

Improving Operating Efficiency and Reducing Airborne Dust on a Redesign of a PRB Coal-Fired Power Plant Tripper Conveyor System

Industry	PRB Coal Fired Power Plant
Application	Tripper conveyor feeding the bunkers
Material	Blend of Sub-Bituminous and Bituminous PRB Coal 1" minus
Product	3-DEM™ Chute Design, Fabrication and Installation
Objective	Improve material flow, reduce airborne dust on tripper floor and improve life of internal wear liners
Detail	Two (side-by-side) tripper conveyors 36" wide at 400' FPM and 600 TPH that feed the coal bunkers below

Challenge

This area of the coal handling system was a major issue for the plant for several reasons. Due to the current OSHA NEP combustible dust requirements, has made it mandatory for many PRB coal fired power plants to address any airborne dust issues. Also the timeline for dismantling the existing system and installing the new tripper cars and transfer chutes was on tight schedule and had to be accomplished one at a time so at least one of the trippers could run during the day to fill the coal bunkers below.

Solution

Two new tripper cars were modeled and designed using ASGCO®'s 3-DEM™ material modeling software, to allow the PRB coal to be either loaded down to the bunkers or loaded back onto itself, moving in the same direction, speed and in the center of the receiving conveyor. The new design improved the flow of the coal and new combination of internal liners also improved the wearability of the liners. The combination of the X-Wear™ MDX liners, a combination of ceramic cylinders encased in rubber, for the impact area and the chromium carbide overlay plate (double pass and polished) was the answer to the sliding abrasion issues prior to the new design. As shown in the picture the amount of airborne dust and spillage is virtually eliminated with the new tripper design, Clamp-Mount™ skirting, dust curtains and Skalper® belt cleaners to further aid in the elimination of any fugitive dust and carry back help the plant meet



Before



After



Results

The newly installed transfer chutes now operate with improved coal flow through the tripper system without buildup and less wear in the internal liners and nearly eliminated all spillage and any significant amount of airborne dust. The overall project was a great success and ASGCO® has once again provided a "Complete Conveyor Solution".