

Field extension - virtual multiphase metering

Client:

Norwegian Oil Major

Location:

Norway

Equipment:

Multiphase metering system for subsea wells

This bespoke approach demonstrated to our client the advantages of a virtual solution.

For testing the PVT model's integration, we obtained test data from the vendor that had been used prior, we replicated the approach for our own testing to compare the results. This remote solution saved time, expense and lowered Proserv's environmental footprint with no need to physically attend the vendor's site to perform interface testing.

Some of the OEM software used on this project was only capable of OPC DA communications so we enhanced this to provide OPC UA - a far more secure and modern communications protocol.

Preferred Supplier

Proserv was chosen to undertake this project due to clearly defined client benefits across cost, time and by reducing the client's environmental footprint with a virtual solution. Proserv had previously developed successful projects for this client using bespoke and tailored solution technology proving new approaches can further enhance the client supplier relationship.

Project Background

Proserv recently completed a metering system installation for a tie back of eight subsea wells to an existing client installation. The installation was for a platform in one of the largest fields in the Norwegian Continental Shelf. Although the metering system was designed with capacity for up to eighteen wells, a Pressure Volume Temperature (PVT) model was effectively integrated into the Metering Supervisory Computer - a Virtual Flow Computer provided totalisation.

Virtual Solution

Due to COVID restrictions in place, we had to approach the challenge with new thinking. Existing practices on a project like this would see the Proserv team perform a number of interface tests, visiting the vendor's site with our server or related equipment and performing testing on site. There we would test the data handoff from our system to theirs, however for this remote solution, we volunteered to host the vendors' virtual machines on our server in Cumbernauld, Scotland, so that all interface testing could be performed remotely.



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Client Benefits

The integration of a software package allowed our client to derive the process conditions of the well, improve the accuracy of the multiphase flow meter and ultimately save money.

Space is a premium on the platform, so the metering system was all installed on a single Virtual Machine and deployed on the client's host server. This meant no physical equipment was supplied or required to be installed saving the client money on shipping and travel costs as well as lowering their carbon footprint.

Having remote access to a fully virtual system that requires little physical maintenance has proved to be a new approach for our client, now less reliant on physical service visits, again demonstrating a saving in time, money and a lower environmental impact.

- Secure remote access
- OPC UA interface
- Remote testing performed reduced the risk incurred with travel during COVID
- Integration of a PVT model into the supervisory
- System installed on a Virtual Machine
- Remote access to a system like this reduces the need for mobilisations offshore for maintenance, which leads to cost savings for our client
- Designed in line with the client's cyber security standards

Providing Tailored Solutions

This project was by no means a conventional metering system. Proserv teams' expertise allowed us to build a tailored cyber secure metering system solving the client's challenges. By installing a virtual machine, running a next generation supervisory package with a PVT model built in, and calculations being performed by a virtual flow computer, we successfully provided a virtual technology solution to our client.

A Future-proof System Solution

OPC UA communications and the capacity to meter a further ten wells will ensure this system is future-proofed for many years to come. For Proserv, this has proved to the client that this system design can be used on subsea tie backs further enhancing our client relationship.

For the client, this project is one of the most profitable in their history, with a breakeven price of under \$10/barrel and CO2 emissions of less than 0.1 kg per barrel oil equivalent. It also extends the life of the offshore platform beyond 2050.

"Proserv demonstrated out of the box thinking and approach to our challenge. Saving our company time, money, reducing risk and reducing the carbon footprint on this project. Their entrepreneurial spirit and solution based approach has future-proofed this system for generations to come."

