



PTTEP prepares for safe, efficient operations in the Timor Sea

Designing automated maintenance and procurement processes to support a new FPSO

Overview

The need

To support its operations in the Timor Sea, PTTEP Australasia is building a new floating production, storage and offloading (FPSO) vessel. To support this sophisticated vessel, PTTEP needed to integrate offshore maintenance and onshore procurement processes. Moreover, to meet regulatory requirements, the company needed to implement a computerised maintenance management system for the FPSO.

The solution

PTTEP worked with IBM Global Business Services® to implement IBM Maximo® Asset Management. SRO Solutions then deployed SRO Data Replicator (SDR), which links the Maximo instance on the FPSO to the master instance at PTTEP's head office in Perth.

The benefit

Maximo streamlines maintenance and procurement processes, eliminating paperwork. SDR keeps onshore and offshore processes in sync over a low-bandwidth satellite connection. Even if the connection is temporarily lost, the FPSO's Maximo instance can still support maintenance tasks.

PTTEP Australasia is an oil and gas exploration and production company. It employs approximately 350 people at its headquarters in Perth, Australia, at offices in Darwin and Singapore, and on vessels and platforms in the Timor Sea. It is a subsidiary of PTT Exploration and Production, a Thai company that invests in oil and gas projects in Asia, the Middle East, Africa, Canada and Australia.

PTTEP Australasia is currently working on a major project to develop the Montara, Swift and Skua oilfields in the southern Timor Sea, north of the Kimberley region of Western Australia. The Montara development will comprise an unmanned well-head platform, four horizontal production wells, a single gas re-injection well, and a new floating production, storage and offloading vessel (FPSO), which is currently being built in Singapore.

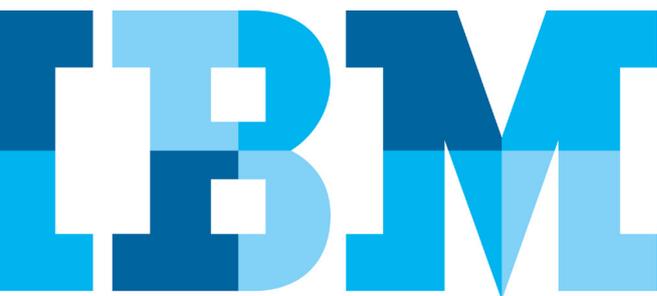
Developing a robust maintenance solution

When operational, the FPSO will moor itself to a buoy near the well-head platform, process the crude oil that has been extracted, and store it until it can be offloaded onto a tanker. This is a sophisticated process, involving hundreds of pieces of equipment that all need to be kept in good working order 24/7. To help PTTEP's engineering team maintain and repair these assets effectively, the company requires robust preventive and corrective maintenance processes. It also needs an efficient procurement process to ensure that spare parts are always available or can be ordered and delivered quickly.

“In our previous projects, we had been using separate solutions for maintenance and procurement,” says Greg Archer, IT Support Engineer at PTTEP Australasia. “They shared a common database, but the interfaces were different, so if you were working on a maintenance task and needed to order some materials, you had to switch to the other application. There also wasn't much in the way of workflow management, so a lot of our processes involved printing out work orders and sending paperwork around to be approved by different people. For the new FPSO, we decided to take a more modern, more automated approach.”

Working in partnership with IBM

Working with IBM Global Business Services, the PTTEP team selected IBM Maximo Asset Management, and began designing an



Solution Components

Software

- IBM Maximo® Asset Management
- SRO Data Replicator

Services

- IBM Global Business Services® – Application Management Services

IBM Business Partner

- SRO Solutions
-

architecture for the implementation. The IBM team was also awarded a three-year contract for support and maintenance of the Maximo environment.

“When we were designing the solution, the most important challenge was to find a way to keep our maintenance and procurement processes in sync between our onshore offices in Perth and Darwin and our offshore environment on the FPSO,” explains Greg Archer. “When the FPSO is at sea, it will only be able to communicate with our onshore sites via a satellite link – which means that the bandwidth is relatively low, and there will probably be times when we can’t connect at all. For this reason, we wanted to have separate instances of Maximo in Perth and on the FPSO. That way, everyone would be able to carry on with their work even if the connection temporarily went down.”

SRO Data Replicator

To keep the two instances in sync, the IBM team advised PTTEP to consult SRO Solutions, an IBM Business Partner based in the UK that specialises in Maximo solutions, and has considerable experience with marine engineering. The company has developed a solution called SRO Data Replicator (SDR), which automatically transmits and synchronises data between Maximo instances, making it accessible and freely available across the organisation.

“SDR is designed to solve the exact problem that we were facing” comments Greg Archer. “It provides a highly reliable asynchronous replication solution that compresses data to minimise satellite bandwidth requirements. It enabled us to set up three linked instances of Maximo – a master node that handles background processes and reporting; a slave node for the onshore users to log into; and another slave node on the FPSO itself. SDR replicates new or changed data from the slaves to the master and vice versa, so all three systems are kept in sync, even though they operate independently.”

Effective international collaboration

Greg Archer adds: “SRO Solutions were excellent. They worked closely with our database administrator to gain an understanding of our Maximo architecture, which enabled them to do a lot of the configuration work in the UK. When they were ready, they flew over to Perth and installed a test environment to prove that the solution worked. Everything went very smoothly, so we were able to move SDR into production just before the Maximo instance on the FPSO was scheduled to go live. They also did a great job on knowledge transfer: our database administrator was able to set up the production environment himself, with minimal external help.”

Streamlined, automated maintenance and procurement

With the solution up and running, PTTEP has been able to start managing both preventive and breakdown maintenance tasks on the new FPSO, helping it to pass all the safety inspections and operational tests that need to be completed before its launch.

“We will continue to work with IBM to develop the solution, and when we reach a steady state, we expect to see significant improvements in productivity and reductions in maintenance and procurement costs.”

— Greg Archer, IT Support Engineer, PTTEP Australasia

All the maintainable equipment on board is registered in the Maximo database and assigned an appropriate cycle for planned maintenance. When an asset reaches its planned maintenance date (or when corrective maintenance is required), a work order is automatically triggered in the system and sent to the relevant supervisor for approval. The supervisor then adds the tasks to the maintenance schedule, and the system manages the workflows that move the work order through different areas of the business until it is completed.

If spare parts are required, the system generates an inventory transaction from the FPSO's store room or from the company's main warehouse in Darwin. Each item is checked in and out of the store room using barcode scanners, which are integrated with the Maximo system – eliminating the need for manual data entry.

If the parts are out of stock, Maximo generates a purchase requisition in Darwin, which is then actioned by the procurement team in Perth. The system then raises a purchase order with one of the company's approved suppliers, and handles invoicing and payment.

Looking to the future

“We're still at an early stage in our adoption of Maximo, but we're already able to see that the new workflows are much more automated and streamlined than our old paper-based processes,” comments Greg Archer. “We will continue to work with IBM to develop the solution, and when we reach a steady state, we expect to see significant improvements in productivity and reductions in maintenance and procurement costs. Overall, we are planning to keep the ratio of preventive to breakdown maintenance as high as possible – ensuring high availability for all the equipment on board the FPSO and supporting 24/7 operations.”

About SRO Solutions

SRO Solutions Ltd specialises in IBM Maximo Asset Management, database replication, bespoke development, training and support. It provides resources for most ICT-related projects, software interface development work, database activities and systems integration projects in the enterprise asset management space.

To learn more about products, services and solutions from SRO Solutions, visit www.srosolutions.net



For more information

To learn more about IBM Enterprise Asset Management solutions, contact your IBM sales representative or visit: ibm.com/software/tivoli/solutions/asset-management



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IBM Australia Ltd.
Level 13
IBM Centre
601 Pacific Highway
St Leonards NSW 2065

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