

FEATURED PROJECT

ABRASION RESISTANT COATINGS

INTERNAL COATING FOR COAL PULVERIZERS

CUSTOMER

Louisville Gas and Electric

APPLICATION TEAM

Maintenance Contractor

SYSTEM

Ceramic Repair Putty

LOCATION

USA

DATE OF APPLICATION

Sept. 2020

SUBSTRATE

Carbon Steel

PROBLEM

A power plant operated by LGE-KU discovered extensive internal degradation of their coal pulverizers during a routine inspection. Historically, degradation of the uncoated steel was not an issue however a shift in coal makeup created a combined corrosion/erosion mechanism due to an increase in the moisture, chloride, and sulfur content of the coal. The general operating conditions of the pulverizers include continuous abrasion from coal ranging in size from pea gravel to baby powder with internal temperatures between 130 - 150°F. A non-combustible and highly abrasion-resistant solution capable of withstanding periodic mill fires up to 800°F was required.

LGE agreed to a test of Advanced FRP's recommended high-temperature, ceramic-filled, novolac epoxy coating system. The existing maintenance contractor at the plant applied the Ceramic Repair Putty HT to three coal pulverizer doors, each approximately 50 sq. ft, in two shifts, ensuring that all the deep pitting was filled and the coating was brought to a total film thickness of 1/8 inch.

INSTALLATION STEPS:

1. The surface of the pulverizer doors were first cleaned with a wire wheel to remove debris and then grit blasted to ensure a proper bond for the Ceramic Repair Putty HT.
2. Two layers were applied via trowel over the entire surface of the doors: a fill layer to fill in all the deep pitting and uneven textures on the surface of the doors, and a second layer at 125 mils thick.
3. The Ceramic Repair Putty HT was then allowed to cure for 24 hours at 75°F prior to returning to service.

After 4 months, the doors were inspected and were found to be in excellent shape with no observable wear or corrosion.

SOLUTION

BENEFITS

- Easy-to-install system can hang up to 1/4 inch thick in a single application, eliminating any waiting for the material to cure between coats.
- Ceramic Repair Putty HT is over 70% Ceramic by weight and has a high glass transition temperature, providing excellent abrasion resistance even at elevated temperatures.
- Zero-VOC, non-flammable coating system ensures worker safety during and after the repair.



Figure 1 Pulverizer Doors Prior to Surface Preparation.



Figure 2 Close-up of Extreme Wear and Corrosion on Interior Surface of Door after Cleaning.



Figure 3 Ceramic Repair Putty HT Applied At Over 1/8 Inch Total Thickness.