

HMI 2019/ power transmission / maintenance / plant construction / conveying engineering / electrical engineering / fluid technology

Preventive glimpses into the inner workings

RINGSPANN presents the first condition monitoring system for housing freewheels

Practiced Industry 4.0 and genuine innovation: Using modern sensor technology and telematics, RINGSPANN has developed a condition monitoring system for housing freewheels. Operators of complex multi-motor systems and their maintenance staff now have the ability to predictively monitor all key performance and MRO parameters of the installed freewheels – in real time and from a distance. Data analysis, remote maintenance and functional integration in superordinate control systems are included in the offer. This new tool for predictive maintenance will be presented for the first time at this year's Hannover Messe.

Bad Homburg, March 2019. – The housing freewheels of RINGSPANN's FH series are overrunning freewheels and, with nominal torques ranging from 1,356 to 81,000 Nm, are used, for example, as automatic overrunning clutches in drivetrains with multiple quickly-rotating motors or turbines. If one drive unit should fail, the FH decouples it from the drivetrain. The installation of complex switching equipment thus becomes unnecessary. This freewheel type is used among other things in pumps, generators, conveyor belts, ventilators or interruption-free power supplies. Depending on the complexity and number of drive systems, multiple FH freewheels can be installed in a single system, in some cases in difficult-to-access areas. To be constantly informed on what is going on inside the freewheels is thus of key importance for plant operators and their service teams. Within the scope of predictive maintenance, ideally around the clock, in real time and location-independent. RINGSPANN has incorporated these wishes of users – and more – into the development of the new condition monitoring system for its FH series housing freewheels. This innovation in freewheel technology will be presented to a large audience for the first time at this year's Hannover Messe in Hall 25 (Booth D13).

Comprehensive recording of all MRO parameters

In presenting this predictive maintenance solution for housing freewheels, RINGSPANN yet again underlines its technological leadership in this subsection of drive technology, drawing on modern telematics tools in addition to innovative sensor and diagnostics technology to realise it. The result is a practically-oriented comprehensive solution that gives the user a complete overview of the current functional and kinematic status of each housing freewheel integrated in the condition

monitoring system. All MRO*-relevant operating temperatures and performance parameters are recorded for this purpose: Thermal sensors measure heat development, inductive sensors monitor the speeds of the input and output shafts, vibration sensors determine the bearing condition and intelligent diagnostic electronics act as an early warning system. For detailed analysis and interpretation, all data can be transferred via remote maintenance directly to the RINGSPANN service centre. From there, feedback is given in the form of clearly structured production and efficiency graphs.

Keeping an eye on everything around the clock

The plant operator or maintenance technician can follow MRO-relevant events in the freewheel on their screen, tablet or smartphone: World maps and country maps highlight the locations of the freewheels being monitored, traffic light symbols provide a visual representation of the situation and the functional status of all the sensors, and coloured diagrams provide information on any damaging vibrations and the adherence to vibration limits. Warning lights start to blink as soon as any functional difficulties arise inside the housing freewheel or when a critical condition is reached.

The practical benefits of the new condition monitoring systems from RINGSPANN cannot be overstated. It primarily provides maintenance technicians and plant operators with a powerful tool that enables them to react immediately to urgent events in the housing freewheels – and then also in the entire drivetrain: To prevent impending damages and malfunctions, to prevent expensive consequential damages, or to check any repairs that have been carried out. As a secondary effect, however, thanks to its WWW remote maintenance and the active integration of the company's in-house freewheel analysts, the new RINGSPANN system also clears the way for further drive technology process optimisation and improving plant availability. It furthermore creates the basis for targeted vulnerability assessments, and not least enables a relaxed view towards remaining service lives and the planning of maintenance intervals and repair works.

Crash simulation at Hannover Messe

The new RINGSPANN condition monitoring system for housing freewheels is not designed as a singular stand-alone product, instead it is designed for integration into superordinate production or service control systems. Modern network and internet technologies are thus an integral element of the overall package. At its Booth D13 in Hall 25 at this year's Hannover Messe, RINGSPANN will be showcasing this new Industry 4.0 predictive maintenance solution by means of a concrete example: It will show various typical damage events being simulated on a medium-sized FH housing freewheel – integrated into the new condition monitoring system – with a nominal torque of 5,500 Nm. Just like in MRO practice, the trade fair visitor will then be able to follow events inside the freewheel live via tablet PC.

Note for editorial staff: Text and images available at www.pr-box.de!

Captions (5 pictures)

Figure 1: At its Booth D13 in Hall 25 at the Hannover Messe, RINGSPANN will be demonstrating the new condition monitoring system for its FH housing freewheels using a concrete example: a housing freewheel with a nominal torque of 5,500 Nm, which simulates typical damage events. The picture shows the fair model.

Figure 2a/2b: The new Condition Monitoring System from RINGSPANN visualizes the MRO-relevant events in the housing freewheels on screen, tablet or smartphone: among other things, colored diagrams give information about the temperature development.

Figure 3: The new RINGSPANN condition monitoring system for housing freewheels is designed for integration in higher-level production or service control systems. Modern network and Internet technologies are an integral part of the overall package.

Figure 4: One key quality feature of the housing freewheels of RINGSPANN's FH series is the hydrodynamic clamping roller lift-off. This enables virtually wear-free idle operation.

Figure 5: As a closed solution with an integrated oil filter system and integrated fixing brake, RINGSPANN's currently largest housing freewheel FH 30000 R requires little maintenance and needs no external oil supply.

All images: RINGSPANN

((Infobox))

Non-wearing alternative to the switched clutch

Housing freewheels are frequently used as automatically working overrunning clutches in multiple-motor drives. They do not require a switching device. A special technical feature of the housing freewheels of RINGSPANN's FH series is the hydrodynamic clamping roller lift-off, in which the lifting force of the clamping rollers is generated by an oil film applied by centrifugal force to the outer track in idle operation. This makes a virtually wear-free idle operation possible.

RINGSPANN is recognised as an international market leader in the freewheels sector and supplies around 6,000 customers worldwide with these mechanical components for the realisation of backstops, overrunning and indexing freewheels in drive engineering. Freewheels basically consist of an inner and an outer ring with clamping elements in between. In the one direction of rotation, there is no contact between the inner and outer ring (idle); in the other direction however, the clamping elements ensure a frictional connection between the inner and outer ring (driving operation).

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