

GE Oil & Gas

Product Structuring

Proven modular solutions
to increase performance



Product Structuring

The oil and gas industry has evolved without much global standardization for technology or process. Therefore, companies around the world have developed their own best practices and standards that are often quite different from those of other operations. From an engineering standpoint, the result has been to approach every new project as unique – essentially starting with a blank page for each system design.

GE Oil & Gas has designed, installed and maintained core plant equipment and support

systems in every application area and producing region of the world for nearly 100 years. We have accumulated a comprehensive portfolio of advanced technologies, proven engineering and quality processes, and an incredible

database of operational statistics that feeds back into our design process for future technologies.

All this experience has enabled us to create a Product Structuring program that recognizes and responds to the truly unique requirements of each project, while taking advantage of the fact that many design requirements are common from project to project.

Improving quality, cycle time, cost and performance by combining pre-engineered modular designs with fully customized components to meet all unique project specs

Product Structuring

Every complex engineering challenge begins with a period of exploration and problem-solving that leads to a critical tipping point when solutions begin to unfold and gather momentum. This is typically the most costly stage of development. Product Structuring eliminates this stage in cases where customized problem-solving is not necessary. It therefore offers many advantages and opportunities to enhance overall performance and profitability.

Whereas 'standardization' typically provides only a single solution to any need, Product Structuring creates a variety of pre-engineered solutions that accommodate a full spectrum of customer needs and standards.

The program pre-engineers the components that are common across multiple applications and that do not require extensive customization to meet project-specific demands. It thereby frees up critical engineering time and resources to focus customization activities where they will have the greatest impact on plant performance.

A structured product gives similar advantages to a standardized product in terms of quality, cycle time and cost, while retaining the ability to choose from a range of designs with proven records.

All structured and customized components benefit from our latest technological advances, field-proven designs and rigorous quality systems – ensuring minimized risk and optimized performance from every component.

Key benefits:

- Full compliance with international standards
- Reduced project costs through lower up-front engineering requirements
- Shorter overall cycle time through faster proposal generation, delivery and installation
- Improved component quality as a result of fewer variations, installation to installation
- Increased manufacturing effectiveness through lower variation results in higher quality, fewer non-conformities and increased uptime (higher reliability and availability)
- Streamlined supply chain and readily qualified components with localized manufacturing and inventory opportunities
- Customer training synergies and lower maintenance costs from greater crew familiarity with equipment

Product Structuring in action

There are currently hundreds of configurations present in the industry for gas turbine exhaust stacks – even though there is no technical or business need for that many different designs. For those plants, the majority of engineering time was dedicated to the exhaust stack, not to the turbine. Most quality issues and challenges also related to the exhaust stack, not the significantly more complex turbine technologies.

Through Product Structuring, we have identified 40 configurations that meet all exhaust-stack requirements across the industry. These options still employ all the rigorous engineering, manufacturing and testing quality standards for which GE is known.

But, by eliminating unnecessary variation, Product Structuring frees up engineering and manufacturing resources, increases overall product quality by reducing error margin associated with variation, and enables production economies of scale that reduce costs and delivery times.



Lean Operations

Every GE Oil & Gas facility (whether a Global Center of Excellence for a particular technology or one of our Regional Service Centers with a broad scope of responsibilities) benefits from the most modern Lean manufacturing methodologies and proven quality programs.

In addition to these rigorous systems, we also perform regular site evaluations where cross-functional teams work to identify any areas for improvement in the installation and commissioning processes. These teams focus on reducing delivery time and quickly resolving customer issues through local support capabilities.

Faster evaluation of train options

Our Train Configuration Tool (TCT) is a powerful system for the selection of turbocompressor train elements. The new TCT Lite version was adapted from the advanced TCT Pro configuration used by GE Oil & Gas application engineers. The TCT gives regional teams outside of our Florence Turbomachinery Center of Excellence the power and flexibility to respond immediately to customer configuration inquiries, including:

- Set up project parameters and critical customer requirements in one minute
- Easily change inputs to investigate alternatives
- Feasibility study and budget selections in three minutes

The TCT provides instant feedback on the cost and performance effects of each input change and increases consistency of equipment recommendations across multiple applications and plant locations.

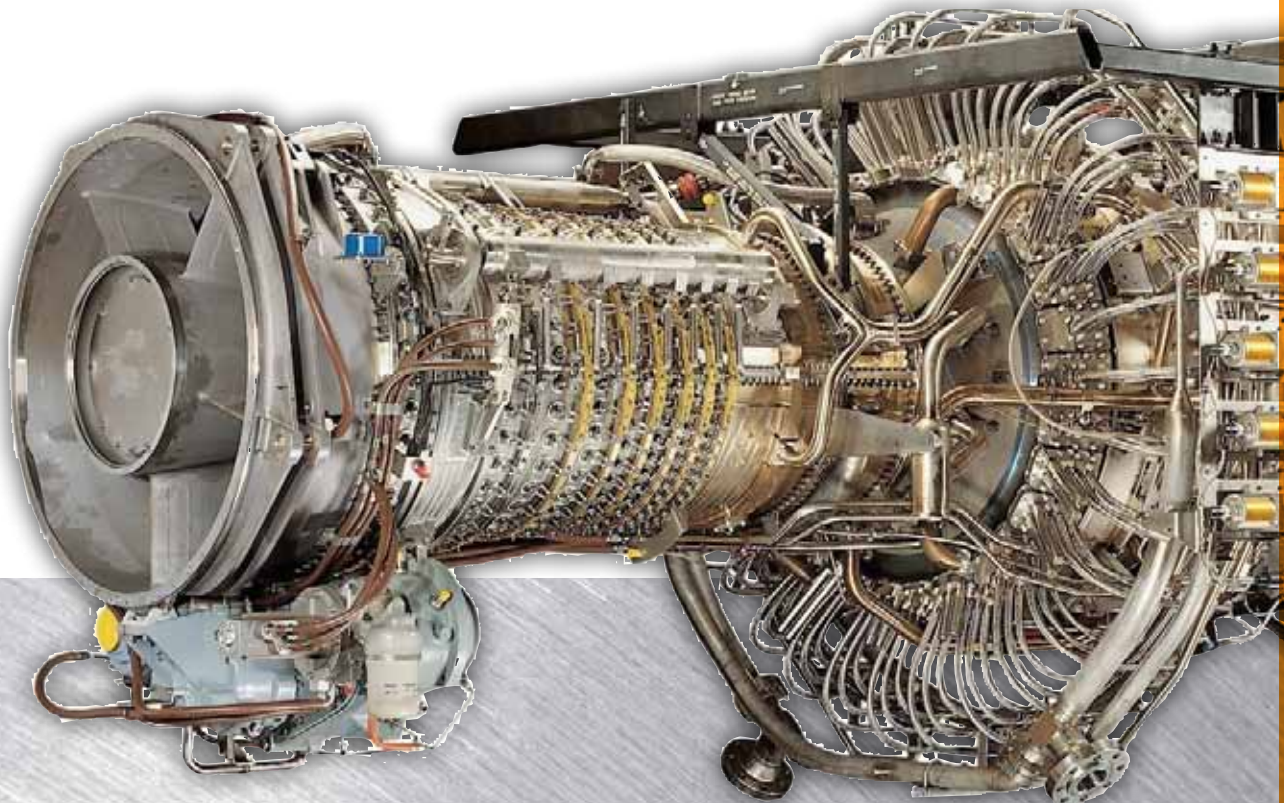
End-to-end project control

Our Oracle P6 Project Suite is a single planning platform that tracks all project details from first commercial negotiation through to machinery start-up. The system is fully integrated with the GE Oil & Gas ERP system, providing complete visibility on project status and integrated risk management across all regions and applications.

Installation excellence

The Lean mindset also applies at our customers' installation sites – no matter how remote they may be. All sub-systems, auxiliary materials and loose parts are assembled by the engineering team – packaged and delivered according to the installation activity chronology. Wherever possible, we use compact, modular, lightweight, re-usable packing containers – to increase on-site flexibility and functionality, and comply with even the most restrictive phytosanitary regulations.

Every installation project is equipped with at least one GE Site Container for a quick resolution of the most common issues. The container includes a wide range of redundant spare parts to avoid re-purchasing from distant vendors. We also provide 24/7 support for all on-site activities with multilingual support centers in Russia, the UAE, China, Australia, Europe and India; and have a localized infrastructure of service shops in North America and South America, Australia, Europe, Africa and suppliers in China, Australia, the Middle East and North Africa.



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