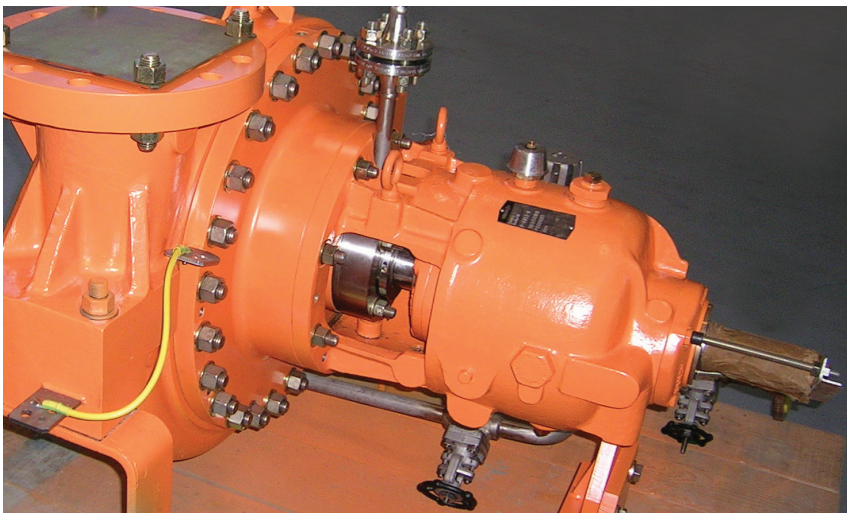


CASE STUDY

HYDRAULIC RERATE INCREASES PRODUCTIVITY AND REDUCING MTBO AT OIL REFINERY

- Hydraulic re-rate improves productivity
- Cavitation issue designed out, improving MBTO
- Change in customer approach following feasibility study accommodated



Finished pump before shipment

CHALLENGE

Our customer wanted to modify the hydraulic performance of two OH2 pumps (one running, one spare) for a gas oil pumping process in a refinery, according to new process conditions. The pumps already suffered intermittent cavitation phenomenon due to low available NPSH and its modelling had shown that the required changes in process conditions would lead to permanent cavitation problems.

The customer asked Celeros Flow Technology company ClydeUnion Pumps to perform an upgrade to meet the new rated point and solve the cavitation issue, with a 30 week lead time to carry out the pumps disassembly and modifications during a process shutdown.

SOLUTION

Calculations performed using the new process conditions identified that the OH2 pumps required an increase in impeller diameter to meet the new required flow for an unchanged head, as well as the addition of a specially designed inducer to avoid cavitation. These modifications were possible using spare parts available from the customer: but following feasibility studies, the customer decided to order two new bare shaft pumps integrating the upgrades rather than modify the existing pumps.



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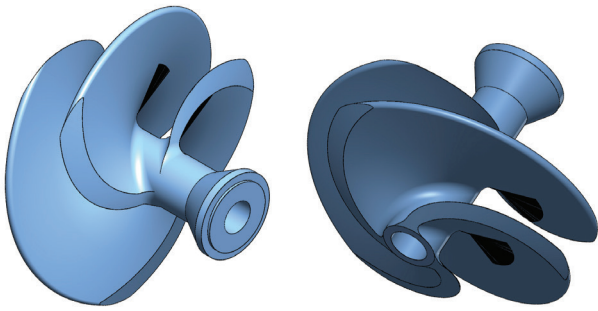
Industry: Oil & Gas - downstream

Region: Europe

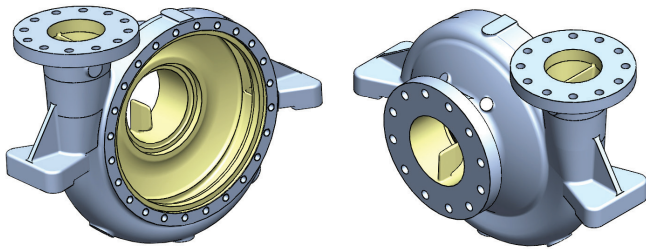
Category: Hydraulic re-rate

API Type: OH2

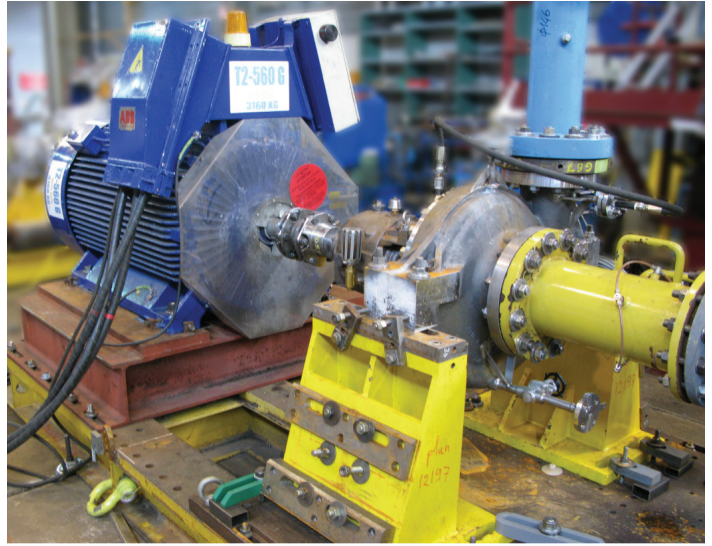
ClydeUnion Pumps Aftermarket Technical Services team has experience across a range of services on critical rotating and reciprocating equipment to improve operational safety, reliability and efficiency. The drop-in replacement of two original Byron Jackson pumps for the oil and gas market is one of our 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.



Specially designed inducer



Modification on volute for adaptation on current baseplate



Pump performance test in test bed

OUTCOMES

The modified pumps are operating as planned, and capacity of the oil gas process has increased in line with customer expectations. The reduction in cavitation has led to an increase in MTBO, reducing maintenance frequency and cost.

FINANCIAL ILLUSTRATION

• Investment

New motor, magnetic coupling, shaft, casing cover and lantern 25,000 Euros

• Savings

- Cost of two new mechanical seals and multiple overhauls on one pump by year
- Cost of damaged parts to replace
- Costs linked to specific procedures for cleaning
- Savings due to increased availability of the process

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