



# APM Integrity

Helping to keep facilities contained and compliant





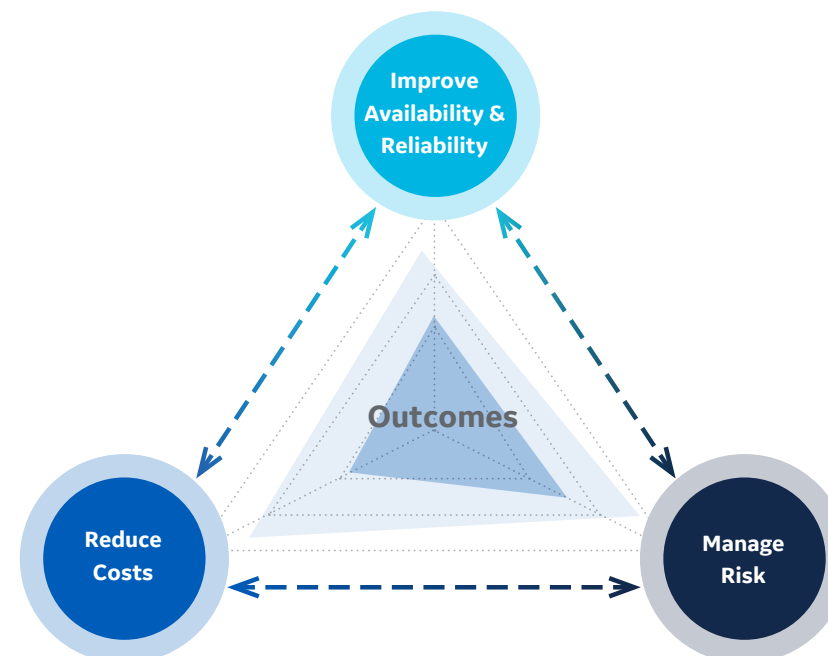
# Business Challenges

With ever increasing safety and environmental constraints, it is critical that operators can ensure the safe operation and containment of their processes. Mechanical integrity regulations require a significant amount of data be captured to ensure process equipment is designed, fabricated, installed, operated, and maintained properly to mitigate associated risks. This generates a significant amount of data that companies must manage; making it increasingly difficult to understand current risk levels and drive optimization of mechanical integrity inspection and engineering resources.

## A continuous loop of improvement

Predix Asset Performance Management (Predix APM) is a suite of software and service solutions designed to help optimize the performance of your assets. Predix APM increases asset reliability and availability while optimizing maintenance costs, mitigating operational risks, and reducing total cost of ownership (TCO). The suite connects disparate data sources and uses advanced analytics to turn data into actionable insights while fostering collaboration and knowledge-management across the organization. Predix APM works across all equipment, all OEMs, and all industries, across the plant, and across the fleet.

Inspection groups need an integrated set of tools and work-processes to understand risk by profiling asset degradation mechanisms and containment threats and generating optimized inspection strategies targeted at mitigating these risks.





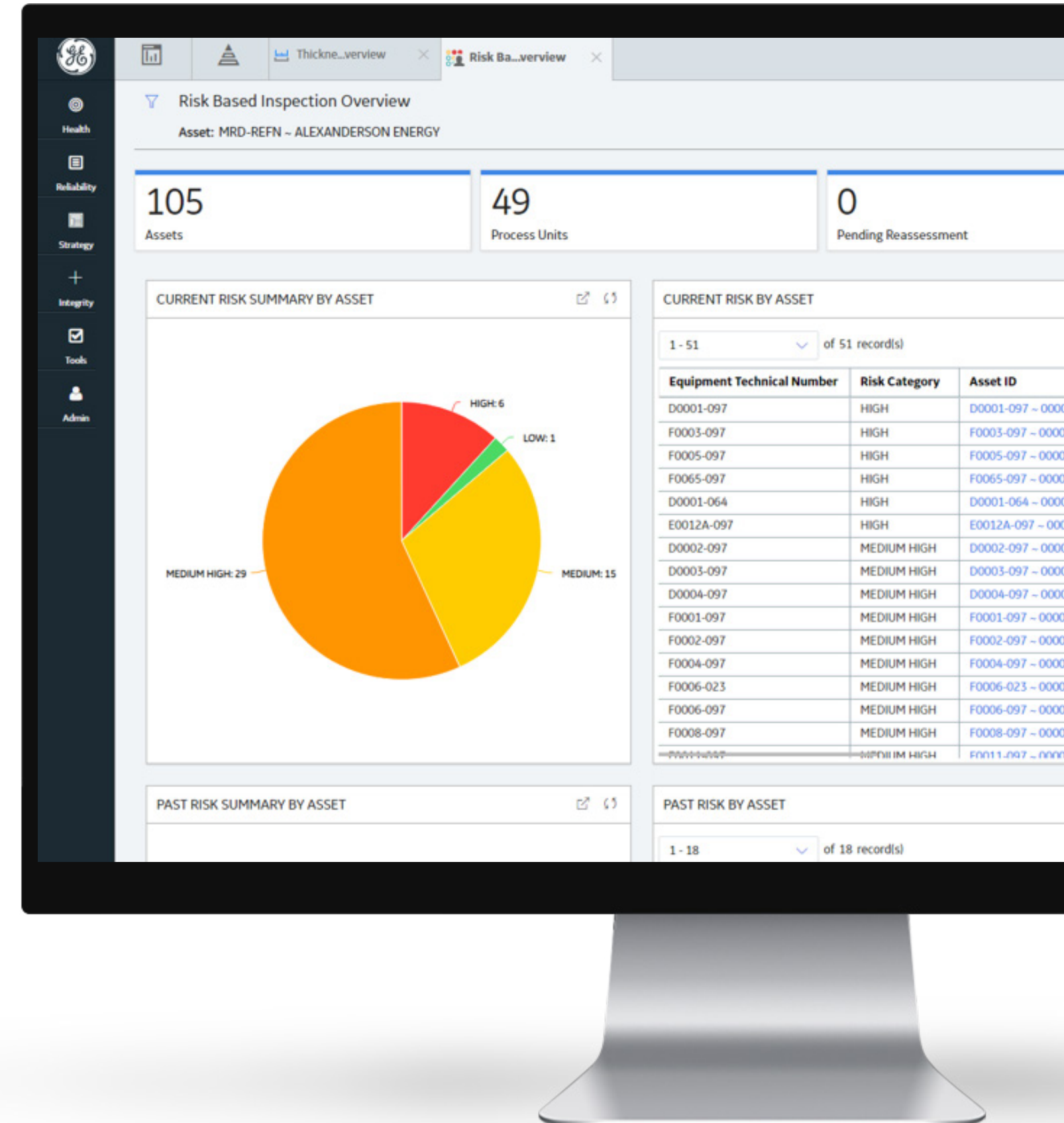
# APM Integrity

APM Integrity, a Predix APM solution, enables a closed loop mechanical integrity program across your enterprise to reduce risk, lower inspection costs, and manage regulatory compliance of your fixed equipment. Using an integrated set of tools, APM Integrity enables you to calculate risk, inspection priority, and the remaining useful life of assets to generate, implement, and execute optimized inspection strategies while streamlining auditability and compliance governance. The solution helps facilitate compliance with various Process Safety Management (PSM) requirements such as process hazard analysis, mechanical integrity, and management of change.

APM Integrity can help you:

- > [Develop inspection strategies](#) to mitigate risk and optimize inspection costs.
- > [Enable compliance](#) with PSM requirements including hazard identification, mechanical integrity, and management of change requirements.
- > [Integrate compliance and integrity initiatives](#) across your enterprise to maximize asset availability and lower the likelihood of catastrophic incidents.

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# Capabilities of APM Integrity

## > Risk based inspection

Since many inspection programs are mandated by regulatory agencies, with the power to apply significant penalties for non-compliance, many organizations are turning to risk based inspection (RBI) as preferred methodology for optimizing their mechanical integrity programs. RBI can help your organization:

- Reduce turnaround exposure
- Extend inspection intervals/reduced inspection scope
- Optimize inspection and maintenance costs

The RBI capability, within APM Integrity, enables you to perform RBI assessments through the following baseline methods:

- RBI-580: adheres to API RP 580 work process with semiquantitative calculation models
- RBI-580 flexible framework: adheres to API RP 580 work process with configurable calculation models
- RBI-581: adheres to API RP 580 work process with quantitative calculation models as per API-581, 3rd edition

Each approach provides the ability to assess the likelihood and consequences of failure and results in a prioritized list of assets with optimized inspection plans based on their risk rank. Optimized inspection plans generated from RBI can seamlessly integrate into inspection management and/or your EAM or CMMS system for scheduling and execution.

## > Inspection management

The inspection management capability provides the ability to drive large-scale inspection programs and helps facilitate compliance with federal, state, and local requirements including the API standards. Inspection management allows asset owners and operators to manage inspection plans, document the condition of an asset on a mobile device, and track inspection recommendations to closure from a single source.

Compliance management functionality, allows users automate and drive a greater degree of auditability in their inspection planning process. Once assets are integrated from an EAM system to Predix APM, compliance management will automatically generate an inspection plan and scope based on the regulatory code and classifications that apply to an asset or group of assets. This simplifies the inspection planning process and allows planners to “manage by exception” as opposed to a manual planning and scoping process. This capability will also alert planners if an in service asset does not have the proper inspection plan in place.

Mobile inspection capabilities enable inspectors to capture inspection data electronically in the field using a tablet or mobile device without being connected to a network.

## > Thickness monitoring

Effective thickness measurement and monitoring activities are an essential component of a mechanical integrity program. Thickness monitoring defines the overall nondestructive testing (NDT) strategy for an asset, including the calculation methods, inspection intervals, and minimum corrosion rates.

With the thickness monitoring capability, you can:

- Drill-down to the measurement locations for visibility into corrosion rate details and trends, current findings, and calculated next inspection date
- Pressure minimum thickness calculations, combined with current corrosion rate calculations, provides corrosion analysts with the estimated remaining life and projected retirement date for an asset
- View half-life charts and measurement trends, which provide visibility to the measurement data over time, along with the option to view the controlling corrosion rate associated with the thickness measurement location

Thickness monitoring offers seamless integration with many UT field measurement devices. Thickness inspection results and associated documentation are formatted for viewing or printing capability.

## Real customer results:

\$325K

Saved annually in inspection costs  
[Learn More](#)

1,135%

Improvement due to change in collective MTBF in piping from 172 days to 2124 days  
[Learn More](#)

£2.12

Saved annually by using risk based inspection capability  
[Learn More](#)



# Capabilities of APM Integrity

## > Hazard analysis

The Hazard analysis capability is based on international hazard analysis standards such as IEC 61882 Hazard and Operability Studies Application Guide. A hazard analysis includes a definition of scope, potential causes that could lead to a consequence, safeguards that mitigate and/or prevent the consequence from occurring, and recommendations, which can be used to create strategy actions, thereby enabling a “closed loop” approach to hazard analysis.

The Hazard analysis capability provides two standard methods for conducting such analyses:

- Hazard and Operability study (HAZOP)
- What-If Analysis

Also included is Layers of Protection Analysis (LOPA), which is a type of risk assessment that helps evaluate the frequency of events that can cause a hazard, the likelihood of failure of independent layers of protection, and the consequences, providing an estimate of risk associated with a scenario.

## > Management of change

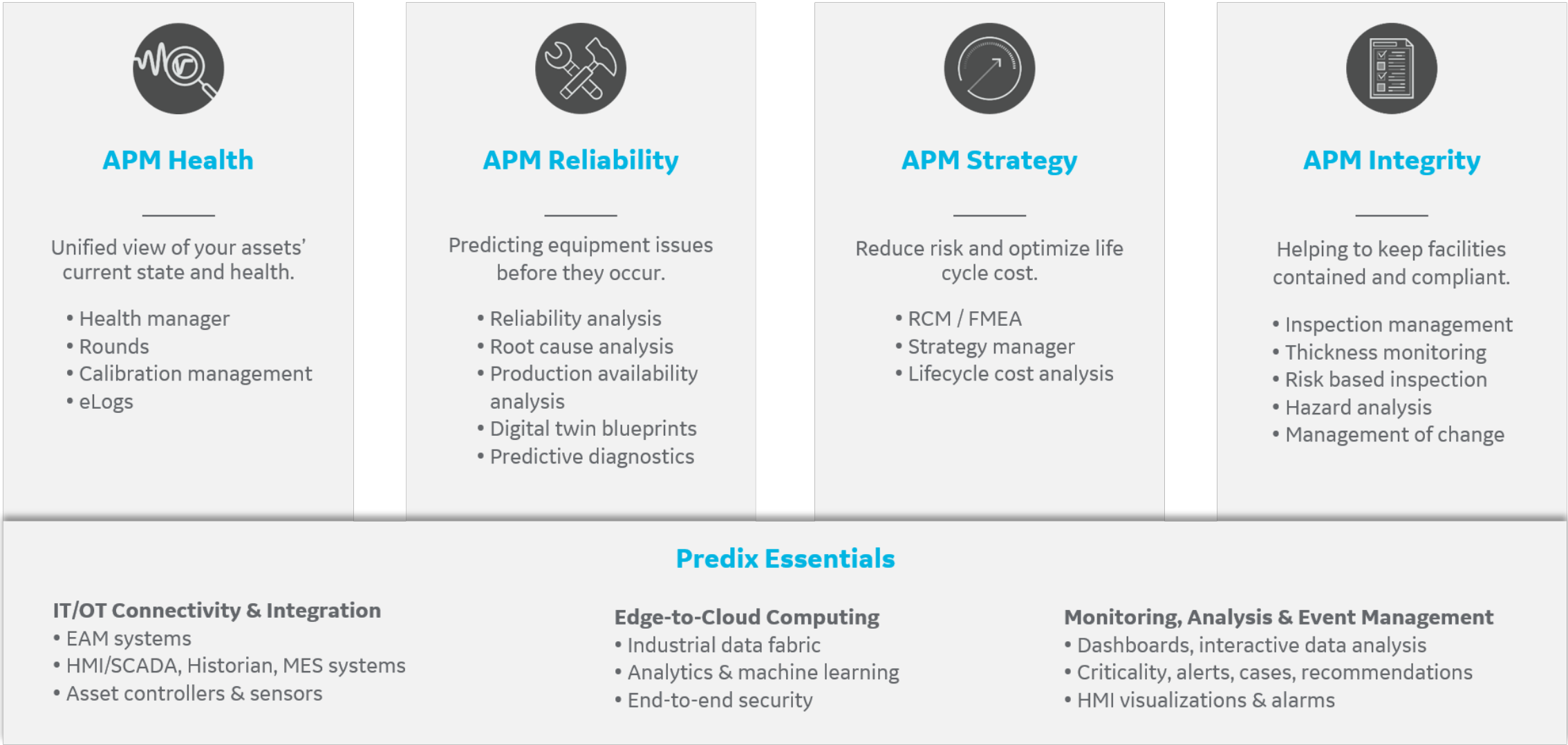
The management of change (MOC) capability follows a systematic approach to delivering a change, taking into consideration all aspects of operations which will or could be impacted because of the change. Using MOC, changes are undertaken as “change projects.” In a change project, changes are formally introduced, approved, and implemented as tasks. MOC provides a flexible solution for creating and managing change projects, communicating changes to team members, and enforcing an approval system to provide accountability for the change. With MOC, users are able to comply with change management requirements by relating records from other Predix APM solutions to ensure that all impacted areas of the organization are recorded as changed elements in the change project. This, in turn, provides organizations with a greater degree of auditability, which is essential in industries that require MOC as a regulatory compliance requirement.

## Real customer results:

Lower long-term  
incident costs by 10 - 20%

# Predix Asset Performance Management

APM Integrity is one of four Predix APM solutions:



**Predix APM offers multiple benefits, including:**

- > Improves reliability, availability, and productivity
- > Optimizes maintenance costs
- > Mitigates risk
- > Maintains technical expertise (tribal/organizational knowledge)
- > Delivers continuous improvement

[Learn more about our complete Predix APM offering](#)

Do you want to learn more about optimizing your asset integrity program to reduce risk, lower inspections costs, and improve employee productivity?

Visit our website to learn more about APM Integrity.

VISIT OUR WEBSITE





## About GE

GE Digital is reimagining how industrials build, operate and maintain their assets, unlocking machine data to turn valuable insights into powerful business outcomes. GE Digital's Predix portfolio – including the leading Asset Performance Management, Automation and MES applications – helps customers manage the entire asset lifecycle. Underpinned by Predix, the leading application development platform for the IIoT, GE Digital enables industrial businesses to operate faster, smarter and more efficiently.

[www.ge.com/digital](http://www.ge.com/digital)