

Media Release

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Voith SlipSet and Coupling Monitoring System CMS 310: Maximized Protection and Monitoring of Crusher Drivelines

- **Voith SlipSet coupling limits torque in case of a critical peak**
- **Voith Coupling Monitoring System enables real-time analyses**
- **Distinguished system for continuous and optimized production**

Hudiksvall, Sweden: When crushing mined rock and materials, uncrushable objects constitute a severe risk for the production process as well as the installed equipment. In order to limit torque load without disrupting operation, Voith designed its SlipSet coupling to temporarily slip in the event of an overload situation and thus act as a shock absorber. The company's recently developed Coupling Monitoring System (CMS 310) offers further benefits by providing real time status information as well as performance analyses; displayed in a particular web interface, on a HMI panel or integrated in an already existing supervision system.

When getting stuck in the crushing chamber or between the rollers, too hard materials or too huge pieces cause the system to stop running. As the motor and the momentum of the driveline still deliver torque, the resulting overload overheats the motor or leads to the collapse of the driveline. To avoid cost-intensive repair works or downtime, belt drives can be replaced with direct drives protected by an integrated torque limiting coupling.

Continuous Operation Despite Regular Torque Peaks

Voith SlipSet couplings consist of a twin-walled hollow sleeve with friction generated by pressurized hydraulic oil. In case of a torque peak which exceeds the preset torque limit, it will instantly slip and protect the equipment from high stresses. If the blockage persists, the coupling slips until the rotational energy is completely absorbed and the drive can be stopped to enable the blockage to be cleared. On a scale of 1 to 20,000

kNm the trigger point for slipping can be set at 50 to 100 percent of the maximum load. Due to its compact design, the SlipSet coupling is easily installed at the optimum position in the driveline.

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Real Time Monitoring of Driveline and Coupling

As it separates the input torque from the output torque of the driveline, the slipping feature of the SlipSet coupling paves the way for a detailed monitoring of the coupling and the occurring forces around. In order to increase product intelligence and enable nonstop performance supervision, Voith developed the PLC based Coupling Monitoring System CMS 310. It is based on the calculation of the torque limiting coupling input and output rotational positions. The measurements are made by inductive sensors mounted on each side. If the coupling slips, there will be a pulse difference between the sensors. The difference in relative position is recorded and recalculated to a slip angle in real time.

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Once a slip occurs, the CMS informs the operator about the incident via a web interface or an optional HMI panel for closed systems. Depending on the respective information, the operator can either adapt the power input, material feed or initiate a controlled shut down. This ensures the maximum output of the crusher since it helps the operator to align the motor power with the full capacity of the machine.

Integration of the Coupling into Existing Supervision Systems

The used Profinet communication standard makes it easy to individually integrate relevant data from the Voith CMS into existing supervision systems. Thus, it requires no particular monitoring activities – still offering the possibility of accessing a history log for in-depth analyses, product settings as well as product information in the web interface provided by default.

As the Voith CMS also documents the number and length of slips of the SlipSet coupling, it proactively highlights the upcoming need for service. Therefore, coupling maintenance can be aligned with the overhaul of further components to not only prevent unplanned downtimes but also reduce planned standstills.

Voith Turbo, a Group Division of Voith GmbH, is a specialist for intelligent drive solutions. Customers from highly diverse industries such as oil and

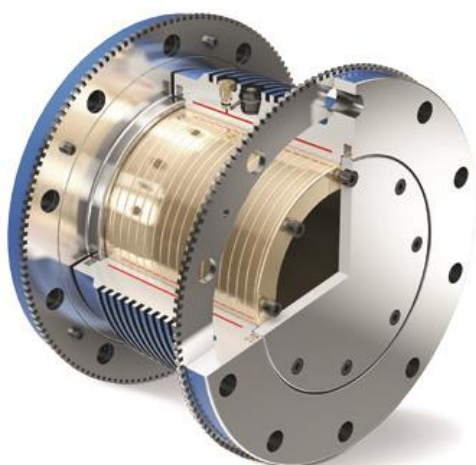
gas, energy, mining and mechanical engineering, ship technology, rail and commercial vehicles rely on advanced technologies from Voith Turbo.

Voith sets standards in the markets for energy, oil & gas, paper, raw materials, transport & automotive. Founded in 1867, Voith employs more than 20,000 people, generates €4.3 billion in sales, operates in over 60 countries around the world and is one of the largest family-owned companies in Europe.*

* Excluding the discontinued Group Division Voith Industrial Services.

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The Voith SlipSet coupling is designed to slip in the event of an overload situation and thus enables continuous production.

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