

PERFORM & TRANSFORM



How Asset Performance Management (APM) software helps oil, gas, and chemicals operators balance performance and transformation responsibilities.



GE VERNOVA

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THE BIGGER PICTURE

How the oil, gas, and chemical industries are facing their toughest challenges. [➤](#)

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The Solution:

APM

5 ways APM software can help the industry balance performance and transformation. [➤](#)

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Take a demo of our industry-leading software. [➤](#)

THE BIGGER PICTURE:

How the oil, gas, and chemical industries are facing their toughest challenges.



IT DOESN'T GET ANY BIGGER THAN THIS.

Operators in the oil, gas, and chemical industries are facing a monumental challenge: balancing the need to perform today with the need to transform for tomorrow.

This means finding a way to effectively decarbonize processes while still meeting demand. It also means operating safely and profitably during times of high financial uncertainty.

With asset performance management (APM) software from GE Vernova, all of this becomes easier.

Read on to learn how APM can help operators balance priorities and work toward a greener future.

STRIKING THE BALANCE

01

Optimize maintenance:

operators must be able to ensure effective and efficient maintenance — reducing risk of poorly performing equipment and unplanned downtime.

02

Asset performance:

operators must be able to optimize how their assets are performing — ensuring resource is not wasted while meeting demand.



The Solution: **APM**

5 ways APM can help the industry balance performance and transformation.

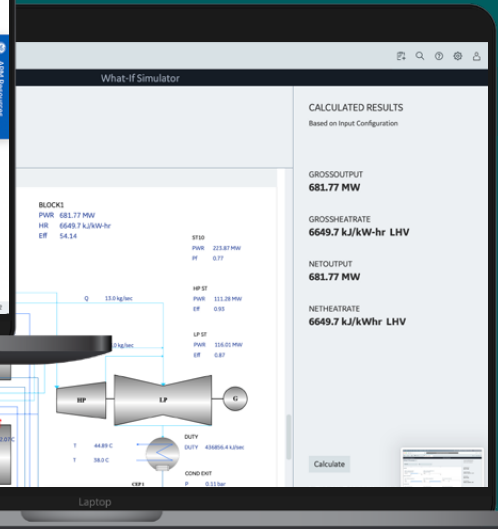
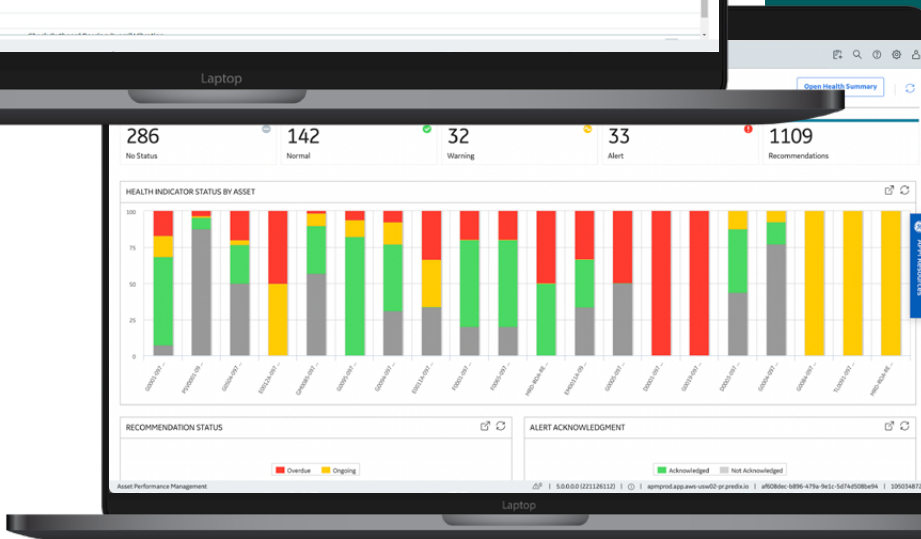
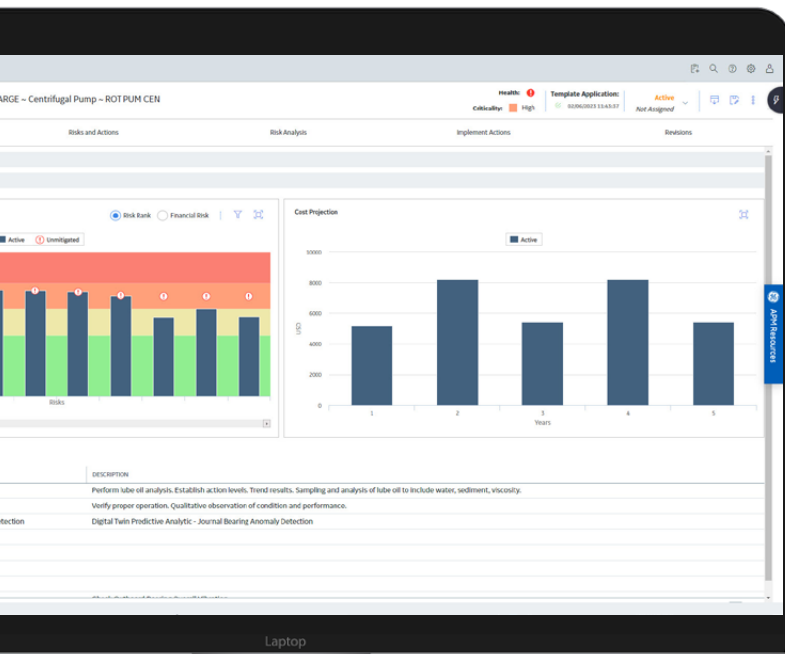


COMPOSABLE & INTEROPERABLE

Asset Performance Management (APM) from GE Vernova is a suite of solutions designed to help optimize asset performance and operations and maintenance (O&M) efficiency across equipment, the plant, and the fleet.

The suite contains specialized solutions, which can be used alone or together in any combination:

- **APM Strategy** uses a risk-based approach to analyze assets, helping you develop and manage strategies.
- **APM Health** provides a clear view of the condition of your assets, including performance data and alerts.
- **APM Reliability** delivers insight into asset performance, predictability, and trends to aid root cause analysis and ongoing improvements.
- **APM Performance Intelligence** empowers power operators to reduce heat rate, fuel costs, and emissions.
- **APM Integrity** enables operators to reduce risk, lower inspection costs, and manage compliance of assets.
- **APM Safety** allows users to identify and mitigate process safety hazards, manage critical safety instrumentation, and manage equipment and process changes that can increase safety risk.



5 WAYS

TO BALANCE OPTIMIZATION & TRANSFORMATION WITH APM

01

DIGITAL TWINS AND PREDICTIVE MAINTENANCE

It's predicted that, by 2028, 70% of upstream operators will deploy digital twins for offshore platforms. Why? Because using cross-site analytics and benchmarking boosts performance and decreases oilfield operations costs by 10%.¹

GE Vernova's APM software is equipped with SmartSignal predictive analytics that provides users access to digital twin blueprints for more than 350 equipment types across manufacturers. Using these virtual representations of their assets, operators can perform proactive maintenance and accelerate time-to-value across their investments.

SEE IT IN ACTION

Case study



02

AI IS BOOMING

Artificial intelligence (AI) has been at the forefront of conversations in every industry — and with good reason. By 2026, 60% of refineries will embrace vision AI technology and, even sooner, 50% of upstream and refinery CTOs will deploy AI/ML-powered energy management tools by 2025.¹

With GE Vernova's AI-driven Autonomous Inspection capability, operators can take advantage of deep insights to supercharge their APM applications like Health and Integrity.

By deploying AI tools such as digital twins in APM, operators can enhance operational and energy efficiency and control operational expenses. They will also be able to rapidly analyze vast amounts of visual data to detect, measure, and reduce risks such as methane leaks, thus lowering environmental impact and improving safety.

¹ IDC FutureScape: Worldwide Oil and Gas 2024 Predictions, 2023

03

HOW APM ENABLES CONTINUOUS IMPROVEMENT

One of the core functions of GE Vernova's APM is to drive continuous improvement. It does this through:

- Monitoring capabilities
- Productivity optimization
- Risk management
- Enabling predictive maintenance

Take a look at how [Astron](#) used APM to enhance asset reliability, increase productivity and collaboration, and reduce costs.

04

HOW APM PROVIDES VALUE

By using an APM software, enterprises are realizing end-to-end value²:

3-40%

EH&S incident reduction

2-6%

increased availability

10-40%

reduction in reactive maintenance

5-10%

inventory cost reduction

05

COMPOSABILITY AND SCALABILITY

GE Vernova's APM suite allows enterprises to compose their own array of capabilities. This means decision-makers can select the individual tools they need to tackle their specific challenges.

Each piece of software is also fully scalable and interoperable. So, no matter which selection of APM tools you choose, your solutions are designed to work with your existing systems (CMMS / EAM / ERP / Historians) and scale with your needs.

² Department of Energy, Operations & Maintenance Best Practices Guide, https://www1.eere.energy.gov/femp/pdfs/OM_5.pdf

A NEW DIMENSION

How APM enables powerful 3D visualization (and what this means for operators).

AN IMAGE IS WORTH A THOUSAND WORDS.

A dynamic, visual representation of your critical assets could be worth much more. For engineers, analysts, and reliability managers, 3D visualization capabilities within Digital Twins open the door to more effective and nuanced decision-making.

Within APM, contextual 3D visualization allows operators to view asset risk distributions, plan and execute work more effectively with precision, and minimize time spent in hazardous environments. There are three use cases for this capability.

01 Risk visualization

APM lets you calculate the risk of an asset using qualitative and quantitative capabilities. With the ability to contextualize information, you can now make faster and more impactful decisions to manage and mitigate that risk.

02 Corrosion loops

Corrosion loops are defined in a process unit based on potential damage mechanisms. 3D and APM integration lets you view this information on a process flow diagram, so operators can identify critical loops and make smarter decisions around effective inspection strategies.

03 Thickness data

[APM Integrity](#) uses asset thickness data to calculate various corrosion analyses, including remaining life, minimum thickness, and corrosion rate. By embedding critical attributes in a physical representation of an asset, analysts can avoid corrosion-related failures and prevent catastrophic loss of containment events.

WITH 3D VISUALIZATION, THE FULL PICTURE OF ASSET INTEGRITY COMES INTO FOCUS.



OPERATE MORE SMOOTHLY WITH APM



How to manage your asset needs while reducing downtime and boosting profit.

As organizations look to modernize, evaluate, and realign their technology investments, their digital infrastructure must be set on a foundation that flexes and adapts to their ever-changing internal and external dynamics.

THE SOLUTION? APM.

APM provides insights that help organizations solve critical maintenance concerns. With rising pressure to reduce costs and improve profitability, APM can help identify and rectify problems pre-failure — reducing downtime, corrective maintenance, and replacements.

To implement a comprehensive solution, [APM Strategy](#) gives enterprises the power to effectively change maintenance outcomes. Once APM Strategy has prioritized assets based on risk and operating context, organizations can deploy [APM Health](#) and [APM Reliability](#). With these applications, users can generate condition-based programs and scale into the use of predictive analytics on critical assets.

Finally, for fixed assets and safety instrumentation, [APM Integrity](#) and APM Safety can be used to avoid loss of pressurized containment events, optimize mechanical integrity and inspection programs, lower catastrophic incident probability, and enhance overall safety.

Straightforward integration of APM applications further ensures you have a powerful suite managing all your asset needs. With APM you can:

- Identify bad actors at an asset, system, and fleet level
- Eliminate costly and unnecessary maintenance tasks
- Ensure equipment is running optimally, which may reduce potential emissions
- Step-change from corrective to preventative and into condition-based and predictive maintenance
- Remotely monitor maintenance processes and asset health
- Conduct risk-based assessments for inspection, intervention, determination, and maintaining the overall integrity of your assets

Did you know

\$500,000

is the average operating revenue loss per hour of unplanned downtime in an oil refinery site is roughly?

[Read the report](#)





SOUTH HOOK
LNG TERMINAL COMPANY LTD

South Hook LNG Terminal
faced two challenges:

01

Ensuring a strong supply chain
for the liquefied natural gas.

02

Maintaining thousands of
key assets.



THE SOLUTION

Using GE Vernova's APM software, a three-phase solution for asset assessment and maintenance was developed.

PHASE 1

Asset Register Data Verification to establish parent-child relationships between assets. These relationships help identify which assets require maintenance, and which assets are connected. This reduces downtime and streamlines the maintenance workflow for plant technicians.

PHASE 2

Asset Criticality Assessment (ACA) to identify the key systems and equipment and provide visibility of those systems and assets that are most critical to the success of the overall business.

PHASE 3

Reliability Centered Maintenance (RCM) to identify the events (e.g., failure, passing of time) that trigger maintenance (e.g., inspection repair, replacement). This ensures an efficient and rational process of applying RCM techniques and generating recommendations that are converted to maintenance strategies across critical assets.

RESULTS

17%

of tasks were eliminated

73%

of proactive maintenance
tasks were optimized

25,000

assets were assessed



OQ wanted to improve the execution of inspection recommendations and reduce unnecessary maintenance spending.

THE SOLUTION

First, OQ conducted a full risk-based inspection (RBI) analysis of all its downstream assets. The company also initiated integrity operating windows (IOW), setting safe operating limits for key assets.

Then, OQ feeds all equipment, design, and inspection data into an asset integrity database, defines corrosion loops, and conducts probability of failure (POF) and consequence of failure (COF) evaluation.

Finally, it runs a risk assessment in the RBI module of GE Vernova's APM Integrity, including confidence and risk ranking. All of this rolls up into a risk matrix to prioritize inspection tasks and ensure execution.

As a result, OQ optimized risk management by allocating resources based on risk and realizing potential savings in Operational Expenditures (OpEx) through shorter shutdowns, longer run lengths, and fewer unplanned shutdowns.

RESULTS

Nearly

\$60M

was saved by one plant in production losses and maintenance and inspection costs

9,554

total assets under the RBI system

271

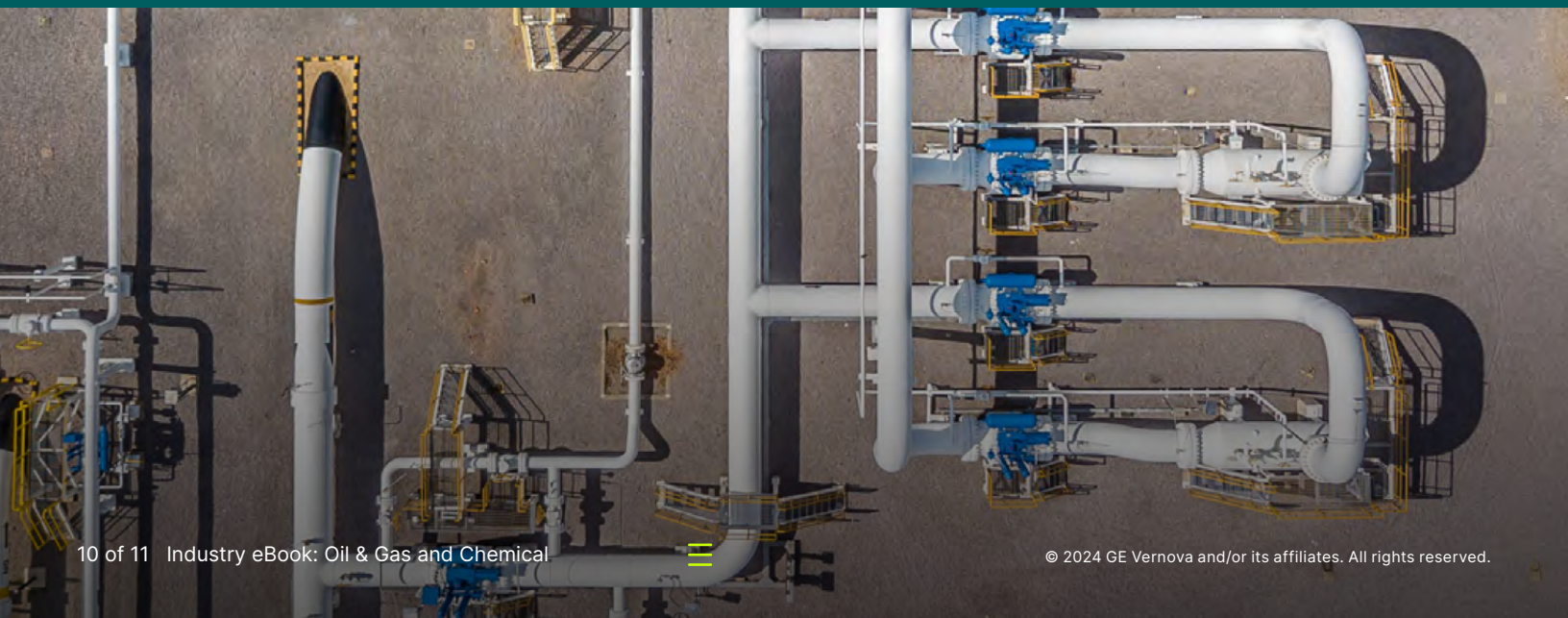
process units

7,560

task recommendations in 2022 compared to 2,540 in 2019

85%

OQ utilization of APM Integrity 2022 compared to 50% in 2018





GE VERNOVA

EXPERIENCE APM FIRSTHAND

Oil, gas, and chemicals operators must manage today's assets while preparing for tomorrow.

APM empowers operators to optimize asset performance and O&M efficiency across the entire organization.

To experience the power of APM firsthand, visit GE Vernova's demo hub.

Explore demos

