

**BAKER
HUGHES**
a GE company



Mitigate your corrosion risks with predictive corrosion management



Predictive Corrosion Management uses our package of:



Rightrax PM UT installed sensors



Cloud-based software



Services and support

The future of corrosion management is here

Today's refineries are spending millions of dollars each year to maintain piping integrity at their facilities, including identifying and managing corrosion before it impacts plant operation.

Predictive corrosion management capabilities, offered as part of the APM portfolio, empower you with the insights to:

Proactively manage corrosion risk

Make data-driven decisions

Reduce total cost of operations

Anomaly and containment loss detection

Predictive Corrosion Management from BHGE is a holistic, powerful package designed for a wide range of applications.



Upstream: Gathering network and central processing facilities



Downstream: Refineries, Petrochemical



Power: Conventional



Chemical, Fertilizer

Upstream and downstream facilities face corrosion and erosion-related threats due to impurities in crude oil such as:

- Hydrogen sulfide
- Hydrochloric acid
- Naphthenic acid
- Carbon dioxide
- Water
- Solids (dirt, sand, iron, etc.)
- Chemicals used in processing

Controlling the production process and limiting corrosion is crucial to safety and profitable operations. Monitoring at a higher frequency and taking more precise measurements are central to success, and Predictive Corrosion Management enables both.

Accessibility

To make assets accessible for inspections, most facility operators spend millions of dollars on:

- Rope access teams
- Scaffolding
- Insulation removal
- Transportation

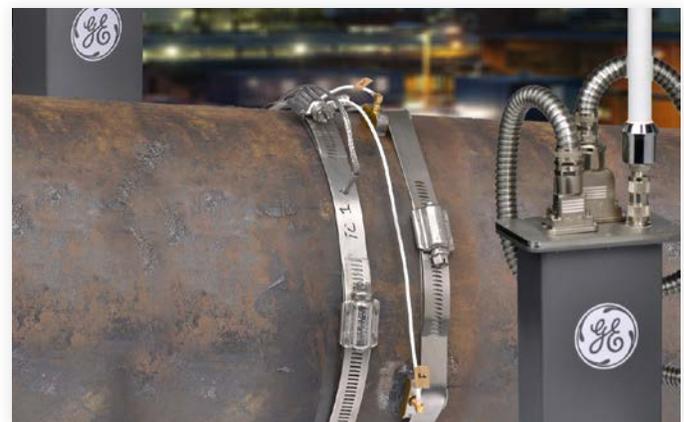
With permanently installed sensors as part of the Predictive Corrosion Management solution, operators can access inspection data on a regular basis for monitored assets, anytime, anywhere.

Safety in Inspections

Many assets that are susceptible to corrosion are difficult for NDT technicians to reach, due to a variety of safety hazards:

- Extreme temperatures
- Highly combustible gas
- Toxic or acidic vapors
- Radiation

Oftentimes, the only way to inspect these assets safely is to shut down critical processes, resulting in production loss. Predictive Corrosion Management's permanently installed sensors improve the safety environment across facilities and can significantly reduce the total cost of inspections for hard to reach or inaccessible locations.



Sensors are affixed to a pipe or other surface by bands and a dry couplant expected to last indefinitely. However, should you need to remove them, the sensors can be detached with no hot work or damage to the asset.

Analytics and visibility into interior piping wall loss enables better decisions

Predictive Corrosion Management enables better maintenance and operating decisions about monitored assets. Installed sensors providing thickness measurements, combined with cloud-based software, offer real-time trending, robust visualizations, and out-of-the-box analytics. With this solution, you can manage corrosion risk and feed more accurate and timely data to Risk-based Inspection programs, and monitor efficiency of corrosion inhibitor programs. Collectively, these capabilities provide insights into asset integrity, manage and mitigate corrosion risks, and reduce costs.

Manage and mitigate corrosion-related risks to operations

Reduce inspection-related costs

Utilize continuous sensor data for better informed asset, maintenance, and process decisions

Monitor interior piping wall loss due to corrosion and erosion

Measure corrosion inhibitor program effectiveness

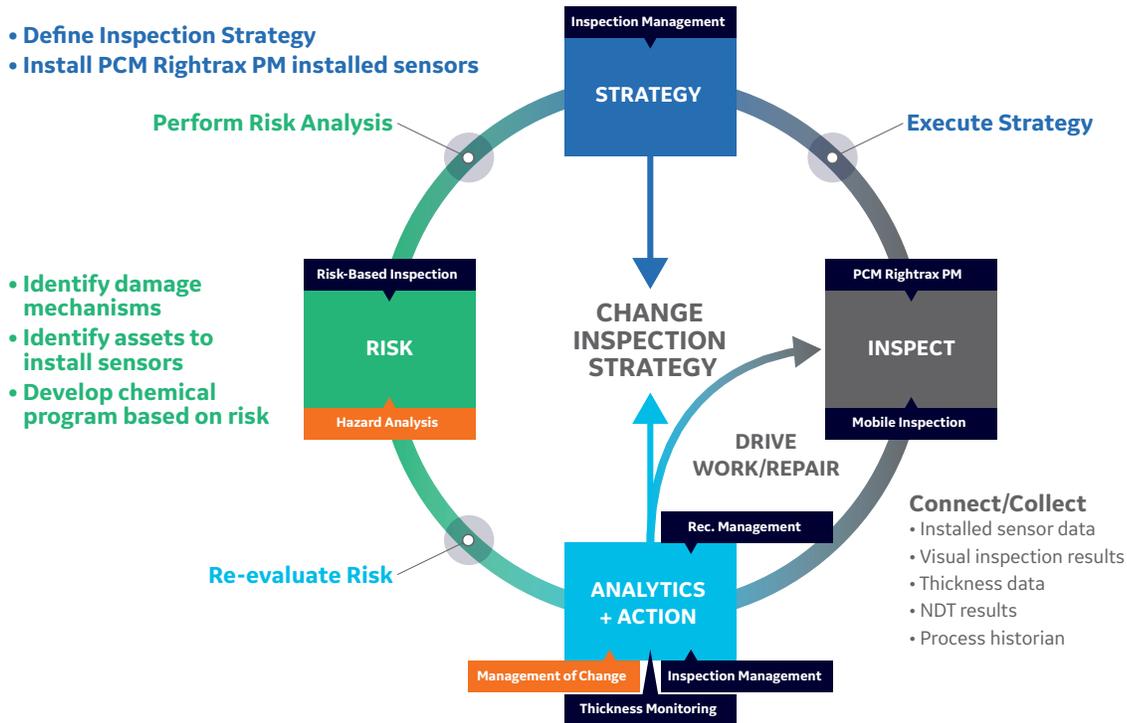
Improve personnel safety

With accurate and reliable interior piping wall loss data collection, corrosion has nowhere to hide

In the production, transportation, refining, and distribution industries, problems like Flow Accelerated Corrosion (FAC) and sand erosion can damage equipment quickly. Why? Because changes in crude quality and operations can trigger unexpected changes in:



With Predictive Corrosion Management, companies can protect their critical assets from failure and reduce inspection costs by using a constant stream of wall thickness and temperature measurements from permanently installed sensors.



BHGE's PCM solution enhances the Intelligent Asset Strategy cycle. Traditionally, organizations utilize Risk-based Inspections (RBI) tools and follow the Intelligent Asset Strategy cycle to drive their inspection programs and support reliable operations. With PCM, operators can introduce permanently installed sensors on critical assets to monitor in near real-time the wall loss and corrosion rate, enabling them to take a proactive approach to manage the risk of corrosion.



Cloud-based software, sensors, and services in one powerful package

Software for the Digital Industrial World

Predictive Corrosion Management software is powered by BHGE's cloud-based platform built for the Industrial Internet. With sensors feeding continuous data to the cloud-based software, you can see trends and predictions that can help improve operational awareness and decision making—extending the run life of pipes and other assets across your facility. The software today provides the following capabilities:

- Drill-down views of asset health, including easy searching and filtering features
- Real-time view of corrosion rates, temperature, and wall thickness
- Sensor equipment health monitoring
- Application Interfaces (APIs) to import measurements from other instruments and export for additional analysis you may want to perform

Services and Support

Working with your process and reliability experts and corrosion engineers, we will help you define the right solution for your application. Our services include the application assessment, site survey, deployment, configuration, installation, and setup.

Sensors That Go Beyond the Expected

Rightrax PM sensors operate remotely, and once installed in hard-to-reach areas, reduce the cost of scaffolding and rigging typically associated with ongoing manual inspection. Their low-profile design can be installed under insulation, reducing repeated and costly insulation removal and replacement. All of this means less manpower, and more reliable data.

- Ultrasonic wall thickness monitoring system for pipe corrosion and erosion
- Continuous monitoring of pipe, elbows, headers, straight runs even under insulation—while in service
- Proprietary SolGel ultrasonic probe technology for dry coupling
- Inherently safe, ATEX Zone-0 and Class 1 Div 1 certified components
- Installed without couplant, adhesives, or welding make it virtually maintenance-free
- Remotely access data via the web

Together, our groundbreaking combination of software, sensors, and services give you a safer, more productive and cost-effective way to monitor and control risk.



Improve uptime by getting the complete download on digital inspection from BHGE.

Predictive Corrosion Management is just one way BHGE's Digital Inspection applications are transforming the industry, by providing more insights, better reliability, and proactive decisions. So you can stay ahead in the digital industrial era. Now. And in the future.

To learn more about how you can make smarter maintenance and operating decisions, go to <https://www.bhge.com/digital>

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