



## Bottom Ash Elbow Repair

### **PROBLEM:**

*A Western Utility experienced leaking in their bottom ash transfer line. This allowed flue gas to be released into the air, and there was concern of an immediate pipe failure requiring an emergency shutdown. Since this was the weekend, there was no chance of getting an immediate replacement.*

*This is a common problem as transfer lines carrying pulverized coal, fly ash, or bottom ash are subject to serious abrasion effects especially in the elbows and transition points. The enhanced abrasion occurs as the particulate stream is forced to change direction, impacting much of the particulate on the turning radius. Of the three materials, bottom ash is the most severe. Bottom ash, in addition to being extremely hard and crystalline has a wide range of particulate sizes. For example, "Black Beauty", a commonly used Grit-Blast Media, is made from screened bottom ash.*

### **SOLUTION:**

**DUROMAR HAR**, a two part, 100% solids, silicon carbide filled epoxy product was used to repair the elbow as it could be done in a relatively short time period.

To repair the damaged Cast Iron Pipe, the worn part was grit blasted to remove all surface contamination and oils. The part was steamed at 180<sup>0</sup>F for 4 hours and allowed to cool. The surface was reblasted and the steaming repeated. A final grit blasting is done to remove any released contamination and to give the surface a 3-5 mil profile.

Any worn areas were rebuilt with **HAR**, and the entire surface coated with an additional **HAR** at 80-120 mils DFT. For the large surface, a 5/32" notched trowel was used to apply a first, grooved coat. This was allowed to become Tack Free, about 2 hours, and a final build coat is applied with a smooth, rubber trowel. The **HAR** was heated to Force Cure the repair @ 180<sup>0</sup>F for 3-4 hours, cooled, and returned to service.

### **RESULTS:**

The cast iron elbow was repaired during an eight (8) hour work shift. It was returned to service, and the plant resumed operation. The repair performed so well that the replacement piece was not installed until the plant was shut down during it's next scheduled outage, over a year later.

### **CURRENT STATUS:**

**HAR** is now used as the repair of choice when dealing with worn bottom ash piping. In many cases, it is applied to new pipes and elbows to make repairs faster and simpler as they wear.

### **COMMENTS:**

**DUROMAR HAR** has been formulated for use in hot, highly abrasive environments. Heavily filled with the highly abrasion resistant silicon carbide, **HAR** may be built up to over an inch without effecting performance.



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