Bently Nevada
a Baker Hughes business

Condition Monitoring

Journey map

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Industry 4.0 is upon us. To propel our future growth, we must re-assess our technology foundations and fortify our operational competencies to meet emerging needs. At the forefront of these needs is the adoption of continuous monitoring capabilities, connected via a unified platform that analyzes and helps proactively optimize operations.

Capabilities such as Plant Asset Management (PAM), Asset Performance Management (APM) and Computerized Maintenance Management System (CMMS) are built upon a unified, connected platform. With competencies such as PAM, APM and CMMS, manufacturers will:

Dynamically meet customer needs (in real-time)

Proactively manage assets via preventative maintenance

Facilitate insights-driven optimizations via real-time, continuous analytics

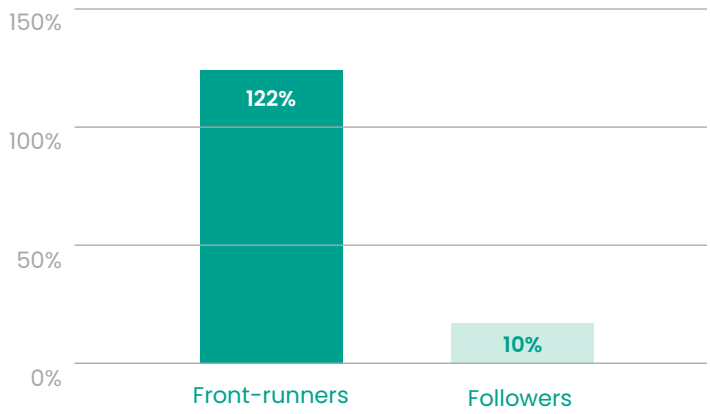
These capabilities must also scale in connectivity with increasing breadth: from single assets to plant-wide to operation-wide to enterprise-wide perspectives.

First mover advantages

Those that lead in embracing the digital transformation, or Industry 4.0 (4IR), will enjoy distinct competitive advantages. In one example, **McKinsey** underscores the impetus for action, stating that AI (Artificial Intelligence) front-runners will enjoy 122% cash-flow increase due to efficiency gains vs. just 10% for followers. Adoption of new competencies required for these transformations will involve a series of steps and be, in essence, a journey.

Yet another first mover advantage is to bridge the growing gap of skilled workers retiring. **Over twenty-five percent** of the manufacturing workforce is over 55 years of age and possess a high level of institutional knowledge. The retirement of those workers will create a sea change in personnel and knowledge over the next decade. This gap can be softened by the adoption of technology solutions. Specifically, the use of technology, automation and AI – such as software to help digitize and embed the knowledge of this experienced workforce – can be leveraged to handle repetitive tasks or intense data diagnostics. In this way, we can better utilize our resources and strengthen our skilled workers.

Cash-flow increase due to efficiency gains



A role model customer: Meet Bosch Automotive

We are already seeing "role model" manufacturing plants that are leaders in the 4IR adoption. A Baker Hughes customer, **Bosch Automotive** (Bosch Automotive Diesel Systems Co., Ltd.), has been heralded a "factory of the future" by the World Economic Forum. At Bosch, the power of real-time data-driven insights is catalyzing faster decision-making and business agility, key tenets of current and future competitiveness. Bosch Automotive has implemented an industrial IoT framework to connect machine condition monitoring sensors, enabling a level of integrated transparency that, in turn, drives predictive and prescriptive functions. By embracing visibility that spans multiple plant personas and stakeholders, such as plant personnel, management and senior executives, Bosch Automotive is integrating their view of real-world user experiences to activate continuous improvement.

The results? Bosch Automotive has enabled double-digit tool cost improvements, is leveraging predictive maintenance, and has generated a 10% increase in output during crucial high-demand events to help ensure delivery and boost customer satisfaction.

"Bosch Automotive has been names a 'Factory of the Future' by the World Economic Forum. We are proud to call Bosch Automotive our customer."

Customer results speak for themselves

Today, manufacturing facilities that have adopted condition monitoring platforms to proactively protect plant assets are realizing significant results; most notably, minimizing unplanned downtime. Since 90% of machine failures are not time-based, real-time monitoring is required to mitigate risks. Other positive results include:

25%
increase in productivity

50%
decrease in machinery breakdowns

70%
decrease in maintenance costs

40%
decrease in downtime

New opportunities, New challenges

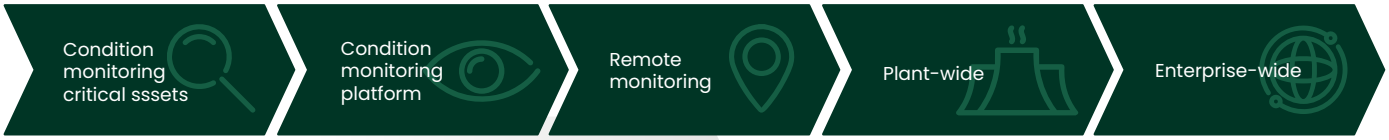
While digital transformations will enable tremendous capabilities, they will also generate new challenges. Most notably is the elevated challenge of cybersecurity. Increases in our industrial connectivity in both depth and breadth — from assets to plants to enterprises and full supply chains, — spawn new risks that must be mitigated with new cyber protection approaches.

The emergence of hardware-enabled cybersecurity measures through novel edge device designs will help bolster protection. Thus, adequate and ever-evolving cybersecurity solutions – in hardware, software and services — are vital in all of our high-stakes manufacturing environments, today and even more so for the future.

What's next for you?

To help our customers, like you, to progress on your journey to becoming a factory of the future, we've created a map (on next page) to help us co-navigate forward together. We invite you to contact us and share more about your operations so that we can align the capabilities that best fit within your operations. For this, you need a partner, not a product. One with rich, proven expertise across a breadth of high-stakes industries, such as Oil & Gas, Power, Pulp and Paper, Steel, etc. One with cutting edge technologies that obsesses about productivity, safety, asset health and profitability to help you dynamically optimize your business and maximize your growth potential. At Bently Nevada, a Baker Hughes business, we aim to be that for you.

1. Connect



Singular protection

Proactive protection reliability

2. Analyze

Fragmented machine protection

Insights via continuous data-diagnostics
Proactive + real-time optimizations
Analytics-driven precision, clarity, context

3. Visualize

Singular view

Single, real-time comprehensive view

Boost Safety, Productivity, Profitability

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