CDM Systems, Inc.

a KMGlobal company

Biomass Power Generation

Power Plant Improves Reliability and Uptime with Enhanced Feedstock Conveying

THE SITUATION

A small power producer supplied a nearby malting facility with its electricity and heating needs.

THEY OCCASIONALLY STRUGGLED TO FULFILL ITS OBLIGATIONS DUE TO UNEXPECTED DOWNTIME OF CONVEYORS AND POOR MATERIAL DISTRIBUTION.

Material flow issues began in the truck receiving system, where they took in a mixture of wood chips, hulls and hog fuel by truck and unloaded it into a pit hopper.

INEFFICIENT UNLOADING ADDED LABOR, MAINTENANCE AND PRODUCTION COSTS WHILE REDUCING OUTPUT.

THE CHALLENGE

CDM's challenge was to design a new conveyor layout for effective material handling and safety improvements.

The conveyor under the hopper needed to meter the material, elevate it from the pit and transfer it to a bucket elevator. But the original layout and plant design created an instantaneous load on the conveyor, stressing the drive, chain and housing. Additionally, the short section and steep (+60°) incline caused excessive strain on the chain flights. This led to premature wear and damage.

The power producer needed a better way to move the feedstock to the boiler.

THE GOALS WERE A REDUCTION OF EQUIPMENT, STREAMLINED MATERIAL FLOW, BUILT-IN REDUNDANCY AND IMPROVED SAFETY AND RELIABILITY.

Project Goals

- Reduction of Equipment
- Streamlined Material Flow
- Improved Safety
- Build In Redundancy
- Increased Reliability

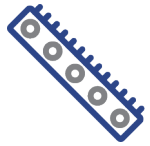
The redesigned L Path en-masse conveyor System effectively handled feedstock from truck unload to the storage silos.

THE SOLUTION

CDM designed two en-masse drag chain conveyors in the following layouts:

PRODUCTS UTILIZED

Drop-Forged Chain



En-Masse Conveyor

CAPACITY: 60,000 LBS/HR EACH
CONFIGURATION: L-PATH
HORIZONTAL SECTION: 20 FT
VERTICAL SECTION: 120 FT
INCLINE: 40°

THE SOLUTION

The two conveyors allowed the facility to have built-in redundancy and continuously supply fuel to the boilers.

THIS ENHANCED DESIGN AND THE PROPER SELECTION OF A CHAIN AND FLIGHT ASSEMBLY ALLOWED FOR THE EFFECTIVE UNLOADING AND DISTRIBUTION OF THE FEEDSTOCK.

Because of a tight capital budget and short installation window, CDM reused existing components that still met safety and performance specifications. They also instructed the maintenance crew on how to properly maintain the conveyors.

THESE ANCILLARY PROJECT MANAGEMENT OFFERINGS SAVED THE POWER PRODUCER ON UP-FRONT CAPITAL COSTS AND LONG-TERM MAINTENANCE.

THE RESULTS

THE CDM EN-MASSE DRAG CHAIN CONVEYORS HAVE BEEN OPERATING FOR YEARS WITHOUT DOWNTIME.

CDM's conveyors provided a highly efficient use of space, which allowed the desired small footprint. According to the power producer, the new conveyor system had tangible financial results for the facility.