INTELLIGENCE CLAMPED ON

Measuring **0-100% Water Cut** from outside of the pipe with high accuracy.

XSENS innovative clamp-on measurement technology is making this possible.

XSENS®
FLOW SOLUTIONS

XACT™ 0-100% WATER CUT

0-100% Water Cut measurement.
Clamped to the pipe.

ACCURACY | COST | RELIABILITY

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XACT WATER CUT 09122022

0-100% WATER CUT CLAMPED ON

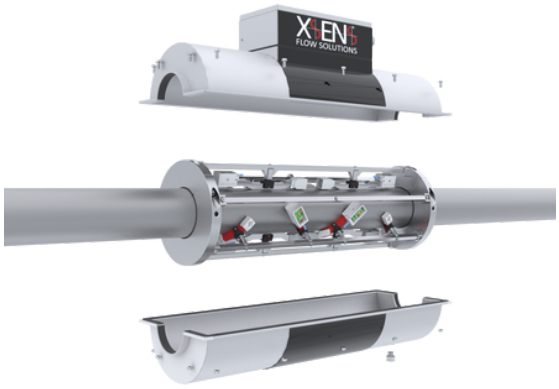
TRUE NON-INTRUSIVE 0-100% WATER-IN-OIL MEASUREMENT - FROM OUTSIDE OF THE PIPE

Clamp-on water cut meters have until now not been available in the industry. XSENS cutting edge ultrasonic technology is breaking through to provide easy-to-install and highly accurate non-intrusive water cut meters.

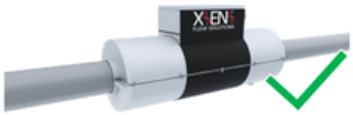
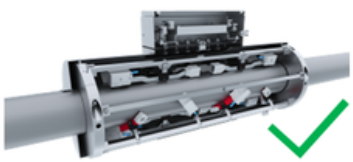
XSENS AS has together with Christian Michelsen Research AS (CMR) in Norway developed and patented a disruptive ultrasonic meter technology. This technology enables us to measure 0-100% water cut from outside of the pipe with an accuracy of +/-1% absolute in the whole range. As of today we are the only company who can do this.

The technology developed started 16 years ago with world-leading acoustics and flow measurement researchers from Norwegian Christian Michelsen Research Institute, and since 2013 through CMR spin-off company XSENS AS.

Our ground-breaking clamp-on water cut meter simplifies installation, commissioning and maintenance compared to inline meters, at comparable performance. Installed cost is significantly lower and potential leakage and clogging points are eliminated.



XSENS WATER CUT METER VS COMPETITION

	Inline water cut meters	XSENS clamp-on water cut meters
Rangeability - 0-100% water cut - High accuracy over full range	- High accuracy on narrow water cut band (ie. 0-15%) - Reduced accuracy or errors on full 0-100% range - Increasing water cut? Meter out of range over time	
Low cost installation - No production stop - Long calibration intervals - Low weight - No NDT/NDE/Pressure/Weld tests needed - No potential leakage points - No erosion, corrosion, waxing, scaling - No clogging of sensors	- Inline = Intrusive design - High installation cost - Expensive to maintain	
Low flow rate - No need for high flow rate - No mixer needed - Can be installed close to bends		

XSENS TECHNOLOGY

DISRUPTIVE INNOVATION

XSENS Clamp-on Water Cut Meter accurately measures the 0-100% Water-In-Oil (WIO) content from outside of the pipe. The disruptive XSENS ultrasound technology adds the required accuracy to clamp-on water cut measurement.

Our goals are to significantly reduce cost for trustworthy measurement in any industry, along with other clamp-on benefits, such as safety and retrofit installation.

PRINCIPLE OF OPERATION

The XSENS water cut meter is a non-invasive ultrasonic Speed Of Sound (SoS) meter, which means that it measures SoS of the combined liquid based on predetermined measured SoS values of oil and water.

The integrated temperature transmitters measure the temperature of the outside of the pipe to compensate for temperature changes. To obtain highest possible accuracy with unstable temperatures, we recommend to use an inline temperature transmitter close by as input.

RELIABILITY

The XSENS technology combines Speed of Sound and Temperature measurement to obtain high accuracy performance. XSENS water cut meters include two to six pairs of independent transducers for measurement validation and redundancy. The rugged transducers are designed for survival in any industry environment. The transducer assembly is easily installed in robust mechanical fixtures, hence covered by a stainless steel protection cover. The XSENS clamp-on flow meters are designed for 20+ years life time.

ACCURACY

The XSENS water cut meters obtain detailed fluid properties at the level of high performance in-line water cut meters. The XSENS water cut meter thoroughly investigates water cut by multiple points.

COST

XSENS clamp-on water cut meters offer significant reduction in “installed cost”. In addition to the advantageous meter cost, cost of pipe engineering is negligible and installation/ commissioning cost is a fraction of traditional inline meters. During operation and maintenance/calibration, no production interrupt is required. In total, “installed cost” is expected to fall in the range of 50% of comparable inline water cut meters.

SAFE OPERATION AND HSE COMPLIANCE

By installation of XSENS clamp-on meters, pipe integrity is never broken; XSENS clamp-on meters have no potential leak points and will not cause any risk for leakage of oil. Installation does not cause any harm or risk for personnel, as the Meter is clamped to the outside of the pressurized pipe. The meter size and weight is just a fraction of traditional meters, easy to install and reducing the CO2 footprint both in production and transport.

XSENS®
FLOW SOLUTIONS

XSENS PRODUCTS

XACT™ 0-100% WATER CUT

0-100% Water Cut measurement.
Clamped to the pipe.

WATER CUT SPECIFICATION

Service	XACT Water Cut: 0-100% Water In Oil measurement
Technology	Clamp-on guided wave ultrasound
Transducers	2-6 pairs, axial (application accuracy, functionality and/or redundancy dependent)
WIO (Water In Oil) range	0-100% WIO
WIO accuracy	+/- 1% abs.
Flow velocity range	0 - 40 m/s
Max process temperature	100 deg C (higher on request)
Environment temperature	-20 deg C to 60 deg C (higher on request)
IP class	IP 66 (higher on request)
Pipe size / pipe spec	1,5 inch (DN40) - 36 inch (DN750) / most metal pipe specs (larger pipe sizes on request)
Power supply / consumption	12-24V / 9,5 Watt
Output signal / communication	4-20mA / Modbus (WiFi, Canbus, Profibus and others on request)
Measurement output	Water In Oil [%]
Hazardous area approvals	ATEX and IECEx Zone 1 and 2
Straight pipe requirements	2-5D upstream and downstream (target)
Signal Inputs (options)	2 x Pt100, 2 x 4-20mA (others on request)

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