“Zero Surprises”

One of the world’s leading manufacturers of bearings began an initiative in 2018 to minimize unplanned downtime of its crucial subsystems at the company’s manufacturing facility in Pune, India.

The company brought in master industrial integrator Persistent Systems to scope and execute a pilot project for one of their manufacturing lines that would dramatically reduce unplanned downtime by enabling:

1. **Proactive machine health monitoring**, comparing each machine’s state to its operating parameters in real time.
2. **Real-time notifications** of any unplanned downtime, capturing probable causes.
3. **Smart diagnostics support**, able to conduct root cause analysis for the breakdown.
4. A **custom overall equipment effectiveness (OEE) dashboard** across the factory floor.
5. A **state of collective intelligence** factory wide, replacing siloed intelligence.
Eliminating the Paper Trail

Prior to the pilot project beginning in March 2018, downtime was tracked by factory supervisors in paper logs, based on their own recollections at the end of each shift. This not only made it impossible to identify trends over time, but smaller unplanned outages – usually under 15 minutes – were often overlooked and didn’t get recorded at all, offering an incomplete picture of the full scope of the downtime patterns.

Persistent transformed the paper logs and manual recording process by:

- Acquiring relevant data from critical manufacturing equipment through sensors and programmable logic controllers (PLCs)
- Connecting the sensor and PLC arrays using Modbus over Ethernet to an IoT Gateway through an OPC-Unified Architecture (OPC-UA) server deployed on premises
- Deploying IoT Gateway on an Intel Next Unit of Computing (NUC) box near the factory floor
- Integrating the IoT Gateway with Persistent’s Concert IoT accelerator deployed on AWS to enable quick development, messaging capabilities and more
- Hosting all IoT Data Historian capabilities in AWS for access, scalability, and interconnectivity with similar solutions at other facilities
- Displaying real-time data on Persistent’s Overall Equipment Effectiveness (OEE) dashboard customized with the company’s specific key performance indicators and machine operating parameters

Digitally Transforming the Factory Floor

The pilot project went live in August 2018, just five months after it commenced, giving the manufacturer the ability to:

- Collect data from a variety of machines in real time
- Monitor specific machine health parameters from critical systems, also in real time
- Push alerts to dashboard users when machine health exceeded established parameters
- Issue SMS/text warnings to floor operators, technicians and managers by type of equipment and area of responsibility
- Analyze historical data to identify root causes for downtime
- Track key performance indicators to measure production effectiveness, throughput, downtime and more
Real World Results

Using these newfound abilities in the six months that followed, the factory managers and supervisors were able to reduce downtime of critical factory floor machines by 30-35%, eliminating a key bottleneck and improving throughput as a result.

The SMS/text warning system also allowed managers to take action more quickly, greatly reducing the mean time to respond when downtime did occur.

The factory’s ability to capture and record 100% of downtime events, no matter how brief, enabled managers to conduct root cause analysis on machine failures, enabling them to proactively mitigate downtime events, stock repair or service parts, and adjust operating parameters to further improve uptime and reduce repair costs.

The OEE dashboard gave the management team the ability to monitor key performance indicators in real time, enabling them to take prompt actions leading to increased machine and worker productivity.

About Persistent Systems

Persistent Systems brings the collective expertise of more than 10,000 employees worldwide to your greatest business challenges and opportunities, including more than 9,000 engineers and technical staff focused exclusively on support, development and innovation.

Persistent is a master industrial integrator that helps manufacturers accelerate their digital transformation journey. More than one hundred industrial customers have relied on Persistent to integrate their existing engineering and manufacturing systems with the industry’s leading processes, software and analytics to create a fully integrated and scalable technology stack that optimizes their value chain.

As a result, manufacturers that work with us are able to maximize their existing IT investments and drive better products to market faster, with more efficient, effective and productive operations across their organizations. During more than 29 years in business, Persistent has grown to more than $480 million in annual revenue, and our industrial business has been growing 37% year over year, based on the results we deliver – how can we help your organization do the same?

Visit persistent.com to find out more

INDIA
Bhageerath
402 Senapati Bapat Road
Pune 411 016
+91 (20) 6703 0000

UNITED STATES
2055 Laurelwood Road,
Suite 210
Santa Clara, CA 95054
+1 (408) 216 7010

UNITED KINGDOM
184 Shepherds Bush Rd,
Hammersmith, London
W6 7NL United Kingdom
+44 (0) 20 3008 7203