

Prevent Downtime Disruption with Predictive Monitoring and Maintenance

There's a variety of reasons manufacturing machines malfunction or ultimately break down. Some of those causes can be attributed to human error. Still, many reside in or on the equipment, which requires attentive performance management to maintain high uptime and overall equipment effectiveness (OEE).

Predicting and scheduling maintenance with the help of condition-based monitoring is crucial to prevent downtime throughout manufacturing facilities. An orchestrated balance of predictive and preventive maintenance using Internet of Things (IoT) technologies can allow manufacturers to track machine health, status, and performance or OEE in near real time.

Sensors also send you an instant alert when there's a machine maintenance problem. The innovative foresight will help you reduce unexpected breakdowns and capital and operating expenses, plus plan maintenance around production schedules. Read how we can help you remotely monitor manufacturing operations 24/7.

Spoiler alert: The ROI is significant by avoiding breakdown, improving productivity, and optimizing maintenance. It's all easily managed using an online dashboard on a mobile device or computer. Plus, alerts via email, text, or call from a wide variety of fast-install IoT sensors and meters.

Challenges

A large manufacturer needed to find more ways to increase productivity and uptime and decrease maintenance costs. The company decided to focus first on one area of their factory where they were having issues with inefficiency and malfunctioning machinery. They were looking to add a machine condition-monitoring solution tailored to the work and equipment operating in that production area.

Of significant concern for the production-line manager was personnel not staying close to their stations while equipment was running. This problem led to prolonged machine use, which caused premature failure of motors due to overheating. The manager knew she needed to monitor her staff's workflow more closely to determine any consistent distractions or disruptions to their work routine.

Company leaders decided that the manager's critical observations combined with a reliable way to remotely and actively monitor the area and its equipment could boost efficiency and reduce equipment costs.



Solution

The production-line manager set up an IoT solution test to track how long equipment runs, its performance, and if the operator left the work area while the equipment ran. The initial customized solution for that factory area included Wireless Voltage Detection Sensors, Accelerometers and Vibration Meters, Temperature Sensors, Infrared Motion and Occupancy Sensors, and a Gateway.

The production managers self-installed:

- Voltage Detection Sensors to monitor production-line equipment motors to tell when they're running and to track operating time
- Accelerometers and Vibration Meters to track machine and other production-line equipment vibrations to help determine lifespan and predict malfunctions
- Temperature Sensors with probes to monitor the temperatures of production equipment and machine motors
- Infrared Motion and Occupancy Sensors to tell if machine operators are in the control area while machinery is running
- The Sensor Management and Remote Monitoring Software on manager and maintenance staff smartphones, tablets, and computers
- Gateways to protect and communicate data sent from every Sensor and Meter

Sensors sent data wirelessly to a Gateway in the factory. The gateway then sent aggregated sensor data to the software. Using monitoring software, production managers uploaded a graphic showing the factory layout of the monitored areas.

This allowed the managers to drag and drop sensor tags onto the design or map with live data. Then, they could see the performance of the monitored production line from an aerial view. Managers set up notifications to alert them if readings or assessments fell outside set ranges and signified any potential issues, allowing them to respond immediately.

Results

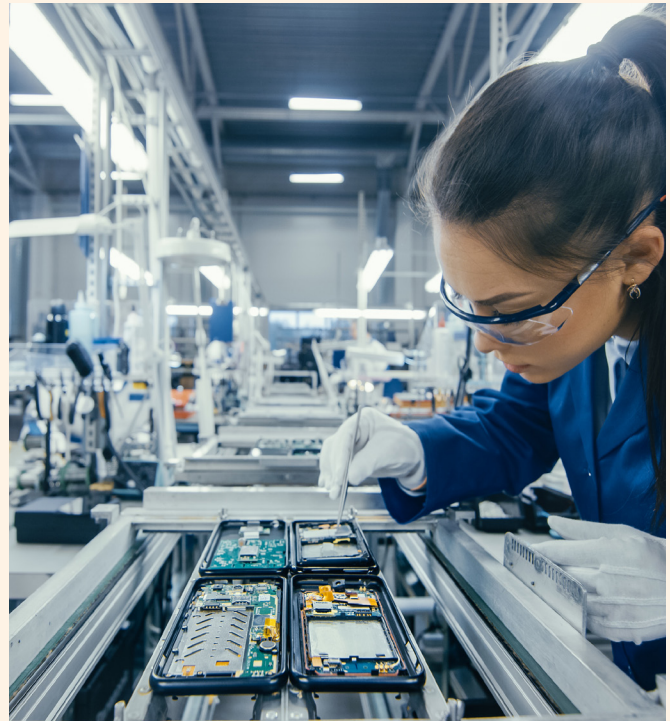
Connexiom makes it easy to realize an immediate return on investment (ROI). The investment in the initial IoT production-line solution for five workstations quickly proved valuable to the manufacturer.

Within the first month alone, the system alerted the production manager of several incidents where employees left equipment running unattended. Each time, the manager corrected the situation fast to prevent undue machine wear and tear.

Additionally, the manager and the process development engineer used sensor data to analyze production processes and implement new procedures unique to each workstation.

Using our comprehensive monitoring solution, the manufacturer can:

- Maintain production equipment more efficiently, reducing repair costs and downtime.
- Ensure production employee workstations operate correctly and efficiently.
- Optimize processes and machine run times, saving energy, maintenance costs, and uptime.



In conjunction with how long motors ran, monitoring the motor temperature and vibration allowed maintenance staff to understand when bearings were faulty and the motor could fail. The data helped the company realize savings in decreased equipment repairs and downtime. They also saved electricity by tracking and optimizing how long equipment ran to complete tasks.

Soon after the production line test, the company believed that Remote Monitoring Solutions are perfect for putting preventive maintenance measures in place and helping fix issues before they become more significant problems. The manufacturer implemented similar sensor solutions throughout its other factory production lines to boost OEE and productivity.

ROI: After only a couple of weeks using our Solutions, the manufacturer optimized its condition-based monitoring with preventive measures and reduced energy, maintenance, and capital expenses.

Remote Monitoring Protects Manufacturers from Unexpected Downtime



1

Voltage Detection Sensors

Monitor the on/off status and power sources of equipment, machines, or battery levels with an Wireless Voltage Detection Sensor. You can quickly know voltage when the sensor triggers an alert via text, email, or call based on your settings.

2

Accelerometers

Measure acceleration on three axes to detect or resolve issues stemming from angular alignment with the Wireless G-Force Snapshot Accelerometer. Put the low-power sensor to work on an assembly line to assess inclination or tilt issues.

3

Advanced Vibration Meters

Track oscillation on three axes to capture vibration frequency, velocity, displacement, and acceleration with the award-winning Wireless Advanced Vibration Meter. Also, assess duty cycle and temperature for ongoing performance analysis.

4

Temperature Sensors

Get alerts when machine motors or production equipment exceed recommended operating temperatures with an Wireless Standard Temperature Sensor. The sensor's leads range in length from three to 100 feet for various placements.

5

Infrared Motion and Occupancy Sensors

Maintain machine operator compliance by monitoring motion and occupancy in manufacturing workstations with Wireless Infrared Motion and Occupancy Sensors. Detect movement around the factory via passive infrared (PIR) technology.

