



Ultrasonics



Fluorescence



Spectroscopy

X-One-FS / X-One-FP

Laser Induced Fluorescence Oil in Water Analyser
Side-Stream and/or Inline, for Hazardous Areas

The Advanced Sensors X-One is the next generation of our incredibly successful EX range of analysers for Oil in Water measurement.

The analysers comprise a central controller with up to two measurement modules. The measurement modules are available in side stream and inline configurations for placement in a process by-pass loop (X-One-FS) or directly in a process pipe (X-One-FP) respectively. The X-One-FP and X-One-FS use Laser Induced Fluorescence (LIF) to provide continuous accurate measurements of oil concentrations in water across a wide range of oil types. Reliable real-time data enables operators to record accurate discharge measurements, react to process changes and improve process efficiency thus enabling cost reductions. The X-One additionally facilitates interconnection of 3rd party sensors to the controller via Modbus and 4-20mA inputs.

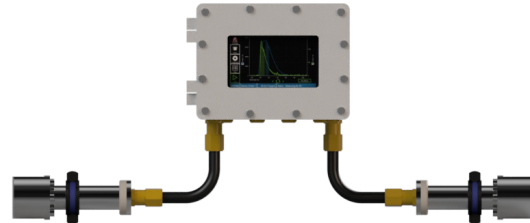
Applications

Applications include Oil in Water measurement in discharge management, process improvement, cooling water, waste-water treatment and oil leak detection. Please follow up with ASL to determine the optimum configuration for your specific application.

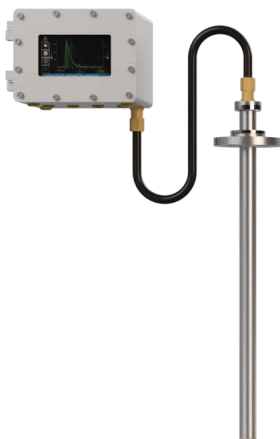
The analyser is available in 5 model configurations.



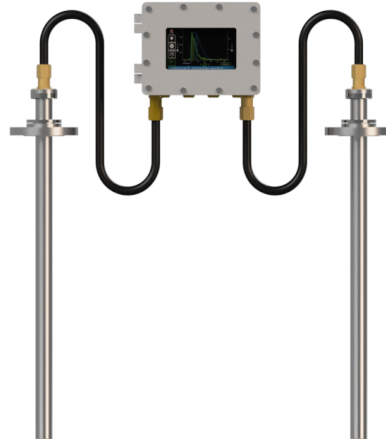
X-One-FS
Side-Stream Analyser
with one measurement cell



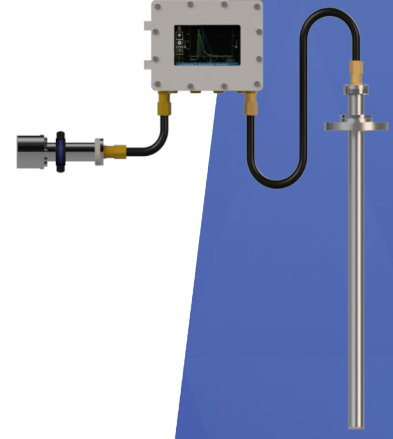
X-One-FS-FS
Dual Side-Stream Analyser
with two measurement cells



X-One-FP
Inline Analyser
with one measurement probe



X-One-FP-FP
Dual Inline Analyser
with two measurement probes



X-One-FS-FP
Side-Stream and Inline Analyser
with one measurement cell and probe



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Laser Induced Fluorescence Oil in Water Analyser
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BENEFITS

- Compact, lightweight design
- Low cost of ownership
- Independent controller acts as a hub for 3rd party and for future Advanced Sensors measurement devices
- No user required maintenance, artificial intelligence (AI) enhanced ultrasonic cleaning removes fouling build up
- Consistent accurate performance
- No sample conditioning system required
- Laser lifetime of 36 months. (Factor of 2 extension over previous generation model)
- No re-calibration required and no degradation of signal over the 36 month period
- Same sample used for analyser and lab measurement for better accuracy
- Remote control of the analyser
- Analyser outputs accessible remotely via HART, Modbus, Ethernet and 4-20mA
- Visibility of process changes provided via spectral fingerprint

FEATURES

- AI Enhanced Ultrasonic Cleaning
- Laser Induced Fluorescence [LIF]
- Dual measurement options
- Remote management and diagnostics
- Easy to install
- Spectral representation of the fluorescence signal
- Ability to connect 3rd party devices to the controller via Modbus and 4-20mA
- Database storage of all data
- Export of historical data via .PDF and .CSV files
- Optional integrated laboratory sample point



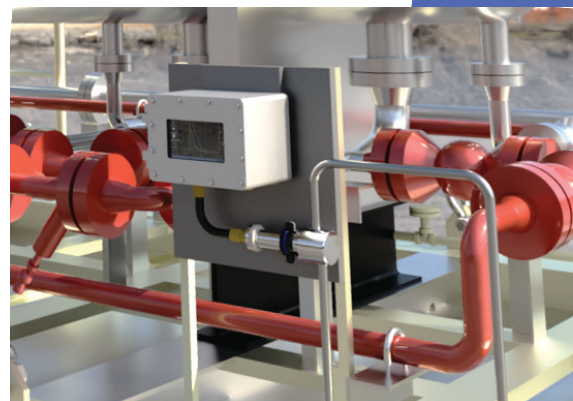
Additional for Inline/ Probe






- Hot insertion/extraction

For pressures in the range 3-5 bar_g a low pressure extraction tool is recommended. For pressures above 5 bar_g a high pressure extraction tool is required

Additional for Measurement Cell/Side-Stream

- Optional automatic compensation for oil droplet size variation (i.e. homogenisation)
- Optional flexibility of measurement cell location



| Measurement Performance | |
|--|--|
| Measurement principle | Laser Induced Fluorescence (LIF) |
| Cleaning principle | AI Enhanced Ultrasonic Cleaning (automatic) |
| Range | 0-20,000 ppm ↗ |
| Repeatability | ±1% of measurement range ⊕ |
| Accuracy | ±1% of measurement range ⊕ |
| Measurement frequency | 1 Second intervals, continuous results ⊕ |
| Operating Conditions | |
| Process temperature | Up to 200°C |
| Operating pressure | Up to 104 bar _a |
| Design pressure | Up to 312 bar _a |
| Process velocity with Probe | Nominal 10 m/s ↻ |
| Process flow with Measurement Cell | Up to 25 l/m ↻ |
| Ambient Conditions | |
| Ambient temperature for operation | -20°C to +60°C |
| Spectrometer Specification | |
| Measurement wavelength range | 475-1,050 nm |
| Pixel resolution | 0.24 nm |
| Utilities | |
| Power supply | 100 to 240 VAC |
| Power frequency | 50 or 60 Hz |
| Power consumption | 25W normal, 150W peak |
| Certification | |
| Ingress protection | IP rated for both IP66 and IP68 |
| Enclosure classification | NEMA 4X |
| USA + Canada Controller |  Class 1 Div 2 Groups C,D, T6 Ta=-20°C to +60°C |
| USA+Canada (Probe or Cell) |  Class 1 Div 2 Groups C,D, T5 Ta=-20°C to +60°C Max. Liquid Temperature -100oC Or Class 1 Div 2 Groups C,D, T3 Ta=-20°C to +60°C Max. Liquid Temperature -200oC |
| IECEX Controller |  II 2 G Ex db [op is IIC T4 Gb] IIB T6 Gb Ta = -20°C to +60°C |
| IECEX Cell or Probe |  II 2G Ex db [op is IIC T4 Gb] IIB T5 Gb Ta = -20°C to +60°C Max. Liquid temperature 100°C or II 2G Ex db [op is IIC T4 Gb] IIB T3 Gb Ta = -20°C to +60°C Max. liquid temperature 200°C |
| Brazil | Inmetro |
| UK | UKCA |
| CE compliant |  |
| Communications, Storage & Access | |
| 2 x 4-20 mA Output | Can be configured as passive or active at the factory Configurable measurement reporting |
| 1 x 4-20 mA Input | Readings from external measurement device displayed at the controller interface |
| Up to 4 x Digital Inputs Up to 3 x Digital Outputs (Dry contacts) | Start/Stop cycle control Configurable as alarm contacts |
| Remote access | Windows Remote Desktop |
| Internal data storage | >10 years |
| User passwords | 3 level password protection |

| Weight & Dimensions | | |
|---|---|---|
| Weight | Controller | 24 Kg |
| | Measurement Probe | 6 Kg |
| | Measurement Cell | 3.5Kg |
| Dimensions | Controller | L 280 mm x H 200 mm x D 195 mm |
| | Measurement Probe | Up to 1m Length with 38mm Diameter Longer probe lengths on request |
| | Measurement Cell | L 225 mm Diameter 76.5mm (Max) |
| Optional Communications | | |
| HART | Hart version 7 | |
| Modbus RTU output | Modbus tables provided on request | |
| Modbus RTU input | Enables connection of an external measurement device ✱ | |
| Extended Ethernet | 2 wire connection, capable of up to 1.3km | |
| Additional Information | | |
| Cable entries | 8 x M20 | |
| Wetted components | Stainless Steel 316L, 25 Cr Duplex, 22 Cr Duplex, Hastelloy C-276, Monel 400, Inconel 625, Incoloy 825 and other options available on request | |
| Controller material | Stainless Steel 316L | |
| Conduit length | Up to 30m | |
| Dual Cell X-One-FS-FS Probe and cell X-One-FS-FP Dual Probe X-One-FP-FP | Allows dual simultaneous measurement | |
| Analyser Stand | Optional | |
| Additional Information Cell | | |
| Process connection | ½" NPT Connection (additional optional connections available e.g. flanged connections) | |
| Optional ultrasonic homogenisation | Facilitated via an optional flow valve | |
| Additional Information Probe | | |
| Hot insertion/extraction | Up to 104 bar _g | |
| Flange fitting | 2" ASME RF 150#, 300#, 600# (various other flange ratings and sizes available upon request) | |

Laser Radiation. Avoid direct eye exposure. Class 3R Laser product

⌚ Dependent on sample matrix & instrument configuration. User may select any desired measurement from 0-10 ppm, 0-100 ppm [...] up to 20,000 ppm

⊕ Under ideal conditions, with a homogenised sample.

Note: Lab calibration with potable water and following ASL standards preparation method can achieve accuracy and repeatability of +/-1% of calibrated range.

⌚ Option to extend the interval via software

⌚ For Higher flow rates contact Advanced Sensors

✱ Contact ASL for assistance with device integration

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