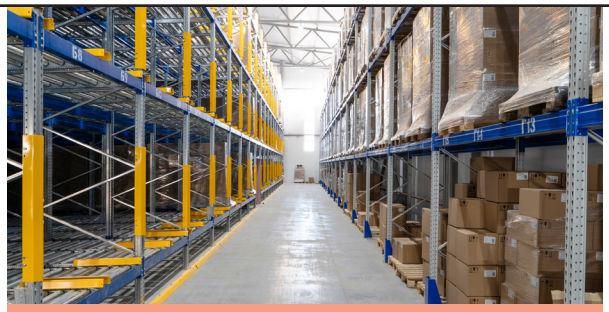
High-Bay Rack Warehouse Monitors Vibration in Rollers to Eliminate Surprise Slowdowns

RESULTS

- Substantial reduction in production slowdowns and downtime to increase process availability
- Issues predicted a month in advance
- Reduction in unplanned maintenance tasks to improve scheduling



APPLICATION

Poles are moved on rollers along rails to retrieve products from tall shelves in a warehouse. The poles move with rapid speed and acceleration. If either is reduced, production slows.

CUSTOMER

German manufacturer of industrial connectors.

CHALLENGE

Components for manufacturing are stored in baskets held in tall bay towers that rise high above the warehouse floor. To retrieve the parts that are key to production, grabbers are raised and lowered on poles that roll on rails through the warehouse at high speeds with quick starts and stops.

The rollers that hug the rails take a beating and experience wear to the plastic that touches the metal rail. Vibrations in the roller mechanics indicate that abrasion and ditches are present. When the wear becomes significant enough, the poles must slow or stop their retrieval duty so that the rollers can be replaced.

As the team began to build a new retrieval area, they wanted to be more sure of the retrieval system. They sought a method to predict when the wear on the rollers would begin to cause the mechanisms to slow or stop the retrieval process.

> ***"Vibration monitoring helps us understand the asset behavior and conditions, allowing us to schedule downtime and maintenance before an accidental event or loss of production efficiency occurs. We also feel much better and more secure knowing the system is not running blind."***
>
> **Manufacturing Manager**

SOLUTION

After successful past experiences with this Emerson solution, the customer asked the Emerson team to implement the vibration monitoring system in a newly installed warehouse area. The goal was to be able to schedule maintenance activities by predicting roller degradation before it slowed down the part-retrieval process.

Emerson's AMS Asset Monitor gathers data from sensors on the rollers to measure and evaluate peak-to-peak vibrations. Through the OPC/UA interface, data is sent to the area PC where data is recorded, trends are logged, and levels can be compared and alarmed as needed. Emerson's Movicon SCADA visualization software enables the team to see the data easily for planning purposes.

Working together, the customer and Emerson teams created a solution that in the second test phase detected a pending roller issue one month before it would have caused failure and a process breakdown. Bolstered by this success, the maintenance team now plans repairs rather than being surprised and having to interrupt production.

Another savings came when, equipped with data, the customer team could prove a roller quality issue to the bay system manufacturer. The manufacturer of the bay system then replaced the rollers at their cost.

The customer has seen and documented the successes and has plans to apply the Emerson solution to other retrieval areas in the warehouse as well as in other production warehouse facilities globally.

"It helped us a lot in quality-issue discussions to have recorded data showing the behavior related to rising vibration levels. The data helped us understand the machine behavior and the roller conditions, and it made the manufacturer of the high-bay racking system replace the rollers at their cost."

Maintenance Manager

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