

+ Custody-Transfer-Quality Sampling of Condensate Mixture Characterized by High Vapor Pressure

Compact, dynamic, line conditioning system prevents release of entrained gases and ensures representative samples, North Sea

CHALLENGE

Acquire high-quality samples of light-density, low-viscosity, high-vapor-pressure condensates exiting the first stage of a separator.

SOLUTION

Install JISKOOT JetLine line conditioning, sampling, and analysis system to mix the fluids without creating a pressure drop, hence avoiding release of entrained gases and change in fluid composition, which improves net-volume accuracy.

RESULTS

Enabled real-time density and water-content measurements, daily samples for quality control, and monthly samples for high-confidence custody transfer and fiscal allocation.

REGION



PRODUCED FLUIDS PRESENT SAMPLING CHALLENGES

Neptune Energy required an improvement to their metering and sampling systems to accommodate a 3rd party subsea tieback connecting two undersea production areas to the Neptune Gjøa platform. This brownfield production platform, is used for the processing and metering of produced hydrocarbons for export. To monitor the quality of fluids coming off the first stage of separation, the operator wanted daily samples from the commingled oil production leg of the separator. They also required monthly samples so they would have the ability to correctly allocate production volumes back to the 3rd party producer.

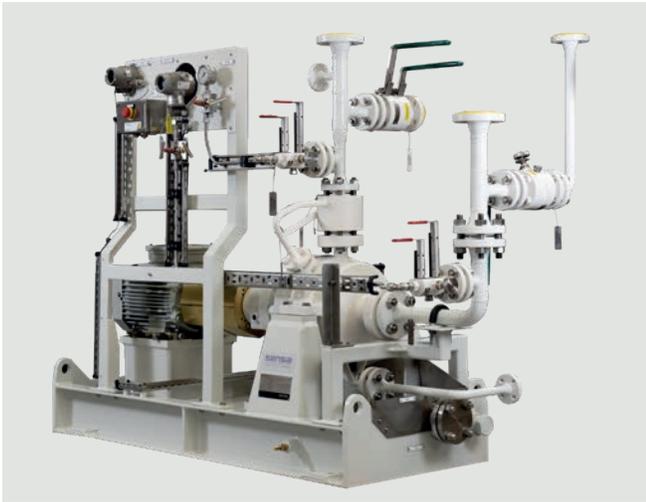
The challenge in sampling downstream of the separator was twofold. Within a conventional separator, velocities are low by design. Moreover, the produced fluids have low viscosities. Because of these two factors, any free water carried into the oil leg will tend to separate very quickly and samples from the resulting flow stream will not be representative. Secondly, a static mixer or mixing nozzle cannot be used to obtain a homogeneous flow regime because the produced fluids have a high vapor pressure. Any pressure losses—such as those created by these mixing devices—in the outlet leg would cause production of free gas, affecting both the metering accuracy and quality determination.

SENSIA'S UNIQUE ENGINEERED SYSTEM PROVIDES A SOLUTION

JISKOOT JetLine line conditioning, sampling, and analysis system provides custody-transfer-quality line conditioning for light-density, low-viscosity fluids. In contrast to conventional equipment, the system has a non-intrusive design that creates truly homogeneous fluid without obstructing the line before the sample point. It also does not induce any measurable pressure losses or gas breakout, improving confidence in the measurement.



JetLine in Duplex Stainless Steel



JetLine Pump Skid

HIGH-QUALITY SAMPLES SATISFY CUSTOMER REQUIREMENTS

Sensia engineered an integrated sampling solution to meet customer specifications. After the JISKOOT JetLine system creates a homogeneous mixture, density and water cut are measured in real time, and daily as well as monthly samples are taken using dedicated cell samplers, per Neptune Energy's operational requirements. To preserve the integrity of the high-vapor-pressure fluid samples, they are stored in two constant-pressure cylinders that provide dynamic feedback of the sample volume collected to enable ongoing performance measurement of the sampling system. The contents of each vessel can be remixed before samples are drawn for transfer to the laboratory. The entire system is built in duplex stainless steel for superior strength and corrosion resistance.

This low-uncertainty sampling solution creates a well-mixed line, ensures representative samples and real-time analysis, and maintains the quality of the samples for laboratory analysis. At the same time, it complies with all applicable NORSOK standards.



Analyzer Cabinet



Sampling Cabinet