SYSTEM TIVAR® ENGINEERING
POLY HI SOLIDUR

case study: lignite coal

TIVAR® 88 HIGH PERFORMANCE LINING SOLUTION

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THE CASE IN BRIEF

Application: Ortner Rapid Discharge Railcars
Quantity: 50 Railcars
Liner: TIVAR® 88-2, 3/8" Thick
Bulk Material: Lignite Coal
Substrate: Corten®
Problem: Flow problems, sticking and freezing
Date Installed: 1997 & 1999

TIVAR® 88-2 Liners Improve Bottom Dump Railcar Operating Efficiency

BACKGROUND

Basin Electric, a lignite coal-fired power plant in the upper Midwest, utilizes carbon steel Ortner rapid discharge railcars to transport coal to storage bunkers. Plant personnel were charged with finding a way to haul greater volumes of coal with the same number of cars and take advantage of the cars' full storage capacity.

PROBLEM

Carryback was a major problem, particularly during the winter months. At one point, each car was accumulating 50 tons of carryback. Turnaround times at the raildump receiving bunkers had reached an unacceptable level. In addition, the power company was forced to use car shakers to discharge loads, damaging the railcars in the process.

SOLUTION

The plant first opted to try TIVAR® 88-2 linings on the sloping end walls of 50 hopper cars. Although coal discharge improved notably, during the winter months, 2-3 tons of material would accumulate on the cross beams each trip, and with a standard two-trips-per-day schedule, build-up remained costly. Next, the utility designated two bottom dump railcars to test complete lining systems. Poly Hi Solidur's SystemTIVAR® team designed linings for the discharge doors and structural support components, including cross beams and center sills. Using thermoforming and proprietary welding techniques, the Poly Hi Solidur team pre-fabricated linings using 3/8" TIVAR® 88-2 UV-resistant material. A certified SystemTIVAR® installation contractor installed one railcar lining each day.

Basin Electric railcars with TIVAR® 88-2 liners installed.

RESULTS

Tested in year-round weather conditions, the 100-ton capacity cars showed less than 1/16-ton carryback – an insignificant amount as deemed by the utility. Turnaround times at the raildump receiving bunkers have been cut by as much as 50% and loads are effectively discharged without the frequent use of car shakers, thawing sheds or other techniques that fatigue railcar structures.

Due to the success of the test cars and savings through maximizing hauling capacity and shortened turnaround times, the power plant has fully lined all 50 railcars. According to power plant personnel estimates, the cost of the TIVAR® 88-2 liners was recovered in less than two years with a projected 8- to 10-year wearlife for the lining systems.

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