non-intrusive ultrasonic sensors for corrosion/erosion monitoring

Sensor Networks’ smartPIMS® Datalogger non-intrusive ultrasonic corrosion/erosion monitoring system is equipped with onboard battery and memory that can store up to 3000 thickness readings. It takes measurements at any user-defined time interval, storing them for manual offload to tablet or PC via RS-485 cable. Use smartPIMS® Datalogger for:

- Applications where frequent measurements are required, but wireless infrastructure is not available.
- Situations where wireless infrastructure is not available.

**monitor corrosion rate**
resolution to 0.001" (0.025mm) • high-risk areas • historically problematic locations

**monitor “low spots”**
post-NDE screening of pits to monitor remaining thickness • measures down to 0.040” (1.02mm)

**replace/augment intrusive methods**
validation of coupons, ER probes, etc.

**reduce costs**
reduce scaffolding and insulation removal/retfitting for internal corrosion monitoring • more accurate/reliable data improving operations

Operates on battery (2 years at 1 reading/day).
Stores 3000 readings (each w/ time, date, waveform).
Connects via Modbus (RS-485) to tablet/PC.
Offloads data to XML/CSV file or directly to webPIMS.
Offers 16 single- or 8 dual-element UT probe channels.
Transducers maintain 1 mil (0.001" / 0.025mm) resolution and 0.040" (1mm) minimum wall thickness.
Transducers withstand -22°F (-30°C) to 932°F (500°C).
Sensors install buried or above-ground, temporarily or permanently.

ATEX, IECEx, UL/CSA and Japanese hazardous-area certifications.

“We only use smartPIMS® magnetic UT probes for in situ corrosion monitoring; we’re forbidden to weld on operating equipment.”
- REFINERY CUSTOMER

“We with multiple magnetic probes, we can measure several locations and then reposition based on UT and AUT data.”
- MIDSTREAM CUSTOMER
Clamped high-temp probe monitors ~640ºF line.
Dual-element probes monitor individual pits.
Datalogger cable runs to enclosure for data collection.

### Transducers

<table>
<thead>
<tr>
<th>Type</th>
<th>Single-element Contact</th>
<th>Dual-element Contact</th>
<th>Delay-line Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>XD-101</td>
<td>XD-201</td>
<td>XD-201</td>
</tr>
<tr>
<td>Application</td>
<td>General Purpose</td>
<td>Ultra-high-Temp</td>
<td>Ultra-high-Temp</td>
</tr>
<tr>
<td>Frequency</td>
<td>5 MHz</td>
<td>7 MHz</td>
<td>7 MHz</td>
</tr>
<tr>
<td>Active Area (Dia.)</td>
<td>0.25&quot; x 0.39&quot;</td>
<td>0.375&quot; x 1.0&quot;</td>
<td>0.375&quot; x 1.0&quot;</td>
</tr>
<tr>
<td>Overall (Dia. x H)</td>
<td>25.4 x 25.4 mm</td>
<td>76.2 x 25.4 mm</td>
<td>76.2 x 25.4 mm</td>
</tr>
<tr>
<td># of Transducers</td>
<td>1-16</td>
<td>1-16</td>
<td>1-16</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001&quot;/0.025mm</td>
<td>0.001&quot;/0.025mm</td>
<td>0.001&quot;/0.025mm</td>
</tr>
<tr>
<td>Thickness Range</td>
<td>0.020&quot;-6.0&quot;</td>
<td>0.040&quot;-6.0&quot;</td>
<td>0.125-1.0&quot;</td>
</tr>
<tr>
<td>Temp Range</td>
<td>-22 to +150°F</td>
<td>-22 to +150°F</td>
<td>-22 to +150°F</td>
</tr>
<tr>
<td>Attachment</td>
<td>Magnetic/adhesive</td>
<td>Magnetic/adhesive</td>
<td>Mechanical clamp/gold foil</td>
</tr>
</tbody>
</table>

* minimum resolutions stated as typical values, but will vary with pipe condition

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