

Paper + Packaging  
Manufacturer:

## Safety Trigger Slowdown

### Problem

A safety measure triggered by a gap in differential pressure in a key mill refiner slowed its motor load, resulting in:

- Increased production of low-quality slurry
- Quality decrease leading to the downgrading of a significant amount of paper roll batches
- Delivery of high-quality paper roll cores ultimately slowed
- **Inability to identify root cause to ensure batch quality**

### Initial Hypothesis & Approach

#### Mill Management Hypothesized That:

- Upstream assets were the root cause of the slowdowns
- They also suspected a refiner valve may be damaged

#### Steps Taken:

- Inspection verified the valve was not physically broken
- Sight Machine's Time Series Correlation analysis helped identify that the water valve leading to the refiner was highly correlated with motor load slowdowns
- The analysis showed no correlation with upstream tags, but further analysis did show the valve response rate was slower than expected
- This delayed response led to a drop in differential pressure in the refiner, which was triggering the safety measure

- ✓ Identification of factors impacting production
- ✓ Diagnose variables impacting defects
- ✓ Connecting machine data to downtime events
- ✓ Identify optimal production settings
- ✓ Real-time process interdependencies

### Solution

#### Solution

1. **Real-time adjustment** of refiner valves to maintain and **optimize differential pressure** with **ideal refiner conditions**
2. Elimination of faulty trigger safety measures, resulting in:
  - Improved **batch quality**
  - Improved **run time**
  - **Timely delivery** of high-quality paper rolls
3. This solution has **permanently addressed the issue** and prevented any related slowdowns since

#### How Did Sight Machine Help?

- **Sight Machine was able to create a data foundation to employ a lines model for the full journey of a reel**, looking at tag settings on the refiner for an entire days' worth of data rather than a snapshot of settings at a given moment.
- This solution would not have been possible without the ability to first leverage the Sight Machine platform to overlay MES system data onto process data.
- Because of this, the team was able to identify that the hypothesis about the root cause of the slowdown being related to upstream assets was incorrect.
- Further, the first check on the slow valve yielded a dead end because the valve was not physically broken.
- Only by analyzing process data further was Sight Machine able to identify that running conditions and settings of the valve were the root cause of the slowdown.
- Once the mill had the end solution to increase responsiveness of the valve, it has been working flawlessly, correcting batch quality for timely delivery of high-quality paper roll cores.

