

Forum's Torque Machines Offer a Turnkey, Lean-Maintenance Solution While Delivering Operational Cost Savings

The Challenge

A leading global oilfield services (OFS) company made a strategic decision to integrate its deepwater completion technologies into one location to align services and equipment maintenance and reduce health, safety and environmental (HSE) risks. The new plant would consolidate eight sites and combine the operational requirements of multiple product lines, delivering cost savings and standard working practices. Since deepwater operations are becoming more complex, the customer's facility also needed to offer increased capabilities to meet evolving market requirements and solution services for their clients.

The OFS customer approached several manufacturers to review the planned assembly area and each product line's technical demands before securing suggestions on how to maximize the facility's space and efficiency, while maintaining a safe working environment. They also required several technical elements as part of this turnkey project:

- New torque machines tailored to each product line and component requirement
- Corrosion-resistant alloy (CRA) torqueing capabilities, along with standard API threading
- A critical service, calibration and maintenance program

The Forum Energy Technologies Drilling team was chosen to complete the project because of their reputation for building large-outer diameter (OD) torqueing machines; long-standing industry reliability; global engineering, manufacturing, delivery capabilities; and ability to design and manufacture tailored machines that meet client challenges, while maintaining time-critical delivery.

The Solution

After reviewing the requirements, the Forum Drilling team, utilizing lean principles, recommended that the customer systematize multiple machines with similar specifications so work could be shifted from one line that was over capacity to another line with less production demand. The lines could also be grouped to standardize pipe handling equipment and reduce nonproductive time (NPT) on component deliveries. Forum also recommended that the facility be futureproofed; in other words, consider including the next generation of tools that would meet the sector's demand for larger and higher torque connections.

The customer and Forum team worked together to finalize the overall design and work was started. Highlights of the project comprised:

- The CRA equipment was handled by Forum's unique soft jaw design, offering nonmarking torqueing and jaws that are interchangeable with all Forum torque machines
- Each layout was modified to complement the product line and its assembly requirements while retaining full operational flexibility

- A service plan was recommended where Forum technicians could call at regular intervals after installation to offer operator advice and training reaffirmation
- Several machines were modified to offer safe operator zones, reduce trip hazards and help ensure safe and accurate loading

Forum further demonstrated its ability to provide cost-effective solutions with operational efficiencies by offering equipment with improved clamping range flexibility and torquing capability. The degree of modifications that were available at the manufacturing plant, from headstock to layout to hose configuration, helped minimize the client's HSE issues and offered better-performing equipment than market alternatives.



Forum's lean manufacturing facility (left: component assembly area; center: torque machine; right: hydrostatic test bay)

The Benefit:

Forum delivered the customer's turnkey package on spec and time. Nine high-quality machines were designed, manufactured and installed without delay, allowing maximum training opportunities and a soft opening of the facility. Equipment operators had the benefit of continuity across all machines since the same operational software system was running on them.

The customer also received a number of key benefits, such as

- Reduced downtime, inventory and cost because machines complemented each other and component commonality across equipment was maximized
- Improved flexibility in production demands since paired production lines offered enhanced capacity and compatibility
- Longer term viability as equipment was sized to accommodate future technological advancements and market demands
- Service, calibration and maintenance was delivered from Forum's regional center where additional mission-critical components were stocked should the client require a within-the-hour response
- Minimized HSE risks by modifying several pieces of equipment, including one that allowed the customer to safely load 60+ ft tool assemblies and apply torque through varying OD sizes