Accumulator Pre-Charge Monitoring

MESH GLOBAL

Noble Drilling

Accumulator Pre-Charge Monitoring

Case Study

Duration

6 Weeks Concept to Installation

Scope Overview

- Initial review of existing hardware.
- Development of specification documentation, including hardware requirements, operating system/ software, programming environments, functional requirements, data requirements, and interfaces to all external systems.
- Completion of the following pre-delivery scope: generating all Factory Acceptance Test documentation, and conducting a final integration test using simulation where physical devices were not available.

Provision of personnel for the following tasks:

- Installation and commissioning of the new system.
- Conducting offshore training on the system covering operation, maintenance and fault finding.

Achievements

This project showcases MESH Global's ability to design innovative solutions that lead to increases in operational efficiency. The implementation of this system enables a more efficient, safer way to check accumulator pre-charges.

Additional Information

The Accumulator Pre-Charge Monitoring System can be implemented as a stand-alone system or integrated with pre-existing PLC based system infrastructure. Additionally, two other associated systems can be combined to further enhance this system: Inline Contamination Monitoring system and cycle counting / condition monitoring. For additional information on these associated systems, please refer to their respective case studies.

Background

While upgrading a BOP Control system to include additional functionality (Contamination Monitoring & Function Counting as part of a CBM system) our client discussed the task of checking pre-charge pressures on accumulator bottles and the time consuming nature of this maintenance task as well as the risks associated with working with Nitrogen. MESH were confident that they could simplify the process and make it a much safer task.

Requirement

Efficiency gains and safety improvements were key considerations for the system. As part of the upgrade, it was crucial to see where efficiency gains could be made, whilst also increasing safety. The client estimated that to check all accumulators used to take on average 1-2 shifts as each accumulator needed to have a mechanical gauge fitted to each to read the pressure. This now takes them 15 mins and is a much safer and efficient method than previously adopted.

Approach

For maintenance purposes we installed RFID pressure sensors on all accumulators. Using a hand held device, the operator simply touches the pressure transmitter and instantly gets a reading. This reading is stored in the device, which when connected to a computer automatically uploads the data to the pre-existing maintenance system. The pressure transmitters require no cabling or power so are very simple to install. Operators can quickly check pre charges without exposing themselves to potentially dangerous nitrogen leaks, and also make significant time savings with no need for mechanical gauges to be connected to each accumulator. One client estimated that to check all accumulators used to take on average 1-2 shifts. This now takes them 15 mins and is a much safer and efficient method than previously adopted.

Results

The client can now quickly, and safely check pre-charge levels on accumulators. Upon docking the reader, the results are automatically uploaded to the assets existing maintenance system. This results in a notable increase in efficiency and cost savings.

Benefits

Operators can quickly check pre charges in a matter of minutes without exposing themselves to potentially dangerous gas or pressure. The system also takes away the administrative task of entering in values to a maintenance system manually, as the hand held reader on being docked, automatically uploads all relevant information directly to the clients system.

Our system has now been rolled out on multiple client assets globally.

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