

Paint Booths & Conveyor Systems Application

INTRODUCTION

For manufacturers of products requiring a painted finish, operations rely heavily on industrial conveyor systems and paint booths. These environments face two significant challenges: the high volume of chemicals and paint passing through exhaust systems, and the numerous points of failure in conveyor systems.

To reduce contamination and avoid bearing failures, manufacturers typically enforce rigorous preventive maintenance programs with daily inspections. While effective, these inspections are costly and resource-intensive. Without more advanced monitoring, plants risk both product quality issues and unplanned downtime.

PROBLEM

Exhaust systems are the most maintenance-intensive component of paint operations. Heavy chemicals and paints accumulate in filters, and over time, debris can contaminate the system, potentially affecting the quality of finished goods. Knowing precisely when to replace filters is critical to maintaining product quality.

Conveyor systems also present a high risk, with bearings being a common point of failure. When a bearing fails, the entire paint line shuts down until repairs are made. If replacement parts are not in stock, the downtime is extended further. Challenges include:

- Frequent inspections that consume time and labor.
- Costly downtime due to unexpected bearing or fan failures.
- Product quality compromised by contaminated exhaust air.
- Repairs delayed by lack of parts or preparedness.
- Higher safety risks when failures occur during reactive maintenance.

Maintenance teams need to know **precisely where and when a failure will occur** to plan their repair in the most **cost-effective way possible**.

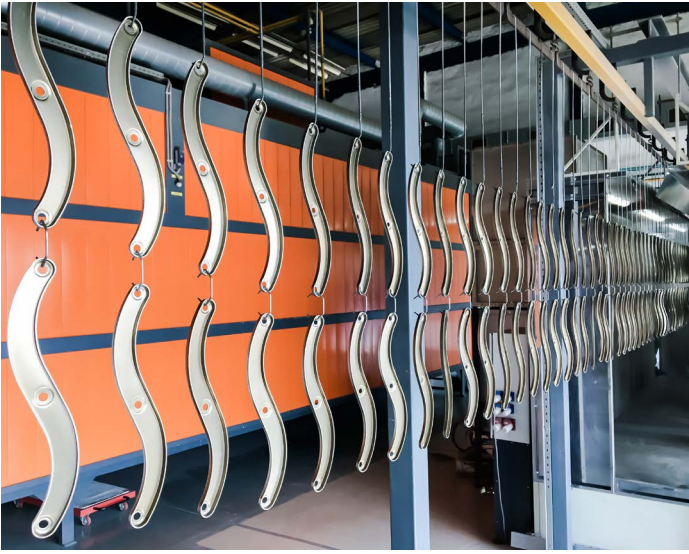


SOLUTION

The GraceSense Machine Health Monitoring Solution equips exhaust systems and conveyors with wireless vibration and temperature sensors, connected to a cloud-based Maintenance Hub.

- **Exhaust System Monitoring:** Sensors track fan performance, alerting personnel when fluctuations fall outside normal ranges—an indicator of filter clogging or fan degradation.
- **Real-Time Data:** Continuous monitoring provides live updates, accessible through dashboards and automated reports.
- **Automated Alerts:** When degradation is detected, the system issues SMS/email





notifications with clear instructions to inspect or replace filters.

- **Conveyor Bearings:** Sensors installed on critical points detect early signs of wear and alert maintenance teams to the precise failure location. This eliminates guesswork and ensures replacement parts are ready when needed

BENEFITS OF GRACESENSE™ IN PAINT BOOTHS & CONVEYORS

- **Improved Product Quality:** Prevent unwanted contaminants from reaching painted goods by maintaining exhaust system integrity.
- **Precise Failure Detection:** Narrow potential failures to exact conveyor locations, saving time and resources.
- **Reduced Downtime:** Early alerts allow proactive planning for part replacement and repair scheduling.
- **Optimized Maintenance Resources:** Continuous monitoring augments preventive programs, reducing the frequency of manual inspections while freeing up staff for higher-priority tasks

ABOUT THE GRACESENSE™ MACHINE HEALTH MONITORING

The GraceSense Machine Health Monitoring Solution is an IIoT-based system that combines wireless and wired sensors with advanced analytics and data processing capabilities.

- Provides deep insights into machine health to prioritize resources effectively.
- Improves plant reliability, safety, and maintenance efficiency.
- Sends timely SMS/email notifications with step-by-step remediation instructions when anomalies occur.



By enabling real-time monitoring, actionable alerts, and data-driven insights, GraceSense™ helps paint line operators prevent downtime, maintain consistent product quality, and improve overall plant performance.

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