

Gain unparalleled operational clarity and context with System 1

System 1 offers plantwide insights to reduce risk, increase productivity, and minimize unplanned downtime





Preparing for digital transformation in the industrial sector

As industrial operators begin their digital transformation journeys, one of the key differentiators for truly optimized efficiency will be gaining a single plantwide view of operations. A connected factory supported by a powerful condition monitoring platform turns data collected from assets into actionable insights that help teams across all industries make smarter proactive maintenance decisions.

Process-intensive operators are increasingly looking for ways to streamline production in the face of globalization, a shifting workforce, and heightened cyber security threats. System 1 supports these goals by empowering reliability, operations, and maintenance teams to proactively improve productivity. The right predictive maintenance technology can help decrease unplanned downtime by 40%, decrease machinery breakdowns by 70%, and increase overall production by 25%.

Improving operational efficiency, increasing personnel safety and protecting against environmental hazards while maintaining a competitive advantage over peers is virtually unachievable without intelligent adoption of technology and cultural acceptance of changes to long standing processes. System 1 can kickstart digital transformation at your facility by empowering your personnel to do their jobs better than ever before.



Industries include:

- Refining
- Upstream oil and gas
- Power
- Petrochemical
- Metals
- Pulp and paper
- Mining and aggregate
- Food and beverage
- Pharmaceuticals

Challenges of modern industrial operations

As Digital Transformation strategies are deployed to increase operational efficiency throughout the industrial sector, factory productivity and reliability expectations continue to rise. Here are some of the challenges factory maintenance teams must overcome in order to meet productivity goals while minimizing downtime and protecting the integrity of operations.



Operations are fragmented across the plant and data is siloed



Machinery expertise may be centralized and not available at every plant location



Aging workforce means losing machine and plant knowledge



Outdated maintenance techniques result in unnecessary maintenance and unplanned machine failures

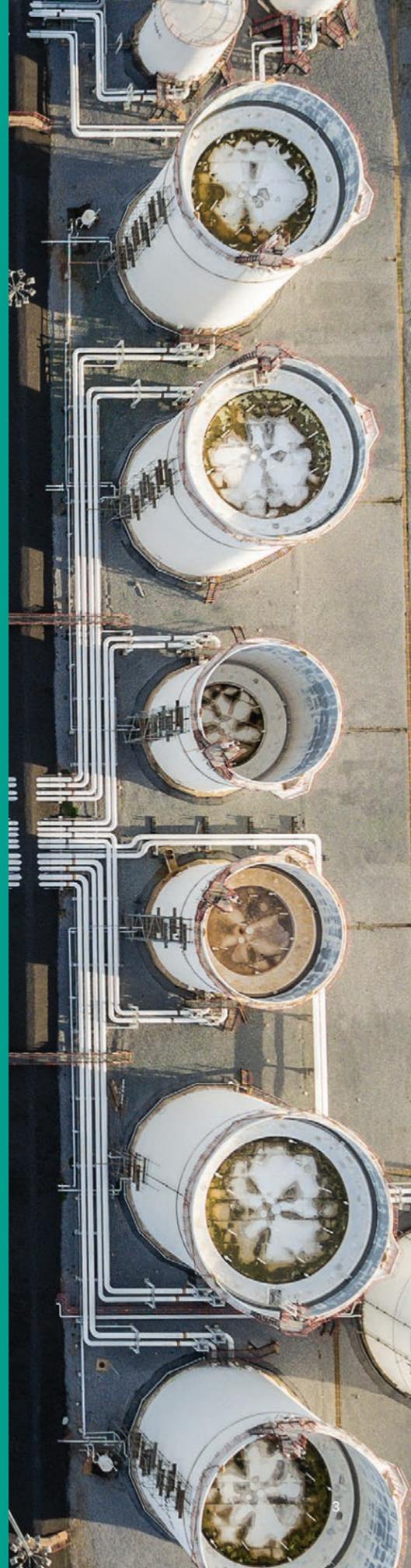


Lack the plantwide view of operations to perform efficient Root-Cause Failure Analysis (RCFA) when an asset does fail



Data accessibility limited to factory so asset insights are not shared enterprise-wide

Continuing to depend on time-based maintenance or condition monitoring of only critical assets is inconsistent and unreliable at best. The potentially catastrophic gaps in monitoring that occur by using a siloed maintenance strategy expose plants to significant financial and environmental risks and fall far short of the necessary reliability goals for modern industry maintenance to move from reactive to proactive to predictive.

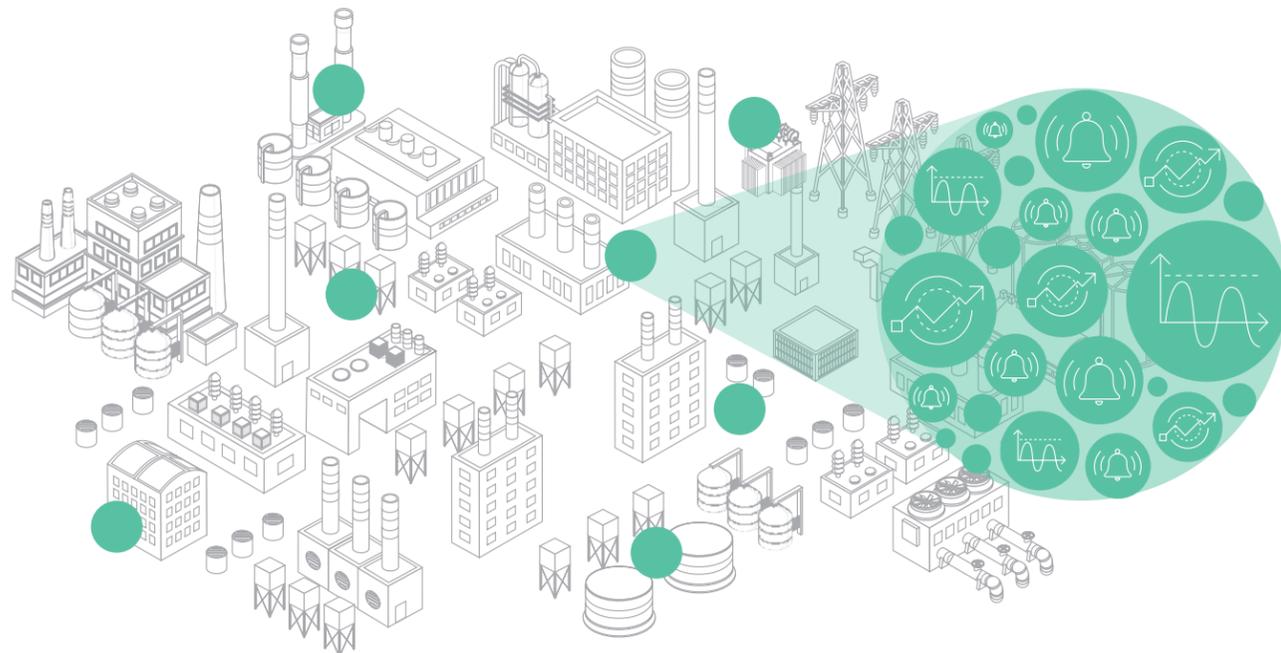


From siloed data to a centralized platform

Factories that rely on asset condition monitoring to monitor the health of equipment are already taking proactive steps toward more efficient and effective maintenance. Unfortunately, most solutions are still siloed, with data collected concurrently from handheld devices, manufacturer-installed sensors and third-party sensors. Each different monitoring tool provides small siloed pockets of clarity unless there is a centralized platform to access data and process plantwide insights.

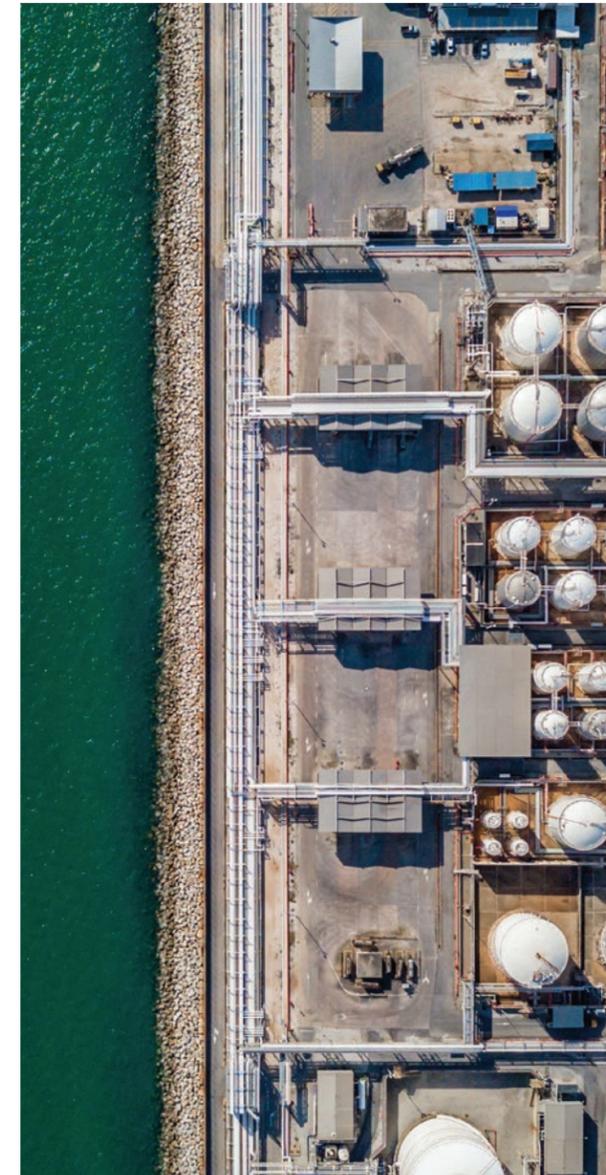
In many cases, there are only one or two multi-skilled maintenance professionals in a factory that have the ability and experience to make critical maintenance decisions using disparate data—and most of them are nearing retirement. In manufacturing, 50% of the workforce is forecasted to retire in the next 5-10 years. Therefore, manufacturers must adapt and successfully integrate an inexperienced but digitally-savvy workforce into their maintenance teams. While man expertise is difficult to replicate, technology can be leveraged to collect and transmit contextual data from individual assets to a centrally managed location for analytical development and remote support. Armed with data-fueled plantwide insights, maintenance teams can make smart, timely, and proactive decisions about individual assets and the plant as a whole.

Siloed data provides pockets of clarity but lacks a plantwide view



“Bently Nevada is one of the condition monitoring firms that can rightly claim they invented the whole concept of Asset Management in the first place.”

— Control Magazine



System 1 provides operational clarity and context

System 1 streamlines decision-making processes by bringing machine data into a single platform, providing clarity and context to your operations and enterprise. Harnessing the power of Bently Nevada’s decades of machinery research and advanced diagnostics expertise, this powerful tool is a key component of successful digital transformation in any industrial facility. By combining its **Connectivity, Analytics, and Visualization** capabilities, System 1 is the premier edge historian and condition monitoring platform among industrial operators.

Bently Nevada is the world’s industrial condition monitoring leader

Bently Nevada has a rich heritage in helping customers solve industrial maintenance challenges that is over 60 years strong. Through user research in 20 countries with more than 400 end users, we have studied our customer’s team dynamics, site processes, and technology suites to determine how System 1 can best support plantwide machinery management. The resulting platform is the most comprehensive and user-intuitive condition monitoring solution ever developed.

Bently Nevada by the numbers

Proven leaders in condition monitoring solutions

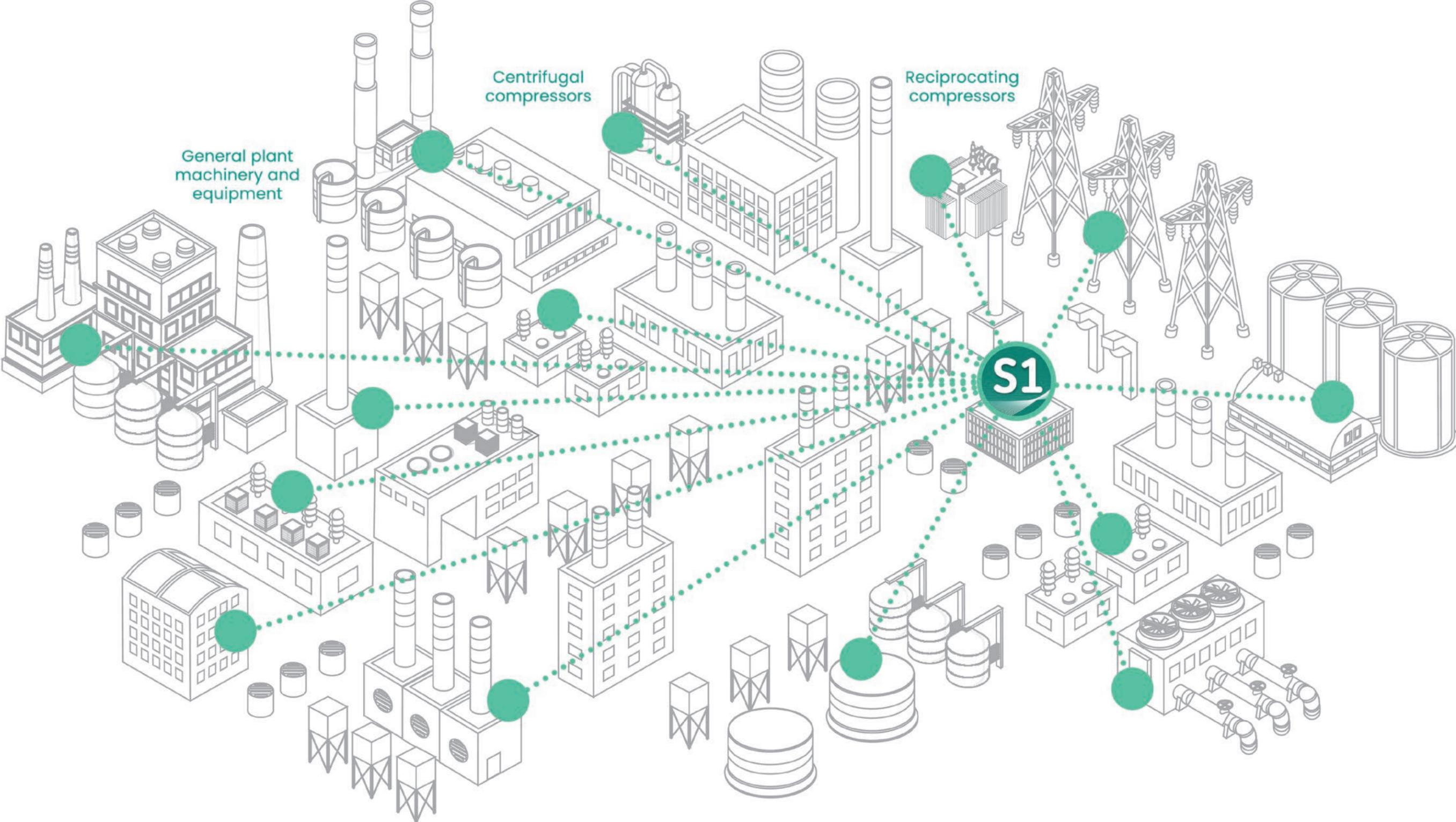
60+ years
machinery protection
and condition
monitoring

8 million+
sensors in use

600+
patents owned

300,000+
monitoring
devices in use

From Edge to Enterprise, System 1 brings it all together



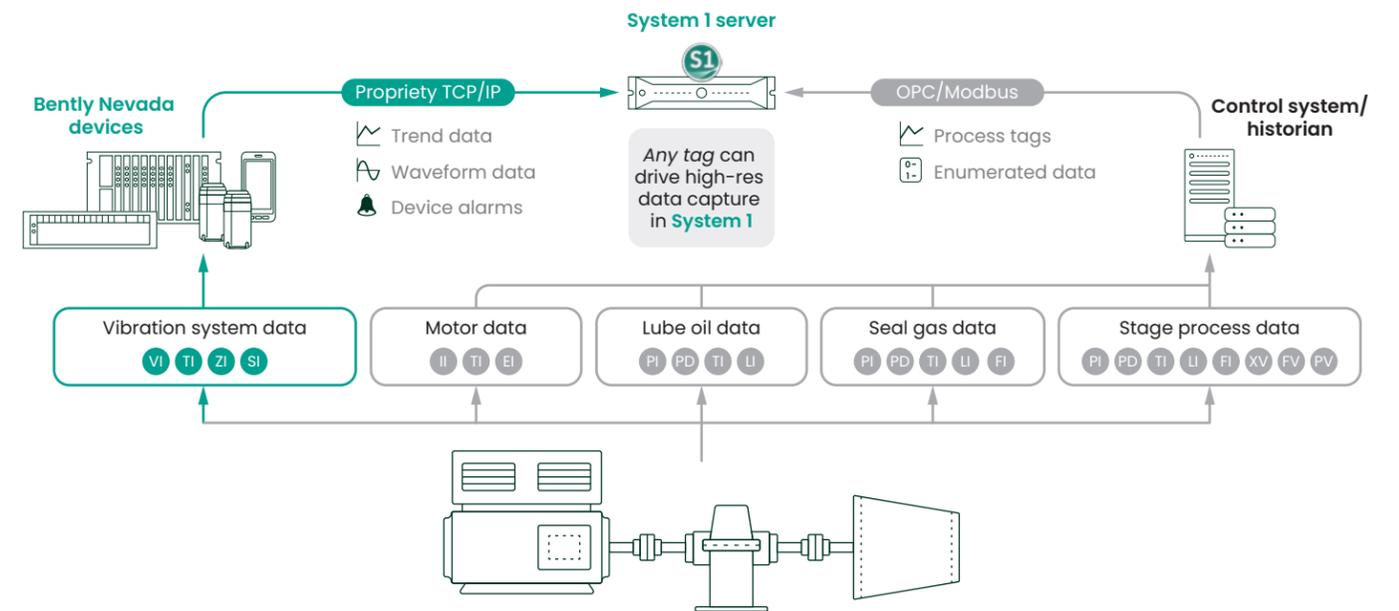


Connectivity + Analytics + Visualization = a complete solution



Connectivity

System 1 condition monitoring platform connects to data sources on the Edge and collects high resolution vibration, process, and control system data. This data can be collected at up to once-per-second from a Bently Nevada Device, such as 3500 or Ranger Pro, from a Programmable Logic Controller (PLC), or from another Historian. In addition, an alarm on any tag mapped to a machine will trigger high-resolution data capture from all other tags, which includes 100 ms static data from Bently Nevada's 3500, ADAPT, and Orbit 60 series devices.





“We are using it (System 1) to proactively detect early trends. Along with this, we are using it to schedule our maintenance conditionally. We have extended outages from 6 years to 10 years on some of our equipment.”

— Invista



Analytics

Within System 1, threshold alarms can be configured per machine operating state, with adjustable settings for time delay, latching, and suppression. Four levels of alarm setpoints can be configured per measurement, regardless of the source of the data (e.g., Bently device, OPC). Decision Support extends the analytic capabilities of System 1, enabling users to build custom rules for deeper insights into the behavior of their machines and enhanced knowledge across plants or entire enterprises. Bently Performance further expands analytic capabilities within System 1 by offering online thermodynamic performance monitoring.



Visualization

Post collection and analysis, System 1 provides best-in-class visualization tools. The HMI Builder allows users to graphically represent their entire Plant System using the built-in symbol library. The HMI view graphically depicts operational health, allowing users to focus on their high priority assets. Collected data can be viewed and manipulated within the plotting workspace, enabling users to diagnose machinery health issues. With a multitude of plot types and tools, users can quickly identify abnormalities and assess their impact on the smooth operation of their facility.



System 1

Core alarming, state analysis



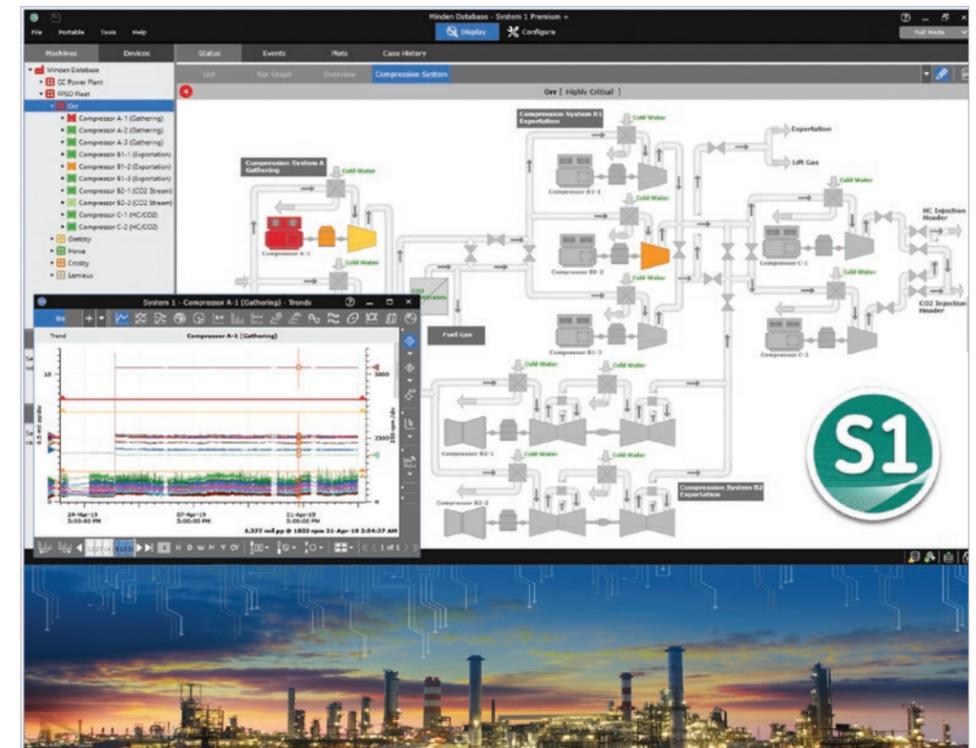
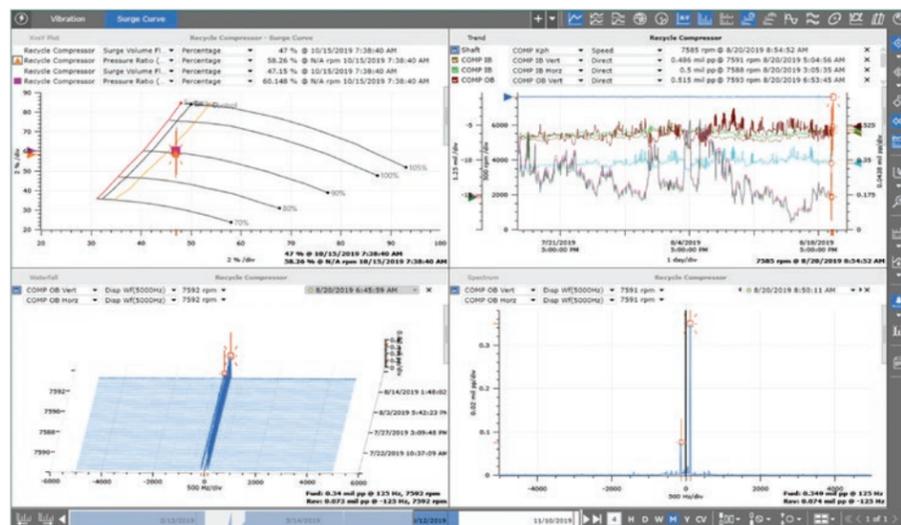
Decision Support

Custom algorithms, waveform extractions



Bently Performance

Thermodynamic performance



Want to learn more?

[Bentley.com](https://www.bentley.com)

Copyright 2023 Baker Hughes Company. This material contains one or more registered trademarks of Baker Hughes Company and its subsidiaries in one or more countries. All third-party product and company names are trademarks of their respective holders.

BakerHughes_BN_System1_Brochure-041323



[bentley.com](https://www.bentley.com)