

electrical requisition engineering – an interactive integrating interface

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Abstract

Global giants for long have been engaging engineering service providers for specialized services, particularly where they do not possess the requisite expertise in house. With ever increasing demands and an innovation driven growth path, Requisition Engineering comes into play. In general, Requisition Engineering deals with integration of different areas plus providing the technical expertise as required for the solution/product. Though Requisition Engineering is an emerging area of development, it has grown broader with time globally.

Requisition Engineering deals with tailor-made services to cater to specific demands of projects / customers. It has become integral in providing different kinds of Engineering Solutions for different markets. Requisition Engineering is applied in all core engineering areas such as Electrical, Mechanical, Chemical, and Aeronautical.

Electrical Requisition Engineering applies proven methodologies and best practices to bring in productive solutions. Electrical controls are a critical aspect in the interfacing of any product and are extensively used in Power Plant Engineering, Industrial Automation, and Programmable Logic Controllers to name a few.

In a demanding market of Power Generation, QuEST's Generator Electrical Requisition Engineering team plays a vital role in delivering cost-effective solutions to customers.

With this whitepaper, QuEST aims to provide crucial insights on the benefits of Requisition Engineering and integration of products in the electrical domain of Engineering Services as an answer to the diversification in the product world.

In Focus

The recent trend in Electrical Engineering focusses more on the inclusion of electrical Requisition Engineering and taking it to the next level in terms of delivering quality and value to customers.

To deliver next generation solutions, manufacturers focus on one particular niche product /component/area of engineering solution and bring the best to market. Though these practices offer manufacturers more room to innovate and optimize, customers are more interested in a well-engineered solution from the project point of view. Requisition Engineering integrates all components

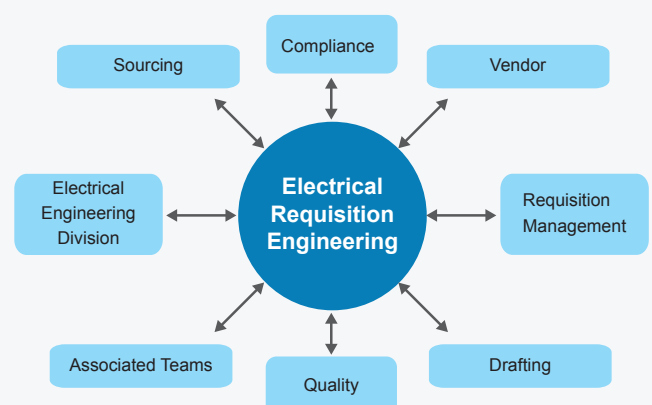
together to provide one complete well-engineered solution in a customized platform. Electrical Requisition Engineering further enhances the solution by:

Lowering energy consumption: Customers look for ways to reduce energy consumption by having smarter designs and efficient electrical controls.

Focusing on automation: The use of latest and more sophisticated technology requires automation in almost every aspect of engineering projects. Automation helps reduce overall costs without compromising on quality.

How does Electrical Requisition Engineering work?

The Electrical Requisition Engineering team comprises a group of people working towards integration. Requisition Engineering interacts and coordinates between different services and





behaves as a common focal point of all units involved in the project, focusing on delivering what is expected.

These units/teams specialize in their own area of service. Requisition Engineering integrates these services for the final product/solution as per end user requirements.

The Electrical Requisition Engineering team acts as an interface and interacts with:

- Electrical Engineering
- Sourcing Interface
- Vendors/Drafting Interface
- Quality/Product SPCs Interface
- Associated Engineering Teams
- Requisition Management Interface

Electrical Requisition Engineering

This unit forms the core of the whole requisition process. It consists of elite technical experts. They envision and plan the end-to-end process of the project lifecycle. This division is primarily responsible for the complete implementation of technical activities of a project.

Control Panels / Consoles / Compartments / Cabinets are designed with associated internal circuitries to provide the required logics. Signaling and operating devices provide the needed controlling modes. Contactors, timers, PCBs, control / power transformers, terminal boards and other accessories functionalize the logics. Cabling / Busduct interfaces complete the

network for operation. Metering and protection systems safeguard the equipment.

Key areas of concentration

- Assessing and planning
- Project interfacing
- Technical expertise
- Addressing, resolving, and troubleshooting technical discrepancies
- Coordination with other units
- Overcoming challenges/hurdles

Interfacing in Action

Sourcing Interface

The sourcing team plays an active role in vendor relationships. Vendors are the units from whom the product would be subcontracted. Sourcing focuses on cost optimization, developing communication plans and final delivery of the product to site.

Key areas of concentration

- Market survey
- Developing a vendor portfolio
- Negotiating, evaluating, committing, and agreeing
- Vendor relationship management
- Communicating business proposals, tenders, requisition templates

Vendor Interface

The vendor unit identifies potential contractors for the procurement of parts according to requirements.

Requisition engineers interact with vendor units for selection of parts/tools according to exact specifications and dimensions. This involves providing the drawings / specs and required approvals for manufacturing and extend support throughout the product manufacturing cycle.

Drafting Interface

Requisition Engineers interact with the drafting unit for CAD/CAM drawings necessary for the project. For instance, the drafting team generates diagrams that include electrical layouts, schematics, internal arrangements, and BOM creations. They make use of the best CAD/CAM tools available in the industry to create/modify drawings.



Key areas of concentration

- Interpretation of drawings
- Creation of detailed assembly drawings
- Usage of different tools according to customer requirements

Quality/Product SPCs Interface

Statistical process control (SPC) is a quality control method using statistical methods. It is mainly used to monitor and control product quality standards. This unit coordinates with the Requisition Engineering team to identify any faults in the product/solution.

Key areas of concentration

- Quality assurance
- Reliability
- Facilitating for addressing technical issues
- Suggestion for tweaks and enhancements

Associated Engineering Team Interface

Requisition Engineering interacts with the required associated teams at various intervals for inputs / outputs.

Key areas of concentration

- Improving usability and interface
- Performance upgrades
- Necessary enhancements for optimization

Requisition Management Interface

This team manages and leads the Requisition Engineering units for successful completion of the projects.

Typical responsibilities include

- Supporting the quality unit for cost of quality cases affecting due requisition
- Tracking meeting action items and following up with action owners to facilitate timely closure
- Supporting the team with productivity tracking and metrics
- Facilitating release meetings (engineering release and full manufacturing release)

Benefits of Electrical Requisition Engineering

- Integration interfacing
- Single point of contact
- Knowledge enhancement and market development
- Precious utilization of time
- Adaption of best practices and lean manufacturing methods
- Highly organized approach
- Delivering as per requirement

Challenges in Electrical Requisition Engineering

- Awareness of the latest industrial developments, tools, and methodologies
- Coordination between multiple teams for constructive teamwork
- Risk assessments
- Impeccable communication skills
- Progressive interaction

Requisition Engineering helps engineers specifically concentrate at all levels of the project lifecycle with the required technical expertise of different units. The collaboration of all the units simplifies complex processes into simple and manageable tasks, ensuring smooth and successful completion of the entire project.



Few scenarios where the application of Requisition Engineering can be adapted to obtain well-engineered solutions

Application	Description	Need for Requisition Engineering
Power Plant Engineering	Turbines and Generators along with other components of power plants form a major entity in power generation. Generation of power could be hydroelectric, thermal, wind, or solar (renewable and non-renewable energy)	<ul style="list-style-type: none"> • Power plant expertise • Turbine Control specializations • Generator Control specializations • System interfacing with measuring and protection systems • Optimization of the power generated • Grid Synchronizing and load demands • Substation Engineering
Fly-by-Wire Electrical Controls (Avionics)	Fly-by-wire (FBW) is an electrical system that supersedes the traditional mechanical flight controls of an aircraft with an electronic interface	<ul style="list-style-type: none"> • Avionics specialists • Comprehensive planning • Procurement of high reliability parts • Need for detailed electrical diagrams • Complex interfacing between the cockpit and manual flight controls
Automotive Electronic Interfacing/Infotainment solutions	A high level of interfacing is required in automotive to enable electronic controls to replace manual controls of traditional automotive. It is required in health monitoring and to run real-time diagnostics related to performance	<ul style="list-style-type: none"> • Complex design and development • Procurement of sensors and ECUs according to exact specifications • Integration of all the electronic functionalities for a better and efficient driving experience • Complex wiring installations

Conclusion

Today's fast moving world is characterized by rapid technological advancements in engineering and a diversified product outlook. Adapting end-to-end engineering solutions in the form of Requisition Engineering helps manage this diversification. By adopting Requisition Engineering, companies do not need to invest on extra resources and technology as required for individual projects of different capacities executed across the globe. Companies can also concentrate on the broader scale of their business interests.

Engineering service providers are now well equipped with the latest technologies and tools to provide enhanced engineered solutions to their customers.

With QuEST's proven expertise in various engineering domains, expertise in handling varied projects, cross-functional, knowledgeable and resourceful teams across geographies, it is ideally geared to offer its services to companies who would benefit immensely with Generator Electrical Requisition Engineering in Power Plants on their side.

Author Profile



Guruprasad

Guruprasad is Project Leader in the QuEST Operations division and supports General Electric in the Electrical Requisition Engineering of Generators and also the Technical Regulatory Standards for Motors. Guru comes with 13+ years of experience in the electrical domain of power generation and works on projects for clients across the globe.

Prior to joining QuEST, Guru worked with TD Power Systems, Bangalore in the Projects Division of Steam Turbine Generators. He started his career in Kirloskar Electric Company and worked on Generator Excitation Systems. Has visited power plants and has acquired a hands-on experience in the field of Control Panel Engineering.

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About QuEST Global

QuEST Global is a focused global engineering solutions provider with a proven track record of over 17 years serving the product development & production engineering needs of high technology companies. A pioneer in global engineering services, QuEST is a trusted, strategic and long term partner for many Fortune 500 companies in the Aero Engines, Aerospace & Defence, Transportation, Oil & Gas, Power, Healthcare and other high tech industries. The company offers mechanical, electrical, electronics, embedded, engineering software, engineering analytics, manufacturing engineering and supply chain transformative solutions across the complete engineering lifecycle.

QuEST partners with customers to continuously create value through customer-centric culture, continuous improvement mind-set, as well as domain specific engineering capability. Through its local-global model, QuEST provides maximum value engineering interactions locally, along with high quality deliveries at optimal cost from global locations. The company comprises of more than 7,000 passionate engineers of nine different nationalities intent on making a positive impact to the business of world class customers, transforming the way they do engineering.



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