

# HONEYWELL FORGE ASSET PERFORMANCE MANAGEMENT

Machinery Surveillance | Performance Monitoring |  
Process Improvement | Predictive Analytics



**Honeywell**

# WHAT IS HONEYWELL FORGE APM?

Leveraging our long history driving process automation and control innovation, Honeywell Forge APM advances asset performance management (APM) capabilities to a new norm by combining performance monitoring with machine learning and predictive analytics. Drawing from a wealth of standard asset libraries and tools to integrate existing plant data sources, Honeywell Forge APM deploys rapidly. On average, installation costs can be recovered in 12 months or less.

- Provides **surveillance** over all local and remotely-located machinery and processes
- Continuously **reveals** latent inefficiencies, impending issues, and plant constraints
- Continuously **quantifies** inefficiencies and detects early onset of reliability issues
- **Expedites analysis** toward root cause and defining actions (e.g. maintenance, tuning)
- Manages **workflow** in applying corrective actions and improves team **communication**
- Provides supplemental **support** to Safety, QMS, environmental and regulatory agendas

Honeywell Forge Asset Performance Management provides the latest capabilities for serving a company's APM a company's APM initiative – whether that initiative is to embark on a new asset management program or transform an established condition monitoring system. Honeywell Forge APM integrates all plant data into a single database. It integrates process and asset data into a unified dataset and creates digital twins with advanced predictive analytics. The result is increased performance and reliability from both your assets and the processes that the assets serve.

Honeywell Forge APM continuously monitors equipment and process health, enabling industrial facilities to predict and prevent asset failures, improve operational performance, and manage reliability and maintenance efficiently.



## Challenges Across Industries

**Experience Loss** – A retiring workforce, tribal knowledge, and a skilled labor shortage threatens loss of experience that underpins manual asset and process reliability programs.

**Juggling Assets** – Company process and rotating equipment experts struggle to adequately monitor all equipment due to competing priorities. Instead, they focus on selecting critical machines, processes and “bad actors.”

**Manual Calculations** – Process engineers may utilize multiple programs to assess performance (e.g. combination of Excel, UniSim and mathematical programs) to periodically analyze performance. This is time consuming, intermittent, and often an undocumented method.

**Run-to-Fail** – Where experts or monitoring systems don’t exist, “run-to-fail” remains a standard practice.

### Productivity Improvement –

Productivity gains have narrowed following decades of driving lean and continual process improvement. Traditional means to remove costs appear exhausted short of compromising safety and quality.

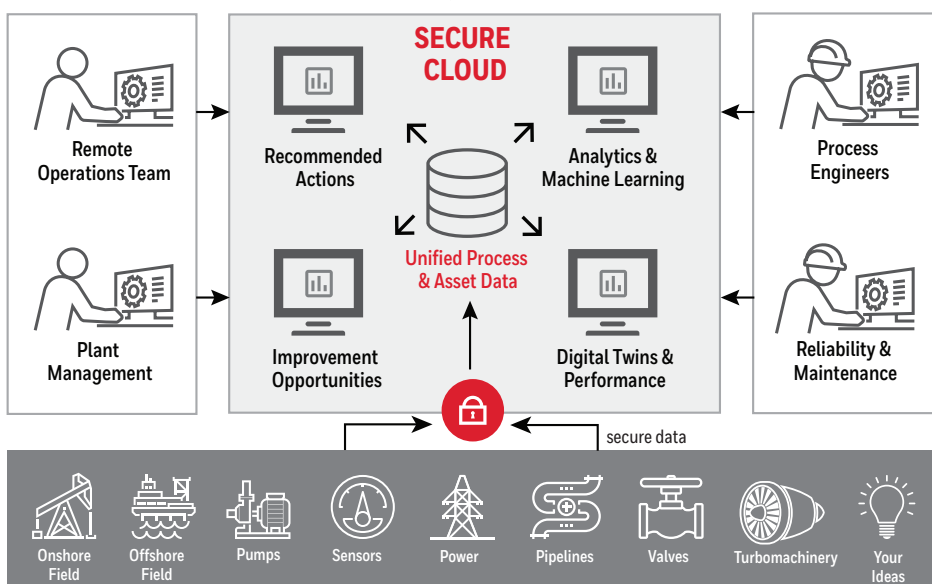
**Capacity Constraints** – Unplanned downtime and bottlenecks are the largest contributor to missed profits - especially during sold-out, max capacity conditions.

**Fragmented Views** – Plants struggle with multiple data silos, and varying visibility into the nature of potential issues with assets and processes. Reaching consensus on root cause and agreed course of action is a persistent challenge among engineering, maintenance and process personnel.

## ADDRESSING CHALLENGES THROUGH DIGITAL INTELLIGENCE

Today, companies require “digital intelligence” to manage the challenges surrounding hundreds or even thousands of assets serving processes. Digital intelligence transforms data into real-time knowledge regarding process performance, equipment health and energy consumption.

### Asset & process data, digital twins and analytics find issues and improvement opportunities



#### Honeywell Forge APM

Process- Asset  
Integration

Infinitely Scalable

Performance Models

Analytics & ML

Interactive  
Calculations

Event Detection

# APM Intelligence Designed to Enable Smart Operations

Honeywell Forge Industrial Solutions is the backbone for real-time APM through unified data, analytics and visualization. With Honeywell forge APM:

- Honeywell and plant SME knowledge becomes **embedded**.
- Continuous data feeds **digital twins** and drives **real-time KPI calculations**, event notifications, and on-demand report generation.
- Personnel stop wrangling raw data and cobbling reports. They are freed to **analyze, improve and control** a wider range of asset and process improvement opportunities.
- Integrated process and asset models reveal root cause of bottlenecks, **identify new levels of untapped productivity**, and uncover potential EHS threats.
- Machine learning and **predictive analytics deliver early insight** to potential machinery downtime and guide maintenance planning.
- The **unified environment** of data and KPI event generation establishes a common source for workflow among engineering, maintenance, and operations teams.

## **SOLUTIONS ACROSS INDUSTRIES AND ASSETS**

Designed to meet the needs of Honeywell customers worldwide, Honeywell Forge APM works across industries—on a varied set of monitoring applications—and across a broad set of asset types including both mobile and fixed equipment.



## Depth & Breadth of Capabilities

INDUSTRY	 Oil and Gas	 Refining & Chemicals	 Mining	 Manufacturing	 Power
MONITORING APPLICATIONS	 Process	 Health	 Efficiency	 Safety	 Energy
TYPES OF EQUIPMENT / COMPLEXITY	 Excavators	 Instruments	 Valves	 Pumps	 Heat Exchange
	 Compressor	 Turbine	 Haul Truck	 Unit	

## MAKE HIDDEN OPPORTUNITIES VISIBLE

Honeywell Forge APM reveals latent asset performance issues and guides prescriptive actions toward reducing asset-related inefficiencies. Combined with continuous surveillance of key operating and equipment conditions, this allows for the earliest possible indication of performance gaps and the quickest path to stopping profit losses.

### PROCESS-ASSET INTEGRATION

Effective asset management goes beyond focusing only on asset condition. APM must quantify how well an asset's performance harmonizes with the process it serves - using all data.

### EMBEDDED MACHINE EXPERTISE

A broad library of expert asset models and templates accurately quantifies machine efficiency (performance) and gives a leading indicator of process and/or asset health issues. The effectiveness of a digital twin is pinned to the quality of its models, which Honeywell has been evolving through decades of our experts modeling processes and machines.

### PREDICT OUTCOMES

Machine Learning models provide predictive analytics to augment the performance metric. While Honeywell performance models excel at accurately quantifying energy consumption and machine efficiency, Honeywell data-driven analytics excel at recognizing irregularities early, revealing root cause, and providing probability estimates of future outcomes.

### INTERACTIVE CALCULATION ENGINE

Rather than go offline to other programs, engineers directly connect their algorithms with continuously fed process-asset data. The time savings frees them to manage more assets concurrently. Additionally, advanced configuration capabilities allow site experts to deploy OEM-provided machine models, execute advanced programming (e.g. C#, VB), and run data science and data analysis tools (Python, R) directly from the unified APM database.

### EVENT DETECTION

The leveraging of process-asset data, performance and analytics models, and the calculation engine culminate here – real-time. Actionable insight is delivered across the enterprise. Events notify the Event Dashboard, notify personnel via e-mail, or alert a CMMS system based on the output of the performance, analytics, and interactive calculation engines.



## **CUSTOMER VALUE**

### **INCREASE ASSET UTILIZATION UP TO 10%**

- Reduce unplanned downtime by predicting failures and providing proactive response
- Minimize rate and efficiency losses

### **REDUCE MAINTENANCE COSTS UP TO 10%**

- proactive response to minimize equipment damage and emergencies
- Optimize maintenance based on real asset conditions
- Improve reliability and extend equipment life

### **INCREASE OPERATING EFFICIENCY UP TO 10%**

- Monitor energy usage to achieve up to 10% reduction in costs
- Improve engineering effectiveness with continuous monitoring, remote collaboration, and ready-access to required information

### **INCREASE SAFETY**

- Minimize risks by ensuring normal and stable operations
- Eliminate production stops for safety system verification

# HONEYWELL FORGE APM CLOUD

Honeywell Forge APM has infinitely scalable capability. Start with a handful of assets or scale from unit, to site, to the edge of the organization's enterprise – anywhere in the world. The cloud-based asset performance services allow plants to grow their APM footprint indefinitely, while delivering continuous access and insight from a unified vantage point. As plant knowledge grows and evolutionary changes occur, Honeywell Forge APM can grow with the plant. The cloud enables plants to stay up-to-date and facilitates enterprise-wide collaboration between all plant processes and asset stakeholders.

## APM for Process & Equipment Monitoring

### Advanced Performance Library

First-principles models for pumps, compressors, gas turbines, steam turbines and heat exchangers to compare current performance against predicted performance and highlight deviations at the earliest notification of equipment health problems—detecting valve wear, fuel nozzle issues, sensor problems, and turbine erosion.

### Standard Performance Library

Pre-defined set of performance equations and fault models that can be customized and enhanced for vital assets such as furnaces, blowers, motors, etc.

### UniSim® Runtime

Design models from UniSim can be run from Honeywell Forge APM in real-time for other dynamic monitoring needs, including column flooding or separation efficiencies.

### Thermodynamic Property Package

An extensive database of physical properties, transport properties and phase behaviors for high-accuracy performance calculations, provides support for process modeling of distillation, reaction, heat transfer, rotating equipment, and logical operations in both steady state and dynamic environments.

### Smart Instrument Monitoring

Since the advent of smart instruments, companies have struggled to fully realize the benefits of digital device diagnostic information.

In conjunction with Honeywell's Field Device Manager (FDM), Honeywell Forge APM delivers an integrated instrument asset management solution to help achieve the promised benefits. Honeywell Forge APM provides meaningful organization and prioritization for diagnostic device alerts.

Automatic synchronization with Honeywell's Experion® Process Knowledge System (PKS) makes this task effortless.

Honeywell Forge APM maintains fault history, bad actor and other records so reliability analytics can be employed over time to improve the overall reliability of instrumentation.

In addition to smart device monitoring, Honeywell Forge APM offers advanced monitoring and diagnostics that look beyond the instrument and assess control loop performance to detect oscillation, bias, drift, stiction, frozen sensors, etc.

# WHY HONEYWELL?

Don't compromise on your operational and business performance – choose an automation and APM supplier committed 100% to your success. At Honeywell, we have decades of experience providing asset management technology to the process industries.

Our proven track record includes the evolution of the Asset.MAX suite of software from 1999. Since then, we've delivered asset-monitoring solutions to many of the world's leading industrial firms.

With 1,500 experts in over 80 countries around the world, Honeywell understands your business and can speak your language. Our consultants provide onsite and remote support for Overall Process Effectiveness (OPE) and Overall Equipment Effectiveness (OEE). We deliver a unique set of advanced software applications for better safety, reliability, efficiency and sustainability.

Honeywell's advanced solutions software and embedded expertise empowers users to turn data into action, make smarter decisions and improve process and asset performance.

In addition, Honeywell Forge Connected Performance Services (CPS), powered by Honeywell Forge APM, enables industrial facilities to utilize cloud- and subscription-based solutions to gain a clear view of operational inefficiencies. CPS managed services translates data into intelligent insights and embedded actions that allow operators to act proactively – to improve process reliability and asset optimization. In-depth, multi-variant analysis can be delivered visually with predictive insights; decisions that used to take days to make are done much more quickly.

## For more information

To learn more about Honeywell Forge Asset Performance Management visit, [Asset Performance Management](#) or contact your Honeywell account manager.

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WHAT  
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MAKE IT**

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