SENSOR® NETWORKS, INC

Inspection, Testing & Asset-Integrity Solutions

micro PIMS® Global Solutions

Wireless UT Corrosion Sensors

Non-Intrusive Ultrasonic Sensors for Corrosion/Erosion Monitoring

microPIMS® Global Solutions is a 2nd-generation, star-network topology system which leverages SNI's success and experience in non-invasive corrosion monitoring. microPIMS is a fully wireless, non-intrusive, ultrasonic corrosion/erosion monitoring system. Powered by a long life battery, it operates using long range sub-Gigi-hertz LoRaWAN® wireless connectivity. Each microPIMS sensor is programmed to take readings at any user-defined time interval and automatically send data to webPIMS™, a cloud-based or on-premise software back-end for analysis, trending and more. Use microPIMS for:

- Applications where frequent thickness data is required to monitor corrosion/erosion rate issues.
- When short- or long-term corrosion rate data is needed to monitor crude-slate changes or to correlate operational system upsets.
- Areas not conducive to manual UT thickness surveys.
- Covering many discrete points with simple attachment.
- Situations where quick and easy installations are required.
- Easy repositioning—no welding required.

Front:
dual element with attached with band clamp (top) & dual element with magnetic base (bottom)
Back:
ultra-high-temp attached with band clamp

Monitor corrosion rate

accurate 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

7-year battery life at 1 reading/day | 10-year at 1 reading/week* (Saft LM26500 battery.)

Two models: dual element (up to 275°F/135°C) **and ultra-high-temp** (up to 932°F/500°C).

Built-in thermocouple provides surfacetemperature readings and temperature compensation.

Installed temporarily or permanently.

Wireless gateway supports up to 1000 microPIMS offers up to ~1 mile (1.6km) **range in industrial settings**

Cellular or ethernet back-haul through gateway.

Hazardous-area certified to UL/CSA Class 1 Div. 2, Gas Groups A-D, T4.

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

Operates using LoRaWAN Sub-Gigihertz digital radio frequency.

LoRa Alliance®

* Typical Values. Results may vary based on range, RF noise, and temperature.

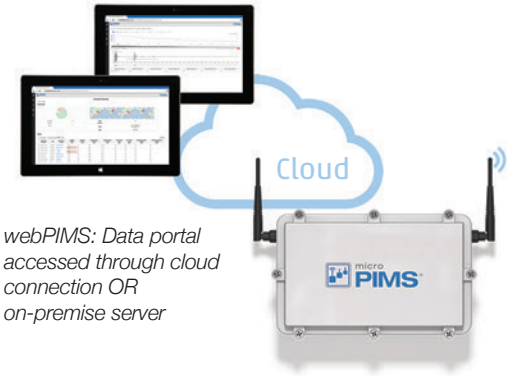
Measure it, Manage it.

Ultra-high-temp installed using a band clamp

Dual element unit installed with a magnetic clamp

Dual element unit with a magnetic clamp.

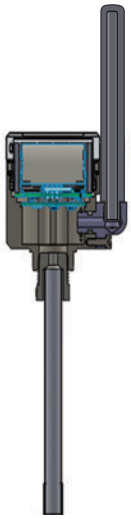
webPIMS software offers trending and analysis for corrosion data, ultrasonic wave form, temperature-corrected thickness, and is able to quickly and easily export or integrate data for reporting



webPIMS: Data portal accessed through cloud connection OR on-premise server

LoRa-Wan compatible gateway

microPIMS: Ultra-High-Temp and Dual Element



Cross-sectional view of dual-element microPIMS sensor.

specifications

	dual element	ultra-high-temp
elements	dual	single (delay line)
frequency	5 MHz	7 MHz
measurement range	0.040-6″ (1-150mm)	0.125-1″ (3-25mm)
probe surface temperature	-20°F (-28°C) up to 275°F (135°C)	-20°F (-28°C) up to 932°F (500°C)
weight	20.5 oz. (580g)	31.0 oz. (880g)
size (height × housing dia.)	9½×2.8″ (241×70mm)	15½×2.8″ (394×70mm)

hazardous location rating . . . . . Class I, Div. 2, Groups A-D, T4, Class 1, Zone 2, IIC, T4
Ⓔx II 3G, Ex ec IIC T4 Gc, T_{amb} -20ºC to +60ºC
Ingress Protection Rating IP-65
element diameter . . . . . 0.375″ (10mm)
resolution . . . . . 0.001″ (0.025mm)
battery life (typical)† . . 10 yr. @ 1 reading/week; 7 yr. @ 1 reading/day at 68°F(20°C)
construction . . . . . 303 stainless steel
mounting . . . . . magnetic base; band clamp
data . . . . . digital thickness, RF waveform, temperature, time/date stamp
data access . . . . . cloud-based via webPIMS™ portal or on-premise
local network . . . . . LoRa-WAN (node to gateway)
connectivity . . . . . gateway to cloud OR on-premise (cellular or ethernet)
node count . . . . . 1000 microPIMS units per gateway
gateway* . . outdoor; cast alum.; Approx. 11×8×4.5″ (280×204×115mm); 6.0lb (2.7kg)

** without antennas*
† Typical Values. Results may vary based on range, RF noise, and temperature

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