SYMPHONY INDUSTRIAL AI

APM 360

Peak Industrial Performance

APM 360

APM 360™ optimizes asset performance to increase reliability and availability, minimize costs, and reduce operational risks. Outcomes include increased asset availability by as much as 5%, reduced reactive maintenance by 10-40% and up to 10% in inventory cost reduction.

The Challenges

Making your operation more reliable while optimizing performance at a lower cost is a tough balancing act. Variables include:

- The number and variety of assets to track
- The amount of regulations and compliance requirements to follow
- The volume of data to aggregate and analyze
- The retiring of a seasoned skillset

Asset-intensive companies must do more than improve maintenance. Meeting both objectives requires you to digitally transform meaning, break down production siloes, and connect all assets, systems, and data.

The Answer

APM 360™ is a cloud-based asset performance management solution for overall asset health, real-time condition monitoring, and predictive maintenance. Unlike other solutions, APM 360 drives more value by recommending specific actions, accurately. APM 360 uses AI machine learning to detect anomalies and take into account complex, dynamic behavioral machinery patterns and contextual data in the manufacturing process at large.

The result? Continuous collection and management of all asset data across the enterprise, organized and analyzed to help you make the best business decisions, lowering risk and cost while improving optimization and asset performance.

How Does It Work?

APM 360 has a failure modes and effects analysis (FMEA) template library that uses failure detection algorithms to identify the inputs to the analytical module and maps these inputs to the asset template. It uses “layered analytics” including supervised machine learning algorithms, KPIs, and first- principle models to analyze the data. The apparent cause engine, along with layered analytics, use the analyzed data to detect behavior anomalies in a multi-dimensional model (also known as a digital twin). APM 360 maps the model’s behavior back for specific failure mode(s) to determine advisories, recommendations, and alerts. The analyzed data is also normalized and weighted based on the asset or system impact, summed and differentiated to determine the asset’s overall ability to maintain its design function. This calculation is the asset health score.

APM 360 uses this health score to track the asset’s health over time and provide early warnings and allows your team to focus on mechanical or process-driven degradation. Altogether, you get role-specific dashboards for maintenance, reliability, and operations by asset, plant, and across plants.

Solution Highlights

Flexible Data Input

The APM 360 asset templates and models can use information from data historians such as OSI PI and Aspentech IP21, distributed control systems, enterprise asset management (EAM), and WATCHMAN 360.

Integrated FMEA Library and Asset Templates

APM 360 contains a library of faults with associated recommendations. It doesn’t just alert you that something is abnormal, but it goes one step further by recommending a prescriptive course of action.

Open Platform

You can write your own algorithms in Python (or any other language that conforms to API standards) and then import them into APM 360.

Asset Health Intelligence

APM 360 generates an accurate asset health score by performing additional calculations based on layered analytical results and AI algorithms based on the asset’s digital twin. APM 360 uses this score to track health over time and generates early warnings for proactive intervention.

Predictive Workbench

Test and deploy new models or run ad-hoc analytics.

Powered by Microsoft Azure

APM 360 uses Microsoft Azure to offer a seamless and secure edge integration with zero disruption to your digital infrastructure. It combines Azure services (such as IoT Edge, IoT Hub, Event Hub, AKS, and Stream Analytics), Microsoft Power BI with MathWorks MATLAB to provide fast analytics and actionable insights.

Why Choose APM 360?

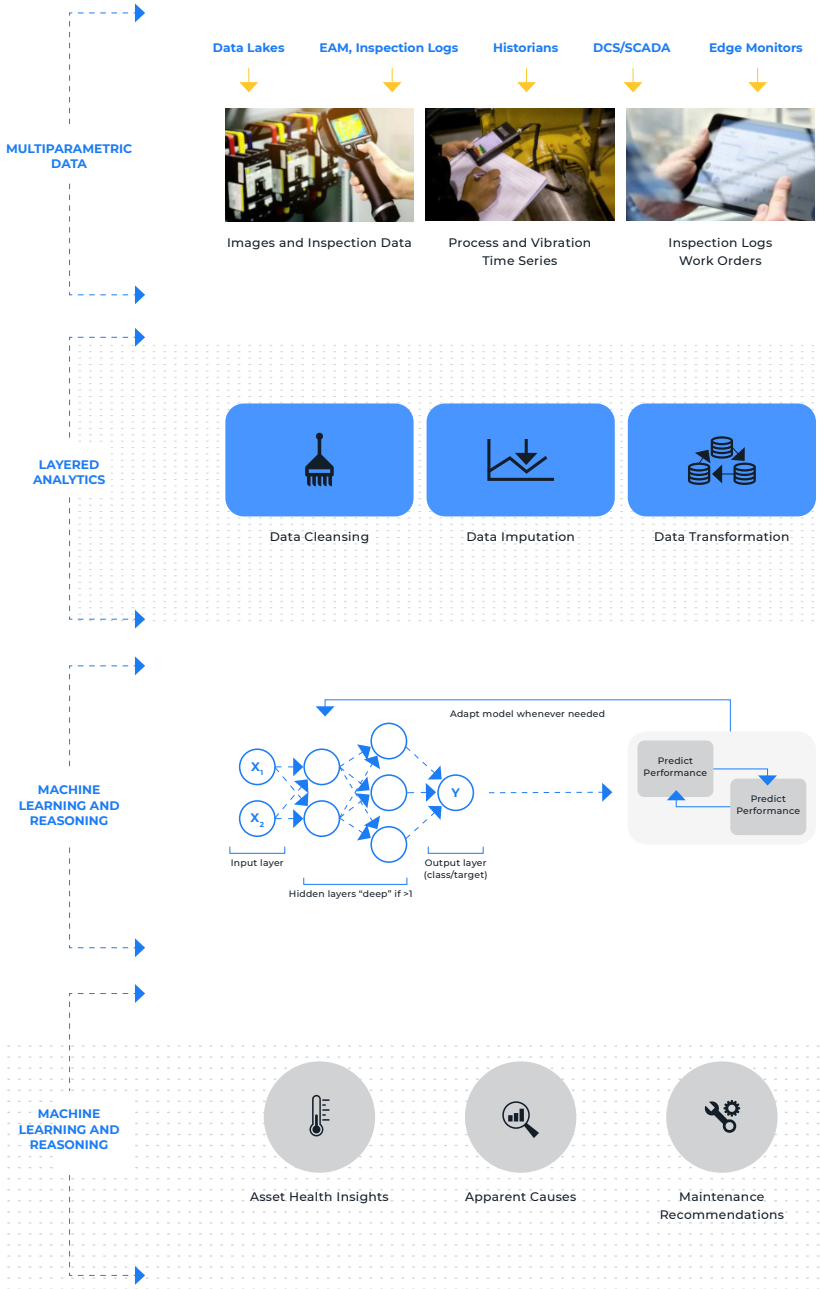
Most computerized maintenance management system (CMMS) and EAM solutions have reliability applications that use statistical models of leading indicators like mean time between failures (MTBF) or mean time to failure (MTTF) to identify “bad actors” and improve asset maintenance. However, this model is based on historical events and does not take into account asset state under continuously changing operating conditions. In contrast, APM 360 uses advanced models to learn from continuous, real-time analysis and visibility to predict operating issues and provide actionable actions for mitigation while balancing risk, cost, and performance.

What makes APM 360 unique is the breadth of the asset template library, use of asset data from several sources, and an open platform approach. While other APM solutions use only one kind of AI algorithm to identify an asset failure, APM 360 uses a layered approach with six different algorithms. The system can also ingest CMMS/EAM data to increase the accuracy of APM analytics. The result is reduced false positives, reduced false negatives, and higher accuracy of diagnostics and advisories.

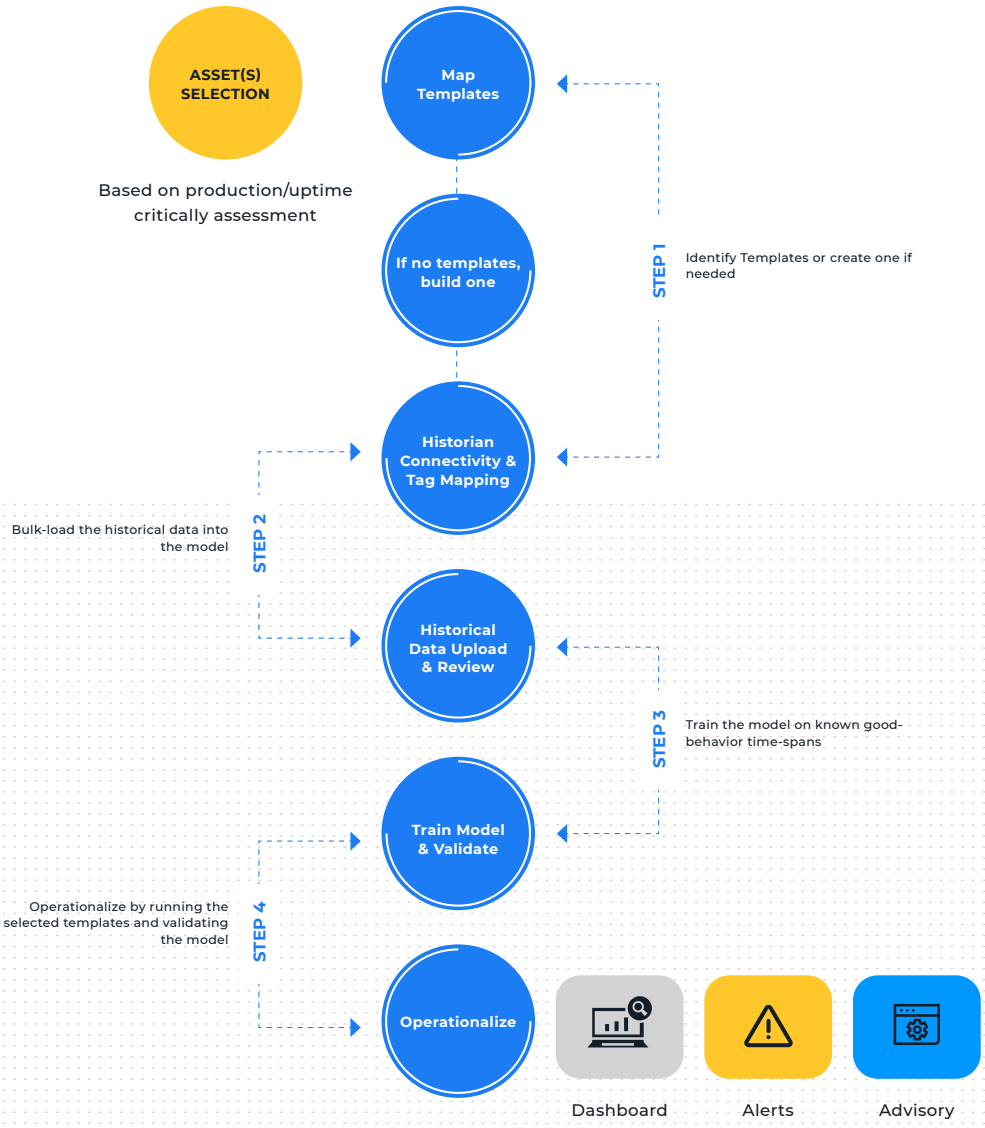
Best of all, APM 360 focuses on mechanical component health, asset process health, and system/unit health, giving full transparency both from the plant level and across plants. Customers benefit from:

- Cost reduction through predictive maintenance
- Greater accuracy in predicting an asset’s remaining useful life by creating conditions that improve performance while maintaining health.
- Improved quality control and safety

APM 360 Architecture



APM 360 How-To Step-by-Step



About Symphony IndustrialAI

Symphony IndustrialAI is the leading innovator of industrial insight, from machine component health to plant performance optimization. Symphony IndustrialAI solutions span condition monitoring, asset performance management, and predictive maintenance, including software and data acquisition devices. For more information, visit symphonyindustrial.ai

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