

# Maximize The Value Of GE Digital Asset Performance Management For Power Generation Operations

GE Digital Asset Performance Management (APM) is an integrated set of solutions designed to optimize asset management functions across power generation operations. The APM solution includes diagnostic and analytics tools to collect and monitor asset data and ultimately provide a holistic view of an asset landscape. The consolidated view of asset data informs maintenance cycles, equipment strategies, and other key decision areas to provide efficiencies and identify cost-saving opportunities while improving reliability across power generation assets.

GE Digital's APM solution centers around a foundational offering of APM Essentials that aids in data management, processing, and visualization as well as asset monitoring and alerts. Additional components include APM Health, which provides a unified view of asset health and current states; APM Reliability, which analyzes the data collected to predict equipment issues; and APM Strategy, which helps with strategy management to reduce risk and optimize life cycle costs.

Automatic asset monitoring and alerting can help organizations realize value with an APM solution quickly. However, the full breadth of value comes from using APM data as a foundation to optimize maintenance practices and to inform strategy and business decisions across an organization. Power-generation organizations looking to modernize and improve their asset management with GE Digital APM will benefit from approaching APM as a holistic solution to radically transform their operations across strategy, organizational, and maintenance decisions.

To better understand the benefits, costs, and risks associated with GE Digital Asset Performance



Total five-year return:

**1.3x initial investment**



Net present value:

**\$1.39 million**

Management For Power-Generation Operations, GE Digital commissioned Forrester Consulting to interview five representatives and survey 53 more and conduct a Total Economic Impact™ (TEI) study. <sup>1</sup>

This abstract will focus on power-generation organizations' use of GE Digital APM and its value to their organizations. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization.

## INVESTMENT DRIVERS AND OBJECTIVES

Before investing in GE Digital APM, interviewees and survey respondents' organizations had limited or outdated asset monitoring capabilities. Often, they constantly monitored only the most critical assets, and data collection was largely manual. Data aggregation and communication systems were disparate and siloed across the organizations' assets. Nearly all the interviewees' organizations maintained routine asset maintenance schedules that did not account for asset health and they found internal efforts to categorize asset health to be too difficult. In their prior environments, the interviewees' organizations struggled with challenges including:

- **High operations and maintenance (O&M) costs.** Without tying asset maintenance practices to asset health, their organizations replaced assets that were still in good health or for which they could not foresee asset failure. Unplanned failures resulted in more costly ad hoc asset replacements and maintenance and unsustainable O&M costs.
- **Inefficient and unstructured data collection and management.** With unaggregated data and siloed and outdated communication systems, the organizations underutilized data in informing decision-making and actions. Disparate systems and approaches to maintenance were common within one organization. Flagged issues didn't always get to the right people, and action items would not be followed up on.
- **Difficulty ensuring asset integrity and compliance.** As the makeup of fleets aged or moved toward more renewable energy sources, interviewees' organizations experienced asset failures they didn't understand.
- **A lack of in-house expertise in data analysis and interpretation.** The organizations often

**“I think there’s no utility out there that hasn’t had the same story where we did an assessment and inspection and come to find out [that] after it failed, we had it in somebody’s filing cabinet drawer. We pulled it out and realized that we didn’t actually action anything.”**

*EAM implementation manager,  
eastern Canada*

**“We needed a formalized system that could help us pull all that [data] together for sustainability.”**

*EAM implementation manager,  
eastern Canada*

didn't know how best to respond to the signals and data they received through their preexisting systems. Technical knowledge was at risk of being lost when experts aged out of the workforce.

The interviewees' and respondents' organizations aimed to achieve the following with their investments in GE Digital APM:

- Improve asset reliability and availability.
- Lower O&M costs.
- Improve data quality and organization, centralizing data to create a single asset view.
- Improve the speed and quality of business decision-making.
- Contribute to overall risk avoidance.

The interviewees said their organizations chose GE Digital APM over other solutions in the market due to GE Digital's:

- Flexibility with deployment and service options.
- Positive reputation in the market, often coupled with the organization's prior experience with GE.
- Strong industry knowledge and technical capabilities with the ability to provide recommendations and expertise.
- Strength in consulting and implementation services.

## COMPOSITE AND APM IMPLEMENTATION

The composite organization is a regional power-generation company that operates 10 power-generation sites with an average capacity of 600 megawatts (MW) per site, for a total managed capacity of 6,000 MW. Each site has one to two power-generation plants, the majority of which are 2x1 combined cycle gas plants.

The composite organization deploys the GE Digital APM solution in the cloud and begins with a basic investment in Essentials and APM Reliability with predictive diagnostics. Deployment spans all 10 sites, and the most critical 8% of all assets. The APM Health and Strategy solutions, which offer more advanced capabilities, are deployed in Year 3 once the organization is more mature and strategic-focused.

**“The product itself is very good, but the real value you get is if it is properly set up, implemented, and tuned.”**

*Reliability engineer, southern Europe*

## KEY BENEFITS WITH GE DIGITAL APM

Interviewees’ organizations that only invested in some components of the full APM suite could not realize the full breadth of value from the solution. Many of the organizations were not taking full advantage of GE Digital APM’s predictive analytics and maintenance optimization capabilities. They did not use APM predictive analytics to update their maintenance and work processes, keeping them from realizing the full transformational value of an APM solution. The more of the complete APM solution an organization utilized and the more their people and processes were willing to adapt to learnings from APM data, the greater the value APM delivered.

Additionally, using APM software across additional assets and generation sites compounds the value an organization can extract from the data. The composite organization experiences the following benefits with GE Digital APM:

### **\$4.0 million in avoided costs from reducing unplanned downtime.**

GE Digital APM avoids critical asset failures, improving plant reliability and reducing unplanned downtime by 10% to 20%.

- GE Digital APM’s asset health monitoring and alert capabilities notified the interviewees’ organizations of imminent incidents and enabled them to take corrective actions to prevent asset failure before it occurred. In addition to avoiding incidents, earlier detection of potential failures or areas of weakness decreased the severity and length of downtime required to fix parts.
- Each minute of unplanned downtime represents lost revenue or the financial burden of needing to purchase replacement energy to meet an organization’s delivery commitment to the grid.
- To maximize the reduction in downtime, organizations can continuously help improve the software’s data analysis capabilities to capitalize on continued learnings. One interviewee said that if the software missed equipment issues, their organization’s diagnostic team reviewed the algorithm and modified it where necessary to improve future data.

**“[GE Digital APM] quickly pays for itself when you can avert or miss some of those [lost production] opportunities.”**

*EAM implementation manager, eastern Canada*

Five-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

**Better business decision-making.** GE Digital APM's time-series data analysis, life-cycle cost analysis, and improved data access helps the composite organization make better strategy decisions beyond immediate reduction of downtime or asset replacement or maintenance. Heightened transparency and confidence in a more complete, fleetwide data set enables decision-makers to feel confident in making decisions and setting strategy based on APM data. Improved decision-making with APM leads to improved processes, new revenue streams, and business innovation.

**A 7% to 13% reduction in planned maintenance and a 10% to 20% reduction in unplanned maintenance hours.** GE Digital APM decreases the total time spent on maintenance when the composite organization creates and optimizes a data-driven approach to asset maintenance. With a better picture of real-time asset health, the composite organization confidently prioritizes asset work, extends maintenance cycles, and reduces the overall time spent on maintenance.

- The improved workflow and communication with APM means that all maintenance requests are properly logged into the work management system on time, while previously, maintenance requests were sometimes missed. With the greater transparency and accuracy of where maintenance was needed, the organization plans out maintenance most efficiently.

- A reduction in total asset failures and associated reductions in unplanned downtime decrease the time spent on unplanned maintenance, which often has a much greater financial impact than reducing planned work.
- To realize these cost savings, an organization must make a deliberate effort to update maintenance practices and schedules based on its APM system's real-time asset data. Organizations that are not open to changing their standard maintenance schedules from time-based maintenance to risk-based with GE Digital APM will not experience time or cost savings from optimizing their asset maintenance.

**Improved knowledge management, centralization, and preservation.** APM acts as a single source of truth for current asset information and preserves knowledge to help future employees maintain best practices. An EAM implementation manager in eastern Canada said: "APM captured the specific checks that senior operators would do [and] plug it into the software so we could have consistent measurement and make sure that we weren't losing things that could come back to bite us."

**Cost savings of \$278,000 from improved asset management.** With GE Digital APM, the composite organization makes more informed decisions around equipment strategies and replacement cycles, reducing the frequency with which it replaces assets. As a result, it saves on the costs required to replace equipment and equipment components by delaying new asset replacement purchases.

- Asset management also improves with better data-driven prioritization of replacements and repairs when organizations lack resources to undertake all desired maintenance work.
- Like with updated maintenance schedules, organizations must deliberately update asset replacement practices based on their APM

**"Our goals are to reduce our maintenance costs by implementing this from 25% to 30%, and we're well on our way."**

*VP, asset management, eastern USA*

system's real-time asset data to realize these cost savings.

**Improved safety and ability to meet regulatory and compliance requirement.** With its APM solution, the composite organization has a better handle on the safety concerns around major pieces of equipment, can identify risks better, and has fewer failure events that can cause compliance violations.

**“If you're putting something new out there, change management is huge because if you don't get the organization to accept it, it's going to fail — no matter how good a job you do implementing it.”**

*VP, asset management, eastern USA*

**Additional operational efficiencies for data collection, management, and reporting efforts totaling \$86,000.** GE Digital APM helps the composite organization automate data collection, aggregation, and analysis, and it provides dashboards and generates reports for the organization without manual work, which improves internal processes and communication and saves employees' valuable time.

- Survey respondents spoke highly of improved communication and workflows with GE Digital APM. They credited APM with preventing inaccurate data from being submitted to their systems, streamlining communication, and avoiding misunderstandings, delays, errors, and inefficiencies that negatively impact productivity.
- Interviewees' and respondents' organizations used APM's data analysis and reporting to enhance decision-making and save time for monitoring and diagnosis (M&D) team members as well as for business leaders.

**Increased fungibility of resources leading to efficiencies in team structures.** With reduced site downtime, optimized maintenance practices, and data collection and reporting efficiencies, the composite organization streamlines its workforces or operates as usual while facing talent shortages.

**Direct cost savings from improved inventory management or retiring old technology.** The composite organization reports cost savings from inventory reconciliation with its their vendors and the sunsetting of expensive data collection or old asset monitoring systems.

**Reduced insurance spending.** The composite organization reduces its insurance premiums by 2% per year due to the risk mitigation APM provides.

**Improved employee experience.** An improved quality of life for employees stems from an improvement in work planning, both in reducing after-hours or emergency work and in preventing cancelled work hours when something fails.

**Reduced environmental impact.** APM avoids failure events that can cause environmental violations or damages, and it reduces energy waste with an improved heat rate. Organizations looking to minimize their environmental impact should look for areas to utilize APM data in environmental decision-making.

**“We repurposed people for a broader purpose. We might have had one individual at one particular plant. They did it for their own plant. But with these tools, now they do it for the fleet.”**

*EAM implementation manager, eastern Canada*

## TOTAL ECONOMIC IMPACT ANALYSIS

For more information, download the full study: “The Total Economic Impact™ Of GE Digital Asset Performance Management For Power Generation Operations,” a commissioned study conducted by Forrester Consulting on behalf of GE Digital, July 2022.

### STUDY FINDINGS

Forrester interviewed five representatives and surveyed 53 representatives at power generation organizations with experience using GE Digital APM and combined the results into a five-year composite organization financial analysis. Risk-adjusted present value (PV) quantified benefits include:

- A 20% reduction in unplanned downtime, saving the composite organization \$4.1 million.
- Optimized maintenance strategies reducing planned and unplanned maintenance labor by up to 13% and 20%.
- Cost savings of \$365,000 from extending asset lifetimes and operational efficiencies.



**Return on investment (ROI)**  
**31%**



**Net present value (NPV)**  
**\$1.39M**

## Appendix A: Endnotes

<sup>1</sup> Total Economic Impact is a methodology developed by Forrester Research that enhances a company’s technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

### DISCLOSURES

The reader should be aware of the following:

- The study is commissioned by GE Digital and delivered by Forrester Consulting. It is not meant to be a competitive analysis.
- Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the full study to determine the appropriateness of an investment in GE Digital APM.
- GE Digital reviewed and provided feedback to Forrester. Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester’s findings or obscure the meaning.
- GE Digital provided the majority of the customer names for the interviews but did not participate in the interviews.

### ABOUT TEI

Total Economic Impact™ (TEI) is a methodology developed by Forrester Research that enhances a company’s technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders. The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility.



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