



Oil & Gas Solutions: Complete Net Oil

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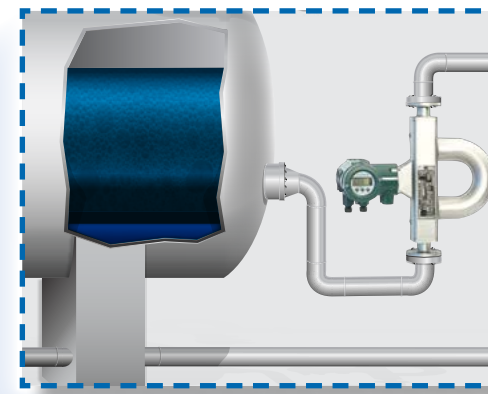
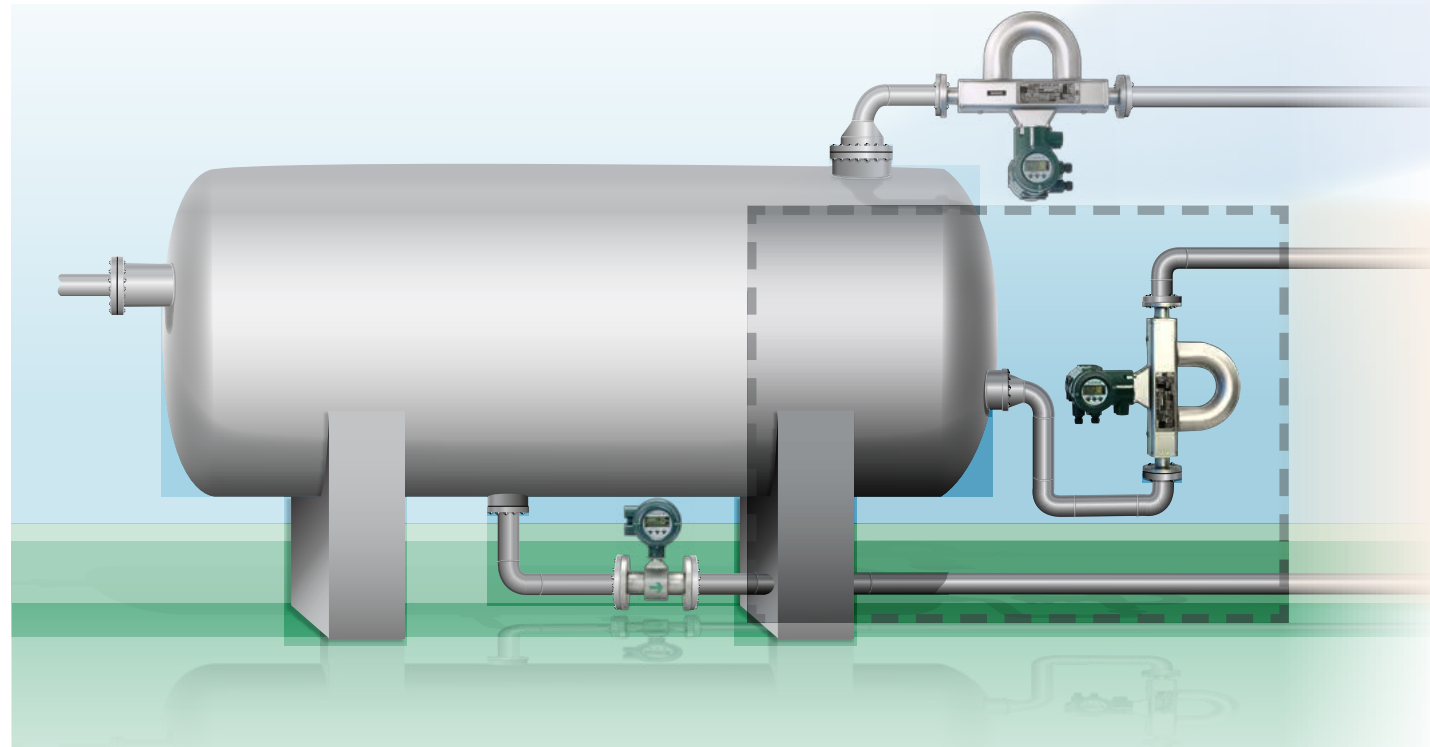
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Know What's In Your Oil - Complete Net Oil Solution

RotaMASS- Advanced Solution for Well Production

Accurately measuring total production from a well is an essential requirement for lease allocation and well performance monitoring. The obstacle faced on many wells is that separators do not completely separate the three phases of gas, oil and water. The incomplete separation leads to disparities between the amount of oil measured by the lease allocation meter and the amount of oil measured in the storage tanks. The difference can be explained by the additional settling time of the oil in the storage tank, which allows more water and gas to separate from the live oil.

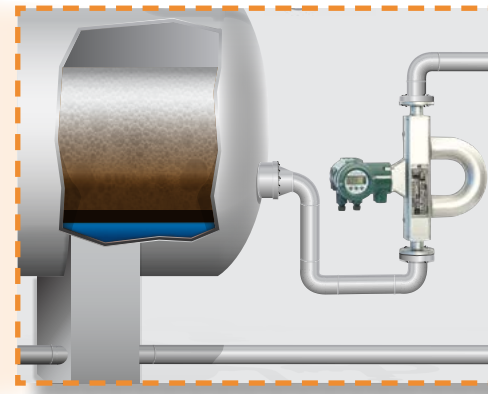
Yokogawa's patent pending technology, available in the RotaMASS Coriolis meter, provides an accurate net oil measurement even if the oil leg of the separator contains an oil/water or oil/gas emulsion. Further, the RotaMASS is the only flow meter that yields a continuous water cut measurement and gas void fraction measurement seamlessly in the same meter.



Advanced Net Oil/ Water Cut Measurement

Yokogawa's Net Oil measurement delivers real-time values of oil from the separator by utilizing precise mass flow and density measurements from the RotaMASS. The oil/water ratios are determined by combining internal algorithms with API oil density curves and the well's unique produced water properties.

Oil & Water Emulsion in the Oil Leg of a Separator: This occurs when a well produces a large amount of water and the oil/water emulsion does not have enough settling time in the separator. This allows both separated oil and some oil/water emulsion to flow over the internal weir and into the oil holding area of the separator.



Real Time Gas Void Fraction

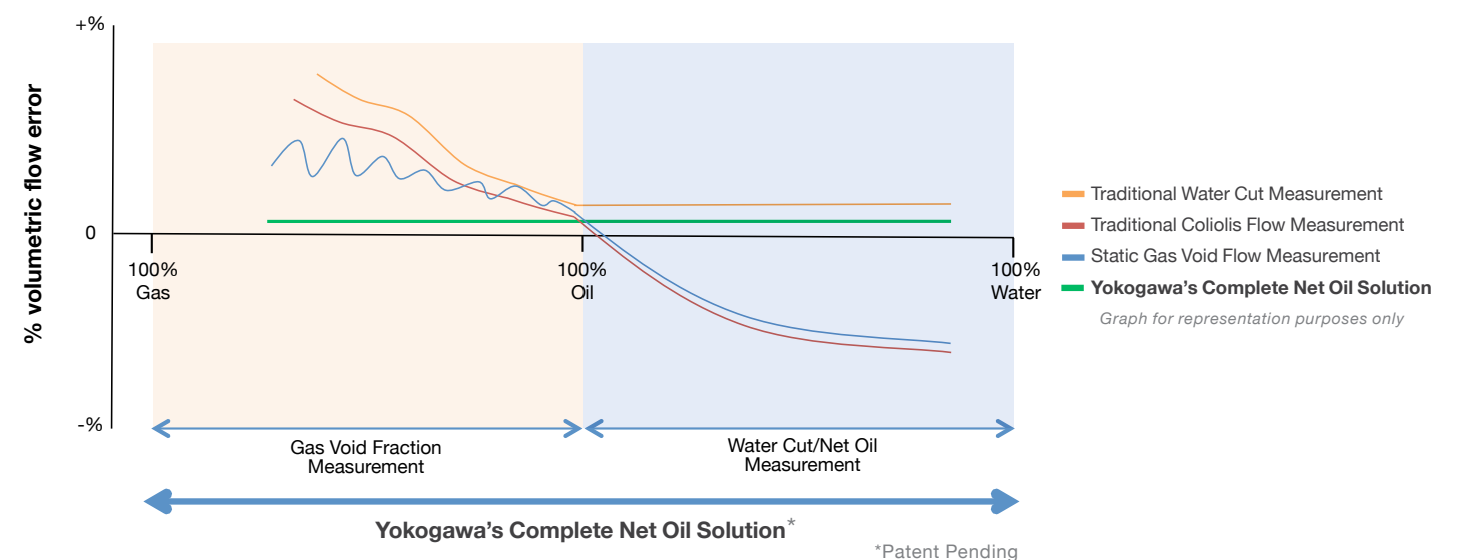
When the measured density is lower than the known density value for the oil at the specific operating temperature, the internal algorithms generate an operating density based on API density calculations, allowing for a corrected volumetric flow, negating the volume error generated by the gas.

Produced Oil & Gas Emulsion in the Oil Leg of the Separator: Oil/Gas emulsion layer is dominant and no large pure oil phase exists, typically due to short retention time or foaming at the well head.

Yokogawa's Complete Net Oil solution encompasses both the net oil and gas void fraction functionality. The RotaMASS Coriolis meter switches seamlessly between the two functions with no disruption to production or the measurement. The Complete Net Oil solution is adapted to each unique well site and is adjustable as the well changes and the field matures.

In addition to the standard RotaMASS outputs, the following information can be provided by the unit:

- Total net oil values
- API barrels correct to 60F
- Water cut values
- Gas void fraction value
- Total gross volume
- Total mass



The Wellhead and Beyond

Yokogawa's total solutions include not only the well site, but also the injection, pipeline, compressor station, and the process plant facility. Our experience for these applications can be integrated to optimize the overall operation capability and maintainability.

Increase Production and Reduce Costs Safely

Operation Center

- Asset Management & Control
- Process Historian
- Diagnostics
- Asset Performance
- Callout System



Compressor Station

- Asset Management & Control
- Remote Terminal Unit
- Multivariable Transmitters
- Communicator Device/ Platform



Well Site

- Remote Terminal Units
- Transmitters
- Flow Meters
- Enclosures
- Wireless Devices
- Solar Panels



Pipeline

- Remote Terminal Units
- Transmitters
- Cabinets
- Solar Panels



Process Plant

- Distributed Control System
- Process Safety Systems
- Process Historian
- Controllers
- Flow Meters
- Transmitters
- Analyzers

Why Yokogawa?

Yokogawa is selected by major energy companies as their automation partner due to its focus on delivering highly reliable solutions – from instrumentation to RTUs, SCADA, DCS, safety systems and integrated digital oil & gas field applications. Providing a turnkey automation solution, Yokogawa offers a wide variety of sensors and controllers that are used to monitor and operate the digital oil & gas field, as well as engineering and configuration services and support. Explore the various products and solutions to increase the efficiency and environmental performance of your wells and ensure their safe and stable operation.

vigilantplant.[®]

The clear path to operational excellence

SEE
CLEARLY

KNOW
IN ADVANCE

ACT
WITH AGILITY

VigilantPlant is Yokogawa's automation concept for safe, reliable, and profitable plant operations. VigilantPlant aims to enable an ongoing state of Operational Excellence where plant personnel are watchful and attentive, well-informed, and ready to take actions that optimize plant and business performance.

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