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| Condition monitoring in flood preventionHigh cost savings through online condition monitoring and automatic lubrication of flood pumps |
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* Installing condition monitoring devices on flood pumps and motors can provide advanced warning of any impending bearing failures
* By installing vibration monitoring and automatic lubricators to pumps and motors, Schaeffler’s Belgian customer has prevented unplanned downtime of its flood pumping stations
* Other customer benefits include no secndary damage to motors and pumps, reduced maintenance costs and increased plant availability

Birmingham, UK | 27. August 2020 | Floods are a major challenge for many countries today. Over the last few years, the UK has suffered badly from a series of violent storms that caused widespread flooding – both in terms of coastal areas and river floods. Industry experts predict that due to the effects of Climate Change, these types of storms are likely to continue over the next decade and beyond, with the economic cost to the UK being as high as £6 billion.

Despite significant achievements in the UK’s river flood forecasting and early warning systems, there is still a need for effective tools and measures, either to prevent the floods or at least to decrease their negative impact on agricultural and urban areas. This information can be used by storm-water and flood pumping stations to avoid the damage that can occur after the flood. One of the main issues is the condition monitoring of these pumping stations. In some cases, these stations are not ready for an instant response to natural disasters such as floods. In order to prevent unexpected failures of the drives or the pumps themselves, it is necessary to monitor the condition of the equipment. One method of acheiving this is to install condition monitoring devices on pumps and motors to provide advanced warnings of any impending bearing failures.

**Flood pumping station in Belgium**

In a recent example in Belgium, SmartCheck condition monitoring devices and CONCEPT2 automatic lubricators were installed on flood pumps and motors. Schaeffler’s Belgian customer has since seen a range of benefits, including the prevention of unplanned downtime to pumping stations, reduced maintenance costs and increased plant availability.

**Challenge for Schaeffler**

The customer is primarily responsible for water, air and environmental resources. The company’s area of responsibility includes maintaining the operation of pumping stations.

In order to avoid flooding in its area of responsibility, the customer built a pumping station. A catch basin and three propeller pumps in the pumping station ensure that any excess water is pumped out and diverted accordingly. Inadequate pump monitoring led to the unforeseen failure of a bearing. As a result of this, the pump wheel began to vibrate, causing 5cm of wear to the pump housing. In order to prevent pump failures due to bearing damage in the future, the customer sought a condition monitoring solution for the pumping station.

**Schaeffler Solution**

Schaeffler experts recommended installing six CONCEPT2 automatic lubrication systems for lubrication of bearings in the motors and pumps. This solutions permits ongoing and reliable lubrication of the bearings. CONCEPT2 supplies two lubrication points independently of each other and withstands pressures up to 50 bar.

Schaeffler also recommended installing nine SmartCheck condition monitoring devices to monitor the three pump/motor units. Two SmartChecks are installed per unit to monitor the upper and lower motor bearings, plus an additional SmartCheck on each of the pump bearings.

Any deviations or changes in vibration behaviour are detected by SmartCheck and reported via the customer’s control system, thus allowing incipient bearing damage to be detected at an early stage. Monitored parameters include vibration, temperature, speed and cavitation.

The local dealer Supplimax, a certified Schaeffler partner, recommended the systems and will be providing future on-site service advice.

**Customer Benefits**

As a result of Schaeffler’s holistic predictive monitoring solution, the customer is seeing the following benefits:

* Prevention of unplanned downtime of the pumping station during ongoing operation.
* No costs incurred by production stoppages.
* No secondary damage to motors and pumps.
* Low acquisition costs of the monitoring systems.
* Reduced maintenance costs.
* Increased plant availability.
* Greater security due to self-reporting systems.

Working on the basis of just one occurrence of bearing damage per year, the following savings would be acheived using the monitoring systems:

 **Estimated savings with the SmartCheck and CONCEPT2**

***Annual maintenance expenditure (8 h)................................ €1,000***

***One-off expenditure for SmartChecks and CONCEPT2.......... €14,000***

***Pump damage without monitoring systems........................... €50,000***

***With monitoring system***

***Cost saving following initial occurrence of damage................ €35,000***

***Cost saving with each subsequent occurrence of damage....... €49,000***

As the pumping station is not manned on a permanent basis, remote monitoring provides a sound alternative method of observing the system. This holistic solution can also be applied and extended to other units in almost any plant.

For more information, please contact Schaeffler UK’s Communications & Branding Department on info.uk@schaeffler.com



*(Left) Motor monitoring with SmartCheck and the CONCEPT2 automatic lubrication system; (Right) SmartCheck and CONCEPT2 for pump monitoring and lubrication.*

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*Pump and motor monitoring using the SmartCheck and CONCEPT2 lubrication system.*

Photos: Schaeffler

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About Schaeffler

The Schaeffler Group is a leading global supplier to the automotive and industrial sectors. Its portfolio includes high-precision components and systems for engine, transmission, and chassis applications as well as rolling and plain bearing solutions for a large number of industrial applications. The Schaeffler Group is already shaping “Mobility for tomorrow” to a significant degree with innovative and sustainable technologies for electric mobility, digitalization, and Industry 4.0. The technology company generated sales of approximately EUR 14.4 billion in 2019. With around 84,200 employees, Schaeffler is one of the world’s largest family companies and, with approximately 170 locations in over 50 countries, has a worldwide network of manufacturing locations, research and development facilities, and sales companies. With almost 2,400 patent applications in 2019, Schaeffler is Germany’s second most innovative company according to the DPMA (German Patent and Trademark Office).

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