CALIPERAY™

A MISTRAS GROUP BRAND

AVOID COSTLY MEASURES™

REMOTE THICKNESS TRACKING

AUTOMATED ULTRASONIC THICKNESS DATA ANALYSIS

SYSTEM OVERVIEW

AUTOMATED ULTRASONIC THICKNESS DATA ANALYSIS

High-temperature, hard-to-reach locations are not tested as often as they should be. Without adequate testing, plant operators have little-to-no warning of developing problems arising from corrosion and erosion – a costly surprise.

Traditional ultrasonic thickness testing (UTT) methods for determining corrosion and erosion on piping and vessel walls can be challenging to execute at times. It can often be difficult for technicians to access assets in potentially hazardous locations, and manual measurements have to contend with changes in surface conditions, technology and equipment.

The CALIPERAY™ remote thickness tracking system makes it easy for operators to stay on top of their asset integrity and maintenance by utilizing permanently installed ultrasonic sensors to remotely, quickly and accurately monitor corrosion and erosion.

COMPATIBILITY

SEAMLESS INTEGRATION WITH DATABASES AND SENSOR NETWORKS

WirelessHART™ PCMS

CALIPERAY's™ enhanced compatibility capabilities were designed with plants' interoperability needs in mind. The system seamlessly incorporates into existing WirelessHART™ sensor networks, and into in-house top-tier database management systems like MISTRAS' Plant Condition Management Software (PCMS). This capacity eases the difficulties and costs involved in installing the system, as the WirelessHART™-enabled sensors can share the same infrastructure as other WirelessHART™ devices. Integration into PCMS and other database management systems simplifies plant maintenance and optimizes data efficiency with a streamlined route of communication from sensor to database.

APPLICATIONS

OVERHEAD LINES

REDUCERS

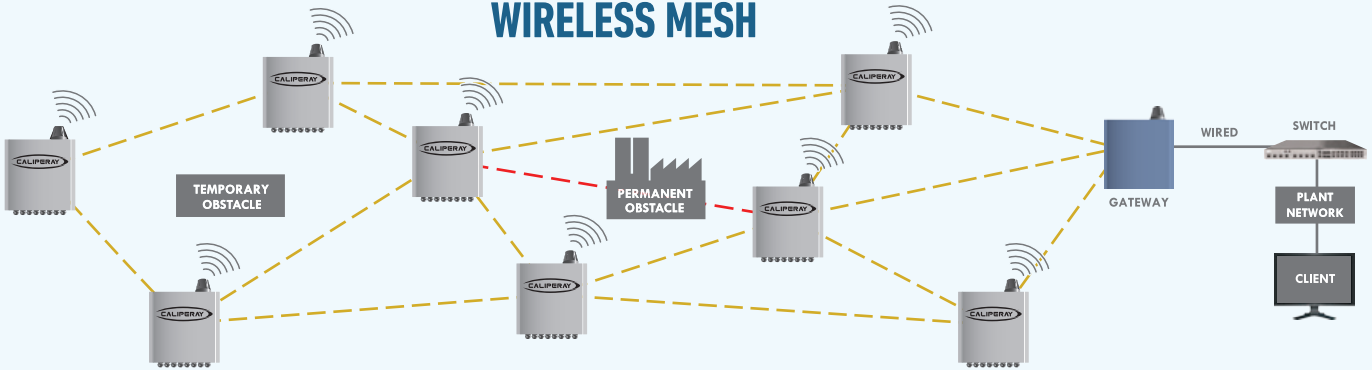
ELBOWS

PRESSURE VESSELS

TEES

AND MORE

WIRELESS MESH



The thickness transducers make up a wireless mesh network. As they collect data from the piping or vessel walls, they both receive and transmit information through the rest of the network until it reaches the Smart Wireless Gateway, where it is then transferred to the host computer. The wireless mesh allows CALIPERAY™ to seamlessly merge with on-site and remote network equipment.

The mesh network is self-healing and self-organizing, so if there is ever an interruption in the network, such as a temporary or even permanent obstacle, the transducers will simply find another path to the gateway. This smart sensor network makes it easier to install the network, streamlines the collection of data, and ensures higher reliability and lower maintenance.

CERTIFICATIONS

The CALIPERAY™ system holds many top tier certifications: IS/Class I, Division 1, Groups A/B/C/D; AEx ia for Class I, Zone 0, Group IIC (US); Ex ia for Class I, Zone 0, Group IIC (CA); T4 for -55°C ≤ Ta ≤ +55°C; IP66; Ex ia IIC T4 for -55°C ≤ Ta ≤ +55°C; IP66; FM15ATEX0043X APPROVED.

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SOFTWARE

SIMPLE ON-LINE MONITORING OF PIPE WALL THICKNESS

CALIPERAY™ WEB APP

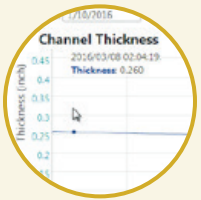
PCMS

OTHER TOP TIER IDMS

CALIPERAY™ comes equipped with its own web application for advanced data management. The online monitoring suite tracks and stores data as it comes into the host computer, and provides immediate, real-time, automated data analysis, offering information on corrosion rates, revealing damage trends and allowing users to compare real-time and past reporting histories.

Software such as MISTRAS' PCMS(Plant Condition Management Software) and other compatible top-tier integrated database management systems (IDMS) enable technicians to make timely, well-informed decisions when immediate action needs to be taken.

FEATURES & BENEFITS



CALIPERAY's™ automated pipe wall thickness monitoring collects data more frequently and accurately than traditional methods, because the permanent sensors remove many of the variables that can create inconsistencies in manual readings. Tracking trends in a pipe's wall condition, CALIPERAY™ provides a rich dataset, helping operators make the right judgments on when to proactively take remedial action, and when to hold off. This level of insight delivers benefits in cost, safety, planning, and peace-of-mind.

GREATER INSIGHT

Frequent measurements enable the opportunity for practical asset maintenance, rather than extensive repairs. CALIPERAY™ helps to extend maintenance budgets and assets' operational lifelines by discovering potential problems as soon as they manifest. Because refineries depend on these data for important resource allocation, CALIPERAY™ is designed to foster cost-effective, well-informed decision-making by notifying engineers early on in the process of a problem's extent.

DECREASED COSTS

Through its automated monitoring capabilities, CALIPERAY™ limits the need to send employees into hazardous areas of a plant, reducing the chance of injury to personnel. Frequently testing pipes and vessels also makes them inherently safer. As many assets contain hazardous materials, the system helps reduce incidents that may put employees in jeopardy. CALIPERAY™ not only reduces the need for employees to be in the operating area, it also makes it safer for them when they do have to be in the vicinity.

SAFETY

- NON-INTRUSIVE DESIGN AND INSTALLATION
- HIGHLY PRECISE READINGS
- HIGH-TEMPERATURE FUNCTIONALITY
- SELF-ORGANIZING & SELF-HEALING NETWORK
- DECREASED READING INTERVALS
- IMPROVED CORROSION MGMT. & DETECTION
- REDUCED INSTALLATION COSTS

INSTALLATION

1

SURFACE PREPARATION

Ground clean to prepare the surface where the CALIPERAY™ will be installed for use.

2

INSTALLATION

Unit sensors are mounted on the prepared surface. CALIPERAY™ does not require sensors to be welded on.

3

THERMOCOUPLE HOOK UP

Spring terminals inside the unit allow for easy thermocouple hook-up.

4

COMPLETED INSTALL

System mounted and installed on vertical piping (L) and horizontal piping (R)

EXPERTISE

When the integrity of your critical assets is at stake, trust the latest innovation from the industry experts. MISTRAS Group (NYSE: MG) is a publicly-listed, leading global nondestructive testing (NDT) and asset protection solutions provider with decades of industry-proven expertise and thousands of talented engineers, scientists, and technicians on staff.

MG
LISTED
NYSE

MISTRAS' immense knowledge and expertise has influenced the industry at large, and extends beyond the hardware-only backbones of competing manufacturers. The CALIPERAY's™ sophisticated design and capability embodies MISTRAS' technological leadership.

SPECIFICATIONS

GENERAL

Manufacturer: MISTRAS Group, Inc.
Product Line: CALIPERAY™ Thickness Trackers
Reference Name: 1616 Wireless UT Node
Model Number: 1616-5015 (IS Certified)
Multiplexer: 4-Channel for single or dual crystal transducers

Receiver: 20-70dB Gain
Bandwidth: 1MHz to 9MHz
Battery Life: Up to 5 Years at 1 measurement per day
Temperature Range: -28°C to 55°C
Made in USA

SENSORS

SINGLE CRYSTAL SENSOR (ISSUT5-HT)

Operational Frequency Range: 3 - 5 MHz
Shock Limit: 10,000 g
Surface Temperature: -55°C to 350°C
Sensor Material: Stainless Steel 316
Connector Type: LEMO 00
Connector Location: Side
Sensor Type: Contact, Delay
Seal Type: Laser Welded
Sensor Height: 1.5 inch
Sensor Diameter: 0.75 inch
Delay Line: 1 inch
Cable Type: 1' hard line + 2M (6.6') soft line

DUAL CRYSTAL SENSOR (ISDUT5M)

Operational Frequency Range: 5 MHz
Shock Limit: 10,000 g
Surface Temperature: -55°C to 150°C
Sensor Material: Stainless Steel 304/316
Connector Type: LEMO 00
Connector Location: Side
Sensor Type: Contact
Seal Type: IP66
Sensor Height: 0.934 inch
Sensor Diameter: 0.65 inch
Cable Type: 2M (6.6')

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SCHEDULE A LIVE DEMO

VISIT US ON THE WEB AT

CALIPERAY.COM

LOCAL PRESENCE, GLOBAL REACH

*WirelessHART™ Certification Pending as of Print Date