Case study

Baker Hughes PPS team completes large-scale lube oil flushing, chemical cleaning during pre-commissioning of LNG export terminal in southern U.S.

Background

The energy industry's growing use of liquid natural gas (LNG) has spurred a corresponding expansion in the construction of LNG export terminals across the globe. Recently, one of the largest LNG export terminals in the world, located in the southern U.S., began a complex pre-commissioning phase to ensure its ability to handle high volumes of LNG. Due to the large scale of each of the terminal's systems, the corresponding scope of work for the pre-commissioning project was quite complex, requiring uniquely engineered solutions.

Specifically, the project had to meet stringent cleanliness requirements, and multiple lube oil systems had to be flushed. And, all of the work needed to be completed within a short timeframe while navigating the approval process across three separate construction companies.

Based on demonstrated success in an extensive array of LNG projects over the last two decades, Baker Hughes' Process & Pipeline Services (PPS) organization was selected to help with the massive pre-commissioning project.

Solution

Baker Hughes was familiar with the electric-driven turbine motors at the LNG export terminal as these were supplied by the Turbomachinery division as part of its propane and mixed-refrigerant compressor systems.

Prior to the start of the job, the PPS team worked with the customer to develop a tailored solution with specific procedures to meet the required scope of work. The team's proven, efficient LNG project technology and service techniques were applied to multiple, crucial pre-commissioning activities including hydraulic lube oil flushing, chemical cleaning and degreasing.

Results

Coordinated by a dedicated project engineer, the PPS team's highly trained personnel applied engineered solutions and equipment to achieve the required scope of work within the customer's tight timeline. The team successfully performed high-velocity lube oil flushing of nine large-scale compressor systems, chemical cleaning of nine compressor cooling water systems and degreasing of three large-scale pre-treatment amine systems, handing over clean systems within the required project timelines.

The creation of detailed, uniquely engineered procedures made the momentous effort possible, including the impressive achievement of three simultaneous oil flushes and one chemical cleaning operation in parallel. The project made use of uniquely designed, specialized hydraulic and lube oil (HALO) pumping equipment from Baker Hughes.

System cooldown and heat up services

Because LNG is cryogenic in nature, pipework and vessels are often cooled in preparation for LNG introduction prior to startup. Baker Hughes has extensive modeling and simulation capabilities to determine the safest and most efficient way to cool the system for the vessel using nitrogen as a controlled cooling agent.

Additional services

- Engineering services
- Pneumatic testing
- Tank weight testing
- Leak testing
- Oil flushing
- Chemical cleaning
- Drying services
- Nitrogen services
- Accelerated cool down

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