TechnipFMC

M-Flow Sure-Cut®

Low Water Cut Analyzer

Achieve significant operational efficiencies with Sure-Cut®

TechnipFMC and M-Flow have collaborated to deliver precision water cut measurement under changing process conditions. This partnership with M-Flow offers a fully compensated single sensor design for highly accurate measurement performance.

Delivering superior measurement accuracy

Sure-Cut® uses microwave resonant cavity sensing. Microwave resonance is recognized as the highest accuracy method for obtaining water in oil, water cut measurements. Sure-Cut® has a proven uncertainty, based on extensive laboratory validation.

The key consideration for users of water cut analyzers should be real-world field performance of the device where variations in oil type and composition, density and temperature can have a substantial impact on accuracy. Water cut analyzer users need to be aware of these factors and be confident that their device can perform in these realworld conditions. Sure-Cut® is supplied with auto-calibration software which is active when line density and temperature readings are provided in a System based around Sure-Cut®.

The Sure-Cut® analyzer's ability to compensate and maintain accuracy in a system measuring a variety of oil densities has been proven in a year long field validation trial.

The benefits

- Full range 0% to the inversion point in a single analyzer
- Full density compensation as standard
- Compatible with a wide range of oil densities and viscosities
- Unique design with no intrusions into the flow eliminates sensor fouling and damage
- Repeatable multi-year performance with no maintenance or recalibration required

Instrument performance

Water Cut range	0% to Inversion Point Inversion point varies for different oil types. Typical range is between 35-60%		
Operating ranges	Oil Gravity: 10 to 100 API Oil Density: 600 to 1000 kg / m^3 Water Density: 990 to 1240 kg / m^3		
Measurement Accuracy*		**Water cut range**	**Uncertainty**
	Laboratory calibration	0-1%	± 0.05% absolute
	Laboratory calibration	1-20%	± 0.12% absolute
	Flow loop testing (NEL)	0-32%	± 0.22% absolute
	Field performance**	0-5%	± 0.14% absolute

*Uncertainty quoted is 2 x SD to 95% confidence

** Data from 64 measurement runs, each with a 6-12 hour duration. Fluid type ranging from 17 to 37 API gravity. Uncertainty quoted is 2 x SD to 95% confidence for a 1" analyzer versus Karl Fisher analysis of API 8.2 compliant samples. Quoted numbers overstate analyzer uncertainty as they include their uncertainty of sampling and lab analysis.

Sure-Cut® Low Water Cut Analyzer

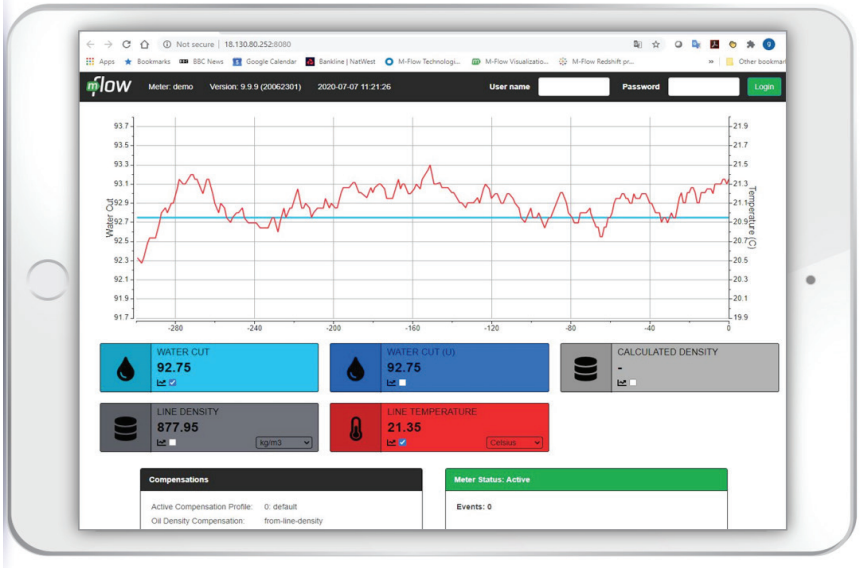
Connecting you to the digital oilfield, from anywhere in the world

Graphical interface and connectivity

- M-Flow uses a transparent system to process and present accurate production and diagnostic data
- Monitored remotely, M-Flow provides modern instrumentation for the digital oilfield
- Quality, reliable data is accessible via a secure online interface from any connected device, anywhere in the world

The benefits

- Fully digital electronics
- Continuous, rich and configurable data
- 24/7 access to real-time and historical data
- Modbus integration across SCADA, PLC
- GUI for monitoring set-up and diagnostics
- Accessible via ethernet web interface, local or remote, wired or Wi-Fi straight to laptops or handheld devices



M-Flow digital interface

Design specification

Sensor type	Microwave resonance
Water cut range	0% to inversion point
Oil density range	600 to 1000kg/m3; 10 to 100 API Gravity
Water density range	990 to 1240 Kg/m3
Sizes	50mm ID bore with 2” and 3” flange connectors
Pressure drop	0 barg (no intrusions to the flow)
Fluid temperature range	-10 to +110 degC / +14 to +230 degF
Ambient temperature range	-40 to +60 degC / -40 to + 140 degF
Hazardous area certification	ATEX, CSA, UL, II 2 (1) G Ex d [ia Ga] IIB T4 Gb
Ingress protection	IP66, NEMA 4X
Materials	Body: PEEK + carbon fiber composite Flanges: 316 Stainless Steel
Material compliance	NACE MR 0175/ISO 15156
Flange Class	ASME B16.5 rated #150 & #300 standard
Installation orientation	Horizontal and vertical

Power and communication

Power supply	Typical 24VDC (Min 18 VDC, Max 30 VDC)
Power consumption	5W
Communication	Modbus RTU and Modbus TCP
Transmission length	1200m (RS-485/TIA-485-A); 100m (Ethernet)
Display screen	2.42” OLED, 128 x 64 pixels Dimensions: 57mm x 29mm

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