smartPIMS® Cellular

non-intrusive ultrasonic sensors for corrosion/erosion monitoring

Metal Samples along with Sensor Networks Inc., offers the smartPIMS® Cellular nonintrusive ultrasonic corrosion/erosion monitoring system which is battery powered and has an integral SIM card and cellular radio. The Digital Sensor Interface (DSI) unit is programmed to take thickness measurements at any user-defined time interval, then send the data to webPIMS[™], a cloud based backend for analysis, trending and more. The smartPIMS® Cellular is used for:

- Frequent data collection to resolve corrosion-rate or pitting issues.
- Quick, easy installation temporary or permanent.
- Areas difficult or expensive to access and not conducive to manual data collection.

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/refitting for internal corrosion monitoring • more accurate/ reliable data improving operations





- Operates on battery (5-7 years at 1 reading/day).
- Cellularly transmits data to webPIMS[™].
- Offers 16 single- or 8 dual-element UT sensor channels.
- Transducers available to withstand -22°F (-30°C) to 932°F (500°C).
- Maintains 1 mil (0.001" / 0.025mm) resolution and 0.040" (1mm) minimum wall thickness.
- Sensors install buried or above-ground, temporarily or permanently.
- ATEX, IECEx, UL/CSA and Japanese hazardous-area certifications.



Technical Specifications

Digital Sensor Interface

<u>Transmitter:</u>		
Туре:	Cellular (3G/4G-LTE)	
Encryption Type:	Secure Socket Layer (SSL)	
Model:	smartPIMS [®] cellular	
Battery Type:	Li D-cell, 3.6 VDC, qty. 2	
Battery Life:	5 years (typical, based on 1 reading/day)	
Ultrasonic System:	Channels:	16 ultrasonic, 1 temperature
	Pulser Voltage:	±5V bipolar square wave
	Analog Frequency:	1–10 MHz (-3dB)
	Gain:	-10dB to +70dB
	Digitizer Frequency:	40 Msps
	Certification:	Class I, Div. 2, Groups A-D, T4, Class 1, Zone 2, IIC, T4
		II 3G, Ex ec IIC T4 Gc, Tamb -20°C to +60°C
Enclosure:	Туре:	Instrumentation housing
	Material/rating:	Cast aluminum / NEMA 4X, IP66
	Temperature Range:	-4°F to + 140°F (-20°C to +60°C)
	Dimensions (w/o antenna):	5.44 × 5.63 × 5.13" (138 × 143 × 130mm)
	Weight:	5.5 lb (2.5 kg)

Transducers

Transducer Cable:			
Туре:	Coaxial, ¼" dia.		
Max. Length to Transducer:	Standard 10' (3.0m) and 25' (7.6m), custom to 50' (15.2m)		
Transducers:	Dual-Element Contact	Delay-Line Contact	
Model:	XD-301	XD-201	
Application:	Severe pitting	Ultra-High-Temp	
Frequency:	5 MHz	7 MHz	
Active Area (dia.):	0.375" (10mm)	0.375" (10mm)	
Overall (dia. x h):	0.75" x 0.75" (19 x 19mm)	0.8" x 2.25" (20.3 x 57.2mm)	
# of transducers:	1-8	1-16	
Resolution:	0.001" (0.025mm)	0.001" (0.025mm)	
Thickness range*:	0.040 - 6.0" (1.0 - 150.0mm)	0.125 - 1.0" (3.0 - 25.0mm)	
Temp. range:	-22 to +275°F (-30 to + 135°C)	-22 to +932°F (-30 to 500°C)	
Attachment:	magnet / adhesive	mechanical clamp	

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



