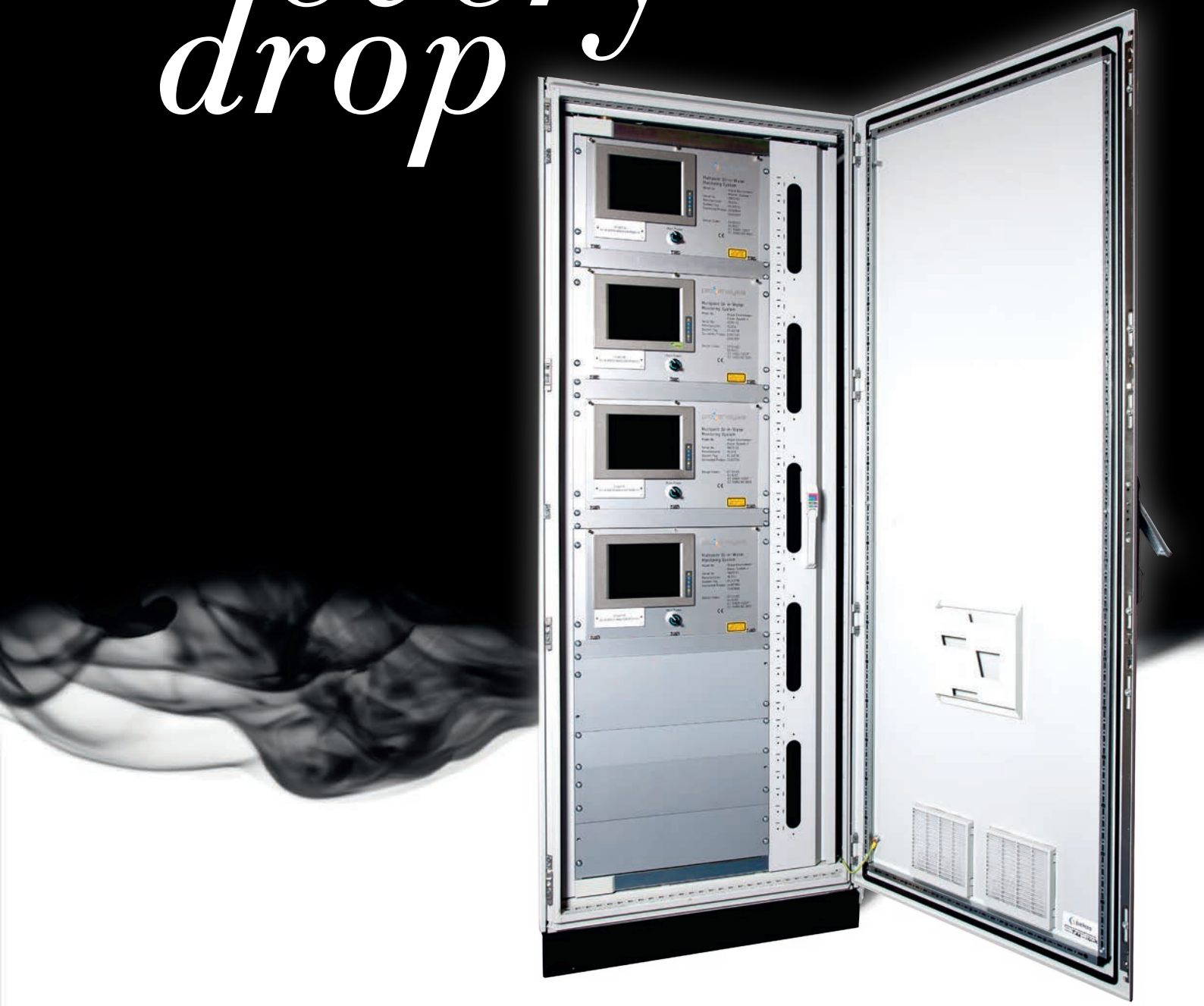
pro analysis

ARGUS®
UNIQUE OIL IN WATER MONITORING

Spots every drop



ARGUS MULTIPOINT

Multiple Oil in Water measurement points in one system

- *Several in-line measurement probes*
- *Same central control unit*
- *Low-pressure and high-pressure*
- *Customized system design*
- *One interface*

The Argus® design enables several in-line measurement probes to be connected to the same central control unit through fibre-optic cable. In a multipoint Oil in Water monitoring system both low-pressure and high-pressure measurement points can be implemented. The control unit can be located in a hazardous area or a safe area. Flexibility of the Argus® technology makes ProAnalysis able to design systems that custom fits customer needs.

HAZARDOUS AREA EX UNIT - UP TO 4 IN-LINE PROBES

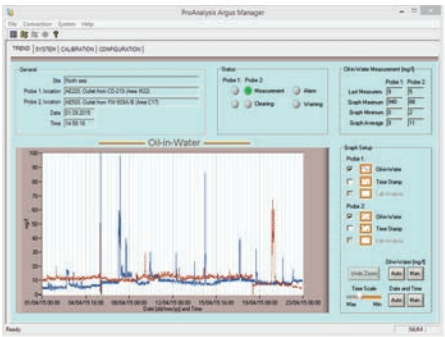
Up to 4 in-line measurement probes can be connected to the ATEX certified field enclosure housing the Argus contol unit (laser, optics, electronics etc.). A typical setup includes one measurement point at the inlet to the produced water treatment system, one measurement point at the outlet, and - if needed - one or two measurement points at different stages of the process. Such a system provides unique control and information about the efficiency of the produced water system.

SAFE AREA CABINET - UP TO 12 IN-LINE PROBES

Locating the control unit in a safe area (instrument room or similar) enables up to 12 in-line measurement probes to be connected to the control unit. From one complete Oil in Water monitoring system, one or several produced water treatment trains or systems can be monitored and controlled (before and after treatment, between hydrocyclones etc.). Operators get the full picture of the performance of the different systems, and are able to make qualified decisions based on real-time process data.

KEY BENEFITS

- Significantly reduced cost per measurement point compared to using separate Oil in Water monitors at each measurement point. Costs are reduced at all levels - initial investment, installation costs and service costs.
- Efficient produced water process control and optimization. Monitoring each step of the process enables immediate and accurate response, improving the performance of the produced water treatment system.
- Low space requirements eliminating the need for several separate instruments.
- Condition based maintenance of process equipment.
- Cost reductions from improved water treatment (chemicals etc.)
- Up to 200 m optical Fibre cable between in-line probe and control unit



MEASUREMENT

Measurement principle
Laser Induced fluorescence (LIF)
Sensor probe configuration
In-line
Number of measuring points per control unit 1 or 2
Number of measuring points per system 1 – 12
Measurement range oil in water
0 –3000 mg/l Note 1
Measurement repeatability oil in water < ± 1 % Note 2
Measurement range
Turbidity: 0 – 1000 FNU
TSS: 0 – 100 mg/l
Sampling frequency
1 sample per second

OPERATIONAL CONDITIONS

Process temperature
-29 – 149 °C
Ambient temperature
-20 – 65 °C Note 3
Design / operating pressure
0 – 50 barg
Pipe dimension ≥ 2”
Flow velocity < 10 m/s

MAIN COMPONENTS

1. Control unit (electronics and communication)
2. In-line probe
3. Retraction tool for safe probe extraction under pressure
4. Cable connection between probe and control unit

PROCESS CONNECTION

2” 150/300/600# RF/RTJ flange

Connection flange orientation
0 - 360°
Probe insertion length
Recommended 1/3 of pipe ID
Standard material, probe and retraction tool wetted parts
22Cr Duplex (UNS S31803), titanium gr.5 Note 4
Weight, probe and retraction tool
typical 17-35 kg

CERTIFICATION

Instrument is certified in accordance with

1. 97/23/EC Pressure Equipment Directive, module: A, A1
2. 94/9/EC ATEX Directive, Ex de [ia] IIB T6 (Zone 1)
3. 06/95/EC Low Voltage Directive
4. 04/108/EC EMC Directive

POWER SUPPLY

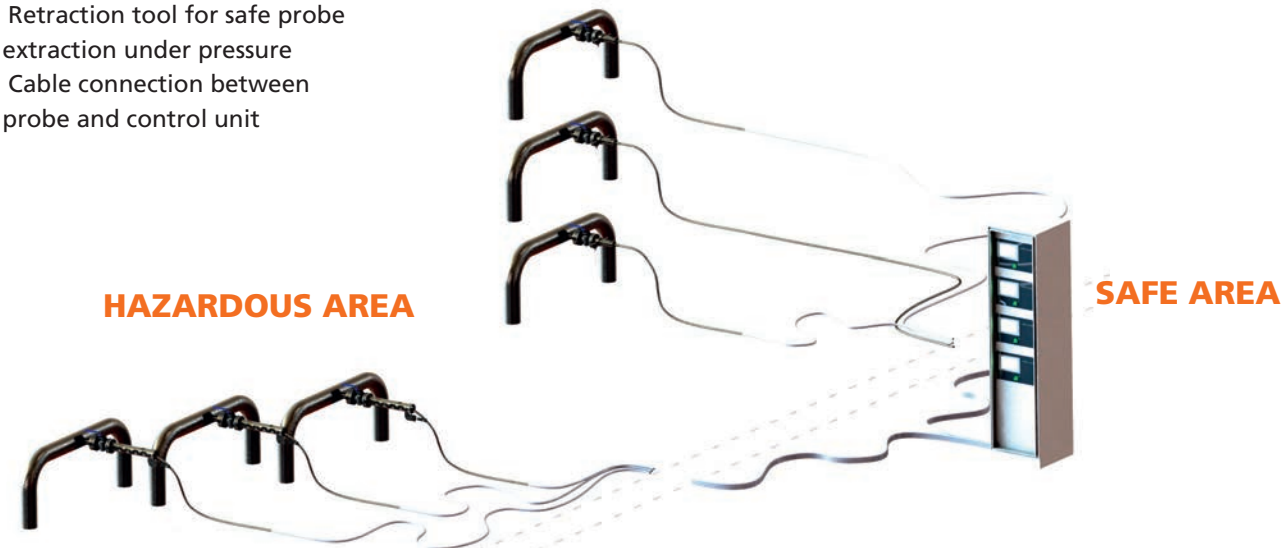
Supply voltage Control unit
220 – 240 VAC, 50/60 Hz, 16A
(110 VAC, 50/60 Hz, 16A)
Power consumption
200 -300 W (average)

HYDRAULIC SUPPLY

Supply Pressure
Typical 150 – 200 bar, 4-6 l/min. *Note 5*

INSTRUMENT INTERFACE

Serial
Modbus RS422 or RS485
hard- wired (standard).
Ethernet
Ethernet hard wire (standard)
Ethernet 10/100 Mbps,
hard wire (standard)
Analogue
(Exi) 4 - 20 mA, HART (optional)
Self-cleaning technology (Patented)
Ultrasonic cleaning
Cleaning intervals - Configurable



ARGUS®

UNIQUE OIL IN WATER MONITORING

MODEL CODE SYSTEM

ARGUS CONTROL UNIT	1	2	3	4	5
E.G.	1EX	M	A	1	A

The example will specify an OiW monitor with following: One control unit in SS316 Exd enclosure in field with Modbus Comm. Interface, 220/230 VAC 50-60 Hz 16A circuit, Ambient Temperatures below 40 °C, and standard documentation package.

1 CONTROL UNIT PROPERTIES

xEX	x number of Exde enclosure in SS316 for hazardous area
xS19	x number of Safe Area 19" Rack
xSWC	x number of Safe Area Wall Cabinet

Note: Each control unit can have up to two probes. There can be up to 12 probes per interface.

2 COMMUNICATION INTERFACE

M	4-20 mA, Ethernet and MODBUS RS 422/485 all hardwire (standard)
H	4-20 mA, Ethernet and HART all hardwire

3 POWER SUPPLY

A	220/230 VAC, 50-60 Hz, 16A (standard)
B	110 VAC, 50-60 Hz, 16A

4 AMBIENT TEMPERATURES

1	Below 40 Deg. C
2	Above 40 Deg. C

5 DOCUMENTATION

A	Standard documentation
B	Standard documentation with client specific front page
C	Project specific documentation

ARGUS PROBE	6	7	8	9	10	11	12
E.G.	2	Z	40	D	15	0	Y
	2	Z	50	D	15	0	Y

The example will specify an OiW monitor with following: One double probe system with RT-ZC retraction tool, 40 meters for probe one and 50 meters for probe two of field fibre cable, wetted parts in duplex, 150# RF flange, no manual sample points and with local display.

6 NUMBER OF PROBES PER UNIT

1	Single probe system
2	Double probe system

7 RETRACTION TOOL

C	RT-C retraction tool (standard)
Z	RT-ZC retraction tool
H	RT-H retraction tool

8 FIELD FIBER CABLE

XX	XX-meters cable for probe 1
YY	YY-meters cable for probe 2

9 PROBE, WETTED PARTS

D	Duplex (UNS S31803) (standard)
SD	Super duplex (UNS S32750)
SS	Stainless Steel 316L

Note: Other materials after request.

10 FLANGE DIMENTIONS

15	150# RF
30	300# RF
60	600# RF
6J	600# RTJ

11 SAMPLE POINT IN PROBE SHIELD

0	No manual sample point (standard)
1N	Manual sample point, ½" NPT
1F	Manual sample point, ½" flanged

12 LOCAL EX(I) DISPLAY

Y	Yes
N	No

proanalysis

FOR FURTHER INFORMATION
ProAnalysis AS Norway
Telephone: (+47) 55 21 00 60
Fax: (+47) 55 21 00 61
contact@proanalysis.no
www.oilinwater.com