Seawater Pump Impeller

Challenge

Issue
Impaired pump efficiency diminished steam condenser cooling capacity, reducing power output.

Goal
To restore the pump capacity back to original point, allowing increased power production.

Root Cause
Pumping seawater with entrained sand at a high flow rate caused corrosion erosion damage to impeller, impeller vanes and leading edges.

Solution

Preparation
- Pressure wash and decontaminate surfaces to eliminate soluble salts
- Machine leading edges back by 1.5 mm (0.060")
- Grit blast to Sa 2.5 with 3 mils (75 µm) profile

Application
1. Rebuild leading edges flush with ARC 858
2. Apply 2 coats of ARC 855 ~DFT: 60 mils (1.5 mm) alternating colors to monitor wear rates

Results

Inspection Results
- Goals of improving operating efficiency and increasing power production were achieved
- Impeller has remained in perfect condition
- NOTE: After 9 years of pumping salt water and sand, the “brush marks” are still evident and pump is performing required duty point

Worn leading edge of impeller
Leading edge rebuilt with ARC 858
Follow up inspection after nine years shows no wear