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Environmental Protection with SPX Gas Condensate Pump

The SPX CombiSumpMag pump provides an environmentally sound solution to the oil and gas industry for pumping condensate from a sump or storage tank and was specifically developed for this application at Nederlandse Aardolie Maatschappij B.V. (NAM) natural gas production sites. The pump provides hermetically closed magnetic couplings to assure a high level of containment and reliability.

Formed by Shell Nederland B.V. and ExxonMobil Holding Company Holland LLC, NAM is by far the largest natural gas producer in the Netherlands and has a mission to sustainably produce oil and gas from within the Netherlands and Dutch section of the Continental Shelf. When extracting gas from a well, certain amounts of 'waste' products also need to be handled along with the gas. These include water and condensate but can also incorporate other environmentally harmful products. These products are held in a temporary storage tank or sump prior to further processing and their efficient and reliable handling is an important part of the gas production process. A submersible centrifugal pump is used to pump the condensate from the tank or sump into a pipeline.

Traditional pumps for this application have used packed gland or double mechanical seals. The packed gland has obvious issues with leakage and the double mechanical seals add complexity to the pump. A magnetic coupling has the advantage of eliminating leaks with a hermetic seal in a relatively simple pump configuration. The SPX Johnson Pump brand offers a wide range of pumping solutions and has vast experience in engineering solutions ideal for specific applications. It developed a solution for this application based on its well-proven and reliable CombiSump centrifugal pump with closed magnetic couplings. Known as the CombiSumpMag, the pump ensures leak-free operation and environmental protection from the waste products within the storage tanks/sumps.

The CombiSumpMag pump meets the environmental requirements for high-level containment along with appropriate explosion proof ratings. For installation inside the storage tank or sump it meets ATEX Group II/Category 1, Zone 0, temperature class T4. On the NAM sites the pump is utilised as a vertical submersible pump driven by an electric motor above the base plate. The magnetic coupling transmits power from the motor to the shaft and hermetically seals the shaft through the base plate. The tank or pit is hermetically sealed by a stationary gasket between the base plate and pit/tank entrance to prevent any leaks into the environment. SPX has also engineered the pump to provide a direct replacement for the existing, older pump arrangements for easy installation at the NAM sites.

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The pump is designed for high reliability and is installed with a minimum submersible depth, which ensures the highly effective silicon carbide axial and radial bearings are permanently lubricated by the pumped liquid. The radial bearings further ensure precise positioning of the inner rotor on the shaft. Pump depth is varied to meet individual site requirements using multiple pump shafts fitted with intermediate bearings, which are lubricated via the discharge nozzle from the pump casing.

The CombiSumpMag is designed for reliable and safe operation within this hazardous environment. A Pt100 sensor measures the temperature of the liquid and the measurement obtained can be utilised to set up a process interrupt when a pre-set temperature limit is reached. The power factor for the pump is also monitored to identify problems with low flow or failing torque transfer. Failing torque results in non-synchronous rotation of the inner and outer rotors and creates a rapid rise in temperature. The signal from the power factor (CosΦ) monitor is, therefore, used to protect against unacceptable temperature rises within the ATEX environment with immediate pump shutdown.

Through its Johnson Pump, Bran+Luebbe, ClydeUnion Pumps and Plenty brands, SPX has significant experience in supplying pump solutions to the oil and gas industry. In addition to developing the CombiSumpMag to meet the needs of the NAM application, it has also supplied OH2 (API 610 & API 685), OH3 & VS4 pumps over a number of years for utility packages for the Offshore Industry, particularly for the Norwegian market where the pumps supplied used components sourced from NORSOK approved suppliers and NORSOK approved painting procedures.

The application at NAM is another example of how SPX works in partnership with its customers to deliver solutions which bring real benefits. The design of this specific solution guarantees simple replacement of the old pumps for reduced overall cost of installation. For NAM’s mission for sustainability, the CombiSumpMag pump ensures the environment is protected from leaks while the unit delivers safe, reliable and efficient operation for pumping the condensate for the future.

About SPX Flow Technology:

The SPX Flow Technology segment designs, manufactures and installs highly engineered solutions used to process, blend, meter and transport fluids, in addition to solutions for air and gas filtration and dehydration. The segment supports global food and beverage, dairy, pharmaceutical, oil and gas, energy, and industrial markets.

About SPX:

Based in Charlotte, North Carolina, SPX Corporation (NYSE: SPW) is a global Fortune 500 multi-industry manufacturing leader with over $5 billion in annual revenue, operations in more than 35 countries and over 15,000 employees. The company's highly-specialized, engineered products and technologies are concentrated in Flow Technology and energy infrastructure. Many of SPX's innovative solutions are playing a role in helping to meet rising global demand for electricity and processed foods and beverages, particularly in emerging markets.

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The company's products include food processing systems for the food and beverage industry, critical Flow components for oil and gas processing, power transformers for utility companies, and cooling systems for power plants. For more information, please visit www.spx.com.

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