Sundyne HMD Kontro
Sealless Pumps

HMD Kontro

Case Study

Internal Vapour Monitoring Solves Hydrocarbon Challenges

ZeroLoss™ and VapourView® Technologies Supplied to US Oil on Light Hydrocarbon Application

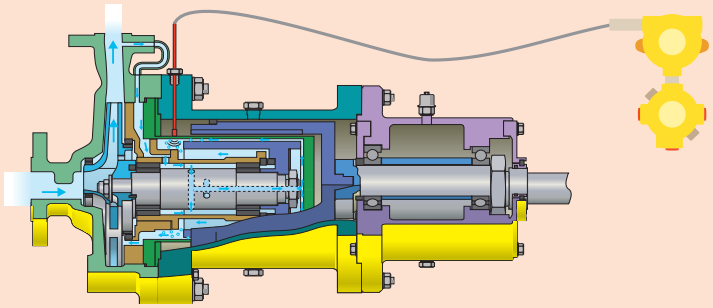
Experiencing operational and fugitive emissions issues with an existing mechanically sealed API pump application in Washington, USA, US Oil reviewed whether the application of a magnetic drive sealless pump solution would improve the situation.

The application liquid, a highly volatile hydrocarbon, presented several sealing and operational challenges that would be overcome by the elimination of the mechanical seal. The proposed solution from Sundyne HMD Kontro was a magnetic drive pump, complying with the API 685 standard, fitted with an engineered composite (or ZeroLoss™) containment shell and internal flow regime monitoring.

The engineered composite (or ZeroLoss™) containment shell eliminates induction losses normally associated with metallic containment shells and provides much improved handling of volatile and heat sensitive liquids. It also provides a more robust solution for magnetic drive installations that might experience marginal system conditions. The ZeroLoss™ containment shells are produced to comply with the 40 bar (580 psi) API 685 design pressure requirements and feature highly chemical resistant composite material that is tough, durable and robust.

Non-invasive internal flow measurement with a (VapourView®) instrument was proposed to provide constant monitoring of the hydrocarbon inside the pump. Early detection of the presence of gas in the internal cooling and lubrication system is given, providing an early warning of adverse conditions that might impact the safe and reliable operation of the pump.

One of the key features of the system is that it measures the primary cause of a potential problem (the presence of vapour), and not a secondary condition such as a change in power or temperature. Further, the system ensures correct priming and venting of the pump is performed during start-up, a desirable feature, particularly on hydrocarbon applications.



VapourView® consists of two major components. The sensor head is mounted on the outside of the containment shell, non-invasive to the process liquid (see illustration). This eliminates the need for additional sealing in a harsh process environment. The pulser/receiver is mounted external to the pump, in an explosion proof enclosure. This allows straightforward access for installation into an End-User control system. VapourView® outputs a 4-20mA signal, making it easily interfaced into most control systems. With measurement speeds up to 10 kHz, the ultrasonic measurement technique is suitable for dynamic measurements of process applications. VapourView® is designed and certified as compatible for operation in explosive atmospheres (to ATEX/ IECEx, UL and CSA requirements).

After consideration, US Oil chose to implement the proposed magnetic drive pump solution. During the commissioning phase of the installation, the internal flow monitoring device detected a number of priming and venting issues that enabled the user to revisit their start-up procedures, ensuring these issues were overcome. After start-up, the presence of gas was also detected inside the pump, which originated from the presence of vapour in the pumps suction pipeline; this condition was also corrected.

By reviewing and applying the latest magnetic drive pump technologies, US Oil is now enjoying improved reliability and reduced fugitive emissions in this hydrocarbon pump installation, as well as having the additional benefit of a window on the process operation, phase state.

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US Oil Case Study 1.0 06/16 Eng.