

How to Improve Operational Performance in Real Time

4

Ways that Real-Time Alerts Are Revolutionizing Manufacturing Operations

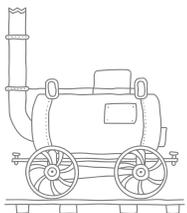


Since the very first industrial-strength machine was switched on for the very first time, plant executives have lied awake asking themselves the same questions: *How can I predict and prevent machine downtime? How can I tell which small issues will grow into big problems? How can I integrate communication between machines, departments, and people? How can I increase machine safety and compliance?*

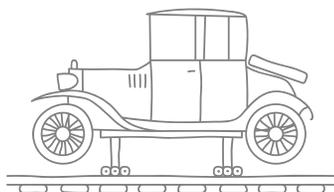
But the industrial Internet of Things (IIoT)—often called the “**fourth industrial revolution**”—is creating new ways to solve these longstanding problems.

One of the most holistic solutions for improving operational performance is also one of the simplest: IoT-enabled machine and process monitoring. Customizable, real-time alerts are redefining predictive maintenance, collaborative communication, safety awareness, and enterprise integration. They provide instantaneous, integrated insights based on data that manufacturers have never had access to before—bringing to light new ways to prevent downtime, increase quality, drive ROI, and create overall process improvements.

Real-time alerts integrate the micro- and macro- view of plant operations, so that both the operators on the floor and executives in the C-suite can optimize processes like never before. With accurate and timely information always at your finger-tips, you can focus on future-forward innovation, instead of struggling with age-old challenges.



Industry 1.0



Industry 2.0



Industry 3.0



Industry 4.0

1.

Real-Time Alerts Prevent Unplanned Downtime

by giving operators the information they need to proactively prevent and correct machine malfunctions.

In the past, manufacturers relied on reactive repairs and maintenance schedules (created on a combination of experience, Tuesday morning reporting, and guesswork) to manage downtime. But routine maintenance is not cost-effective and can't identify future issues that could cause equipment failure. And as a result, global process industries continue to lose about \$20 billion in revenue a year due to unplanned downtime.¹

With little-to-no predictive data on why a machine or line is disrupting production, maintenance teams have no way to prevent downtime. They're left to react to failures—and they have no way to prevent the same failure from occurring again.

With IoT-enabled real-time alerts, maintenance teams can easily create notifications to proactively monitor the plant floor. They can forecast maintenance needs based on real-time performance data—rather than rely on the churn of pre-determined maintenance schedules. This immediate awareness of machine issues, data connectivity, and device health prevents disruptive equipment failures. Instead of waiting for a machine to stop working, maintenance can quickly access and analyze their real-time alerts to identify potential root causes, troubleshoot, and fix the issue before it turns into downtime.



INCREASE uptime through real-time alerts on lines, machines, product, environment, and more.



REDUCE maintenance costs through predictive maintenance, instead of reactive repairs.



IMPROVE asset utilization and ROA with holistic performance awareness.



ENABLE informed preventative maintenance through predictive alerts.

¹Refinery Power Outage Mitigations report. Accessed 11/13/18: subscriber.hydrocarbonpublishing.com/ReportP/power.pdf

2. Real-Time Alerts Increase Product Quality and Process Innovation

by helping you troubleshoot, correct, and innovate in real-time.

Production processes are intricate and multi-faceted, often consisting of a long chain of separate—and individually complex—activities. Because of this, operators are often unaware of production issues until a cycle is complete and it's too late to correct product quality. Time and money is wasted, scrap is needlessly created, and customer deadlines are impacted.

Operators who get alerts in real-time can act in real-time—preventing waste and quality degradation at the end of a production cycle. They can troubleshoot an issue's root cause, create new alerts that monitor different influencing factors, analyze their production processes, test hypotheses, and adjust based on different results. They can even evolve their alerts on the fly to ensure that the right information is being measured by the right person.

Real-time alerts not only identify inefficiencies in the moment, but also help operators record historical data—creating a reliable trend knowledge-base for faster prevention of future problems.

But real-time alerts don't need to only focus on what's going wrong. Operators can create notifications built on production KPIs, asset output, environmental factors, and almost any other measurable metric. By highlighting high performance thresholds, operators can then duplicate those trends across other equipment, lines, and factories.



INCREASE ROI and efficiency by reducing scrap, WIP inventory, quality degradation, and other process waste.



INCREASE production by reducing and optimizing cycle time.



IMPROVE workforce productivity by reducing reworks and failures.



INCREASE innovation through real-time awareness for creative solutions, faster responses, and more informed troubleshooting.



INCREASE agility to either course correct or proactively keep up with the market and know the results you see are timely and correct.

3.

Real-Time Alerts Improve Communication and Safety Awareness

by enabling you to proactively correct compliance anomalies and environmental, health, and safety risks.

With real-time alerts, operations that fall outside of safety tolerances and compliance specifications are caught and corrected immediately. Machine safety; threshold compliance; personnel health risks—alerts can be customized to immediately inform the correct person of any issue, at any time. That person can then address the alert and maintain a real-time pulse on the issue. Hazard communication is streamlined and safety ownership is clarified, so all parts of the enterprise are aware of micro- and macro-compliance and safety issues.

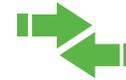
In addition to safety and compliance awareness, real-time alerts improve overall connectivity and communication across both the local and global enterprise. With PLCs, OPC servers, sensors, and other assets all connected and monitored through integrated alerts, anyone, anywhere can know everything. There's no confusion about who saw what notification or who owns an alarm. Instant alerts enable holistic device-to-person communication—and alerts can even monitor that communication itself through connectivity-based notifications. This accurate and reliable communication creates more accurate and reliable decision-making.



PREVENT and correct any safety and compliance risks by monitoring operating conditions from anywhere, at all times.



IMPROVE ROI and ROA due to faster, more informed decision-making at all levels, based on real-time knowledge and communication.



INTEGRATE, improve, and increase information sharing across maintenance, performance, executives, and any other manufacturing department that needs timely information.

4. Real-Time Alerts Provide an Advantage Over Your Competition

by giving your organization more market-place flexibility.

The benefits of an integrated, real-time alert-informed enterprise go beyond operational improvements. One huge, immeasurable benefit lies in gaining a competitive advantage. Real-time alerts mean real-time agility—both in the immediate and in the long-term, as IoT-enabled alerts lower the cost of business in numerous large-scale ways. For example, proactively maintained machines don't wear out as quickly—meaning fewer repairs and fewer replacement costs over time and more employees freed up for more productive work. Less routine maintenance and increased workforce agility empowers operators to try new, market-leading innovations in process and products.

And as all people, systems, and assets become more efficient, innovative, and informed, they become better positioned to gain huge strides against competition and across the industry.

Your factory doesn't look anything like the ones that first brought in the Industrial Revolution—so why do you struggle with the same stressful issues that kept your predecessors up at night? Get ahead by staying proactive, agile, and informed through real-time alerts.



IMPROVE global operations performance.

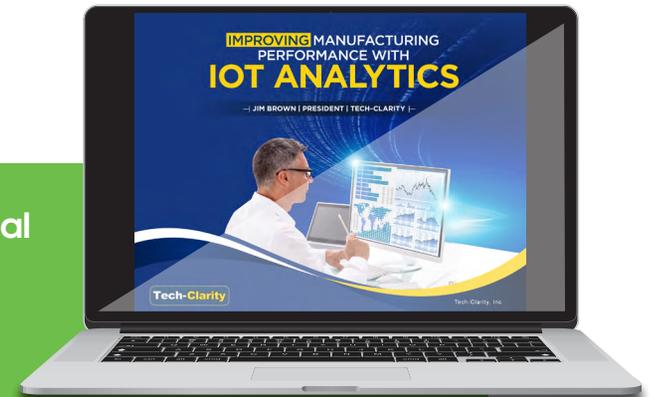


ACCELERATE time-to-market.



INTEGRATE simple, real-time overviews of machines and metrics.

To learn more about how real-time information can optimize your operational performance, download the *Improving Manufacturing Performance with IoT Analytics* ebook from industry analyst Tech-Clarity.



© 2018, PTC Inc. (PTC). All rights reserved. Information described herein is furnished for informational use only, is subject to change without notice, and should not be taken as a guarantee, commitment, or offer by PTC. PTC, the PTC logo, and all PTC product names and logos are trademarks or registered trademarks of PTC and/or its subsidiaries in the United States and other countries. All other product or company names are property of their respective owners. The timing of any product release, including any features or functionality, is subject to change at PTC's discretion.