

Challenge

Issue

Pug mill paddles handling abrasive fly ash wear much faster than projected—resulting in inefficiencies, downtime, and high maintenance costs.

Goal

Provide a long-life alternative to conventional paddles in fly ash pug mills.

Root Cause

Abrasive fly ash easily abrades and erodes exotic alloys, coated metal and PE (UHMWPE) liners. Competitor ceramic epoxies also failed.



Condition of the pug mill blades in service

Solution

Preparation

- Urethane molds were created for the various paddle blade configurations
- New blades were abrasive grit blasted to a Sa 2.5 with a 3 mil (75 µm) angular profile

Application

- An encapsulated cast using ARC MX1 at a thickness of 6-8 mm



ARC molded abrasion resistant product on new blades

Results

Equipment Life Extension at 4 Years After Application

- Client reports that ARC coated blades have extended blade life from less than 6 months to more than 4 years
- Only the cast elements wore, thereby representing a lower cost consumable
- The worn elements are easily recast with additional ARC MX1 product as required eliminating blade replacement



In service of the blades protected with ARC coatings