

Targeting Oil in Water



Argus® Environment

Oil in Water monitor for low pressure applications

Argus Environment monitors Oil in Water (OiW) concentrations at water discharge to the environment, online and real time. Oil & Gas operators are given effective means to comply with HS&E regulations and reduce OiW levels without the need for manual water sampling and laboratory analysis.

Key benefits

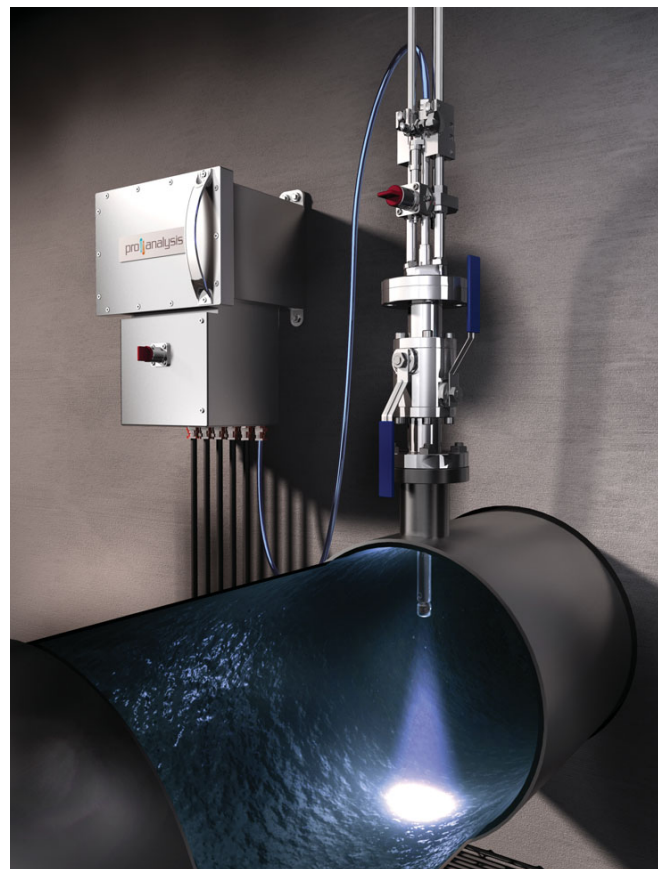
- **Replaces manual sampling** and laboratory analysis, eliminating / minimising costs associated with such activities
- Prevents significant oil discharges by means of immediate **alarm** when OiW levels exceed a defined limit
- Is **easy to install**, no complex and expensive bypass loop required
- Is **maintenance-free***, compared to the high level of manual maintenance associated with traditional (bypass) OiW monitors
- Facilitates **remote monitoring** of OiW (offshore or onshore), fully integrated with industry standard control systems

The Argus® technology

ProAnalysis delivers unique high-end technology for Oil in Water (OiW) monitoring. The Argus range of online OiW monitors has been developed in close cooperation with major Oil & Gas operators in the North Sea, and provides accurate and reliable measurements of OiW concentrations online and real time, with the following main features:

- **Robust** measurement principle: Fluorescence
- **In-line** probe (retractable): No bypass loop required
- Automated ultrasound-based **self-cleaning**: Eliminate in-line probe contamination
- **Maintenance-free***: Eliminates high maintenance associated with bypass systems
- **Low installation costs**: Simple installation through a single flange

* Annual service agreement is a prerequisite to ensure maintenance-free operation.



Argus® Environment

Technical specification

Measurement

Description	
Measurement principle	(Laser-Induced) Fluorescence
Sensor probe configuration	Inline
Number of measuring points per instrument / system	1 - 2 (standard). Additional measuring points available upon request
Measurement range (min. / max.)	0 – 10...1000 mg/l. For extended range (> 1000 mg/l), contact ProAnalysis
Measurement accuracy	< ± 10 %. Note 1
Repeatability within measurement range	≤ 5 %. Note 1
Sampling frequency	Max. 1 sample per second

Operational conditions

Description	
Min. / max. process temperature	5 / 120 °C
Min. / max. ambient temperature	-10 / 60 °C. Note 2
Design pressure	20 barg
Max. operating pressure	20 barg
Max. pressure under probe insertion / retraction	3 barg
Pressure rating	API 150#
Min. / max. pipe dimension	≥ 4" / DN100
Flow velocity	< 10 m/s

Physical data

Description	
Main components of Argus Environment	<ol style="list-style-type: none"> 1. Enclosure in appropriate material (316SS/Al/GRP) 2. Inline probe with retraction tool 3. Special armoured fibre/ultrasound cables between enclosure and inline probe (max. length 100 m)
Enclosure	Hazardous zone (Ex): Typical size 500 x 800 x 400 (w x h x d, in mm) Typical weight 100 kg Safe zone (non-Ex): 19" rack mounted
Process connection	Probe installed directly into the process line via a retraction tool and isolation valve(s). Valve requirements: Full bore ball valve(s). Available standard dimensions and pressure classes: 2" (DN50), 150# RF ANSI B16.5
Connection flange orientation	0 – 360°
Probe insertion length	Insertion length maximum 550 mm from underneath retraction tool flange. Probe is recommended inserted within central 1/3 of pipe i.d.
Standard probe length	1200 mm
Required length for probe installation and maintenance	A free length of 1600 mm measured backwards from flange surface on retraction tool should be available for probe installation and maintenance.
Material, probe and retraction tool	Wetted parts: 22Cr Duplex (UNS S31803), titanium gr. 5 Non-wetted parts: 316SS
Weight, probe and retraction tool	Typical 17 kg

Notes:

1. Accuracy and repeatability figures given refer to measurements of stable fluorescent objects (liquids or solids).
2. For ambient temperatures ≥ 40 °C, instrument air is required.

Calibration

Description	
Calibration requirement	Yes. Calibration intervals will depend on specific application and operator and / or authority requirements and regulations.
Extent of calibration automation	Standard field calibration may involve manual sampling and analysis of water samples over the appropriate measurement range. Calculated calibration factors are implemented via the instrument user interface Argus Manager.

Certification

Description	
Instrument is certified in accordance with:	1. 97/23/EC for pressure equipment, module: B1+F
	2. 94/9/EC ATEX, EEx de [ia] IIB T6 (Zone 1)
	3. IEC 60825-1:2007/EN 60825-1:2007 Class 1M (laser safety)
	4. CSA / US certification pending

Electrical interface

Description	
Supply voltage	220 – 240 VAC, 50/60 Hz (110 VAC available on request)
Power consumption	Less than 100 W (average)

Instrument interface

Description	
Serial	Modbus RS-422 or RS-485 hard wire RS-485 can also be delivered for fibre cable
Ethernet	Ethernet fibre cable (standard) or hard wire (optional)
Analogue (EExi)	4 - 20 mA HART (optional)

Automatic cleaning of inline probe

Description	
Cleaning technology (patent pending)	Ultrasound – no manual cleaning required
Cleaning intervals	Configurable