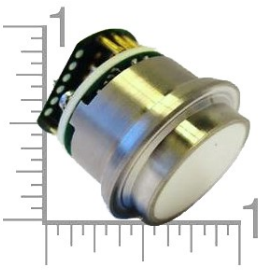
SENTECH WATER CUT METER

The Sentech Water Cut Meter Offers Some Unique Advantages:

- Full-bore measurement in any pipe diameter
- 0 – 100% water-in-oil range for all sizes
- Completely non-intrusive – introduces no pressure drop
- Suitable for two-phase and multiphase flow
- Averages measurements at multiple locations around the pipe
- Provides detection of oil/water distribution as well as water cut
- Rugged and durable all Metal and Ceramic design
- Low Power Consumption
- Excellent accuracy over a wide temperature range
- Measurement not affected by changes in salinity
    - *The meter's precision remains unaffected by variations in salinity content exceeding 0.2%*
- Our sensors deliver consistent performance in both saline and freshwater conditions

The ***SeCaP*** sensor with ceramic front and circuit board with embedded oscillator and temperature sensor measures less than 1" in all directions



Typical Applications

The Sentech Water Cut Meter measures water content in any oil-based liquid, as well as in multiphase flow (oil, water, gas). Numerous applications can be found within Oil & Gas production and processing, as well as in industries such as Marine, Chemicals, Food & Beverage etc.

- Individual oil & gas well monitoring – for instant notification of changes in water production
- Slug detection – for early warning before excess water is hitting the process facilities
- Production separator inlet monitoring – for early action before water level starts to increase
- Production separator oil outlet monitoring – for continuous assessment of separator efficiency
- Coalescers, centrifuges and dehydrators – for rapid identification of bad performers
- Heavy oil (incl. oil sands) – when viscosity, specific gravities and solids prohibit other technologies

The number of SeCaP sensors is adapted to customer preference and process conditions, only limited by physical space around the circumference of the pipe. The instantaneous readings from each sensor are averaged – both across the circumference of the pipe and over time. Although the highest accuracy is always achieved in well mixed flow, the Sentech Water Cut Meter is still able to measure in vastly unstable flow regimes (slugging) – and even on horizontal pipes with stratified flow

Design Flexibility

The Sentech Water Cut Meter is normally supplied as a flanged spool piece for in-line installation in any pipe size. This allows operator to take advantage of existing pipe routing, and avoids the requirement for extra piping, flanges and valves for bypass arrangements.

If required, the barriers can be installed in Zone 2, within a certified enclosure.

The Sentech Water Cut Meter can also be delivered as a single sensor Insertion Style Probe.

And, since the sensor easily can differentiate between oil and gas, the technology can measure both Water Fraction and Water Cut.

System and Installation

The Sentech Water Cut Meter is Certified as an Ex ia system for Hazardous Area installation in Zone 0.

A full installation consists of:

- In-line Water Cut meter
- Controller Unit

Field units with local displays for real-time monitoring and data transfer to control rooms

After installation, the instrument can easily be calibrated in-field to accommodate for changes is Oil values and compositions.

Sentech Water Cut Meter Datasheet

The specifications below apply for the traditional in-line (spool piece) version of the Sentech Water Cut Meter. The table indicates the standard options for material, sizes and process connections.

For other specifications, contact Sentech AS (post@sentech.no).

	MECHANICAL SPECIFICATIONS – METER BODY (SENSOR UNIT)
Pipe diameter (in-line)	2" – 24" and larger, sch. 40 - 80
Spool material	SS 316L, Duplex, Super Duplex or other upon request (E.g. Inconel 625)
Construction	Machined spool piece with integrated or welded flanges.
Process connections	Flanged ASME B 16.5 or B 31.3 to project specification.
Number of sensors	2-16 typical*
Design temperature	125°C, 175°C, 205°C
Design pressure	Up to 450 bar (depending on pipe schedule and flange rating)
Enclosure protection	IP66
Protective coating	Not applicable
	MECHANICAL SPECIFICATIONS – CONTROLLER UNIT ENCLOSURE
Dimensions	260 x 260 x 150 mm^3
Material	SS 316
Mounting	Stand-alone
Enclosure protection	IP66/IP67
Protective coating	Not applicable
Ambient temperature	-40°C ≤ Ta ≤ +60°C
	ELECTRICAL SPECIFICATIONS
Hazardous Area classification	Ex ia protection from Sensor Unit to Safe Area Analyzer Interface cabinet -Sensor enclosure: ATEX/IECEx II 1/(1)G Ex ia/[Ex ia] IIB T4-T2 Ga -Controller Unit enclosure: ATEX/IECEx Ex ia IIB T4 Ga -40°C ≤ Ta ≤ +60°C
ATEX certificate	Presafe 16 ATEX 8593X (Available at www.sentech.no)
IECEx certificate	PRE 14.0004X (Available at www.sentech.no and www.iecex.com)
Interface Cabinet	Available upon request, must be placed in Safe Area. Power conversion, 120/230VAC to 24VDC. IS Barrier installation, Industrial Fanless Embedded PC
Outputs	RS485 Modbus RTU and 4–20 mA IS barriers: Located in Safe Area or If required, they can be installed in Zone 2
Power consumption	< 10 W for necessary IS Barriers. (higher for interface cabinet)
Cable entry	As pr project requirement – minimum IP54
Maximum cable length	Meter Body to Controller Unit: 5 m Controller Unit to Safe Area barrier modules: 500 m
	PERFORMANCE SPECIFICATIONS
Primary measurement	% of Water in Oil
Measurement principle	Single Electrode Capacitance (SeCaP)
Measurement range	0 – 100%
Uncertainty**	0 – 1% Water: ± 0.1% (±10% of reading) 1 – 20% Water: ± 0.1% (±1% of reading) 20 – 50% Water: ± 0.1% (±0,4% of reading) 50 – 100% Water: ± 0.1% (±10% of reading)
Resolution 4-20mA	12 Bit
Resolution Modbus	16 Bit
Repeatability	± 0.1% of reading (based on 20 years field experience)

*Number of sensors will have an impact on overall accuracy of instrument

**Uncertainty is dependent on Instrument installation orientation, flow speed, and well mixed upstream flow (in oil continuous flow)