



RAIL

# MANUFACTURING ENGINEERING

## Flexible and transformational solutions to help manufacturers go to market faster

The massive size of locomotive engines and rolling stock forces rail manufacturers to decentralize and build plants as close to customers as possible. The challenge lies in developing standardized engineering technologies that can be transferred across the globe. At the same time, manufacturers require flexible factory solutions that work efficiently within each country's local ecosystem of regulations, culture, and language. Rail companies also need to develop lean resource processes that reduce manufacturing costs. This is particularly critical since manufacturers frequently lack sufficient internal resources to develop engineering designs.

### PROVEN RESULTS

“QuEST has proven its **manufacturing engineering capabilities** by completing our DFMEA (design failure mode and effect analysis) in a very short time. They have also **proven their efficiency** in running our tolerance stack-up test and clearance analysis—both were **completed perfectly**.”

— **Director of truck and platform engineering**, multinational rail manufacturer





## Standardized Manufacturing with Local Flexibility

QuEST Global provides flexible and transformational solutions, developed through collaboration with global experts in the rail industry. Our digitized product and workflow process documentation streamlines end-user interactions and allows rail companies to solve their manufacturing engineering challenges:

- Bringing engineering processes into production faster
- Generating manufacturing cost savings
- Reducing defects and nonconforming parts
- Improving production planning and execution
- Producing digital data and provides information to personnel in real time

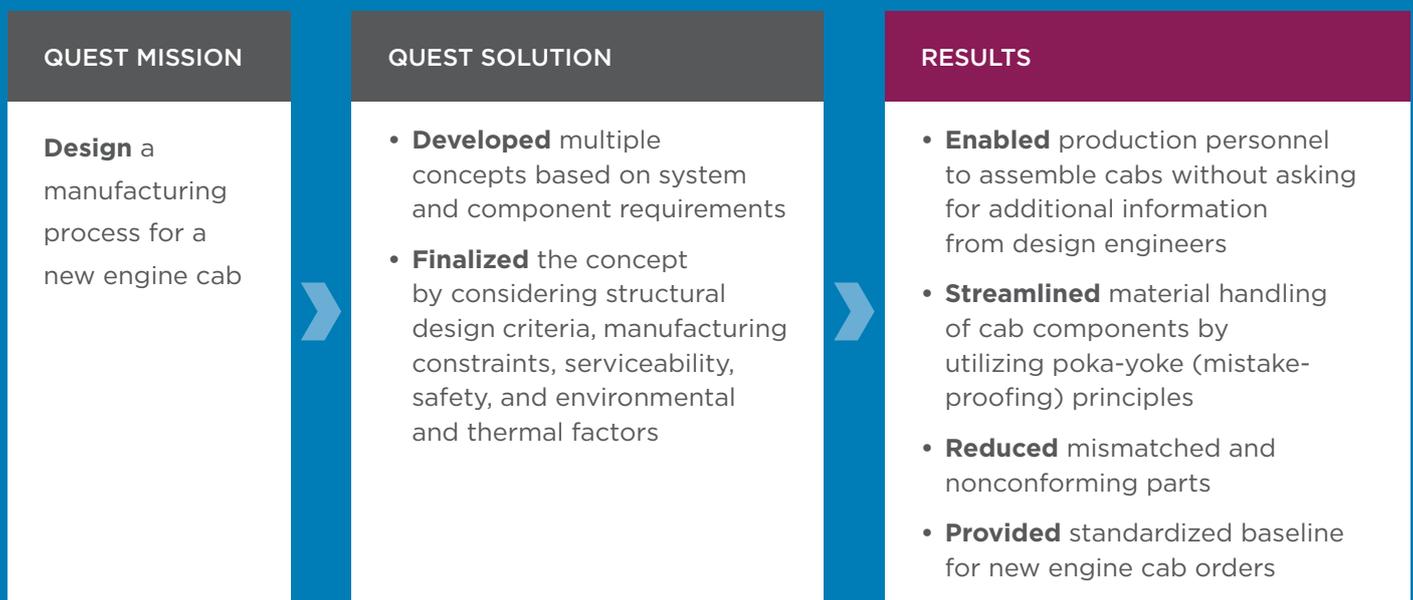
## Efficient Mass Production

QuEST generates detailed, text-free pictogram instructions that make it easy for workers in plants to follow procedures. This approach facilitates deploying global standard processes while still giving each plant the flexibility to conform to local requirements.

By leveraging our manufacturing engineering solutions, rail manufacturers gain supply chain productivity enhancements. Even more important, manufacturers can leverage processes that enable the efficient mass production of locomotives, rolling stock, and control systems.

## Proven Results: Cab Engineering Design Reduces Nonconforming Parts

A multinational rail manufacturer asked QuEST to design a manufacturing process for a new engine cab. QuEST developed multiple concepts based on the system requirements and the existing baseline engine cab. QuEST's solution streamlined the handling of cab components and reduced mismatched and nonconforming parts, giving the customer a standardized baseline on all new engine cab orders.



## Driving Operational Excellence and Global Standardization

The QuEST manufacturing engineering center of excellence (CoE) provides rail customers with a dedicated team for centralized manufacturing engineering and shop floor expertise. Our manufacturing engineering services support global factories and drive operational excellence while helping rail manufacturers achieve standardization.

### NEW PRODUCT LAUNCHES AND INDUSTRIALIZATION

Planning and execution of part movements from design to production to enable real-time production and initial rate prove out.

### PROCESS OPTIMIZATION

Identifying and implementing initiatives to improve product quality, increase shop productivity, reduce costs, and achieve reliable rates.

### PLANT TRANSITION

Planning and execution of cells and factories to streamline new start-ups and improve the performance of existing factories.

### DIGITAL MANUFACTURING

Providing support for digital transformation to integrate engineering, manufacturing, quality control, and procurement.





## Transformational Digital Solutions

QuEST helps rail manufacturers design and utilize standardized manufacturing processes for plants located around the world while also offering flexible designs so processes can conform to local requirements. By applying our global best practices knowledge, we deliver transformational digital solutions that streamline end-user interactions so manufacturing plants can operate more efficiently.

### QuEST Expertise

Combining rail experience with proficiency in applying engineering best practices across multiple manufacturing industries, QuEST leverages a proven delivery model that utilizes a combination of local and global resources. In addition to consistently delivering engineering designs on time for large, complex projects, we apply a methodology that enables rail manufacturers to easily integrate our engineering services into product development and production workflows—with minimal drag on internal resources.

## Your Trusted Partner for Driving Manufacturing Efficiencies

With our deep rail industry experience, QuEST can help you find the answers to drive manufacturing efficiencies that enable you to improve process design turnaround times and go into production faster—with designs that sync to manufacturing plant capabilities. Achieving this mission will help you maintain and increase your market share.



To learn how QuEST Global's transformative engineering solutions can help you succeed, contact:

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or visit [quest-global.com](http://quest-global.com)

QuEST Global is a trusted engineering services and solutions partner to many of the world's most recognized Fortune 500 brands in aerospace and defense, medical device, power, and transportation. For more than 20 years, QuEST has been a trusted partner providing comprehensive support across the complete engineering lifecycle to help our customers improve efficiency, increase quality, create new products, and open new markets. Through a collaborative and customized approach, QuEST enables its customers to manage traditional engineering requirements as well as the convergence of digital and mechanical technology to help them create safe, dependable, and high-quality products and services.

