



Project: Aoka Mizu

Contractor: Nexen Petroleum UK

End User: Nexen Petroleum UK

Product: Fuel Gas Import Metering

Location: UK, Offshore

Year: 2014

Application

This project is a Gas Import Metering skid package for the Bluewater operated Aoka Mizu Floating Production Storage and Offloading (FPSO) vessel located in the Ettrick field. Aoka Mizu is the seventh Bluewater designed, built, owned and operated FPSO installation, and has been deployed at the Ettrick and Blackbird fields since August 2009.

Description

The system consists of 3 x 50% LTCS metering streams, suitable for the flow range, arranged as follows:

- 3" ANSI 1500 system inlet connection flange and inlet header
- 3 x 3" ANSI 1500 meter streams each equipped with inlet isolation modular DBB ball valve, pressure gauge and nitrogen purge connection.
- Zanker plate flow conditioner in upstream straight length, single chamber orifice carrier with pressure tappings to high and low range dP transmitters and gauge pressure transmitters, indicating temperature transmitter and test thermowell. All transmitters are housed inside heated GRP enclosures.
- Downstream of the orifice carrier and instruments there is an inspection tee, outlet isolation modular DBB ball valve (ball-needle-ball), which then joins into the 3" outlet header.
- From the outlet header the system has 2 x Sample take-off c/w DBB valves for use with Manual spot sampling system and leading to the chromatographs (by others).
- In the outlet piping there is also a Methanol injection point, Pressure Control Valve with associated dP Transmitter, 2 x outlet Temperature Transmitters, dual check valves terminating in a 3" ANSI 600 system outlet connection flange.
- There is also a bypass pressurisation system and drain and vent systems within the package. The system is partially trace heated and insulated

Signals from the transmitters are sent via skid-edge junction boxes to flow computers installed in a "Safe area" metering control panel (by others).

The equipment was mounted on a skid support base frame which was completely grated and provided with the necessary steps and hand railing.

Challenges

There were several key challenges that had to be overcome during the project implementation. The main challenge, however, was delivery. The project had been stalled on several occasions by Nexen and Bluewater so once OGS was awarded the contract we had a very short delivery period.

The system was designed to maximise the extent of pre-fabrication and testing in the controlled environment of our fabricator's works. Equipment was supplied with supporting structures, with all process instrument and utility connections brought to skid edge junction boxes. The units are designed for simple site hook-up and minimum site erection time and costs.

Initially we were asked to provide a 'dropped object frame' but during initial design the requirement was changed into a support frame for the vent system and fire and gas instrumentation. Along with this the skid mounting system was designed to meet the projects on-site requirements. All of the above was completed whilst complying with very strict weight control due to the lifting capacity of the FPSO.

The final package size was 8.35m long x 4m wide x 3.5m high and the weight was 16.2t.

