WAND system

Monitor wall thickness accurately, reduce risk, and save costs

The WAND system offers a better way of generating wall thickness data...

Wall thickness data helps operators assess the condition of their assets. By monitoring thickness loss with time, and thereby the rate of internal corrosion/erosion, operators can perform remaining life forecasts for predictive maintenance, which in turn helps to optimize asset integrity operations.

The two most common methods of acquiring thickness data are:

- Manual Ultrasonic Testing (Manual UT)
- Conventional UT sensors

But these methods present different challenges...

The WAND system and associated accessories have been designed so that these challenges can be overcome...

The challenges with Manual UT

Skilled labor which can be a high recurring cost

Acquiring thickness readings can take time

Human error can lead to inaccurate data

The challenges with Conventional UT sensors

Network set up is required which can be a logistical hassle

Cannot use for insulated and coated applications

The technology has a high capital cost

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Our solution

*Introducing the **WAND system**: a 3-part solution that generates precise, repeatable wall thickness readings and enables accurate internal corrosion/erosion monitoring and trending.*

Using the WAND system, you can monitor the integrity of your assets safely, reliably, and cost-effectively

1. Passive sensors
battery-free ultrasonic thickness sensors that are permanently installed to the surface of structures

2. Data collection
both **handheld**, and **remote** sensor data collection options

3. Cloud software
for device configuration, data management & analysis, as well as report generation

Acquiring thickness readings with the WAND system is a quick and easy process…

Install passive **WAND sensors** at corrosion monitoring locations

Upload your thickness data to the **i-DART cloud**

Collect thickness data from the sensors using either the **WAND-HDC** or **WAND-RDC**

Manage and analyse your thickness data from anywhere, using **i-DART browser-based software**

WAND sensors can be embedded underneath insulation, coatings and wrap repairs, and wirelessly activated through the material, using inductive coupling technology

How does WAND inductive coupling work?

1

An **electromagnetic signal** is transmitted by the WAND which activates the sensor

2

When activated, the sensor sends an **ultrasonic pulse** through the structure

3

An **electromagnetic signal** is returned by the sensor so the WAND can calculate wall thickness

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The Technology

The WAND system has been designed to make thickness monitoring easier, safer, and more cost-effective.

The core product – the passive WAND sensors – generate precise, repeatable thickness readings free of human-error.

Inductosense offer either the WAND handheld data collector (WAND-HDC), or the WAND remote data collector (WAND-RDC), as well as an assortment of accessories depending on the application requirements.

Your thickness data and WAND devices can then be managed using the cloud-based Inductosense Data Analysis and Reporting Toolkit (iDART) software.

TM sensors

Passive, RFID tagged ultrasonic thickness sensors, designed to be permanently installed at corrosion monitoring locations. WAND TM sensors provide repeatable wall thickness measurements and enable accurate trending of internal corrosion and erosion:

- Battery-free (wirelessly powered up when needed)
- Ultrathin and embeddable
- Installed quickly using adhesive
- ATEX/IECEx approved for Zone 0 (Ex ia IIC T4...T3 Ga)
- -40C up to 130C (-40F up to 266F)

WAND-HDC

Handheld data collection probe designed to work with WAND sensors. The WAND-HDC will wirelessly activate and simultaneously collect a thickness reading from a single WAND sensor:

- Anyone can use the WAND – minimal training required
- Collects a reading in under a second
- User interface displays live thickness and A-scan in the field
- Data can be imported directly into Inductosense software, or extracted as DAT or CSV files
- Has an integrated RFID reader for tagging of the WAND sensors

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WAND-RDC

Battery-powered device designed to work with WAND sensors. The WAND-RDC will take thickness readings from WAND sensors on demand, or automatically at predefined intervals, and the data can then be collected wirelessly via Bluetooth:

- *Up to 200m wireless range*
- *5-year(+) battery life*
- *Up to **8 WAND sensors** can be connected per RDC module, using reader pad wires*
- *Inbuilt temperature sensor*

iDART software

Inductosense Data Analysis and Reporting Toolkit (iDART) is a cloud-based software package that enables configuration of WAND devices, as well as management, analysis and reporting of WAND thickness data:

- *Configure WAND sensors and devices*
- *WAND-RDC live readings and scheduling*
- *Manage and analyse thickness data:*
  - *View trend graphs*
  - *Analyse A-scans*
  - *Calculate internal corrosion/erosion rates*
  - *Export raw data, data reports and images*
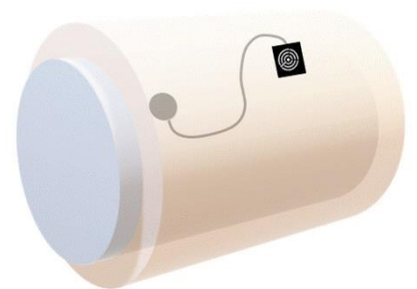- *Export data and data reports*
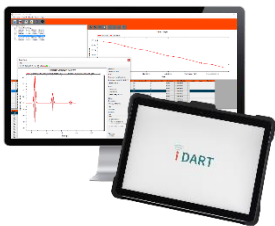
WAND accessories

ECHO extension cable

An extension antenna accessory for use with a WAND sensor. The ECHO can be used to offset the data collection location to somewhere more convenient:

- *Enables thickness monitoring from underneath insulation, or obstructed areas*
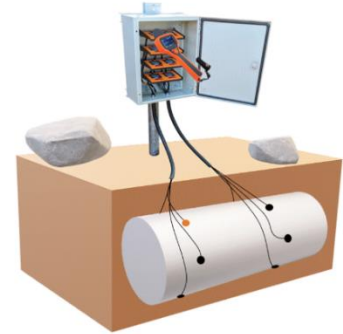- *Set length varieties from 45cm up to 4m*

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WAND measurement terminal

An intrinsically safe box that can be used to house ECHO extension cables. This serves as a convenient and safe place to collect thickness readings from difficult-access locations using the WAND:

- *Up to 8 ECHO cables per terminal*

Example application: underground pipes

REACH extendable probe

An extendable pole accessory for use with the WAND handheld data collector. The REACH can allow convenient access to sensors installed at height:

- *Enables easy access to collection locations that are hard to reach, potentially eliminating the need for scaffolding and ropes*
- *Adjustable length, up to 4m*

WAND robotic crawler

Magnetic crawler module for use with WAND handheld data collector. Simply plug the WAND handheld data collector into the crawler housing (no tools required), and then operate via remote control to acquire thickness readings from WAND sensors installed at heights

- *Allows thickness measurements to be taken from WAND sensors installed on large tanks and flat structures, eliminating the need for scaffolding or ropes*
- *Perform simultaneous visual inspection*
- *No surface prep, water couplant or precise alignment required*

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Benefits

The WAND system has a number of advantages over alternative thickness monitoring methods. Our clients are realizing significant cost savings by replacing existing methods and adopting the technology at scale.

Accurate, reliable thickness data

- WAND sensors generate repeatable thickness readings for accurate, reliable monitoring of internal corrosion
- This data can be trended for better informed maintenance decision-making, and in turn help to reduce downtime and optimize processes

Acquire data easily from difficult-access locations

- Thickness readings can be taken easily from underneath insulation and coatings, without needing to remove them
- Thickness readings can be taken easily from heights, without the need for scaffolding and ropes
- The WAND system makes thickness monitoring of difficult-access locations much more efficient and cost-effective

Cut down inspection time

- Anyone can take thickness readings using the WAND system
- Automated data management, analysis and reporting using iDART software
- Acquiring readings with the WAND takes a matter of seconds, which can significantly reduce the time associated with inspection

No network set-up required to collect data

- A key limitation of conventional UT sensors is the need for network set up in order to collect thickness data
- This can be a logistical challenge, as well as expensive
- The WAND system can be installed quickly, and data can be acquired straight away with no IT infrastructure needed

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Applications

The WAND system provides a means of thickness monitoring safely and efficiently.

The WAND system is ideal for:

- **Thickness data for RBI and code compliance**

  The WAND system generates accurate and reliable thickness data free of human-error, which can be used for RBI programs (adhering to API 510, 570, and 653). For higher risk assets, with high inspection intervals and/or difficult access locations, operators can realize significant payback by adopting WAND in place of alternative thickness measurement methods

- **Monitoring internal corrosion/erosion of suspect areas**

  WAND sensors can be installed reactively to monitor localized or uniform internal corrosion that has been identified by inspection. By applying WAND sensors to suspect areas, operators can determine remaining life of their assets, which enables more effective predictive maintenance and reduce shutdowns

- **Replacing corrosion rate coupons**

  Corrosion coupons provide internal corrosion rate data which can be prone to inaccuracy due to contamination. Coupon collection campaigns can pose safety risks, and can be costly, labor intensive and time consuming. WAND sensors can be used as a more efficient and safer alternative source of internal corrosion rate data

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Real customer cost-saving examples...

The WAND system has resulted in significant operational benefits and cost-savings for our clients. Get in touch with us to see how you could save...

Refinery operator

How they saved **$$$**

They were able to monitor thickness without insulation removal, scaffolding, or ropes using the WAND and accessories

Offshore well operator

How they saved **$$$**

Thickness monitoring could be performed by personnel already on site - specialist inspectors didn't need to be flown to site

Onshore well operator

How they saved **$$$**

Real-time UT sensors were replaced by WAND sensors for a 10 x lower CAPEX spend

Onshore gas plant operator

How they saved **$$$**

Manual UT required cleaning and surface preparation which was costly. Thickness data could be acquired with the WAND without the need for this

Refinery operator

How they saved **$$$**

The customer reduced the time associated with thickness data collection and reporting, which resulted in labour cost savings

Agrochemical plant operator

How they saved **$$$**

Using WAND sensors, the customer was able to accurately forecast retirement of their piping, leading to reduced downtime

Pipeline operator

How they saved **$$$**

Thickness monitoring of unpiggable locations could be done for a fraction of the cost using WAND, due to cheaper labour rates

Refinery operator

How they saved **$$$**

Thickness readings could be acquired through their thermal coating, without needing to remove each time, saving time and resource cost

Chemical plant operator

How they saved **$$$**

The need for scaffolding and ropes was eliminated, reducing their annual inspection costs

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Order your WAND starter kit today!

We provide fully provisioned kits to get you started on your WAND journey. We offer **exclusive discounts** for new customers.

WAND starter kit:

- 100 WAND sensors
- 2 WAND-HDC
- i-DART software license
- WAND accessories
- Installation kit
- Training and support

Contact us at info@inductosense.com and request a quote

Who are Inductosense?

We are an ultrasonic sensor technology company made up of a dynamic team of industry specialists. We pride ourselves on the performance of our technology, as well as our commitment to customer support.

We design, develop and manufacture in-house ultrasonic solutions for asset integrity monitoring.

Our aim is to provide monitoring solutions that help our customers reduce risk and save costs.

Get in touch...

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