analysis to ensure manufacturability, interchangeability, and assembly performance.

Technical Support

- Support mechanical design and packaging of electrical distribution equipment in accordance with applicable UL, ANSI, IEEE, and NEMA standards.
- Design enclosure systems and compartment structures that satisfy environmental requirements, personnel safety requirements, arc resistant requirements, equipment segregation requirements
- Support mechanical design of low voltage switchboards and switchgear assemblies in accordance with UL 891, UL 1558, and ANSI C37
- Support mechanical design of medium voltage metal clad and metal enclosed switchgear assemblies in accordance with ANSI/IEEE C37.20.2, ANSI/IEEE C37.20.3, ANSI C37.04, ANSI C37.06.
- Participate in product development and continuous improvement initiatives focused on product standardization, cost reduction, manufacturing efficiency, and product reliability.
- Support UL/ETL certification activities including construction reviews, test sample preparation, factory audits, and documentation packages.
- Perform tolerance stack up evaluations and support first article inspection activities.
- Investigate and resolve mechanical issues associated with fabrication, assembly, transportation, installation, and field operation.
- Support root cause analysis using structured problem-solving methodologies and implement corrective actions.
- Coordinate enclosure ventilation and thermal management systems including:
 - Forced air cooling
 - Heat exchangers
 - Air conditioning systems
 - Filtration systems
 - Equipment-specific cooling requirements

Codes, Standards & Compliance

- Ensure mechanical designs comply with applicable industry standards and customer requirements including NEC (NFPA 70), NFPA 70E, NEMA standards, UL product standards, IEEE standards, ANSI standards, International Building Code (IBC), ASCE-7 seismic and wind loading requirements, and applicable local and jurisdictional codes
- Apply product-specific standards including UL 891, UL 1558, UL 508A, UL 1008, UL 845, ANSI/IEEE C37 Series
- Identify and document such as specification deviations, code compliance concerns, mechanical design risks, manufacturing constraints, and installation risks
- Support customer specific seismic qualifications and structural certification requirements where applicable.

Project & Manufacturing Support

- Provide mechanical engineering support throughout the project lifecycle from proposal development through commissioning.
- Review and approve:
 - Mechanical drawings
 - Fabrication drawings
 - BOMs
 - ECN/ECR, engineering change orders
 - Vendor documentation
- Support design reviews at project, manufacturing, and customer milestones.
- Collaborate with manufacturing and production teams to improve manufacturability, assembly efficiency, product quality, and material utilization
- Support supplier evaluations and technical reviews of fabricated components.
- Assist with NCR resolution and CAPA implementation.
- Support factory acceptance testing (FAT), customer inspections, and witness testing activities.

Customer & Commercial Support

- Support proposal and sales teams with technical evaluations of customer specifications and project requirements.
- Develop conceptual equipment layouts and packaging solutions during quotation phases.
- Provide technical input regarding mechanical scope, structural requirements, packaging concepts, equipment integration risks, and manufacturing constraints
- Participate in customer design reviews and technical discussions related to equipment packaging and mechanical integration.
- Support value engineering initiatives focused on material optimization, cost reduction, weight reduction, manufacturability improvements, and schedule reduction

Required Qualifications

- Bachelor's degree in mechanical engineering (or closely related engineering discipline)
- 2–5 years of mechanical engineering experience in electrical equipment manufacturing, industrial packaging, or a related field
- Proficiency in 3D software (CAD, SolidWorks, Inventor, or similar) and 2D drafting standards
- Working knowledge of sheet metal design, structural steel design, welded assemblies, fastener design, mechanical packaging, and enclosure fabrication methods
- Familiarity with relevant standards: NEC, UL 891, UL 1558, UL 508A, ANSI/IEEE C37 series (switchgear)
- Understanding of GD&T and tolerance analysis (ASME Y14.5)
- Ability to read and interpret electrical one-lines and coordinate mechanical design around electrical requirements
- Strong problem solving and cross functional collaboration skills.
- Experience with power distribution system/product, motor control, or engineered electrical systems.
- Ability to manage multiple assignments and engineering priorities in a fast-paced environment.
- Effective written and verbal communication skills with customers, suppliers, manufacturing personnel, and multidisciplinary engineering teams.

Preferred Qualifications

- Experience with engineered-to-order, configure-to-order, or custom electrical equipment and systems.
- Direct experience designing E-houses, PDCs, switchgear, or similar packaged power equipment
- Experience with medium voltage metal clad or metal enclosed switchgear design
- Experience supporting UL factory audits or third-party listing processes
- Familiarity with FEA/structural analysis software
- Exposure to data center or mission critical facility power equipment
- EIT certification is preferred but not required.

Core Competencies

The successful candidate will demonstrate:

- Mechanical packaging and equipment integration
- Structural engineering fundamentals
- Sheet metal and enclosure design
- Fabrication and manufacturing knowledge
- GD&T and tolerance analysis
- Design-for-manufacturability
- Power distribution equipment familiarity
- Technical specification interpretation
- Root cause analysis and corrective action implementation
- Cross functional engineering collaboration
- Project execution and prioritization
- Quality, safety, and compliance focus

Key Performance Expectations

Success in this position will be measured by the engineer's ability to deliver technically compliant, safe, reliable, manufacturable, and cost-effective electrical solutions, reduce engineering and manufacturing errors, resolve technical issues efficiently, support project schedule commitments, and serve as a trusted technical resource for power distribution and motor control products.