

Challenge

Issue

Extreme abrasion and corrosion damage side plate in slurry pump leading to unplanned shut down (costing >€150K) at least once per year.

Goals

- Increase MTBF of side plate to >1 a year
- Reduce unscheduled shut down
- Eliminate reliance on costly super duplex stainless steel

Root Cause

Abrasive gypsum slurry in hot phosphoric acid erodes and abrades alloy side plate.



Side plate during ARC T7 AR application.

Solution

Preparation

- Machine side plate to 6 mm to allow for clearance to apply product
- Grit blast using aluminum oxide to Sa 2.5 with 3-5 mil (75-125 µm) profile

Application

1. Apply 7 mm (275 mil) of ARC T7 AR to side plate
2. Machine side plate to tolerance with diamond bit



Side plate after machining the ARC T7 AR.

Results

Client Reports (after 2 months)

- After continuous operation for >1,400 hours the ARC T7 AR coated side plate has lost < 0.5 mm total thickness. Client projects coating to last at least a year, doubling service life.
- Client plans to recoat side plate every 12 months

Cost of new super duplex side plate: €30K

Cost of ARC protective solution: €10K

Annual Savings: €20K

€=Euro



No loss of tolerance between impeller and side plate protected with ARC T7 AR.