

Location:

Alabaster, AL

Date of Application:

October 2007

Market:

Power - Conventional

Substrate:

Steel

Surface Prep:

SSPC-SP 6 (Commercial Blast)

Exposure:

Severe Chemical Exposure -
immersion or near immersion
conditions of moderate to strong acids
caustics or solvents

Scrubber Stack Lining & Exterior Finish

Area Coated: Scrubber Stack Lining

- First Coat: Plasite 4550 S

Area Coated: Exterior Coating

- First Coat: Carbozinc 859
- Second Coat: Carboguard 890
- Third Coat: Carbothane 133 HB

Project Description:

The company built a coal fired plant on site as a dedicated power source. The plant began operating in the middle of 2007. The scrubber stack, fan, and duct were built from 316 SS. After 3 months of operation, random welds and plate areas were leaking liquid to the exterior. Liquid analysis revealed a wet, 150°F, low pH acid, high chloride environment. A 12 hour outage was scheduled to evaluate the stack condition. Plate thickness readings revealed a large portion of the stack was below structurally acceptable levels and was rapidly deteriorating.

Project Challenge:

A decision was made to replace the stack. While the new stack was being built, it was determined that the existing stack deterioration had to also be stopped. The concern was it would structurally fail and possibly collapse (creating an even bigger problem), and needed to be refurbished until the new stack was completed. A coating system needed to be selected which could hold up to this aggressive environment. Ultimately, Carboline systems were chosen to complete this work.

Coating Selection Explanation:

The decision was made to shop build a new carbon steel stack and line it with a system provided by a local supplier used on an earlier project at a sister plant. During this time, Carboline Tech Service recommended Plasite 4550 S at 40 mils for a fast turnaround in the existing stack. In addition, we proposed Carbozinc 859/ Carboguard 890/ Carbothane 133 HB as the exterior system for the new stack. During the shutdown, the stack was dismantled and placed onto the ground. The sections were then pressure washed, blown down, and dry blasted. The surface profiles averaged 3 mils. The Plasite 4550 S was applied over the surfaces on the same day. The system was brought up shortly thereafter.

Additional Information:

The stack operated for four months. There were no signs of chemical or physical attack. The film was discolored, but it was hard and continuous. Destructive investigation of the substrate revealed no permeation. The exterior system was shop applied and then touched up in the field. Review of the system after it began operation showed no signs of attack from the ongoing wet fallout. Performance of both systems has been highly successful. The associated duct and fan will be coated with Plasite 4550 S at a later time. Carboline products are now being considered for plant maintenance in this plant and nearby sister facilities.

