Sonoco Metal Packaging Division's Condition-Based Maintenance Program Avoids Major Downtime Events

Sonoco Metal Packaging, formerly known as Ball Metalpack, is a packaging solutions company offering metal packaging for food and household products. They have been an L2L client since 2017.

The Challenge

Sonoco Metal Packaging utilizes industrial KBA curing units that use large fans to circulate hot air throughout the curing unit. Traditionally, these fans have had a fairly short life span and have failed at unpredictable times. Failures are caused by condensate, which gradually builds on the fan blades and then suddenly breaks away in large pieces. When a piece of condensate breaks away, the fans become unbalanced. The out of balance condition quickly leads to bearing failure in either the motor or the fan assembly. Expensive quarterly scans of the fans with specialized vibration equipment was not able to predict when these circumstances would occur and was unable to reduce the fan failure rate. Replacing the fans can cause significant disruptions, often requiring specialized personnel, equipment, and extended line downtime.

The Solution

Working with insights provided by the L2L Smart Manufacturing Platform, Sonoco decided to implement a condition-based maintenance solution that alerts the maintenance team when the fans start vibrating so they can be serviced quickly and avoid failure.

> **"These ovens support one of the primary processes where we're applying coatings to raw sheets of steel. When one of the fans fails, not only do you lose that coating line, but that line might be supplying 5 lines inside the plant, and 6 or 7 lines outside the plant. You might impact 10 or 12 downstream lines as well. That bubble just pushes out and it's enormous when you're a supply plant like us."**
>
> **- Jason Bryan -**
> Senior Manager of Plant Operations, Sonoco Metal Packaging

Sonoco is already using L2L to orchestrate their shop floor teams and execute work orders and they knew it could serve as a foundation for condition-based and predictive maintenance scenarios.

To create the real-time alerting functionality, Sonoco retained Polaris Automation, a system integrator based in Ohio. Polaris installed Banner sensors on the fan units to monitor vibration and temperature. These readings are fed into L2L via Ignition IIoT, and Polaris defined rules that created new maintenance dispatches within L2L whenever the fans are operating outside their target temperature and vibration parameters. The L2L dispatches are automatically routed to the appropriate on-duty maintenance technicians for resolution, and escalated to management when not resolved within prescribed time limits.

This condition-based maintenance solution has been a game changer for Sonoco, allowing them to service the fans exactly when needed instead of replacing them. Not only are they saving the cost of new fans, they are also avoiding the far more expensive line disruptions they had experienced in the past.

The success of condition-based maintenance on the oven fan units has led Sonoco to identify other areas in their plants that suffer from similar failure conditions. In Q1 of 2022, they plan to implement similar monitoring and workflow integration into their press area.

After 9 months, Sonoco Metal Packaging estimates they have saved almost $50,000 from this condition-based maintenance solution on two lines in one plant, not factoring in downstream benefits from improving uptime on this source line. They plan to expand the solution to additional lines and plants in coming months to improve reliability and realize additional savings.

The Result

After 9 months, results include:

- **72 HOURS** — Reduction of unplanned downtime
- **$8,000/YEAR** — In cost avoidance in third party vibration analysis
- **$25,000** — reduction in fan replacement costs
- **IMPROVED RELIABILITY** — on source line and downstream production lines

> So far, we're seeing success with it. By responding to real time data, we have avoided costly unplanned catastrophic failures. So far, we're happy with the results."
>
> **- Jason Bryan -**
> Senior Manager of Plant Operations, Sonoco Metal Packaging