Spots every drop

ARGUS
Reliable and continuous measurements of Oil in Water
Pioneering in-line Oil in Water (OiW) measurements
Well-proven high performance
Retractable under operation
Automatic self-cleaning system
Multipoint system

KEY FEATURES
- Unique in-line probe design
- Robust measurement principle: Laser Induced Fluorescence
- Retractable in-line probe, all pressure ranges, no bypass loop required
- Patented automatic ultrasound self-cleaning
- Remote monitoring of OiW (offshore or onshore), fully integrated with industry standard control systems
- Safe area installation
- Multipoint system
- Wireless communication

KEY BENEFITS
- Continuous measurements
- Improves performance of produced water treatment systems
- Minimises OiW discharges
- Reduces the use of chemicals
- Low maintenance
- Low installation costs
- Replaces manual sampling and laboratory analysis
- Prevents significant oil discharges, immediate alarm when OiW levels exceed a defined limit
- Valve shut down function on high oil concentration

ONE OIW SYSTEM – 12 MEASUREMENT POINTS
The Argus® OiW Multipoint System simplifies installation and integration time by providing the customer only one interface for up to 12 measurement probes. The result is significant cost reductions. The OiW system can be located both in hazardous zone or safe area.

RETRACTION TOOLS FOR DIFFERENT APPLICATIONS

RT-H
Hydraulic retraction tool for operating pressures up to 100 barg

RT-ZC
For increased personnel safety at operating pressures up to 4 barg (Statoil standard)

RT-C
Standard retraction tool for operating pressures up to 2 barg
**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

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

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## ARGUS CONTROL UNIT

**Example:** 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.

<table>
<thead>
<tr>
<th>1</th>
<th>CONTROL UNIT PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>xEX</td>
<td>x number of Exd enclosure in SS316 for hazardous area</td>
</tr>
<tr>
<td>xS19</td>
<td>x number of Safe Area 19” Rack</td>
</tr>
<tr>
<td>xSWC</td>
<td>x number of Safe Area Wall Cabinet</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>2</th>
<th>COMMUNICATION INTERFACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>4-20 mA, Ethernet and MODBUS RS 422/485 all hardwire (standard)</td>
</tr>
<tr>
<td>H</td>
<td>4-20 mA, Ethernet and HART all hardwire</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>POWER SUPPLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>220/230 VAC, 50-60 Hz, 16A (standard)</td>
</tr>
<tr>
<td>B</td>
<td>110 VAC, 50-60 Hz, 16A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th>AMBIENT TEMPERATURES</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Below 40 Deg. C</td>
</tr>
<tr>
<td>2</td>
<td>Above 40 Deg. C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>DOCUMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Standard documentation</td>
</tr>
<tr>
<td>B</td>
<td>Standard documentation with client specific front page</td>
</tr>
<tr>
<td>C</td>
<td>Project specific documentation</td>
</tr>
</tbody>
</table>

## ARGUS PROBE

**Example:** 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.

<table>
<thead>
<tr>
<th>6</th>
<th>NUMBER OF PROBES PER UNIT</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Single probe system</td>
</tr>
<tr>
<td>2</td>
<td>Double probe system</td>
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<table>
<thead>
<tr>
<th>7</th>
<th>RETRACTION TOOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>RT-C retraction tool (standard)</td>
</tr>
<tr>
<td>Z</td>
<td>RT-ZC retraction tool</td>
</tr>
<tr>
<td>H</td>
<td>RT-H retraction tool</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8</th>
<th>FIELD FIBER CABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX</td>
<td>XX-meters cable for probe 1</td>
</tr>
<tr>
<td>YY</td>
<td>YY-meters cable for probe 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9</th>
<th>PROBE, WETTED PARTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Duplex (UNS S31803) (standard)</td>
</tr>
<tr>
<td>SD</td>
<td>Super duplex (UNS S32750)</td>
</tr>
<tr>
<td>SS</td>
<td>Stainless Steel 316L</td>
</tr>
</tbody>
</table>

*Note: Other materials after request.*

<table>
<thead>
<tr>
<th>10</th>
<th>FLANGE DIMENTS</th>
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<tbody>
<tr>
<td>15</td>
<td>150# RF</td>
</tr>
<tr>
<td>30</td>
<td>300# RF</td>
</tr>
<tr>
<td>60</td>
<td>600# RF</td>
</tr>
<tr>
<td>6J</td>
<td>600# RTJ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11</th>
<th>SAMPLE POINT IN PROBE SHIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No manual sample point (standard)</td>
</tr>
<tr>
<td>1N</td>
<td>Manual sample point, ½” NPT</td>
</tr>
<tr>
<td>1F</td>
<td>Manual sample point, ½” flanged</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12</th>
<th>LOCAL EX(I) DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>No</td>
</tr>
</tbody>
</table>

For further information
ProAnalysis AS Norway
Telephone: (+47) 55 21 00 60
Fax: (+47) 55 21 00 61
contact@proanalysis.no
www.oilinwater.com