microPIMS® WiHART

Wireless, Non-Intrusive Ultrasonic Sensors for Corrosion & Erosion Monitoring

microPIMS®-WH is a third-generation, star-network topology system which leverages SNI's success and experience in non-invasive corrosion/erosion monitoring. It is an intrinsically safe, fully wireless, non-intrusive, network of ultrasonic sensors. Powered by long-life batteries and operating on the IEEE 802.15.4 WirelessHART standard, microPIMS sensors offer flexible, efficient, and accurate thickness measurement in demanding environments.

Each microPIMS sensor can be programmed to take thickness readings at any user-defined time interval. Data is automatically sent to private webPIMS™, cloud-based or on-premise WiHART system + software back-end for analysis, trending and more. Use microPIMS-WH for:

- Monitoring corrosion rates at historic problematic or high-risk locations.
- Post-NDT verification and ongoing monitoring of low spots or pits.
- Short- and long-term asset integrity assessments.
- Challenging access points (e.g. elevated piping or insulated vessels).
- Hazardous areas requiring minimized human exposure.

- ~5-years at 1 reading/day (2x D-Size Batteries - 3.6VDC).
- Surface temperature readings for temperature-compensated thickness data.
- Temporary or permenant installation in under 15 minutes per sensor.
- Interoperable with any WirelessHART network or gateway
- Cellular or ethernet data back-haul through gateway.
- ULCSA C1D1, ATEX / IECEx Zone 0 and Japanese hazardous-area certified.

Eddyfi Technologies
Remote Monitoring

SENSOR NETWORKS, INC

Data Connection System Options

WiHART to Cloud

- microPIMS Sensors
- Sensor Networks Provided WiHART Gateway
- microPIMS thickness data from the sensors is transmitted wirelessly from the WiHART gateway to the webPIMS software and stored via the cloud where thickness, temperature, A-Scans, and other data can be analyzed or exported instantly, on demand.

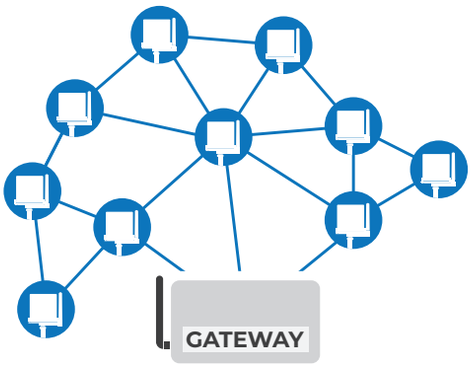
On-Premises

- microPIMS Sensors
- Sensor Networks Provided WiHART Gateway
- If utilizing cloud data storage is not an option, the On-Prem webPIMS data management system provides users with a local self-contained (in-the-fence) system.

  microPIMS thickness data from the sensor is transmitted through WiHART gateways directly into the On-Prem system.

Private Network Integration

- microPIMS Sensors
- Facilities' Existing WiHART Gateway
- For facilities with a current WiHART private network. Sensor Networks' microPIMS can be installed and connected directly to an existing network.



MESH NETWORK TOPOLOGY

· Self-healing network mesh automatically routes around obsticles
· Does not require line of site to gateway for all sensors

Monitor "low spots"

post-NDE screening of pits to monitor remaining thickness · measures down to 0.040"

Reduce costs

reduce scaffolding and insulation removal/ refitting for internal corrosion monitoring · more accurate/reliable data improving operations

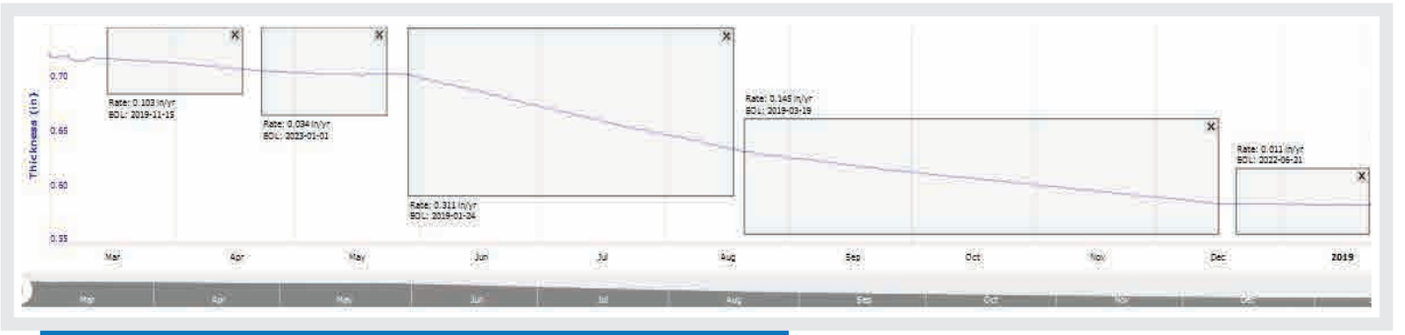
Monitor corrosion rate

accurate to 0.001" (0.025mm) at historically problematic locations

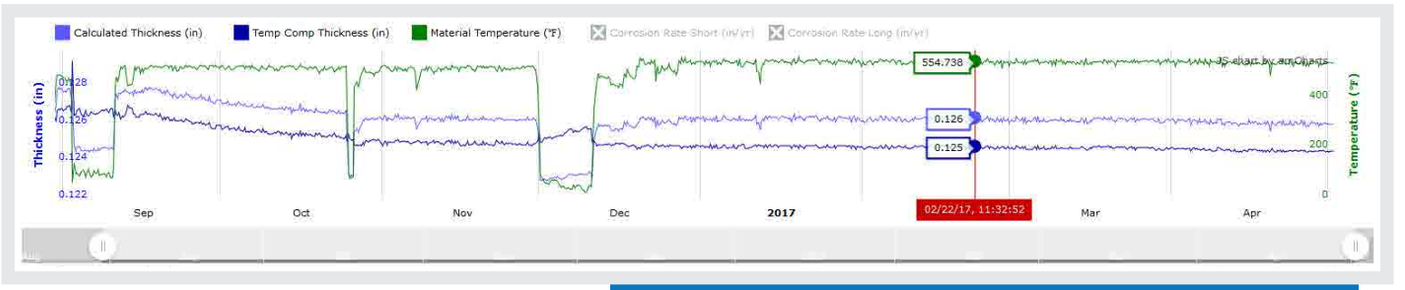
Easy integration into existing WiHART Network

Add microPIMS-WH sensors onto an existing WiHART network · Connect microPIMS data to other software apps.

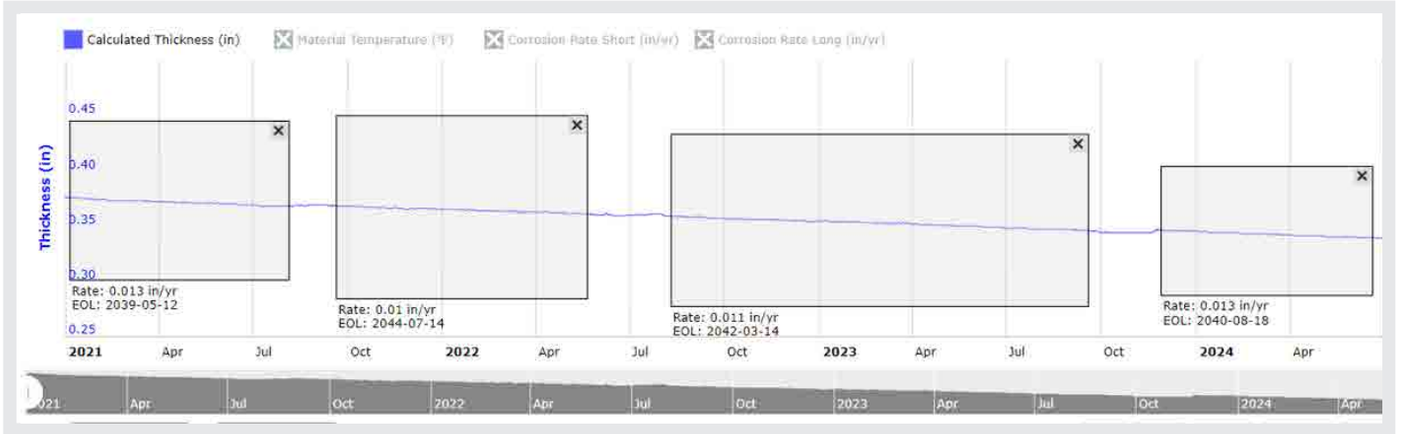
The Power of Monitoring Data



microPIMS can track unexpected and prolonged extreme corrosion and erosion rates, allowing operators to correlate processes, and revert to baseline levels of corrosion.



microPIMS monitor material temperature along with calculated thickness to provide temperature compensated thickness.



With increased data and insights, owners and operators can learn how to optimize processes to reach minimal long-term corrosion rates to maximize asset life.

microPIMS Sensors

	LT Dual	HT Standard	UHT Standard	HT Extended Range	UHT Extended Range
Elements	Dual	Single	Single	Single	Single
Frequency	5 MHz	5 MHz	5 MHz	5 MHz	5 MHz
Element Diameter	0.375 in. (10mm)	0.375 in. (10mm)	0.375 in. (10mm)	0.375 in. (10mm)	0.375 in. (10mm)
Measurement Range	0.040-4" (1-100mm)	0.040-4" (1-100mm)	0.040-4" (1-100mm)	0.040-4" (1-100mm)	0.040-4" (1-100mm)
Surface Temperature	-40 to 135°C -40 to 275°F	-40 to 135°C -40 to 275°F	-40 to 135°C -40 to 275°F	-40 to 135°C -40 to 275°F	-40 to 135°C -40 to 275°F
Weight	20.5 oz. (580g)	20.5 oz. (580g)	20.5 oz. (580g)	20.5 oz. (580g)	20.5 oz. (580g)
Size (height x housing dia.)	9.5x2.8 in. (241x70mm)	9.5x2.8 in. (241x70mm)	9.5x2.8 in. (241x70mm)	9.5x2.8 in. (241x70mm)	9.5x2.8 in. (241x70mm)

microPIMS System Specifications

hazardous location rating intrinsic safety	See chart on the right
Ingress Protection Rating	IP-67
resolution	0.001" (0.025mm)
battery life (typical)†	~5 years @ 1 reading/day 68°F (20°C)
construction	303 or 316 stainless steel (based on sensor model)
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	WiHART (mesh network)
connectivity	gateway to cloud (cellular or ethernet) OR on-premise
sensor count	~100 microPIMS units per gateway
gateway*	outdoor; cast alum.; Approx. 12×6×4" (305×152×102mm) ; 6.0lb (2.7kg)

† Typical Values. Results may vary site to site.
* Without antennas.

UK CA 2503 CE 2776 Ex II 1 G Ex ia IIC T4 Ga, Ta = -40°C to +70°C
CML 21ATEX2356X | CML 21UKEX2357X | IECEx CML 21.0044X

NRTL LISTED MET C US
Ex ia IIC T4 Ga | Class I, Div 1, Gp A-D T4 Ex ia
Class I Zone 0, AEx ia IIC T4 Ga | Class I, Div 1 Gp A-D T4
Ta = -40°C to +70°C
E114158 - Hazardous Location

WARNING: USE ONLY TADIRAN TL-5930, SL-2780 OR XENO XL-205F BATTERIES
WARNING: SPECIAL CONDITIONS FOR SAFE USE, SEE INSTRUCTIONS

IP 67
BATTERY POWERED: 2 Cells, 7.2V, 0.94W
PROGRAMMING PORT: Um = 5V

Contains:
IC: 23069-CW24012
FCC: 2ANDP-CW24-012
Made in the USA

On-Premises Specifications

configuration	single-socket 1U rack size / 19 in.	desktop
weight	36.9 lbs (12.2 kg)	25.70 lbs (11.70 kg)
dimensions	17.1 in. (434 mm), 23.5 in. (596 mm)	6.88 in. (175 mm), 14.17 in. (360 mm), 17.87 in. (454 mm)
main power	110-230VAC / 50-60Hz	110-230VAC / 50-60Hz
haz area cert	none	none
operating system	Linux	Linux
LoRaWAN configuration	ResIoT - perpetual license	ResIoT - perpetual license
analysis application	webPIMS - perpetual license	webPIMS - perpetual license

1.12.26
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sensornetworksinc.com
366 Walker Drive - Suite 200
State College PA, 16801 USA