

Automotive Tier 1 Application

INTRODUCTION

A Tier 1 manufacturer of automotive structural metal components and assemblies turned to Grace Technologies for a solution to keep its stamping and assembly plant in Michigan operating at peak efficiency. With a reduced workforce, the company struggled to meet its machine maintenance needs and sought to transition away from reactive maintenance practices.

The plant required a scalable, easy-to-integrate system that could provide continuous machine health insights, enhance uptime, and minimize costly breakdowns. They implemented the GraceSense™ Machine Health Monitoring Solution, leveraging its Vibration & Temperature Nodes and cloud-based Maintenance Hub.

THE PROBLEM

The automotive manufacturer faced several challenges:

- **Reactive Maintenance:** Limited workforce left machines vulnerable to failures before issues were detected.
- **Cranes:** Personnel frequently overloaded the crane beyond its weight limit, causing downtime. Since the crane delivered steel coils from inbound trucks, the assembly line came to a complete stop whenever it failed.
- **Conveyors:** Failures on conveyors moving blanks from presses to pallets created additional risks of unplanned downtime.
- **Press Bearings:** Bearings in the stamping presses generated heat under load, but without proper monitoring, overheating went undetected until damage had already occurred.

Unplanned downtime resulting from these problems led to costly repairs and lost productivity.

SOLUTION

The plant implemented GraceSense Machine Health Monitoring across multiple applications:

- **Conveyors:** Vibration & Temperature Nodes were installed to track machine health and detect early failure patterns continuously.

- **Cranes:** Nodes were mounted on crane motors, along with a current transformer on the hoist. Continuous monitoring now identifies overload conditions before they cause breakdowns. When overloads occur, automated SMS/email alerts notify the Electrical Supervisor instantly.
- **Press Bearings:** Sensors were placed on press bearings in the steel room to check for overheating, helping prevent equipment damage autonomously.

All data was routed through GraceSense™ Gateways to the Maintenance Hub and connected PLC/SCADA/DCS systems, where analytics identified anomalies and provided actionable insights.



RESULTS

The system helped the manufacturer transition from reactive to proactive maintenance:

- Unexpected downtime occurred across conveyors, cranes, and presses.
- Repair costs reduced through earlier interventions.
- Optimal productivity is maintained by ensuring machines operate at peak performance.
- The maintenance team gained confidence in their ability to monitor machines continuously, even with reduced staffing.

The Electrical Supervisor confirmed: “Their product allows us **always to be monitoring** our machines and **maintain productivity**, and **their support is second to none.**”



CONCLUSION

The GraceSense Machine Health Monitoring Solution proved to be an ideal fit for the Tier 1 automotive plant. By deploying wireless vibration and temperature sensors, combined with cloud-based analytics and real-time alerting, the plant achieved significant improvements in reliability, safety, and efficiency.



With flexible deployment options, including CloudGate, ControlGate, and ComboGate, the system was easily adapted to their needs and is scalable across various industries. GraceSense now enables the plant to stay ahead of failures, reduce costs, and maintain optimal production capacity.

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