

CASE STUDY

## REDESIGN AND TESTING PROVES NEW COATING WILL EXTEND PUMP SERVICE LIFE FOR CUSTOMER

- Returning customer values our expertise
- Custom manufacturing process developed to achieve customer goal
- 50% improvement in pump service life demonstrated



Casing with wear plate

### CHALLENGE

This returning customer had previously been impressed by our ability to upgrade two third party pumps by supplying “drop-in” replacements with protective coatings to internal wetted parts. While the two-year service life of the coating supplied had proved acceptable, the retired coated casings exhibited severe abrasion caused by catalyst fines.

The customer’s maintenance team was therefore interested in applying another coating type that would perform better in abrasive applications. They turned again to ClydeUnion Pumps for support.



Erosion at cutwater

**CLYDEUNION®**  
PUMPS

**Industry:** Oil & Gas – downstream oil

**Region:** Americas

**Category:** Drop-in replacement

**API Type:** BB2

ClydeUnion Pumps Aftermarket Technical Services team has experience across a range of services on critical rotating and reciprocating equipment to improve operational safety, reliability and efficiency. The drop-in replacement of two original Bryron Jackson pumps for the oil and gas market is one of our success stories documented in our library of case studies. These case studies highlight the requirement from the customer, how we achieved the goal and the process we followed to deliver the improvements.

## SOLUTION

The application of the preferred coating presented many challenges. The first requirement was to select materials that were suitable for cladding for the casing and impeller. The process for cladding includes a welding process, so it had to be suitable for a post weld heat treat process: otherwise there was a risk of cracking in the casing.

Design changes to the pump were made to accommodate testing prior to and after the addition of the chosen coating. In addition, the replaceable wear plates were eliminated from the new design and traditional wear parts (including case and impeller wear rings) were made integral with the covers and impeller.

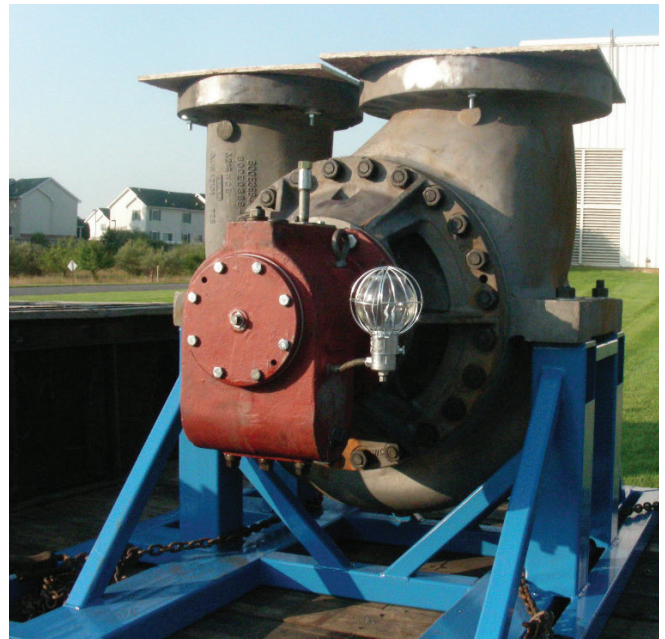
A step-by-step manufacturing process was developed due to the necessity to alter dimensions for cladding after initial testing. Finally, calculations were made to predict the likely shrinkage of casing and cover fits after processing/cladding at 1,900 °F.

## OUTCOMES

The redesign and testing performed by ClydeUnion Pumps proved that the preferred coating for abrasive applications could be applied to the customer's pumps. The overall service life of the pumps would therefore increase by 50%, from four years to six years – significantly reducing the total cost of ownership.

## FINANCIAL ILLUSTRATION

- Service life of original HVOF coated pump – 3 years
- Service life of TMT coated pump – 4 years
- Expected service life with Conformaclad coating – 6 years
- Estimated pump cost – \$250,000 (TMT or Conformaclad coating)
- Estimated cost savings of Conformaclad pump over TMT coated pump – \$125,000
- Routine maintenance cost estimated at \$20,000 per year



Completed pump

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