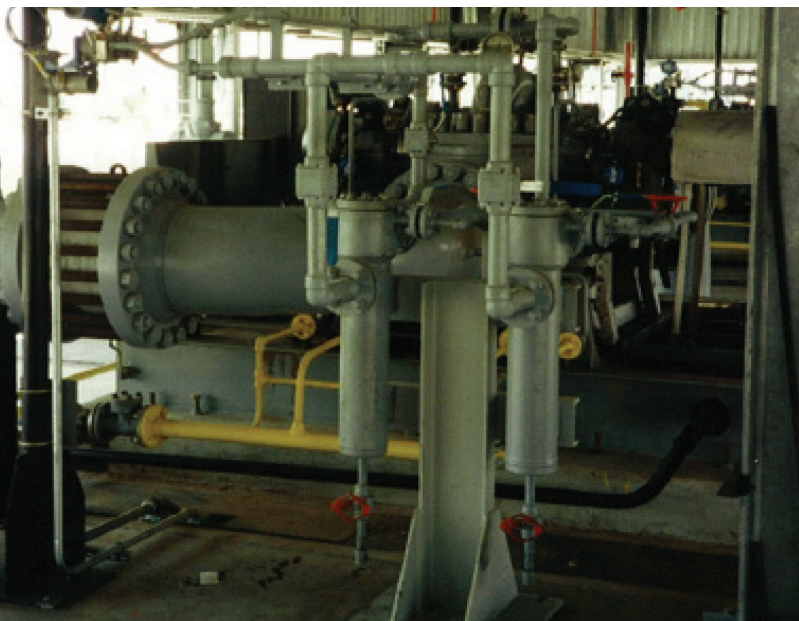


CASE STUDY

FILTERING OUT PREMATURE PUMP SEAL FAILURES IMPROVES MTBO

- Mechanical seal failures averted
- Filter changes possible without stopping production
- MTBO improved from three to 18 months



Improved filtration system for mechanical seal

CHALLENGE

A gas extraction plant in Algeria suffered continual production problems due to failure of mechanical seals on its BB1 and BB3 gas pumping packages, despite the use of very hard materials for the stationary and rotating seal rings (silicon carbide / carbon). Investigation revealed that the mechanical seal faces were being damaged due to the presence of solid particles in the pumped liquefied gas, despite the presence of a filter at the pump's suction. The filtration system was satisfactory for all other parts of the pump except the mechanical seals.

Industry: Oil & Gas – gas extraction

Region: Africa

Category: Mechanical design upgrade

API Type: BB1 & BB3

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 MS Flushing upgrade of the DVDS and DVMX 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

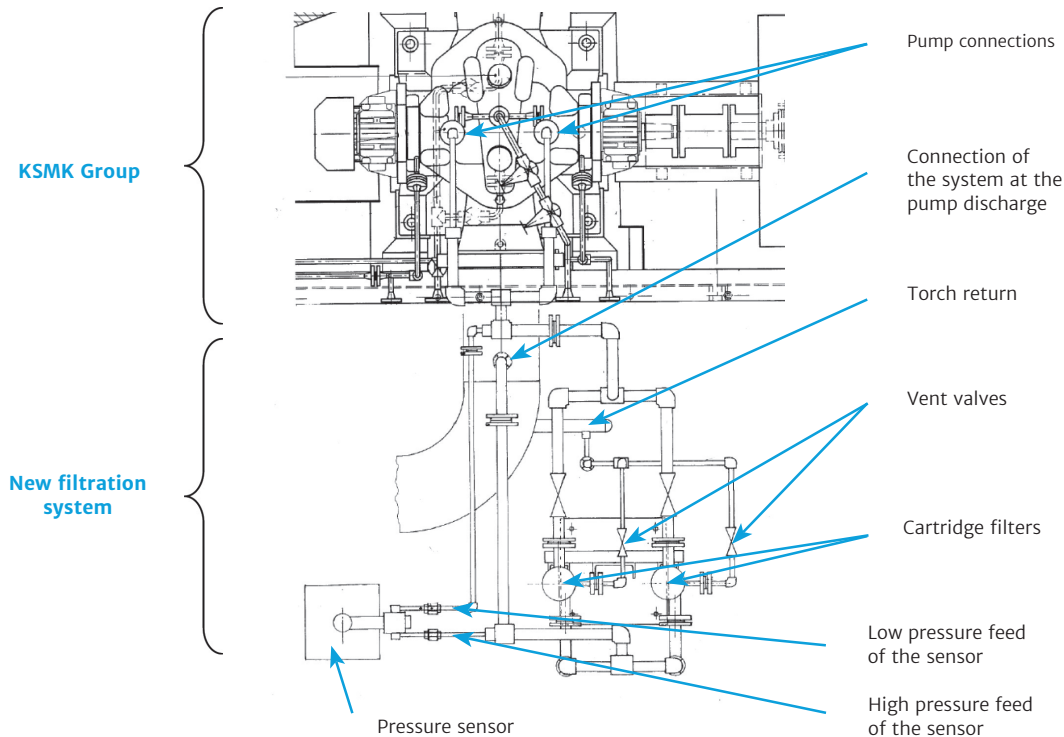
The aftermarket team at ClydeUnion Pumps designed, manufactured and installed a secondary filtration system to remove particles from the flush for the mechanical seals. It is equipped with two filter cartridges, so that filters can be replaced without having to stop the pump. The duplex filter system also features a pressure sensor with an alarm, which alerts when a cartridge is clogged. A valve system allows the clogged cartridge to be isolated and the fluid to flow through the other clean cartridge without disrupting production.

OUTCOMES

The pump has operated well since the installation of the secondary filtration system and start-up, with no abnormal failure of the mechanical seals. The Mean Time Between Outages (MTBO) has increased from three months to more than 18 months.

FINANCIAL ILLUSTRATION

- **Investment cost of parts supplied**
20,000 Euros for double cartridge filters system including pipes and instrumentation
- **Savings due to improved reliability**
Before: 6,000 Euros every 3 months for re-conditioning of mechanical seals = 24,000 Euros / year
Now: 20,000 Euros investment cost + 6,000 Euros every 18 months
- **Savings on 3 years**
72,000 Euros compare to 32,000 Euros for the upgraded solution → Cost savings = 40,000 Euros



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