

offshoring compliance engineering – indispensable strategy

Product engineering is a challenging business. It is driven by very high volume and low margin just like businesses in all other segments like oil and gas, paper and pulp, medical, mining, marine, power, energy, or cement.



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Abstract

Product engineering is a challenging business. It is driven by very high volume and low margin just like businesses in all other segments like oil and gas, paper and pulp, medical, mining, marine, power, energy, or cement. Most of the sales of a new product happen during the first three months of its introduction. Customers look at functionality and its compliance to regulations in the market to make their purchase

decisions. Time-to-market, price, and brand loyalty are the other factors that drive market acceptance.

This white paper addresses the need for a compliance-driven new product development processes and how offshoring the process provides manufacturers an indispensable strategy to lower-costs and gain competitive advantage.

Background

Compliance engineering for licensing, patent-adherence, standards, safety, and regulatory certification issues initially endangers profit and market acceptance. Adequate compliance engineering could, depending on the product, take from a few days to several months; any requests for changes regarding the product have to go back to the origin, and relevant documentation needs to be prepared.

Often organizations cannot release all the information sources because of the many internal departments, suppliers, third-party vendors, and disparate regulatory bodies in different countries. Moreover coordinating for information on raw materials sourced in origin countries is not easy, and historical records may not be in the right place. A delayed arrival of a product by a few months or even days (especially for paper or cement products) will mean loss of market share and may influence the shift of brand loyalty in customers.

In addition to the complex regulatory processes, in general, compliance engineering is not economical. Failure to comply necessitates product re-designing and re-building, at higher costs. This may result in loss of competitive advantage or, at worst, a missed business opportunity.

Every manufacturer's survival depends on the capability to continuously monitor the demand, and supply compliant products to both familiar and new markets. While the need for new products with improved performance is a necessity, their compliance with regulatory requirements is indispensable.

A powerful and cost-effective approach to modernizing compliance engineering is a combination of two important factors - faster time-to-market and offshoring the compliance processes to a dedicated compliance engineering organization.

Delivering Value Through Compliance Engineering

Compliance to regulations and changing market requirements is a major challenge for every industry in getting their products globally recognized.

The various requirements of the product for safe and efficient operation are governed by technical rules and regulations in different countries and markets.

Compliance engineering is a vital function for the success of a product – from an understanding of the product specifications to collating the relevant information and getting necessary approvals for market acceptance.



Identifying and Meeting Challenges in Compliance Engineering

Compliance of the product is the basic requirement of the world today. From the point of safety of the product, users, place of work and environment, compliance engineering has a major role in preserving the world. Each of these challenges present organizations with unique issues, many of which involve ensuring faster time-to-market and reducing costs associated with product compliance.

Reducing Complexity

Widely dispersed information resources on product compliance and information on changing regulation guidelines create an environment that relies on peak performance from compliance engineers at the time of filing for certification. Such high expectations cannot be a reliable management strategy in ensuring timely product release with a dedicated compliance team through the product lifecycle.

Centralizing Compliance Engineering Processes

Today's manufacturing environment includes both a heterogeneous mix of internal personnel and geographically dispersed vendors and others such as suppliers. The compliance engineering staff needs to be able to manage this diverse environment from any location at any time of the day or night, with the right domain knowledge of both legacy and changing regulatory information as well as those specific to the market.

Maintaining Product Continuity and Relevance

Unplanned compliance requirements can cause a variety of problems: lost revenue, lower customer

satisfaction, and potentially, lost customers and, breaches of service level agreements that can result in penalty payments, which further reduces the revenue projections.

Increasing Staff Productivity

A dedicated time for compliance engineering consumes many hours of staff time that could be more productively used on strategic tasks. Staff hiring and training on compliance engineering becomes difficult, time-consuming, and expensive in a heterogeneous and dispersed compliance-engineering environment.

This list highlights the major challenges in compliance engineering:

- Relevant information for compliance are available with disparate groups, both internal and external to an organization, is difficult to collate and quickly report to the certifying bodies and regulatory organizations in individual countries
- Often costly and difficult to source the right personnel with the right domain expertise to induct into the compliance stream by manufacturers
- Lack of an internal dedicated compliance group or having to deal with vendors for different activities of compliance is time consuming and a hindrance in effective program management
- Cumbersome to cope with the changes in product design or the relevant standards within a specific time limit

Major Certifying Bodies

There are many certifying bodies around the globe to assess products for the required certifications and it's acceptance by a country or specific application. Many of these certification bodies are over a century old and have established rules based on their experience, which are well recognized by the market.

A few examples of such classification societies are:

- ABS (American Bureau of Shipping)
- LR (Lloyds' Registry)
- DNV (Det Norske Veritas)

The offshore compliance engineer, as per the requirements from the manufacturer, contacts the appropriate certifying body, understands the rules, and interacts with them during all the stages of the certification process. It becomes a critical need to keep a track of the changing rules of the third party or regulatory standards as well as keep the manufacturer updated on any changes during the certification process. The compliance engineer also follows up with the concerned functions of the relevant internal departments for recertifying the product before the date of expiry.

Offshore Compliance Engineering Processes - A Framework

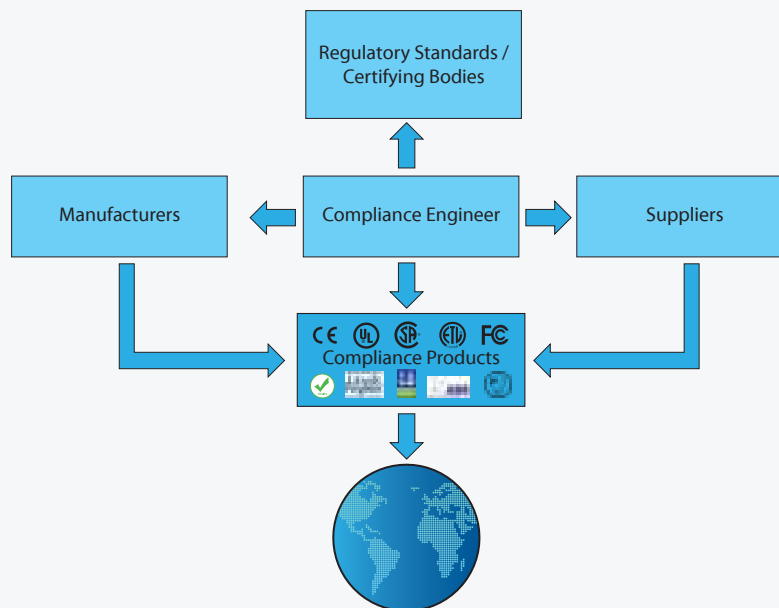
The main function of offshore compliance engineering is to help organizations design and develop a compliant product that conforms to the required standards to ensure that the products work safely in various operating conditions. It is the responsibility of the offshoring compliance engineering organization and its members to interact with the manufacturing company to design or produce a compliant product at every stage of its development through the final deployment to the market.

A dedicated offshore compliance engineer with adequate skills and domain expertise works with the various internal groups of the manufacturing organizations and vendors to carry out the compliance engineering processes throughout the product lifecycle. A sound knowledge of the products, regulatory standards and great communication skills are the pre-requisites of effective compliance engineering. The ability to document the information to the process requirements to complete the service effectively is another essential quality a compliance engineer must possess.

The offshore compliance engineering process involves these high-level list of activities:

- Gather and study the relevant product information
- Understand the regulatory requirements for certification
- Work rigorously to get the necessary certifications for the product
- Make detailed documentation for the product compliance
- Document the compliance process
- Monitor the changes in the requirements and update the processes regularly

The compliance process is the basic requirement for the manufacturers and is dynamic throughout the product life cycle. The following diagram illustrates the compliance engineers' involvement in obtaining compliant products:



After receiving the raw materials from the suppliers, manufacturers convert them into finished products and sell them to the customers at the various locations around the globe. As customers demand compliant products as applicable to their regulatory standards, it is often difficult for the manufacturers to sell their products if they do not meet the standards.

The offshore compliance engineer quickly understands the product details, studies the regulatory standards, and interacts with the various functions in the manufacturing organization to gather all information

required for the product certification. In addition, the offshore compliance engineer works with the various suppliers and gathers information on the materials and certification details.

With the relevant information, the offshore compliance engineer contacts the certifying bodies and initiates necessary assessment of the products and processes. The engineer also works meticulously with all the groups until the successful product certification is achieved, and ensures that manufacturers ship the compliant products to various customers over the timeline.

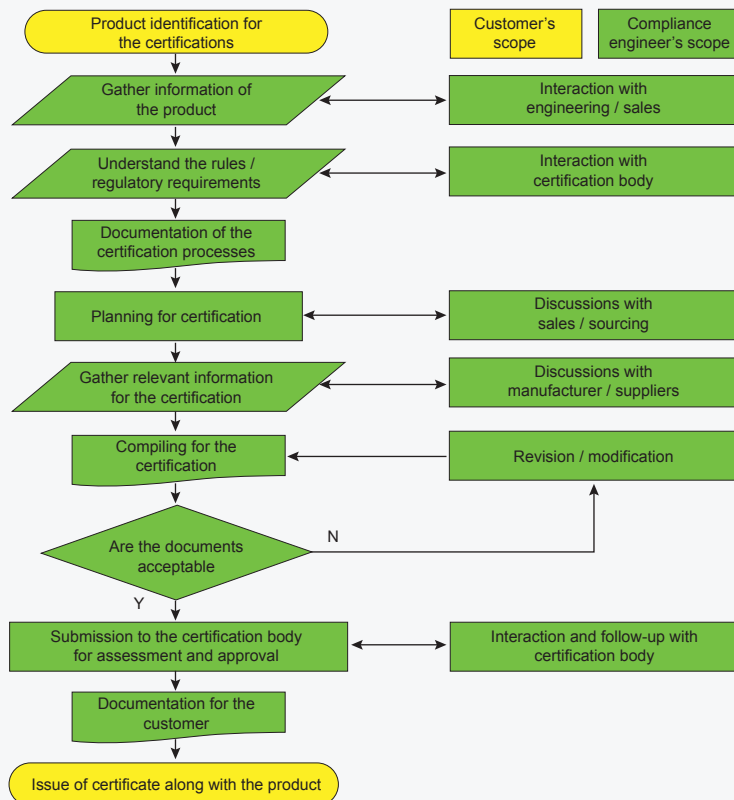


The offshore compliance engineer is not just an agent to get the certification for the product. The engineer is a key member who understands the product design requirements for a particular application and interacts with the design engineers to incorporate the necessary safety and other product features for the application. In general, the compliance engineer forms an essential contributor in new product development initiatives. In addition, the compliance engineer also helps the

company build a robust process to manufacture products that strictly adhere to quality standards.

An experienced team of offshore compliance engineers can handle all the activities of certification effectively with minimal inputs from the customer.

The following flow chart illustrates the end-to-end compliance process:



Conclusion

Experience from several years of dealing with hundreds of certifying bodies around the world has the advantage in effectively dealing with product compliance.

As a prerequisite requirement for every organization, compliance engineering is an indispensable strategy to develop teams and meet the certification standards for their products.

Therefore, the demand for compliant engineers is on the rise. However, it is often both challenging and demanding for organizations to take on board the right compliance engineers while keeping the costs at manageable levels but also continue to ensure meeting the skill criteria for the project.

Established offshore engineering organizations that support various customers in providing solutions in their product development processes and have dedicated compliant engineers with adequate product knowledge and skills can be a cost-effective strategy. Manufacturers can leverage such offshore engineering organizations to support their product compliance requirements. With engineering personnel deployed at various locations around the world and close to the customer base, these offshore engineering organizations ensure their customers establish a robust compliance processes, and obtain product compliance for their clients at the right time and cost-effectively.

Why QuEST for Offshoring Compliance Engineering

QuEST Global specializes in tailor-made offshore compliance engineering.

QuEST Global is one of the few companies in the world offering an end-to-end solution from product design to compliance engineering. Compliance engineering requires an understanding of the certification requirements in demand as well as best practices in processes and compliance. With QuEST Global,

projects will stay on track from concept through final approvals testing.

QuEST Global employees have practical experience in this field and insight on design improvements especially in high-end manufacturing related to markets such as power generation, automobile, aviation, oil and gas, mining, marine, cement and paper and pulp.

Case Study: Complying with Guidelines to Import Products into European Countries

Situation

It is imperative that all manufacturers planning to sell their products to European markets have to ensure that all the components of their products comply with REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) and RoHS (Restriction of Hazardous Substances) regulations. Both these directives are adopted by European countries in restricting dangerous chemicals within permissible levels in all the components of the products that are imported.

Solution

To fulfill the requirements of REACH and RoHS, and assist the manufacturer in shipping their products to European countries to avoid rejection, the offshore compliance engineering team carried out the following compliance process below:

- Worked with clients to summarize the products for certification
- Studied the drawings, parts' bill of materials, material reports, and process documents for products
- Prepared a plan for meeting the deadlines
- Comprehend and understand the various acceptance norms for the REACH and RoHS requirements for the products
- Analyzed the compliance of all the parts of the products against these requirements

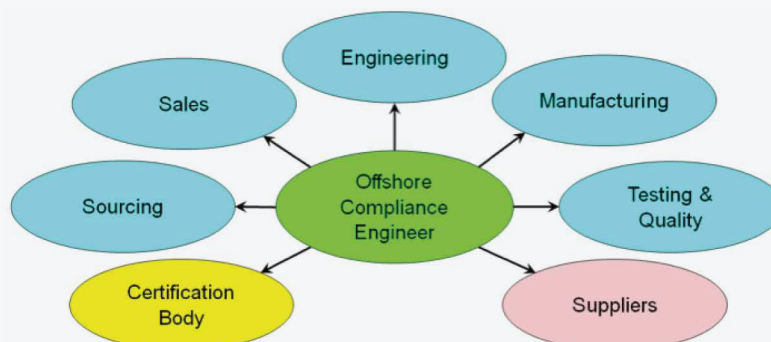
- Prepared the list of the non-compliant parts
- Initiated and followed up for the modification and replacement of the non-compliant part
- Prepared and submitted the comprehensive report to the approving agency for the acceptance of the products

Benefits

The offshore compliance engineers can find the non-compliant products and quickly initiate the modification or replacement. Compliance engineers can invariably interact with various functions of the supply chain to deliver the compliant product. The following were the benefits the customers gained by employing a competent offshore compliance team.

- Delivered the compliant products on-time
- Eliminated the losses due to rejection
- Helped build the brand name
- Developed improved products
- Established processes for getting compliant products
- Met the launch schedule of the new product as per the customer's requirements

The following diagram illustrates the interaction with various functions to get the certified products.



Author Profile



Saravana Kumar

Saravana Kumar is specialized in mechanical design of large AC Motors and Generators. Prior to joining QuEST, he has worked at Kirloskar Electric Company Ltd., Bangalore, in the Large Rotating AC Electrical Machines Engineering Divisions for 11 years. He has worked on various collaborations such as, AEG and Toyo Denki, where he developed new motors and alternators. Before joining Kirloskar he was Manager, Engineering at TD Power Systems, Bangalore for the manufacture of alternators up to 32MW.

Among his biggest achievements, Saravana:

- Authored 6 Design Practices for GE Hydro Generators
- Received several awards for cost savings, cycle time reduction and standardization of the design and manufacture of motors and Saravana holds a Bachelor in Engineering in Mechanical Engineering from Bangalore University and a Masters in Business Administration specializing in Marketing from IGNOU, New Delhi. Currently, he is the Principal Engineer, Generator and Motor business unit, QuEST Engineering, India. At QuEST, he is engaged in supporting GE in designing, drafting, modeling, and analysis of generators, works for the compliance requirements of GE Motors, and is developing a team to support GE Motors in their design requirements

Email : saravana.kumar@quest-global.com

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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