

Challenge

Goal

- To extend the life of limestone slurry, *exotic alloy* pumps, from 15 to 24 months

FEMA*

Despite 27% chrome hardened pump components (volute, back plate, suction plate) the pump became degraded by the abrasive and corrosive nature of the re-circulated slurry in 6-9 months. New parts were installed in each of 12 pumps within a 15 month cycle.

*Failure Mode Effects Analysis



Condition of pump after 9 months

Solution

Preparation

- Use UHMWPE to fabricate suction port mold
- Steam remove contaminants and soluble salts
- Grit blast to Sa 2.5 with 3 mil (75 µm) angular profile

Application

- Apply 5 mm of BX2* to suction and backplates
- Machine suction and backplate to tolerance with diamond bit
- Rebuild cutwater and volute with 5 mm of BX2*

*ARC BX2 is the "Bulk" package size of ARC 897



Molding the suction port

Results

- Run time to date – 24 months + as of 9/08
- Client indicated prior spend at \$54K/year based on 4 pumps per absorber and 3 absorbers
- Total 12 Pumps

Client Reported (Cost/Year/Pump)

New pump elements:	\$ 4,500
ARC Repairs:	-\$ 750
Annual Savings:	\$ 3,750
Total Savings for 12 pumps:	\$45,000
Payback:	10 weeks
\$=USD	



Completed application showing machined ARC surface