



Secondary filtration system on DVDS and DVMX pumps

Industry:	Oil + Gas - gas extraction
Region:	Africa
Territory:	Algeria
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.

Image left: Improved filtration system for mechanical seal

Situation

A gas extraction plant in Algeria suffered continual production problems due to failure of mechanical seals on DVDS and DVMX gas pumping packages, despite the use of very hard materials for the stationary and rotating seal rings (silicon carbide / carbon).

Challenge

The mechanical seal faces were damaged because of solid particles being present in the pumped liquefied gas, despite the presence of a filter at the pump's suction. The filtration system however was satisfactory for all other parts of the pump except the mechanical seals.

Solution

Create a secondary filtration system to remove the particles for flushing the mechanical seals. This filtration system had to be designed to allow cleaning of the filters with no interruption of the process. It also had to be certificated for an explosive atmosphere.

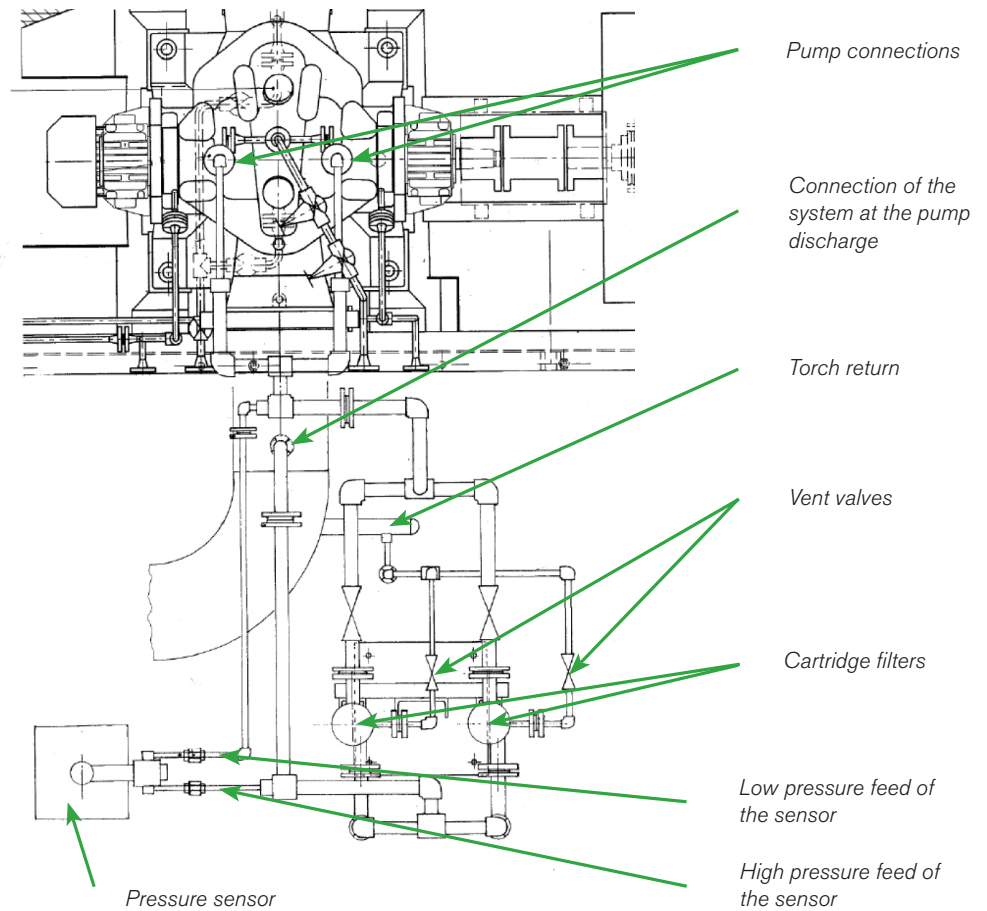
Description of work undertaken:

- Remove the former flushing pipes
- Design, manufacture and install a duplex filter system. This secondary filtration system with two filter cartridges allows cleaning of the cartridges without stopping the pump
- The fluid is taken from the pump's discharge, passes through one of the filter cartridges and then flushes the two mechanical seals
- Addition of a pressure sensor with alarm 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
- The clogged cartridge can then be removed from the filter case and cleaned

Since the installation of the secondary filtration system and start-up, the pump has operated well, with no abnormal failure of the mechanical seals. The MTBO has increased from 3 months to more than 18 months.

KSMK Group

New filtration system



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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