

iQRA: Wood Group Intetech



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Background

Wood Group (WG) Intetech is a company that helps customers in the oil and gas industry and other sectors to ensure the safe and profitable operation of their assets. Managing the integrity of wells, pipelines and other oil and gas assets is typically achieved through design engineering, materials selection advice and software support systems.

Optimising asset performance remains a continuous challenge for oil and gas operators. A key issue is selecting well equipment with reliable performance, which creates a need for oilfield reliability information that operators can trust.

WG Intetech has developed the largest global database of well failure data ever assembled. As of today, the system encompasses more than 250,000 service year lives of equipment data.

Motivation

Connecting data requires firms to work more collaboratively, not just internally between business functions such as operations and IT, but externally between third parties. However, a key challenge in developing a tool that required data sharing between third parties was overcoming the reticence of operators to make sensitive information available externally. Moreover, any firm that has invested time and money in recording a large dataset is unlikely to make it available if they perceive security to be an issue.

In response to industry demand, WG Intetech launched iQRA, an online experience database and reliability analysis tool. This provides online access to reliability figures such as Mean Time to Failure (MTTF), Survival Function, Average Failure Rate and Pass Rate. Subscribers can identify high reliability components



Fig 1 - Remote monitoring equipment

for their field conditions and substantially reduce operational expenditure (OPEX) by adopting risk-based inspection frequencies and performance-led maintenance schedules instead of corrective remedial work.

A major benefit of iQRA is that users can compare data from around the world and use this to benchmark the performance of their own equipment, identifying where changes in operations or maintenance regimes may bring dividends.

Risk-based analysis allows operators to determine where testing can be safely performed less frequently. This can extend the life of equipment, given that each testing cycle causes a degree of wear and fatigue. Potential issues on other wells can also be pre-empted by taking the opportunity to replace a piece of equipment if another well intervention is taking place. Performance data analysis therefore allows the effective management of well integrity problems that could otherwise interfere with safe production.

Development

iQRA enables safe and secure data sharing by ensuring that sources are kept strictly confidential. Sensitive data is anonymised and access to system functions is protected using password strength gates and a robust set of user roles and privileges. Confidential information such as operator and asset name are kept entirely absent from the database, while other confidential data is encrypted.

To produce accurate and reliable calculations that could be used with confidence, iQRA identified minimum requirements for the data. In addition to two stages of manual quality control (QC), iQRA has its own automatic QC process. Constant iterations and fine-tuning by WG Intetech's software developers were required to define the boundaries of 'good' and 'bad' data. Now, the automatic QC process can identify instances where a component has been used outside of design specification; there are multiple registrations of the same failure; there is

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inadequate reporting of installation details and failure data or the overall quality of the reported data is questionable.

Results

WG Intetech was contracted by one of Europe's largest natural gas storage operators to find a solution for capturing, storing and analysing well test data. With software already installed to record the well integrity test results, the process of extracting 30 years' worth of key equipment test data and uploading it to iQRA was a simple process.

iQRA is now providing the operator with a simple and cost-effective way to access reliability statistics of the equipment installed on their wells which number approximately 500.

Next steps

Recognition of the value of real-time data is driving huge investment by oil and gas operators to better connect their business units and support operations intelligence initiatives. Comparing the relative performance of components with identical functions is a critical exercise, given that each may have different mechanisms and root causes of failure. The ability to make accurate evaluations with high quality data delivers huge benefits for operators, such as increasing the reliability of their equipment over time, and realising substantial reductions in total cost of ownership. Ultimately, data analytics can increase confidence in decisions around the selection of equipment.