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 or not permitted.

- 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” (1.0mm) 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.

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

monitor “low spots”
pot-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

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

“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.

<table>
<thead>
<tr>
<th>Transducer Type</th>
<th>XD-101</th>
<th>XD-301</th>
<th>XD-201</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Severely pitting</td>
<td>General purpose</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</td>
<td>0.25&quot; x 0.35 mm</td>
<td>0.375&quot; x 10 mm</td>
<td>0.375&quot; x 10 mm</td>
</tr>
<tr>
<td>Overall Area</td>
<td>1.0&quot; x 1.0&quot;</td>
<td>0.75&quot; x 0.75&quot;</td>
<td>0.8&quot; x 2.25&quot;</td>
</tr>
<tr>
<td>Dimensions</td>
<td>1.0&quot;</td>
<td>1.5&quot;</td>
<td>2.0&quot;</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.001&quot; x 0.025 mm</td>
<td>0.001&quot; x 0.025 mm</td>
<td>0.001&quot; x 0.025 mm</td>
</tr>
<tr>
<td>Thickness Range</td>
<td>0.200&quot; to 6.0&quot;</td>
<td>0.040&quot; to 6.0&quot;</td>
<td>0.125&quot; to 1.0&quot;</td>
</tr>
<tr>
<td>Temp Range</td>
<td>-22 to +150°F</td>
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</tr>
<tr>
<td>Attachment</td>
<td>Magnet/Adhesive</td>
<td>Magnet/Adhesive</td>
<td>Mechanical Clamp/Gold Foil</td>
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</tbody>
</table>

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