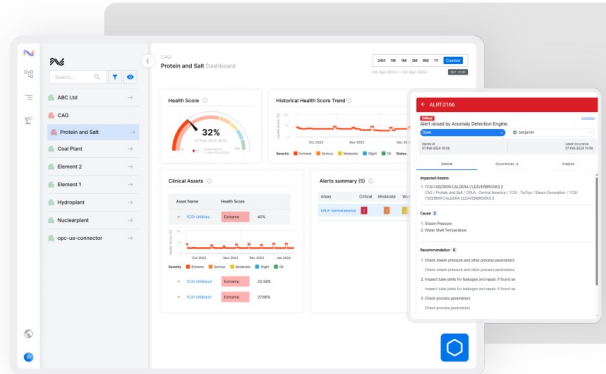**SymphonyAI**

Predictive Asset Intelligence™

Proactively monitor manufacturing assets for peak performance and reliability

Today, global competitive pressure is driving industrial organizations to become more agile, innovative, and cost-effective. With a projected shortage of skilled labor in the industry and the accelerated growth of technology and data, it is unsurprising that many industrial organizations are overwhelmed with ensuring that the assets are in optimal health and that their predictive maintenance journey is delivering impact.

Plant reliability is a critical factor for industrial organizations to meet production targets, reduce costs, and increase safety. While classical condition monitoring techniques, such as vibration and oil analysis, have boosted plant reliability, these approaches do not address all failure modes, prompting the need for a more advanced solution that could predict additional causes of unplanned equipment downtime.

## Challenges faced by industrial organizations

Manufacturing, oil and gas, and energy organizations face various challenges to increase their reliability and avoid unplanned downtime. Some of the most common challenges include:

- **Industrial data management and integration**: Industrial organizations often struggle to collect, integrate, and analyze data from various sources. Assets can produce vast amounts of data, and integrating this data from different types and generations of equipment can be complex and costly.

- **Implementing predictive maintenance**: Predictive maintenance requires advanced analytics and modeling capabilities. Many industrial organizations find it challenging to accurately predict asset failures and schedule maintenance to minimize downtime and costs.

- **Obsolescence and legacy systems**: Older equipment may not have the necessary sensors or connectivity to integrate with modern solutions, making it difficult to monitor and manage these assets effectively.

- **Skills gap**: Most industrial organizations are asked to do more with less. Additionally, many subject matter experts are retiring, resulting in lost knowledge and expertise.

- **Real-time analysis and response**: Industrial organizations need to move from reactive to proactive decision-making, which requires the capability to analyze data in real-time and make quick decisions to prevent failures or optimize performance.

Traditional preventive maintenance methods are no longer adequate, and achieving reliable performance involves breaking down industrial data silos, connecting assets, systems, and people, and taking more proactive actions with the help of predictive and generative AI.

SymphonyAI's innovative approach—Predictive Asset Intelligence
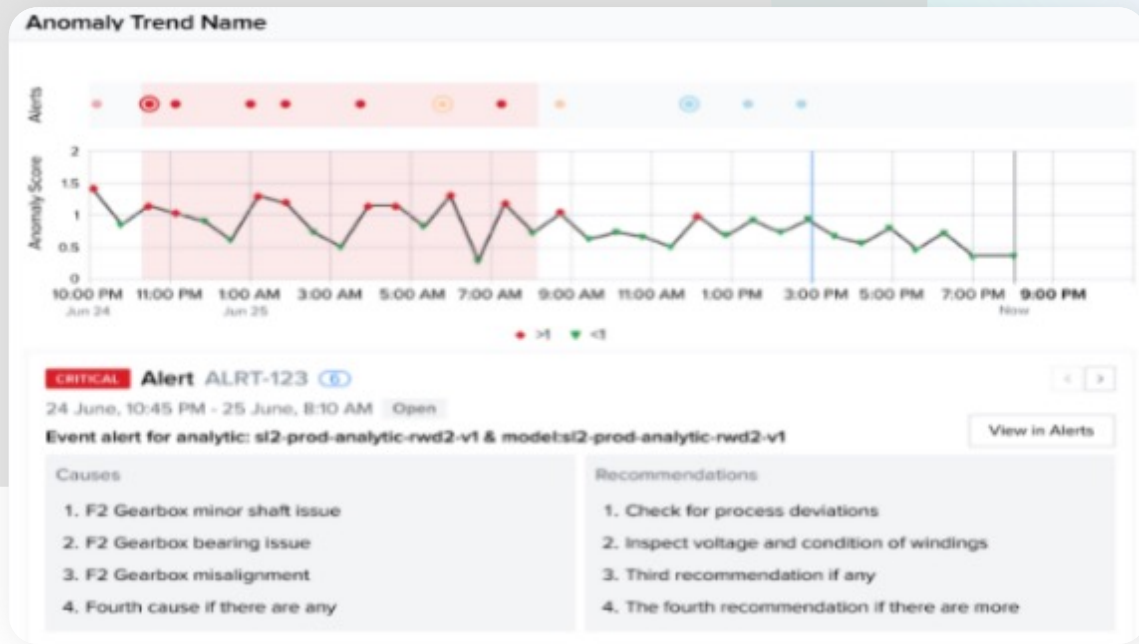
Predictive Asset Intelligence is an advanced, cloud-based solution that increases asset performance. It provides comprehensive asset health monitoring, real-time condition monitoring, and predictive maintenance capabilities. What sets Predictive Asset Intelligence apart from other solutions is its unique ability to accurately recommend specific actions based on predictive AI models and interact with recommendations using an industrial generative AI copilot.

Predictive Asset Intelligence uses AI machine learning to detect anomalies, analyze complex and dynamic machinery patterns, and consider contextual data from the entire manufacturing process. This results in continuous collection, management, organization, and analysis of all asset data across the enterprise. The insights from this data analysis can be interacted with using an industrial copilot, helping businesses make informed decisions that lower risk and cost while improving optimization and asset performance.

Why Predictive Asset Intelligence

1. **Real-time AI analysis**: Leverages the power of layered analytics by combining Anomaly Detection, Apparent Causes, and Recommendations, which work along with KPIs, First-principles Models, and ML and Deep Learning AI techniques. The apparent cause engine, along with other layered analytics, uses analyzed data to detect behavioral anomalies in a multi-dimensional model. To determine advisories, recommendations, and alerts, Predictive Asset Intelligence maps the model's behavior back to specific failure mode(s). The analyzed data is also normalized, weighted based on the impact of the asset or system, and provided to the user as an asset health score.

2. **Advanced early-warning system:** Utilizing cutting-edge deep learning AI, a multi-modal anomaly detection system seamlessly integrates vibration data, process data, documents, and images. This comprehensive approach enables the early detection of incipient issues and provides timely warnings for mechanical or performance problems.

3. **Automatic root-cause & advisories:** State-of-the-art machine reasoning engines that use built-in machine and process physics automatically analyze data patterns to determine possible root causes and mitigating actions.

4. **Fully self-service & configurable:** Use intuitive, no-code interfaces to oversee tasks ranging from asset model setup to data transformation, processing, and visualization. Easily manage AI models with just a few clicks—no expertise as a data scientist or software engineer is required.

5. **Reduced maintenance cost:** Reduce maintenance costs by avoiding costly downtime and emergency repairs that result from traditional reactive maintenance practices.

6. **Enhanced asset lifespan prediction:** Greater accuracy in predicting an asset's remaining useful life by creating conditions that improve performance while maintaining health.

7. **Maximize uptime, minimize downtime:** Receive automated early warnings using AI and physics analysis, identifying issues well in advance. Utilize a unique failure mode library and contextualize historical events for precise proactive maintenance. Reductions in unplanned downtime range from 20% to 50%.

8. **Optimize throughput, control costs:** Forecast and optimize plant operations with deep learning digital twins that adapt to real-time plant conditions, offering setpoint advisories. Achieve yield increases ranging from 1% to 5%.

9. **Eliminate knowledge silos:** Consolidate and contextualize various data sources, including vibration data, process data, maintenance records, and historical reports, for a comprehensive asset health view. Facilitate cross-functional collaboration and informed decisions across the organization.

10. **Predictive asset health:** Attain complete visibility into the mechanical and process health of machines through real-time analytics that use all types of OT, IT, and engineering data available. Enhance productivity by 10% to 30%.

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Product capabilities

1. **Flexible data intake:** Asset templates and models contextualize information from data historians such as OSI PI and Aspentech IP21, distributed control systems, enterprise asset management (EAM), etc.

2. **Open platform:** Import previously developed algorithms written in Python or any other language into Predictive Asset Intelligence.

3. **Predictive workbench:** Test and deploy new models or run ad-hoc analytics without coding. With its intuitive user interface, navigating the process becomes seamless, allowing rapid deployment of cutting-edge models. Additionally, it provides curated best-in-class MLOps studio for updating analytics and model deployment.

4. **Integrated FMEA library and asset templates**: Predictive Asset Intelligence is equipped with a FMEA library, consisting of a range of fault causes along with associated recommendations for various types of assets. Receive alerts when something is abnormal and recommendations for a prescriptive course of action.

5. **Flexibility:** Proprietary analytics are seamlessly imported into Predictive Asset Intelligence using a Docker-based architecture. Depending on application requirements, deploy the Predictive Asset Intelligence solution stack as an edge or on-premises variant.

6. **IRIS Copilot:** Revolutionize plant data interactions with the world's most potent, transparent, and reliable Industrial generative AI Copilot. Inquire about any data within the enterprise and create visualizations, forecasts, inferences, and reports using natural language prompts.

7. **Role-specific visualization:** Pre-built and fully configurable dashboards are designed to suit the needs of various roles and levels of the asset hierarchy.

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Predictive Asset Intelligence step-by-step
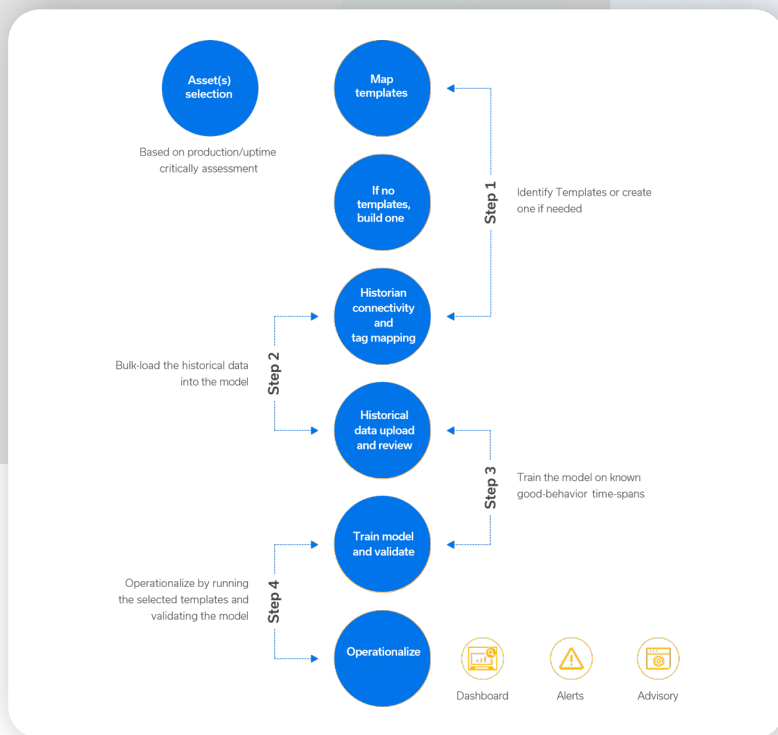
About SymphonyAI

SymphonyAI is building the leading enterprise AI SaaS company for digital transformation across the most critical and resilient growth verticals, including retail, consumer packaged goods, finance, manufacturing, media, and IT/enterprise service management. SymphonyAI verticals have many leading enterprises as clients. Since its founding in 2017, SymphonyAI has grown rapidly to 3,000 talented leaders, data scientists, and other professionals. SymphonyAI is a SAIGroup company, backed by a $1 billion commitment from successful entrepreneur and philanthropist Dr. Romesh Wadhwani. Learn more at www.symphonyai.com.

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