CDM Systems, Inc.

a KMGlobal company

Pulp and Paper Manufacturer

Pulp and Paper Mill Gets Positive ROI in Less than 12 Months with Conveyor Retrofit

THE SITUATION

A Pulp & Paper facility in Pennsylvania had extensive issues with conveyor corrosion and failures on their salt cake handling system.

THE CORRESPONDING FAILURE LED TO HIGH MAINTENANCE REQUIREMENTS AND FREQUENT DOWNTIME.

During the pulping process, vapor from the black liquor tanks severely corroded the housing, drive assembly and chain of the conveyor. The corresponding failure led to high maintenance requirements and frequent downtime.

Recovery boilers are vital to the pulp producing process and found in pulp and paper mills everywhere. The salt cake handling system is located on the boilers, where it recovers the solid byproduct material (salt cake) leftover from the black liquor burning procedure.

THE CHALLENGE

The paper producer sought to solve the liquor vapor corrosion problem to reduce maintenance and improve operating margins.

Adding to this, the facility management and mill staff had a tight budget and timeline for repair or replacement of the conveyors.

CDM WAS CHALLENGED TO FIND THE BEST AND MOST ECONOMICAL SOLUTION.

When CDM inspected the existing equipment they found the vast majority of corrosion occurred near the drive/discharge end of the conveyors. This was due to the incline of the conveyors and where the vapor was being trapped. After evaluating the operating conditions, the CDM team concluded the best option was a retrofit of the existing conveyors fabricated from a stainless steel housing.

THE SOLUTION

CDM designed the conveyor components with stainless steel to resist corrosion. It is a softer metal with lower heat threat limits and is more susceptible to erosion, but CDM countered this by keeping the chain speed at a minimum to reduce wear. Thicker sidewalls and bottom plates provided additional protection to the stainless steel components.

This configuration allowed the mill to simply add the flight extensions to suit the chain. CDM worked with the mill's staff to retrofit the conveyors within an existing maintenance budget. CDM then reviewed the design of the structural steel connections and anchor points and found that they could be reused – along with many other components.

STANDARDIZATION REDUCED THE COST OF OWNERSHIP BECAUSE IT REQUIRES LESS TRAINING FOR MAINTENANCE STAFF AND LIMITS THE NUMBER OF COMPONENTS REQUIRED TO BE ON-SITE.

Standardization
An important goal in most manufacturing plants. This was part of the design criteria, which included the following:

- **Flight Style:** 1/2" x 2" BT
- **Flight Extensions:** 1/4"
- **Chain:** Standard base

THE RESULTS

The retrofit conveyors have allowed production at the paper mill to continue without unplanned downtime from conveyor failure.

CDM's design and engineering of the conveyors eliminated the effects of the corrosive vapor on the conveyors and their components.

THE COST OF THE CONVEYORS AND INSTALLATION MEASURED AGAINST THE INCREASED UPTIME AND REDUCED MAINTENANCE COSTS GENERATED A POSITIVE RETURN IN LESS THAN 12 MONTHS.

The paper mill's production has returned to peak levels.