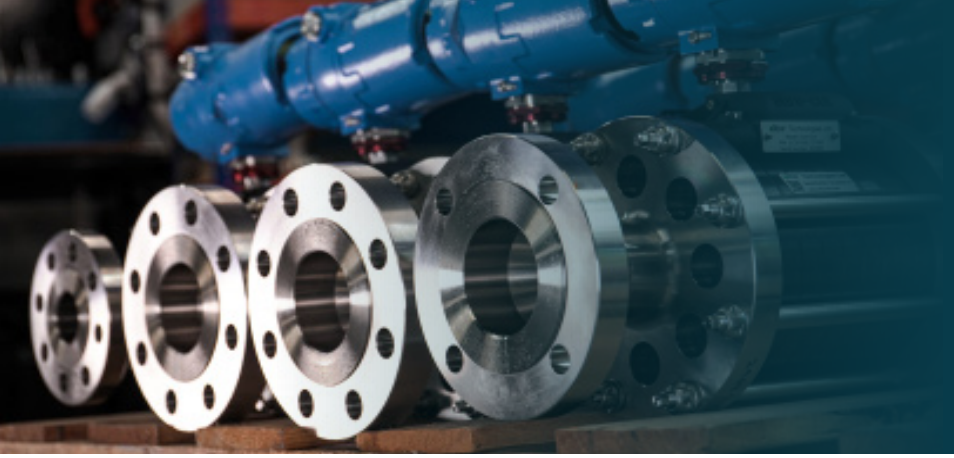
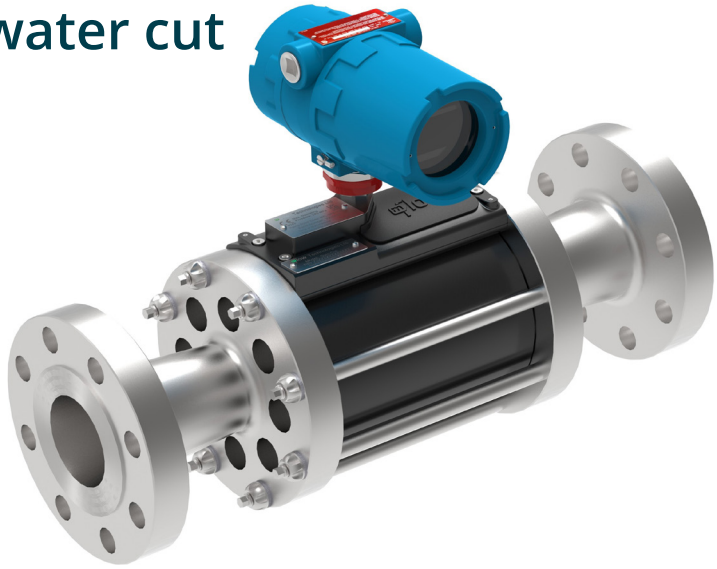


mflow Sure-Cut® Lo

Sure-Cut® Lo delivers high accuracy water cut measurement



Achieve **significant operational efficiencies** with Sure-Cut® Lo

- Single product covers 0% to the inversion point with high accuracy
- Full oil density compensation as standard
- Line density input extends range to 100% water cut
- Compatible with all oil densities and viscosities
- Unique design eliminates any contact with process fluids
- No fouling or sensor damage
- No maintenance or recalibration required
- Repeatable multi-year performance

Sure-Cut®

M-Flow Technologies Ltd
Abingdon, UK, T: +44 (0) 1235 380088
Calgary, AB CAN, T: +1 403 971 4195
www.m-flow-tech.com | info@m-flow-tech.com

Measurement Accuracy





The Sure-Cut® Lo has a proven accuracy and resolution based on laboratory validation of its microwave resonant cavity sensing.

However, the main focus of Sure-Cut® Lo development has been on field performance, when variations in oil composition, density and temperature can have a substantial impact on measurement.

Sure-Cut® Lo is supplied with auto-calibration and optimisation software to compensate for fluid changes, when connected to live line density and temperature inputs.

The ability of Sure-Cut® Lo to maintain accuracy across a variety of oil densities has been proven over multiple field trials and permanent installations.

Instrument Performance

Water Cut Range	0% to inversion point (Typical Inversion 40%)		
Operating Ranges	Oil Type/Density: Condensate to Heavy oil (600 to 1000 kg / m^3) Water Density: 990 to 1240 kg / m^3		
Instrument Accuracy*		**Water Cut Range**	**Uncertainty**
	Laboratory Validation	0 - 1%	± 0.05% absolute
		1-2.5%	± 5% relative
		2.5 - 20%	± 0.12% absolute
	Flow Loop Testing (NEL)	0 - 32%	± 0.22% absolute

**Uncertainty quoted is 2 x SD to 95% confidence vs Karl Fisher to 1% and Centrifuge above.*

Field Trial Performance

Operating Range	Oil Density: 840 to 953 kg / m^3 (17 to 37 API Gravity)
Sure-Cut Uncertainty	± 0.06%*

Data from 64 measurement runs, each within a 6-12 hour duration.

**Sure-Cut Lo uncertainty is lower than overall system uncertainty vs the auto-sampler, which was evaluated at +/-0.14%*. Half of the system uncertainty derived from densitometer measurement.*
See Water Cut Meter Case Study on www.m-flow-tech.com

***Uncertainty quoted is 2 x SD to 95% confidence for a 1" device versus Karl Fischer analysis of API 8.2 compliant auto samples. Quoted numbers overstate instrument uncertainty as they include the uncertainty of sampling and lab analysis.*

Graphical Interface and Connectivity

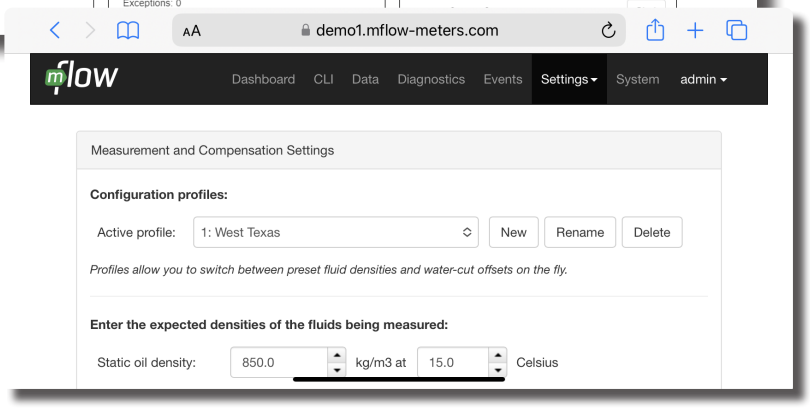
A transparent system to process and present accurate production and diagnostic data.

Reliable data is accessible remotely via a secure online interface from any connected device.

M-Flow provides modern instrumentation for the digital oilfield.



Continued display of Water Cut parameters



GUI set-up page, viewed on mobile

- Fully digital electronics deliver wide operating envelope without sacrificing precision
- Modbus 485 or TCP to flow computer, SCADA or PLC
- GUI for monitoring, set-up and diagnostics
- 24/7 access to real-time and historical data
- Accessible locally or remotely via wired or Wi-Fi connection to laptops or handheld devices

Specification Details

Design Specification

Sensor Type	Microwave
Water Cut Range	0% to Inversion Point
Sizing	1" - 6" nominal flange sizing Flow area determined on throughput.
Pressure Range	Up to 255 barg (3705 psig)*
Flange Rating	ASME B16.5 #150 upto #1500 *
Pressure Drop	0 barg achievable (no intrusion)
Fluid Temperature Range	-35 to +110° C (-31 to +230° F)
Dimensions / Weight	From 432 to 564 mm face to face / From 25 to 45 kg
Mounting	Horizontal or vertical No up/downstream requirement

**Higher pressure range and flange ratings available on request*

Hazardous Area Certification	ATEX, UKEX, IECEx, CSA, UL
Ambient Temperature Range	-40 to +60° C (-40 to +140° F) Electronics certification
Mechanical Design Temperature Range	-40 to +110° C (-40 to +230° F)
Ingress Protection	IP66, NEMA 4X
Materials	Electronics enclosure: Painted Aluminium Core: PEEK/Carbon Fibre composite Sour Service Compatible Flange (and wetted metal parts): 316 SS as standard. Other materials as options
Material Compliance	NACE MR 0175 / ISO 15156
Power	Power supply: Typical 24VDC, Min 18 VDC, Max 30 VDC Power consumption: Typical 5W

Digital Interface

Comms	Modbus RTU, Serial Settings: 19200E1 Modbus TCP: 10,100Base-T Ethernet
Transmission Length	1200 m (RS-485 / TIA-485-A) 100 m (Ethernet)
GUI	Access to System Config, Modbus Comms Set-Up, Measurement Config & System Diagnostics
Wi-Fi	Full access to Graphical User Interface (GUI)
Screen	Display: 2.42" OLED, 128 x 64 pixels Dimensions: 57mm x 29mm



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