Advanced sensors by PAC

Ultrasonics Fluorescence Spectroscopy

X-One-FS / X-One-FP

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

Introducing the Advanced Sensors by PAC X-One, the next generation of our highly successful EX range of analysers for Oil in Water measurement. The X-One system includes a central controller with up to two measurement modules, available in side stream and inline configurations for easy placement in a process bypass loop (X-One-FS) or directly in a process pipe (X-One-FP).

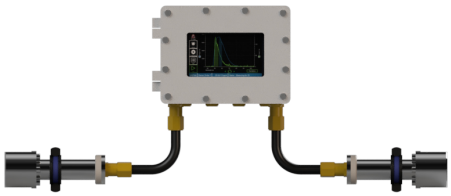
Using Laser Induced Fluorescence (LIF), the X-One-FP and X-One-FS provide continuous, accurate measurements of oil concentrations in water across a wide range of oil types. The reliable real-time data enables operators to record precise discharge measurements, react to process changes, and improve process efficiency, resulting in cost reductions. Additionally, the X-One allows for easy interconnection of 3rd party sensors to the controller via Modbus and 4-20mA inputs.

Applications

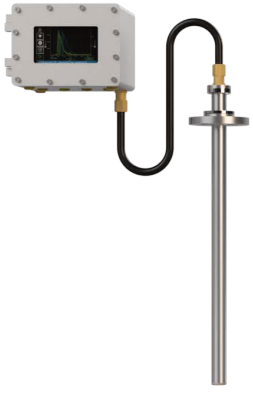
The X-One has many applications, including Oil in Water measurement in discharge management, process improvement, cooling water, wastewater treatment, and oil leak detection. Contact ASL to determine the best configuration for your specific application.

The analyser is available in 5 model configurations.

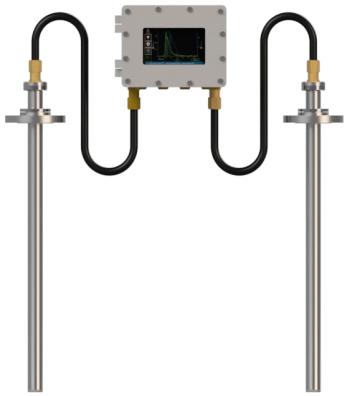
X-One-FS
Side-Stream Analyser
with one measurement cell



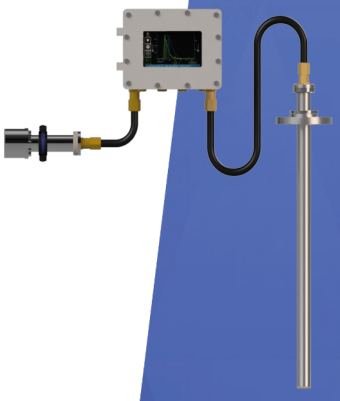
X-One-FS-FS
Dual Side-Stream Analyser
with two measurement cells



X-One-FP
Inline Analyser
with one measurement probe



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



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

8 Meadowbank Road, Carrickfergus, N. Ireland, BT38 8YF, **UK**
Tel: +44(0) 28 93 32 89 22
Email: sales@advancedsensors.co.uk
Web: www.advancedsensors.co.uk

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BENEFITS

- Low cost of ownership
- Independent controller acts as a hub for 3rd party and for future Advanced Sensors measurement devices
- No user required maintenance, 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 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

- 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

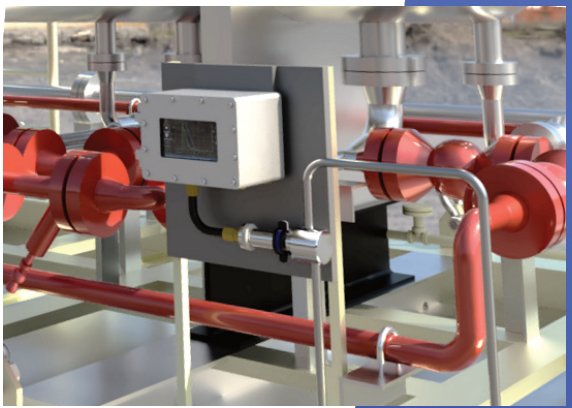
Additional for Inline/ Probe

- 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 control valve and sampling point
- Optional flexibility of measurement cell location



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Measurement Performance	
Measurement principle	Laser Induced Fluorescence (LIF)
Cleaning principle	Enhanced Ultrasonic Cleaning (automatic)
Range	0-20,000 ppm
Repeatability	±1% of measurement range
Accuracy	±1% of measurement range
Measurement frequency	Min 1 Second intervals, continuous results
Operating Conditions	
Process temperature	Up to 200°C
Operating pressure	Up to 104 bar_g
Design pressure	Up to 312 bar_g
Process velocity with Probe	Nominal 10 m/s
Process flow with Measurement Cell	Up to 25 l/m
Ambient Conditions	
Certified for use between	-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, 180W max
Certification	
Ingress protection	IP rated for both IP66 and IP68
Enclosure classification	Type 4X
USA+Canada	Class 1 Div 2 Groups C,D, T4 Ta =-20°C to +60°C Max. Liquid Temperature -135°C Or Class 1 Div 2 Groups C,D, T3 Ta =-20°C to +60°C Max. Liquid Temperature -200°C Class 1 Zone 2, AEx d IIB, T4 Ta =-20°C to +60°C Max. Liquid Temperature -135°C Or Class 1 Zone 2, AEx d IIB, T3 Ta =-20°C to +60°C Max. Liquid Temperature -200°C
ATEX and IECEx	Ex db IIB T4 Gb Ta = -20°C to +60°C Max. Liquid temperature 135°C Or Ex db IIB T3 Gb Ta = -20°C to +60°C Max. liquid temperature 200°C
Brazil	Inmetro
CE compliant	CE
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 5 x Digital Inputs (Adding valves to the configuration will reduce the number) 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 Measurement Probe Measurement Cell	24 Kg 6 Kg 3.5Kg
Dimensions	Controller Measurement Probe Measurement Cell	L 280 mm x H 200 mm x D 195 mm Up to 1m Length with 38mm Diameter Longer probe lengths on request 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	7 x M20	
Options for wetted components include	Stainless Steel 316L, 25 Cr Duplex, 22 Cr Duplex, Hastelloy C-276, Monel 400, Inconel 625, Incoloy 825 and 6Mo	
Controller material	Stainless Steel 316L	
Conduit length	Up to 10m (for longer lengths please contact Advanced Sensors)	
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 (FS Models)		
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 (FP Models)		
Hot insertion/extraction	Up to 20 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.

Laser classification as per IEC60825 is Class 2 and Compliant with IEC60825-1 class 1 thermal limits.

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, min time will depend on the oil being measured

For Higher flow rates contact Advanced Sensors

⁂ Contact ASL for assistance with device integration

Contact Us

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