CELEROS™ FLOW TECHNOLOGY

CASE STUDY

ATTRACTIVE SOLUTION TO PERSISTENT LEAK AT PETROCHEMICAL PLANT

As found CUP-OH1 pump

CLYDEUNION® PUMPS

- Pump availability greatly improved
- Improved safety, as leakage of corrosive liquid halted
- Repair and cleaning costs greatly reduced

CHALLENGE

A petrochemical plant in France was experiencing ongoing issues with leakage of a highly corrosive substance through the mechanical seal on a CUP OH1 pump. In addition to being highly corrosive, the pumped liquid easily crystallised and led to quick deterioration of dynamic seals.

The leaks required monthly interventions to clean, repair or change damaged parts, including the employment of a specialised cleaning sub-contractor to comply with environmental standards.

The customer's main aim was to reduce the frequency and cost of maintenance by suppressing all leak issues. They stipulated that the design solution should retain the same hydraulic performances and require no modifications of the current interfaces (baseplate general arrangement, suction and discharge flanges position).

SOLUTION

ClydeUnion Pumps replaced the mechanical seal with a magnetic drive back pull-out assembly. The advantage of magnetic drive technology compared to mechanical seal is that it contains the pumped liquid in a hermetic can with no need for a dynamic seal.

Our engineers undertook the integration of the magnetic drive assembly, selecting a size in accordance with the power to be transmitted. We also upgraded the motor from a foot design to a flange design and designed a new lantern and casing cover. Materials were specified to be compatible with the pumped liquid. The solution uses samarium-cobalt magnets to transmit heavy torques and resist high temperatures, alongside a zirconium oxide can to suppress eddy current losses generated by magnetic fields.

OUTCOMES

The new magnetic drive assembly for the pump has prevented further leakage, saving the costs of ongoing repair, maintenance and cleaning. With corrosion from leaking liquid eliminated, Mean Time Between Outages has significantly increased – leading to greater availability of the pump package.

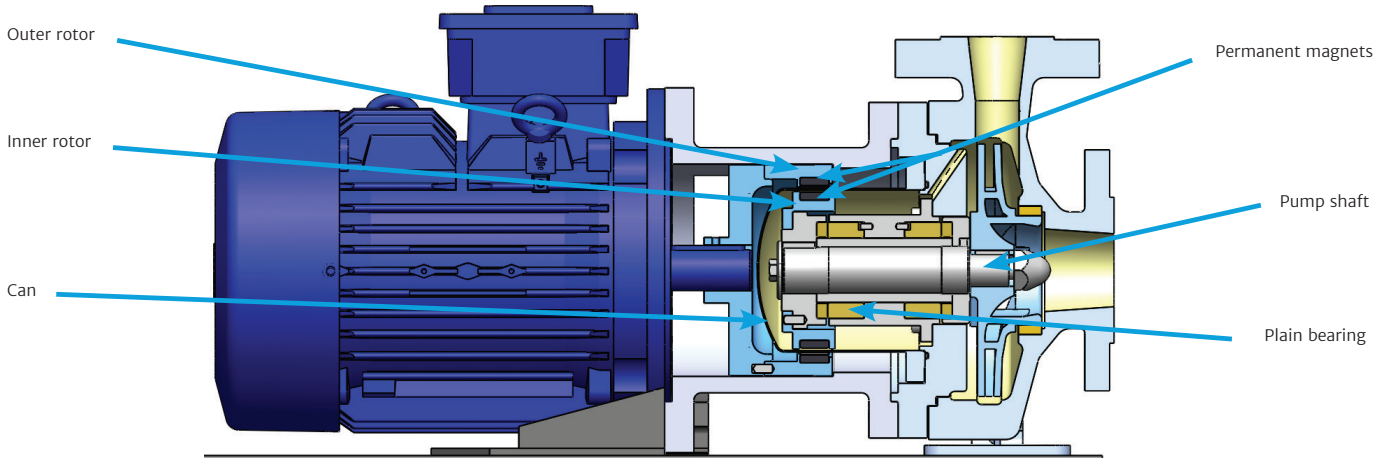
Industry: Oil & Gas - petrochemical

Region: Europe

Category: Mechanical design upgrade

API Type: OH1

ClydeUnion Pumps Aftermarket Technical Services team has experience across a range of services on critical rotating and recipro-cating 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 fol-lowed to deliver the improvements.

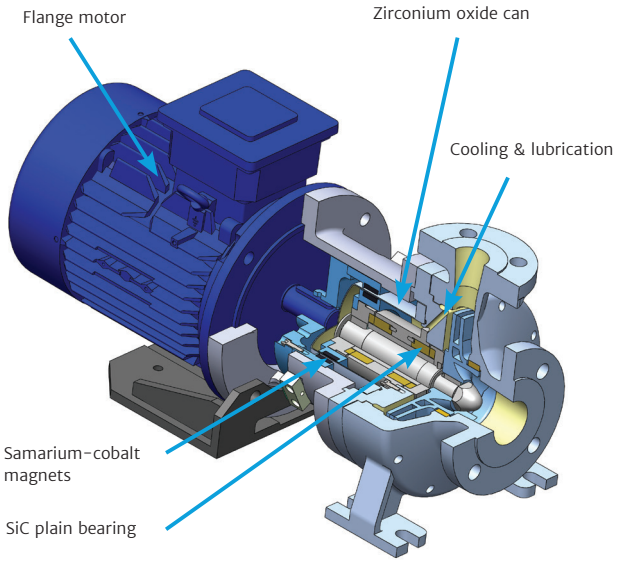


FINANCIAL ILLUSTRATION

- **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



OPERATIONAL IMPROVEMENTS

- Increase of availability of the pumping package
- High increase of MTBO
- Compact arrangement with no need to change the current interfaces

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