

**RINGSPANN®**

Press folder

2019



## Visual twin at Hannover Messe

RINGSPANN's internal freewheels of the FZ series are suitable for nominal torques of up to 420 Nm and can be used as overrunning clutches, backstops and in the indexing function. What sets them apart is their compact design, featuring the same dimensions as the series 62 standard roller bearings according to DIN, making these freewheels a versatile, ideal solution for spatially optimised designs in the drive systems of packaging systems, food processing machinery, warehouse handling machines and conveyor belts. They are already being used for hybrid drive concepts, and they are among RINGSPANN's product highlights at this year's Hannover Messe.

"Time and again we find that even experienced designers mistake the internal freewheels of our FZ series for classic roller bearings", says Thomas Heubach, divisional manager of RINGSPANN's freewheels division. And it's no surprise that one could indeed at first glance mistake the compact machine elements with roller bearings of a closed design: They look deceptively similar and correspond de facto in their dimensions with the series 62 standard grooved ball bearings according to DIN. This outward similarity is of significant advantage, because it simplifies in many cases the design work and supports the realisation of spatially optimised fitting solutions. FZ freewheels can be used in drive systems as backstops, overrunning or indexing freewheels with nominal torques ranging from 9.0 to 420 Nm. And they combine roller bearing characteristics with freewheel functions: The bearing turns – as if moved by the hand of a ghost – in only one direction.







### Compact universalists

At this year's Hannover Messe, RINGSPANN will be devoting special attention to the FZ internal freewheels at its Booth D13 in Hall 25. These maintenance-free freewheels are able to cover a broad spectrum of applications in particular thanks to their "ball bearing properties". They feature bores with diameters of up to 40 mm and are suitable as standard for use under normal operating conditions. Depending on the requirements, there are versions where the torque is transferred via press fit or keyway connection on the inner ring or on the outer ring of the freewheel. In the indexing function, RINGSPANN'S FZ internal freewheels are for example frequently used as a pair in the infinitely variable gearboxes of metering rollers of agricultural machinery, filling plants or food processing machinery: Two cam disks that are set off are arranged on the input shafts of the gearbox, which drive the outer rings of the two FZ freewheels by means of lever arms, which then gradually turn the metering shaft. The compact RINGSPANN freewheels of the FZ series can also be found in the drive systems of many packaging systems, conveyor belts, labelling and textile machines. They have even been installed in hybrid drive concepts of environmentally friendly vehicles within the scope of various research projects. "In their drivetrains, they ensured through the alternating function between idle and driving operation that rotors did not turn when being pushed and that the vehicles could easily continue to roll during switching", explains RINGSPANN divisional manager Thomas Heubach.

### Ready for installation and food grade

RINGSPANN delivers the freewheels of its FZ series ready for installation with grease filling for integration in customer housing. The freewheels are also available with food grade lubricant for use in food technology or other hygiene-sensitive areas of application. FZ freewheels with both-sided seals made of acrylonitrile butadiene rubber (2RS sealing) will also be on display at Hannover Messe – this, too, a parallel to the series 62 standard grooved ball bearings according to DIN.

By the way: The entire range of freewheels in the FZ series can be found in the current offer in RINGSPANN's online shop, plus many other models and types of internal freewheels. Overall, designers and technical purchasers can choose from twelve models of freewheels on this modern Internet platform ([www.ringspann.com](http://www.ringspann.com)). <<



## Safety and efficiency in the drivetrain

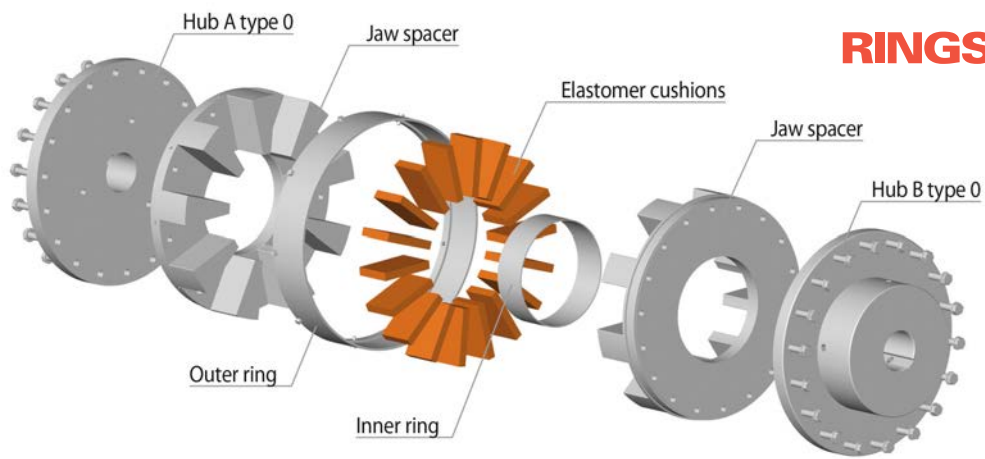
RINGSPANN's ongoing productive offensive in the field of non shiftable shaft couplings since Autumn 2018 has been very well received by designers and developers in industrial drive technology. Thanks to the completion of existing models and the incorporation of new coupling types in its overall range, the company now offers many alternatives for the realisation of safe connections between the various units and components in the drivetrain. At Hannover Messe, RINGSPANN will be providing a glimpse into its current shaft coupling portfolio. At the centre of its exhibition programme are elastic elastomer jaw couplings for dynamic applications.

What RINGSPANN has to offer designers and engineers in industrial drive technology since October 2018 in the field of non shiftable shaft couplings is rich in alternatives: A selection of eight models with nominal torques ranging from 2.0 to 1,299,500 Nm, spanning almost all technically relevant shaft coupling types that you need in industrial drive technology to compensate axial, radial and angular displacements. Overall, the current RINGSPANN portfolios includes flange, flexible and cone clamping couplings, gear couplings, grid couplings and disc couplings, all the way through to pin-and-bush and jaw couplings. Product developers, engineers and plant manufacturers in all sectors are thus granted plenty of leeway for the design of rigid, torsionally stiff and elastic connections between shafts, motors, gearboxes and machines. At this year's Hannover Messe, RINGSPANN will be providing an overview of its expanded coupling range in Hall 25, Booth D13 by means of a number of exponents. The company hereby focuses particularly on the new jaw couplings of the REK series, which feature replaceable elements and spiders made of elastomers or synthetic rubber.

### Fail safe and maintenance free

"The use of jaw couplings for elastic shaft connections is on the rise in Europe. They are fail safe and maintenance free, and are often significantly more compact in construction than pin and bush couplings. Our new REK model is particularly interesting for manufacturers of pumps, compressors, ventilators, stirrers and belt conveyors, as well as for tool machines and crane trolley manufacturers – to name just a few key user groups", says Martin Schneewis, the responsible product manager for shaft couplings at RINGSPANN. The current offer of the company ranges from the classic jaw couplings of the REK ... DCO series with curved spiders and nominal torques from 9.6 Nm, to the couplings of the REK ... DQO series with rectangular damping elements and nominal torques of up to 169,000 Nm. In terms of bore diameters – another key





selection criterion for designers – these models range from 6.0 to 340 mm. All RINGSPANN jaw couplings also meet the explosion protection parameters in accordance with ATEX (Declaration of Conformity in accordance with ATEX 2014/34/EU).

### Quick switch and replacement

At RINGSPANN's Hannover Messe booth in Hall 25, designers and development engineers in industrial drive engineering can receive first-hand detailed information on which practical and functional advantages the jaw couplings offer. So you can find out, for example, that the elastomer damping elements with the couplings of the REK ... DQO model can be very easily and quickly replaced – without disassembling the drive-

train. "The jaws, too, can be replaced quickly in the event of damage, since the hubs of the couplings are split and the drive plates can be removed radially", says product manager Martin Schneweis.

With the ongoing product offensive in the field of non shift-able shaft couplings since Autumn 2018, RINGSPANN has achieved an important milestone on its way to becoming a one-stop supplier for high-grade components of drive technology. The company may have already been involved in the development and manufacture of safety and starting couplings for more than 60 years, and yet Martin Schneweis stresses: "The now completed expansion of our coupling range is as yet unrivalled in RINGSPANN's history".

By the way: If anyone would like to get an overview of the new RINGSPANN portfolio of shaft couplings in advance of Hannover Messe, you can download the current product catalogue for free at [www.ringspann.com](http://www.ringspann.com). Here, all coupling types are listed by model and area of application: The cone clamping couplings and tru-line flange-couplings for rigid connections; the gear, disc and flexible couplings for torsionally stiff connections; the grid couplings for initially elastic and later torsionally stiff connections; and the pin-and-bush und jaw couplings for elastic shaft connections. <<



**Martin Schneweis**  
Product manager  
Shaft Couplings  
of RINGSPANN GmbH



## Preventive glimpses into the inner workings



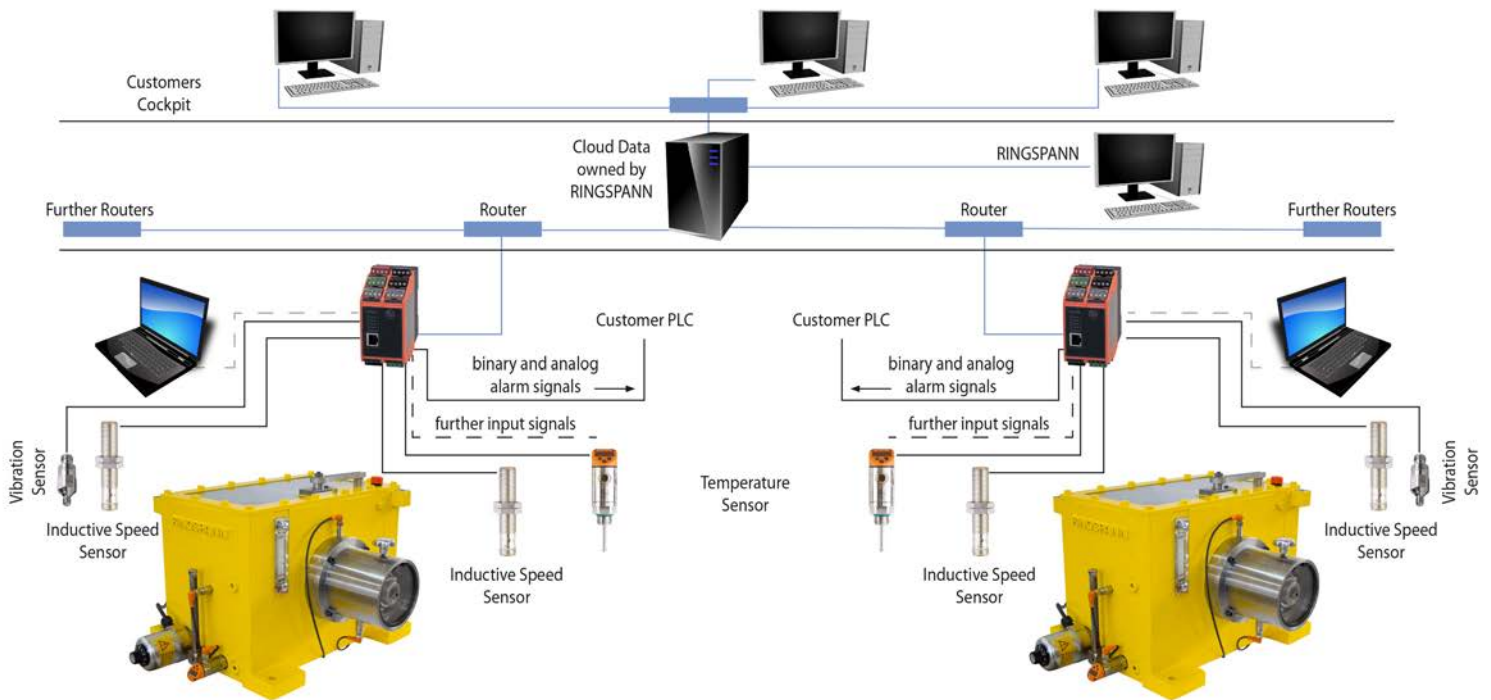
Practiced Industry 4.0 and genuine innovation: Using modern sensor technology and telematics, RINGSPANN has developed a condition monitoring system for housing freewheels. Operators of complex multi-motor systems and their maintenance staff now have the ability to predictively monitor all key performance and MRO parameters of the installed freewheels - in real time and from a distance. Data analysis, remote maintenance and functional integration in super-ordinate 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.

The housing freewheels of RINGSPANN's FH series are over-running freewheels and, with nominal torques ranging from 1,356 to 81,000 Nm, are used, for example, as automatic over-running 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.



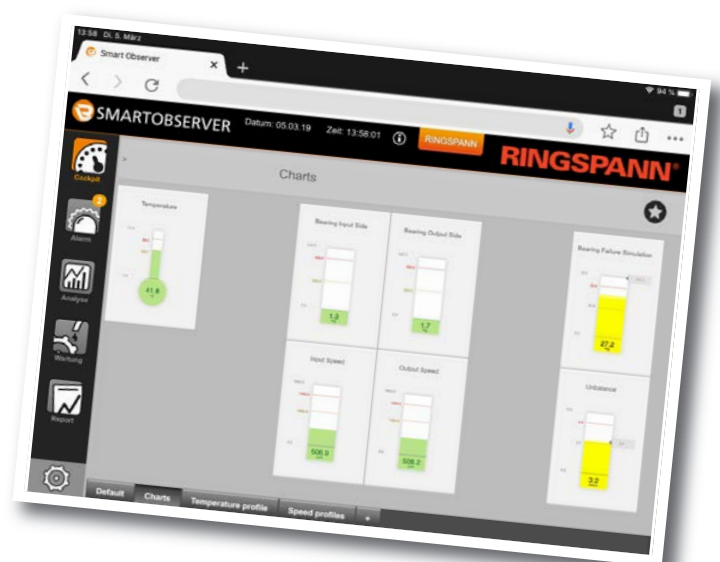
### Keeping an eye on everything around the clock

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. <<





# May

## Unhindered market access to the USA and Canada

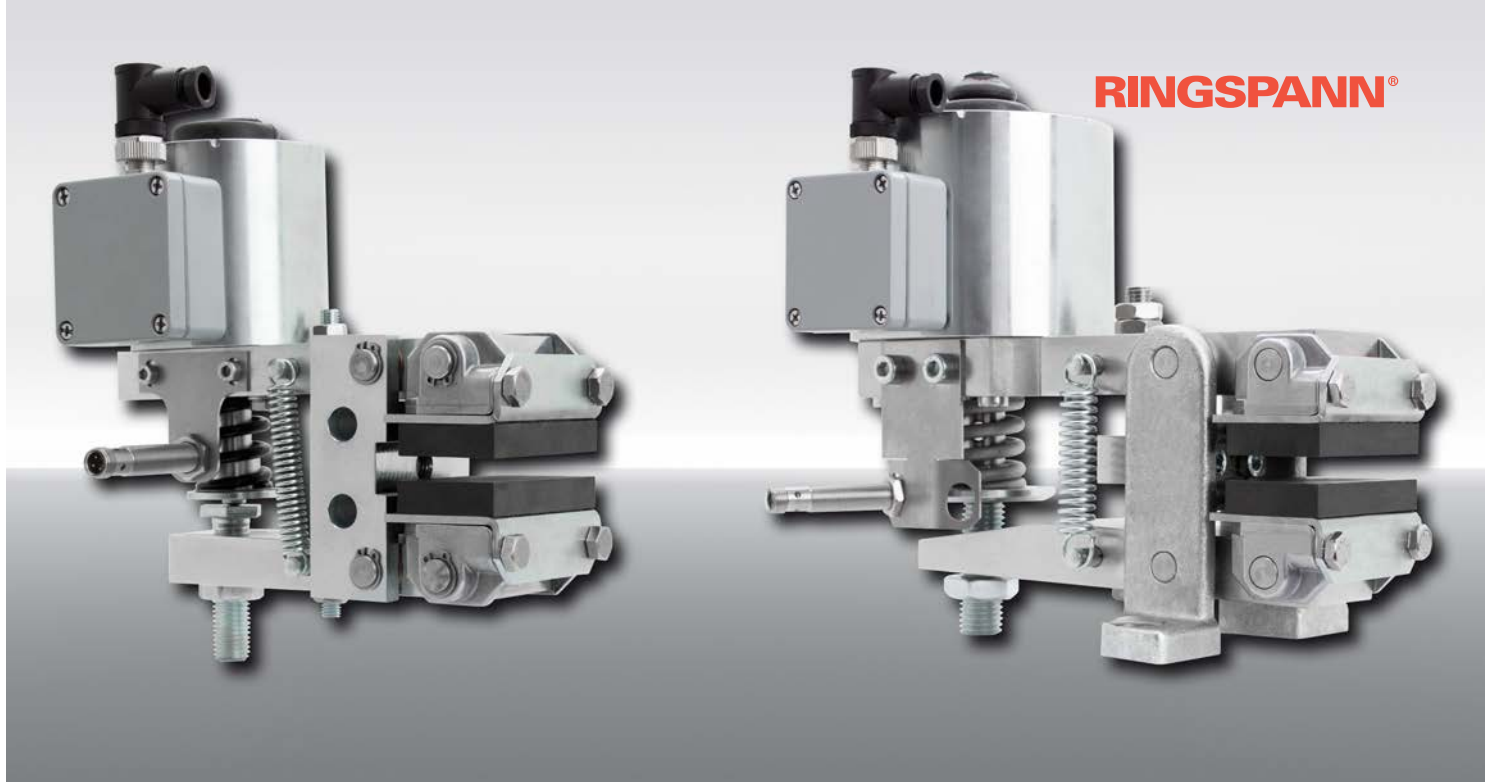


**Franz Eisele**  
Head of Division  
Brakes and Couplings  
at RINGSPANN GmbH

The electromagnetic disc brakes from RINGSPANN rank among the essential components of countless drive systems in mechanical engineering and plant construction. They can be deployed for stopping, control and holding and cover a very large application spectrum with braking torques ranging from 94 to 6,590 Nm. These compact industrial brakes received their UL and CSA certifications just a few days ago. That makes it easier for all export-oriented manufacturers to gain access to international overseas markets – particularly those in North America and Canada.







For mechanical engineers and plant manufacturers who directly or indirectly deliver to North America or Canada, the seals of approval from the *Underwriters Laboratories (UL)* and the *Canadian Standards Association (CSA)* are among the most competitively relevant labels. They may not be mandatory; however, they greatly facilitate and accelerate access to the markets on the north American continent and many other overseas regions. RINGSPANN therefore recently had the electromagnetic disc brakes from its DH and DV series certified according to the criteria of UL and CSA. The EV and EH series are also poised for certification. That would make all spring activated RINGSPANN disc brakes that are electromagnetically released for braking torques ranging from 94 to 6,590 Nm perfectly equipped to be exported obstacle-free into the USA and Canada. "For German and European manufacturers who want to successfully gain a foothold in these regions with their systems, machines or drive units, the use of components with UL and CSA approval is a strategic competitive factor. And that is because, quite similar to our CE label, it confirms the adherence to safety standards", explains Franz Eisele, who heads RINGSPANN's brakes and clutches division.

### Strict specifications by list

To be certified by the UL in Northbrook (Illinois), USA and the CSA Group – they have their European office in Frankfurt am Main – a product may only have materials or components installed that are listed by these two standards bodies. The adherence to this requirement is among other things also checked through test series. "Since it is therefore hardly feasible to retrospectively have existing products certified, we have deployed new magnets and new electronics for our

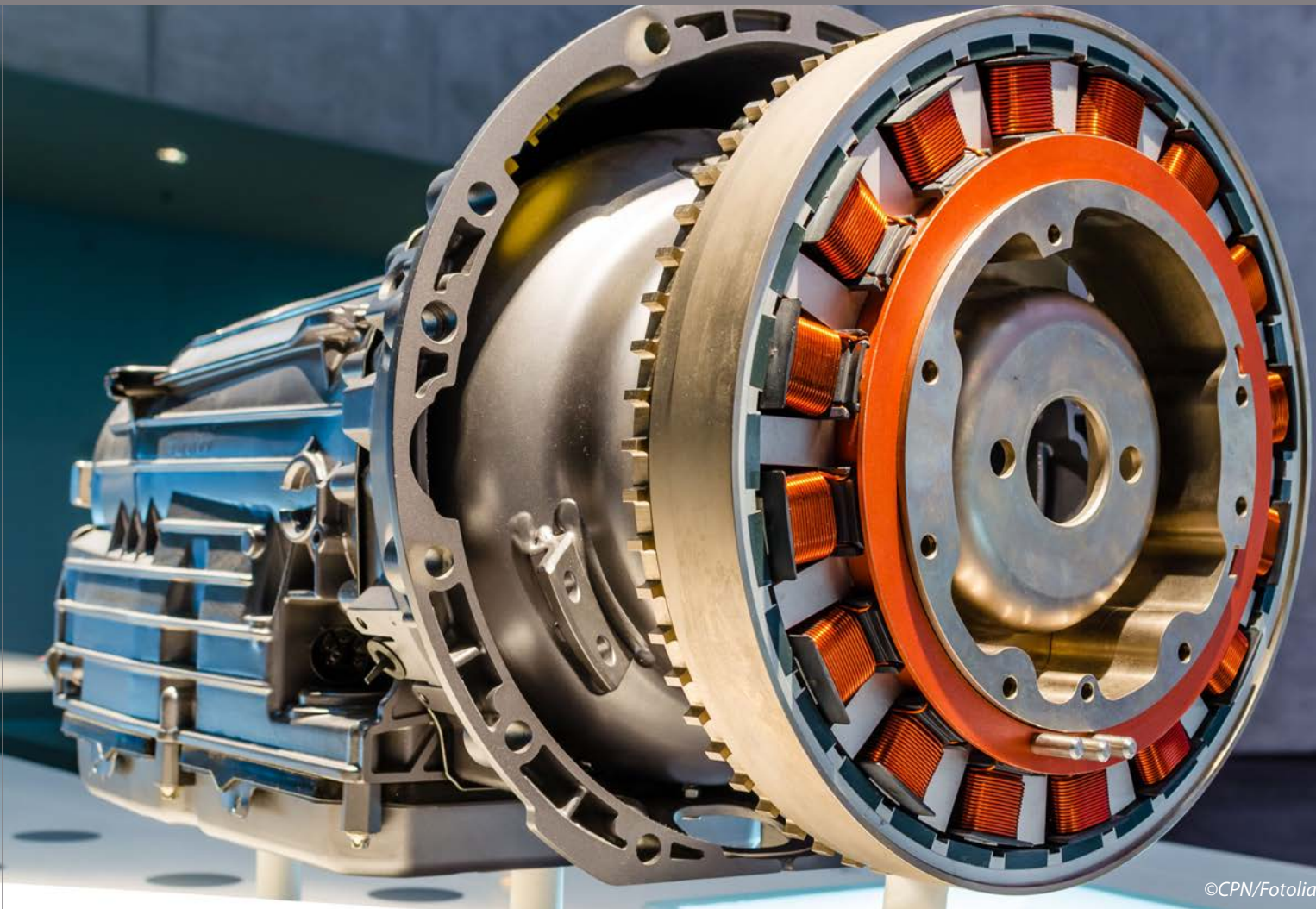
compact electrical brakes. That made it possible for us to create the prerequisites for UL and CSA certification", reports RINGSPANN divisional manager Franz Eisele.

### The electrical alternative

RINGSPANN's electromagnetic disc brakes from the DH and DV series and the EV and EH series cover a very large application spectrum in mechanical engineering and plant construction. They convince particularly as a space-saving and low-maintenance alternative to hydraulic and pneumatic brake systems. Typical areas of deployment for these electrical brakes are for example the turbine, ventilator and fan industries, machine tool construction, winch and winding technology, wind power technology and general drive technology. The (emergency) stop function brings rotating shafts to a standstill within seconds, as a control unit they enable the controlled adherence or delay of defined forces, and as a holding system they prevent the unintended start-up of rotating components.

The electromagnetic RINGSPANN disc brakes can be installed in any position and can also be operated in synchronised groups. The DH and DV series feature electrical brakes with braking torques ranging from 94 to 570 Nm; the EV and EH series meanwhile feature braking torques ranging from 65 to 6,590 Nm. A remarkable technical feature of RINGSPANN's EV and EH brakes is that they only have an extremely low power consumption for the entire holding phase. "The smaller sizes only require 10 watts", stresses divisional manager Franz Eisele. With such excellent performance figures, the Homburg manufacturer is setting international standards and making a tangible contribution towards creating energy-efficient drive solutions. <<

## Smart switching between motors



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With its overrunning freewheels, RINGSPANN offers designers of hybrid drive systems in mechanical engineering and plant construction a clutch coupling solution that is both uncomplicated and reliable. Without elaborate control technology, these installation-ready components are able to control the differences in speed between electric and combustion motors or alternately engage and disengage different motors of a single drivetrain. Read how the manufacturers of cranes, turbines and fans employ RINGSPANN's overrunning freewheels to realise hybrid drive systems.

Overrunning freewheels from RINGSPANN are compact and low-maintenance installation components that make it possible to engage and disengage entire machines or individual units of hybrid drivetrains. The engaging takes place with torque transmission in driving operation of the freewheel, the disengaging with torque interruption, meanwhile, in idling operation. Both take place without any additional (and expensive) regulating or control technology, because the overrunning freewheel is a purely mechanical function module. They can be used as a space-saving and safe clutch coupling or to regulate deviating speeds of electric and combustion motors in joint or parallel drivetrains. The use of overrunning freewheels in such hybrid drive systems has become widespread in mechanical engineering and plant construction.



### Between turbines and pumps

Energy recovery turbines (ERT), for example, are among the standard units in many hydro and power plant engineering systems. These are single or multi-stage pumps or turbines that aim to optimise the effectiveness and efficiency of the systems. To achieve this, an ERT uses the energy surplus from fluid engineering processes to power a neighbouring system via a shaft connection. This means that instead of subsequently throttling the liquid pressure built up in a process engineering process through a pressure reducing valve – which would be trivial and wasteful – the ERT taps this “stored” energy from the system and provides it for further use. This creates a hybrid drive solution, where a considerable part of the energy that is originally fed in is kept and transferred to a second use. And how does this energy transfer work? With the help of an overrunning freewheel, of course, which couples the output shaft (output) of the energy recovery turbine with the drive shaft (input) of the secondary drive. “The freewheel is assigned with the task of relieving the receiving side – that can be a second motor – since it needs to be driven with less energy”, explains Thomas Heubach, the head of RINGSPANN’s freewheels division. In practice, many designers employ, for example, RINGSPANN’s FH or FKHG series housing freewheels with hydrodynamic sprag lift-off or the complete freewheels from the FB series with various sprag types.



### Between drive and expander

Another case in which hybrid drive technology serves the aim of energy recycling is the construction of expanders to transform the thermal energy of hot fumes into mechanical force. Such expanders are used among other things in the petrochemical systems of Fluid Catalytic Cracking technology and make it possible to use the thermopower gained to mechanically drive a generator or a regenerator air fan. The expander itself, too, often benefits from the energy fed back because it is used to support its main drive. This significantly improves its energy balance. “In such applications, our overrunning freewheels sit between the hot-air turbine of the expander and its main drive, which, depending on the type of system, can be an electric or combustion motor. As soon as the main drive reaches a higher speed than the expander, the freewheel disengages both units from one another”, says RINGSPANN divisional manager Thomas Heubach. To make it as easy as possible for the designers of the expanders, RINGSPANN supplies its overrunning freewheels not just as installation-ready components, but alternatively also as construction sets. Here, the customer can construct the shafts and freewheel elements (inner/outer rings, sprags, bearings etc.) into its assembly group – for example a high-speed gearbox – in a space-optimised manner. “However, this assumes that the respective customer possesses comprehensive expertise in the field of freewheel technology”, says Thomas Heubach.



**Thomas Heubach**  
Head of Division Freewheels  
of RINGSPANN GmbH



# June

## Between main and auxiliary drive

The use of overrunning freewheels from RINGSPANN in drive systems of large fans is widespread – for example in tunnel or mining construction. They can be hybrid solutions or systems with motors of the same type. Frequently, these powerful fans are alternately driven by one, two or even three electric motors. Two drives perform – solo or as a duo depending on the power requirement – the main work, while a third motor is only used for slow operation for repairs or inspections. The task of the overrunning freewheels then consists in engaging and disengaging the motors on the ventilator of the fan automatically and where required. RINGSPANN usually supplies its FH series housing freewheels or also complete solutions – so-called Smart Solutions – consisting of freewheels and overload clutches for such applications.

Another application closely related to the fan application is where overrunning freewheels with a housing again assume the alternate switching on or off of the motors: The hybrid drive systems of induced draft fans. This normally involves electric motors with outputs of 400 kW and 800 kW being used in solo or duo operation in combination with combustion motors. RINGSPANN's housing freewheels are situated between the induced draft fan and the motors and couple the respectively operating drive fully automatically with the fan. "The electromagnetic brakes integrated in the freewheels hereby prevent the still-standing drive from being dragged along", stresses RINGSPANN divisional manager Thomas Heubach. If, moreover, a slow-speed drive is provided for slow turning to cool off the rotor, an additional overrunning freewheel with type-z centrifugal force lifting-off sprags is used. It engages at a low speed and switches into freewheeling mode as soon as the system reaches its operating speed.







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### Between diesel and electric

Illustrative examples for the use of overrunning freewheels in hybrid drive systems can also be found in crane and shipbuilding. In mobile, stacking and container cranes you will most commonly find a diesel and an electric motor, which together or alternately drive the crane. Sometimes the diesel engine does the work and the electric drive serves as a generator – in this case, the freewheel couples the drivetrain together. If the electric motor takes control and the diesel takes a break, the freewheel disengages the drivetrain. In shipbuilding, the use of overrunning freewheels enables the switching from diesel drive to electric motor drive in the harbour – quiet, precise and environmentally friendly.

At RINGSPANN, a significant trend has been observed for a long time now towards more hybrid drives in many areas of mechanical engineering and industrial vehicle technology. Divisional manager Thomas Heubach also strongly believes “that hybrid drive technology is a rapidly growing market for our overrunning freewheels. Particularly because it produces extremely smart solutions thanks to the relatively simple mechanics, which are very easy to service, as they make do without any electronics.”

By the way: RINGSPANN'S entire range of freewheels can be found in the company's current online shop offer at [www.ringspann.com](http://www.ringspann.com). <<



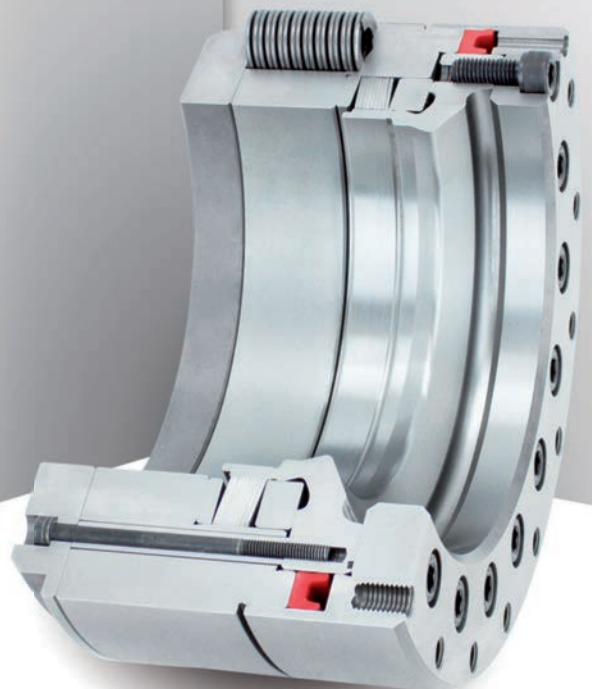
## Conformal projection to the thousandth

Among the highlights from RINGSPANN's appearance this year at EMO is the new clamping coupling for the fixing of driven rotary/swivel tables in multi-axis machining centres. Shortly after first being presented last Autumn, this mechanical, hydraulic high-precision solution has established itself as the favourite of countless renowned manufacturers of tool machines and rotary/swivel portals. With its exceptional conformal projection and holding torques of up to 2,400 Nm, it significantly exceeds the performance capacity of conventional clamping systems.

In the coordinate field of modern tool machines and machining centres, rotary/swivel tables and portals position the A and C-axes. Their kinematic task is to support the precise and fast approach of the workpiece into any required angle setting. To achieve this, the positioning axes with the latest generation of rotary/swivel tables are driven by torque motors that can be controlled directly and with a high degree of precision. When they take up their defined angle settings, they are clamped in tightly and must hold their position securely under stress during machining. The market offers a range of different clamping systems to realise this. Continuously increasing demands of the user with regards to achievable accuracies and transmissible torques, however, mean that manufacturers of rotary/swivel tables and machine tool manufacturers are increasingly looking for more powerful clamping systems for their positioning axes. At RINGSPANN, this trend was identified at an early stage and a new clamping coupling was developed for the clamping of rotary/swivel tables, which should soon replace many well-known clamping system products. Several renowned mechanical engineers have since taken notice of the new clamping coupling and are planning for their deployment. And for good reason: With a maximum torsion angle of just 0.007 degrees, a holding torque of up to 2,400 Nm and a very high torsional stiffness, the new RINGSPANN clamping coupling paves the way for implementing the highest precision and force demands when fixing the driven positioning axes of rotary/swivel tables in tool machines.

Mechanically clamped, hydraulically released

At this year's EMO, trade fair visitors to RINGSPANN's Booth E22 in Hall 3 can learn directly about the advantages and features of the innovative precision clamping coupling. One of the things they will discover is that it employs high-quality clamping discs from the RINGSPANN range to transfer the axial force of screw plate pressure springs into a radial force and taper a specially designed, ring-shaped deformation element. This purely mechanical action ensures a fully anti-twist, all round clamping of the kingpin of the positioning axis. The clamping is quickly released by applying 115 bar of hydraulic pressure to the clamping coupling. This immediately frees the positioning axis of the rotary/swivel table again for the approach into the next angle setting. The new high-precision



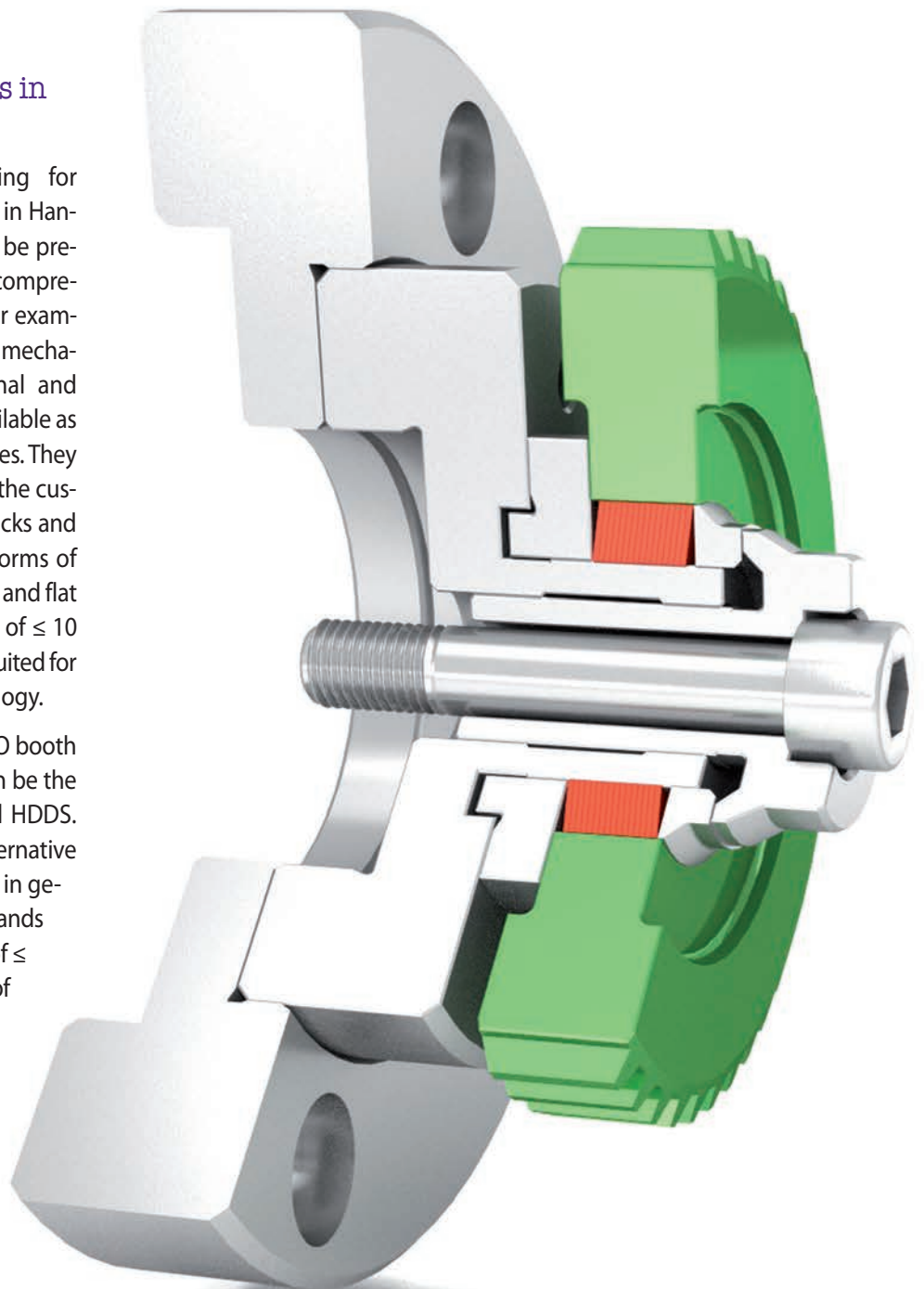


solution from RINGSPANN thus also supports quick changes between different angle settings of a machining process.

### Clamping fixture innovations in Hannover

Besides the new clamping coupling for rotary/swivel tables, at this year's EMO in Hannover (16.-21.9.2019) RINGSPANN will be presenting many more solutions from its comprehensive range of clamping fixtures. For example, precision clamping fixtures for the mechanical processing of cylindrical internal and external surfaces, which are widely available as standardised complete clamping fixtures. They are available in numerous versions, so the customer can choose between flange chucks and flange mandrels in the construction forms of bonded disc, taper collet, taper sleeve and flat element. With true running accuracies of  $\leq 10 \mu\text{m}$  these clamping fixtures are ideally suited for demanding tasks in machining technology.

A major attraction at RINGSPANN's EMO booth in Hall 3 will in all likelihood once again be the innovative expanding sleeve mandrel HDDS. This economical clamping mandrel alternative to hydraulic expanding clamping tools in gearing technology and fine machining stands out thanks to true running accuracies of  $\leq 5 \mu\text{m}$ , takes up workpieces with bores of up to tolerance class IT10 and reduces the costs for feeding and positioning technology in fully automated operation. Depending on the version, the HDDS can clamp bores from a diameter of 23 mm. <<



# August

## More play in gearing



**Volker Schlautmann**  
*Head of Division  
Clamping Fixtures of  
RINGSPANN GmbH*

Manufacturers of gear cutting machines and users in the field of fine machining should make a beeline for Booth E22 in Hall 3 at this year's EMO. Here, RINGSPANN will once again be presenting the youngest star of its comprehensive clamping fixture range: The mechanical expanding sleeve mandrel HDDS. As a both precise and flexible alternative to hydraulic expanding clamping tools, it has since provided multiple examples of its performance capability in various gear wheel assemblies. It is currently under discussion by the first manufacturers to become part of the standard configuration of their gear cutting machines.

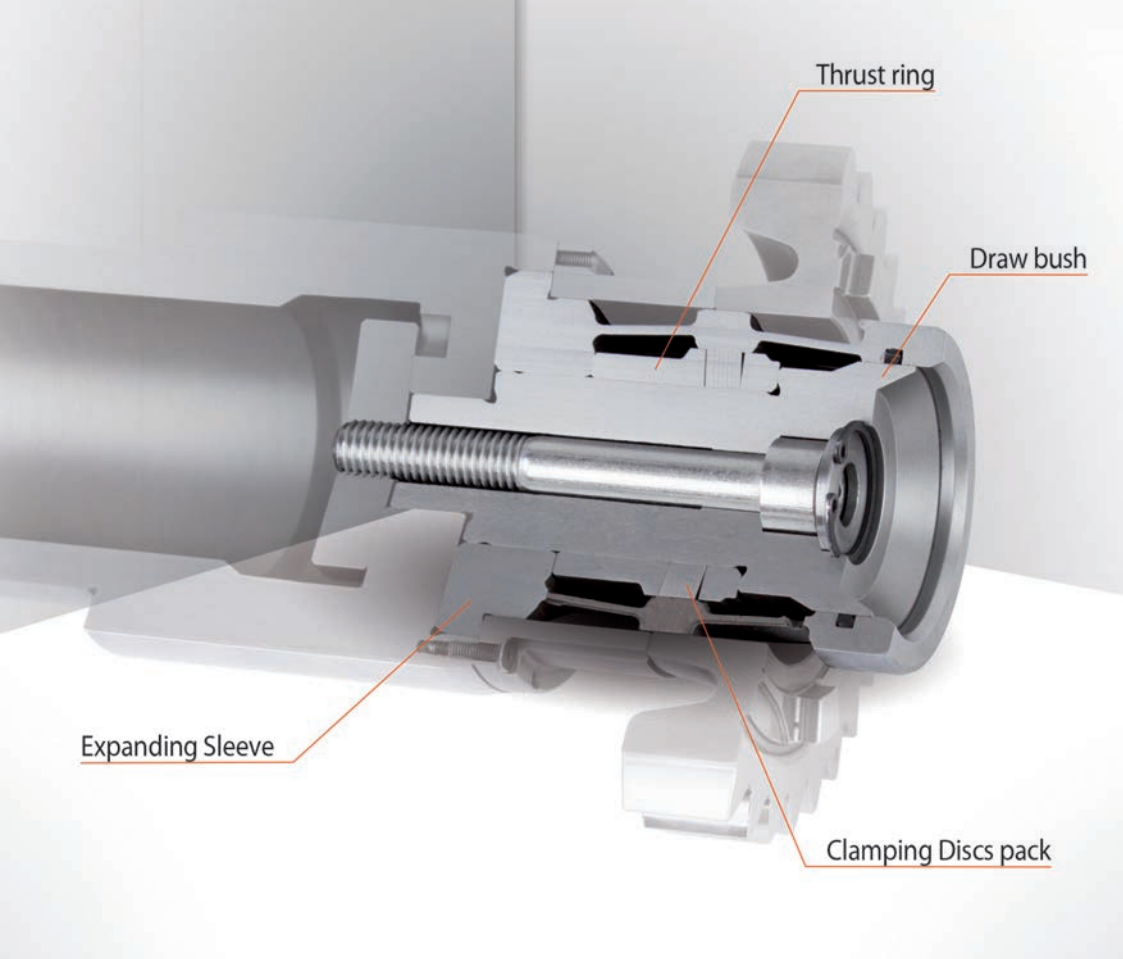
Increasing demands on accuracy have for years determined the mechanical production of spur or taper wheels for gear manufacturing. While gearing qualities of 8 or 9 in accordance with DIN 3961 used to be viewed as sufficient for most applications in this area of fine machining, today clients often write qualities of 7 or 6 into the product specification of their suppliers. Even higher are the demands on gear wheels for mo-

torsports – here, gearing qualities of 5 or 4 have long since become standard. “The clamping tools deployed during machining – in addition to the machines and tools – play a key role in achieving such qualities. Ideally, they support gearing technicians not only when fulfilling increasing quality demands, but also offer them more manufacturing flexibility and economic leeway”, says RINGSPANN's Volker Schlautmann. Visitors of this year's EMO will get a glimpse of how the concrete proposal of the head of sales and design of the company division clamping fixtures looks in Hall 3 at Booth E22. Because that is where RINGSPANN will once again be showcasing the latest star of its current clamping fixtures range: The mechanical expanding sleeve mandrel HDDS.

### More flexibility thanks to greater expansion

The HDDS by RINGSPANN is an innovative inner clamping system and the mechanical alternative to the hydraulic expanding clamping mandrels which are widespread in gearing technology. It stands out thanks to its true running accuracy of  $\leq 5 \mu\text{m}$  and achieves an absolute expansion that is four times larger than most hydraulic clamping fixtures. Volker Schlautmann tells us what this means for the user: “Our HDDS can take up workpieces with bores of up to tolerance class IT10. Most hydraulic clamping fixtures, meanwhile, are only suited to take up workpiece bores up to tolerance class IT7.”

Unlike hydraulic expanding clamping mandrels, RINGSPANN's purely mechanical expanding sleeve mandrel offers an additional key advantage: Its use is completely free of leakage risks. This provides more process safety in series production, since even the smallest leakages of hydraulic clamping fixtures lead to process interruptions, malfunctions and increased repair outlay. The only source of wear for RINGSPANN's HDDS are its clamping discs. These are, however, quality products from our own production that furthermore can be replaced by the user. The clamping mandrel doesn't need to be taken from the spindle to do so.



### Advantages for users and mechanical engineers

Since its premiere at the end of 2016, the HDDS by RINGSPANN has already proven itself in numerous demanding applications in gearing technology. Among other things, it has been able to prove its performance capability in the production of a Swiss gear manufacturer in the high-precision grinding of spur wheels – metrologically documented! Volker Schlautmann reports: “The axial run-out and true running accuracy of our expanding sleeve mandrel was tested both using a control workpiece with a tactile measuring device accurate to the micrometre as well as on an original blank with a coordinate measuring system. In the test run, the measuring device showed  $\leq 2 \mu\text{m}$  for the axial run-out and  $\leq 3 \mu\text{m}$  for the true running, and with the series workpiece the achieved geometry accuracy of the involute gearing was significantly below the defined tolerance limits – the HDDS thus significantly exceeded the expectations of the customer.”

The expanding sleeve mandrel from RINGSPANN is now under discussion with Swiss and US manufacturers of gearing machines as a component of the factory standard configuration of their machines. The reason for this: It enables not only the realisation of high gearing qualities, but further facilitates the simple implementation of fully automated manufacturing concepts. Clamping fixtures specialist Schlautmann ex-

plains: “For physical reasons, hydraulic expanding clamping mandrels exhibit a rather low expansion rate, which is why the handling systems used for their feeding demand a high degree of kinematic precision, which in turn requires rather high levels of investment in measurement and control technology of the periphery. This outlay is significantly reduced with the use of our HDDS, since it shows itself to be much more tolerant due to its high expansion rate.” The machines can be designed more simply and this paves the way for the user to gain a significantly more cost-efficient entry into fully automated processing.

### Small diameters, short clamping lengths

Furthermore, the gearing technicians will discover at RINGSPANN's EMO booth in Hall 3 that the HDDS – depending on the version – can clamp bores from diameters of 23 mm and that it is even suitable for bores whose inner geometry is interrupted by a groove. An additional benefit: It is also a solution for the processing of workpieces with very short clamping lengths, because its mechanics perform a pull-back action, where the workpiece is pressed against a backstop and aligned. <<



# September

## More constructional freedom to both s



RINGSPANN's current industrial brakes range is almost seamless. It offers among other things a large selection of electrohydraulic drum and disc brakes that can be configured specifically for the customer. Just a few days ago the manufacturer incorporated another drum brake series for braking torques of up to 4,500 Nm into its portfolio. The highlight here is the thrustor mounted horizontally over the brake jaws. This is a particularly significant development for engineers of drive and safety systems of large lifting and conveyor systems, who will discover newfound freedom when designing the installation situation.

The brake calipers from RINGSPANN's new series DT ... FEA ... H-ST are much slimmer in design than conventional industrial drum brakes. The key reason for this is a constructional variation that saves an enormous amount of space. While the thrustor for most drum brakes of a conventional frame model is mounted laterally for brake jaw releasing – which is why the entire brake construction is relatively wide – RINGSPANN engineers went down a different path with this new series: The entire electrohydraulic air system, including the integrated throttle valve and optional lever mechanism for manual operation, were turned 90 degrees and repositioned one level higher. It is therefore situated horizontally over the brake cylinder and brake jaws in the new drum brakes series. RINGSPANN thus provides particularly engineers of drive and safety systems of large lifting and conveyor systems for the coal and steel industry, container logistics, crane construction and marine technology with a compact brake alternative for all applications in which there is a lack of installation space to the right and left of the brake.

### Eleven new drum brakes

What looks so simple in the end result required various engineering tricks in advance. Besides the frame, multiple thrustors in different performance classes needed to be re-configured for the horizontal layout. "We were able to do this very quickly, however, since we develop and manufacture all electrohydraulic release systems for our industrial brakes in house", explains Franz Eisele, who heads RINGSPANN's brakes and couplings division.

Overall the new RINGSPANN series DT ... FEA ... H-ST offers the user five frame sizes and eleven versions of compact drum brakes with thrustors mounted horizontally. The selection covers braking torques ranging from 200 Nm to 4,500 Nm, and clamping forces of 2,550 N to 22,500 N. The clamping force describes the power generated by the brake, while the braking torque denotes the force that ultimately impacts the brake jaw (on the shaft or similar).

# ides

## The first brakes are already in use

“The first customers are already using our new drum brakes and are extremely satisfied”, Franz Eisele happily notes. Moreover, in view of what is now his division’s almost seamless range of industrial brakes, he points to the fact “that RINGSPANN is more capable than ever of supplying the most extensive range of brake types in demand on the market”. The company’s brake range de facto ranks internationally among the most diverse offers in this drive technology market segment. Across all models, the drum brakes achieve braking torques of up to 7,200 Nm, while the disc brakes achieve braking torques of up to 19,900 Nm. Further, it includes the suitable control systems, a quick after-sales service and various options for customer-tailored brake configuration.

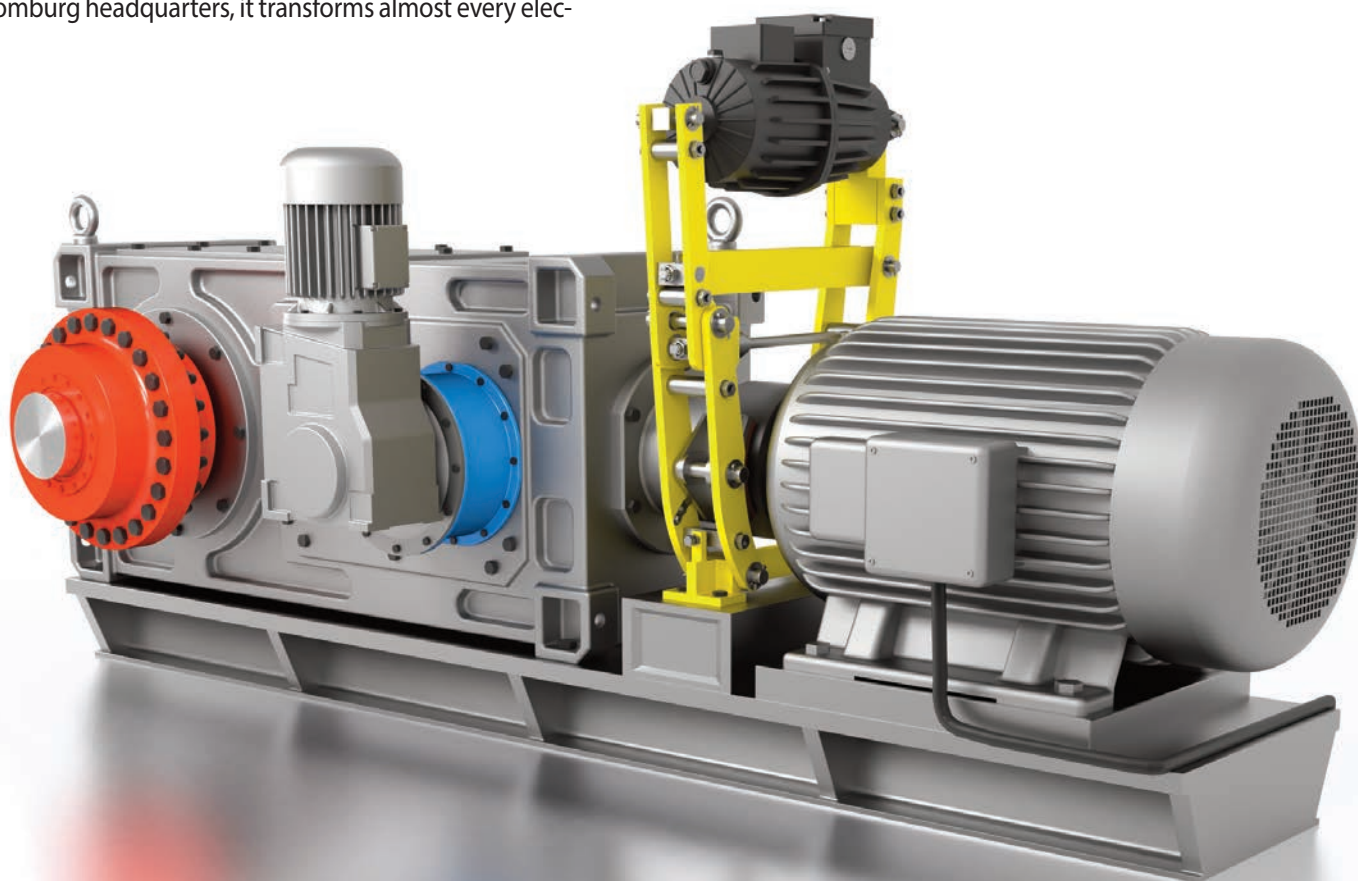
## Many options for fine tuning

A key strategic role in RINGSPANN’s international brake business is played by its Italian subsidiary by Milan. In the daily technology transfer with the engineering department at the Bad Homburg headquarters, it transforms almost every elec-

trohydraulic drum or disc brake in the catalogue programme into a customer-specific ideal solution. To achieve this, there is not only a wide range of technical options available, but also RINGSPANN Italia’s high degree of vertical integration. And for such cases in which the many options should not be enough to tailor the selected electrical or hydraulic brake with wider brake jaws or drums, an automatic friction lining wear control, an externally adjustable brake spring, a heat-resistant lifting device or sinter metal friction linings to the individual application – to name just a few aspects –, the machine fleet in Limbiate offers lots of scope for technical fine tuning.

## Just-in-time partner for customers

The availability of all technically relevant components at the site in Italy further ensures a high degree of availability of the industrial brakes and enables the integration of the brake assembly into the just-in-time concepts of European firms. Furthermore, all wear and spare parts are on standby and delivered in record time. Last but not least, RINGSPANN offers the customer the greatest possible planning security and security of investment thanks to its in-house test bench technology. In addition to installation descriptions and instruction manuals, the customer receives all the necessary test reports and protocols for their technical documentation and quality assurance. <<





# September

## Turns only in one direction

With nominal torques of up to 420 Nm, RINGSPANN's FZ series internal freewheels are suitable for the realisation of backstops, overrunning clutches and the transfer of linear reciprocating motions in incremental rotating or adjusting kinematics (indexing function). The particular attraction of these mechanical elements lies in their compact design, as they feature the same dimensions as the widespread series 62 DIN standard bearings. This makes FZ freewheels ideal when it comes to designing spatially optimised constructions in the drive units of conveyor systems, warehouse handling systems, packaging systems and food processing machinery. Increasingly, they are also being installed in hybrid drive systems.

Anyone who thinks the freewheels in RINGSPANN's FZ series are classic bearings couldn't be wider of the mark. While at first glance one could indeed mistake these mechanical elements for roller bearings of a closed design, they are in fact particularly compact internal freewheels that can be used as backstops, overrunning freewheels or indexing freewheels. The reason for the confusion is thus purely of a visual nature, and is due to the fact that the dimensions of RINGSPANN's FZ freewheels are oriented towards those of the series 62 standard grooved ball bearings according to DIN. "This similarity in the size of our FZ freewheels offers significant advantages particularly in the realisation of spatially optimised constructions or when finding solutions to difficult installation conditions in industrial drive technology. These internal freewheels combine the roller bearing design with the functionality of freewheels, whereby the bearing – as if moved by an invisible hand – only rotates in one direction", explains Thomas Heubach, head of RINGSPANN's freewheels division.







### Broad range of applications

Deployable as backstops, overrunning freewheels or indexing freewheels with nominal torques ranging from 9.0 to 420 Nm, RINGSPANN's FZ freewheels convince in practice as mechanical elements suitable for universal use in a variety of applications thanks to their bearing-related properties. They are maintenance free, have bores with diameters of up to 40 mm and are suitable for operation under normal conditions. The torque is transferred – depending on the version – either via press fit or keyway connection on the inner ring or on the outer ring of the freewheel. RINGSPANN delivers its FZ freewheels ready for installation with grease filling for integration in the customer's construction. FZ freewheels are also available with food grade lubricant specially for use in hygiene-sensitive industrial sectors such as food and drinks technology. The FZ versions with both-sided seals made of acrylonitrile butadiene rubber (2RS) sealing are of particular interest for engineers in mechanical engineering and plant construction in food and packaging technology. This feature, too, bears a technical similarity to the series 62 standard roller bearings according to DIN.

### Locking, coupling, pushing

As backstops, FZ freewheels prevent unintended rotation against the operational direction of rotation, in their over-

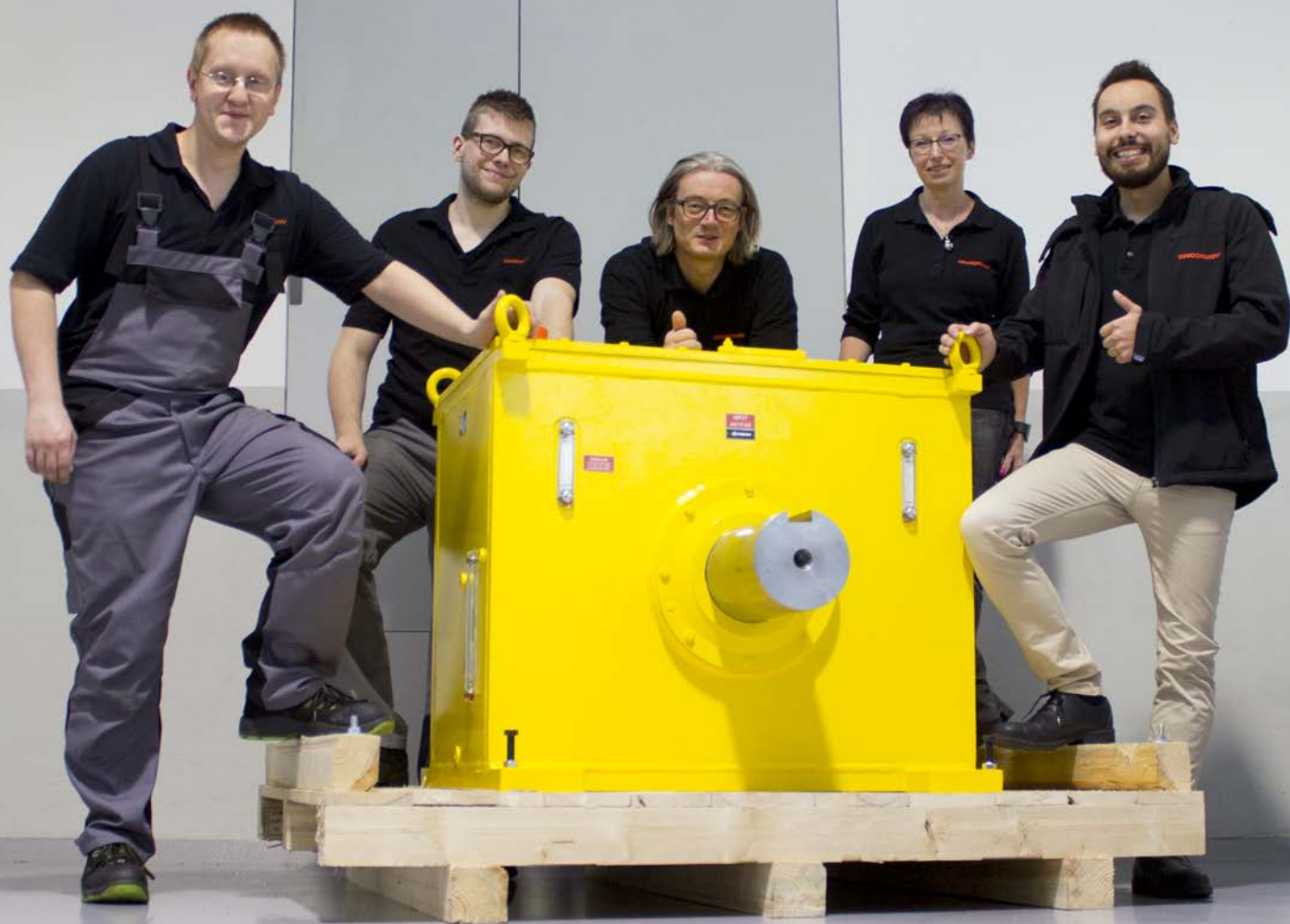
running function they replace complex clutches, and in their indexing function they can transmit linear back-and-forth movements in incremental rotary movements. One typical indexing application, for example, is to use them in pairs in continually adjustable gearboxes of metering rollers in construction machinery or filling systems. Here, you often have two cam disks that are offset and sit on the input shafts of the gearbox, which drive the outer rings of the two internal freewheels by means of lever arms. The freewheels then gradually turn the metering shaft.

Packaging systems, conveyor belts, labelling and textile machines – RINGSPANN's compact FZ freewheels can be found in the drive systems of various systems and machines and are in use all over the world. They have even been installed in the hybrid drive systems of environmentally friendly vehicles. "Here, the alternating function between idling and driving operation ensures that rotors do not rotate and the vehicles can continue to roll while switching", explains RINGSPANN divisional manager Thomas Heubach.

Engineers and sourcing managers will find the entire range of FZ freewheels in RINGSPANN's current online shop offer. Many other series and types of internal freewheels are compiled here so visitors to this modern internet platform can choose from currently twelve freewheel series ([www.ringspann.com](http://www.ringspann.com)). <<

# October

The largest in the world of its kind



A few days ago, RINGSPANN completed the world's largest housing freewheel in technological history for an Asian client. It is the latest member of the FH series and is used in the energy recovery system of a petrochemical plant. As a wear-free overrunning clutch it generates a maximum nominal torque of 81,850 Nm at 1,400 rpm. With this innovative new development, RINGSPANN is entering completely new dimensions in freewheel technology and is once again setting international standards.



**Thomas Heubach**  
Head of Division Freewheels  
of RINGSPANN GmbH

With the realisation of the largest and most powerful housing freewheel to date in the FH 60,000 R, RINGSPANN once again underlines its leading position as an innovative manufacturer in the field of freewheel technology. Completed just a few days ago, the first two of these 1.7-tonne-heavy units are currently ready for shipment to Asia. Instead of expensive and complex clutches, they will be used as speed-dependent, wear-free overrunning clutches in the drive trains of the energy recovery system of a large petrochemical plant. They are designed for revolutions of up to 1,400 rpm and provide a maximum nominal torque of 81,850 Nm. Their external dimensions are 1,260 x 970 x 890 mm.

Like all overrunning clutches in the FH series, the new FH 60,000 R is characterised by a very high degree of reliability, low-noise operation and minimal maintenance. Designed as an encapsulated unit with an integrated oil filter system and built-in locking brake, it requires no external oil supply. Thomas Heubach, head of the freewheels division at RINGSPANN, further stresses: "The new FH 60,000 Rs are also designed for maximum continuous service life and work wear-free thanks to their hydrodynamic clamping roller lift-off. In terms of the normal maintenance, the operator only needs to plan for the regular oil change. It is precisely because of the hydrodynamic clamping roller lift-off that the RINGSPANN FH series housing freewheels are viewed as a high-performance overrunning clutch solution for stationary applications in which a unit is to be driven by several motors or turbines at the same speed or a similar speed. If one drive source should fail, they allow the system to continue running without a hitch. They are also suitable for switching a drive system to partial load operation – for example with the aim of saving energy.

### Complete solution from a single source

RINGSPANN's freewheels division needed no more than 16 weeks to develop and produce the new FH 60,000 R. "To achieve such fast implementation times, we have an efficient process management system in which the various departments of purchasing, design, production, quality assurance and logistics work together like clockwork," says Thomas Heubach. The innovative modular concept of RINGSPANN's FH series also made a key contribution to the rapid completion of the new housing freewheel. And as usual in the case of customer-specific special solutions with small batch sizes, the exceptionally large and thick-walled housing of the FH 60,000 R was designed as a welded construction. This once again yielded a considerable time advantage over the cast version. RINGSPANN had the housing certified with regards to welding technology, tightness and connection dimensions to cover all approval requirements and provide the customer with a ready-to-install solution.

### Next frame size in planning

With the FH 60,000 R, RINGSPANN offers a completely new freewheel size, which opens up previously unimaginable possibilities, especially for international plant manufacturers in the petrochemical, energy technology and coal and steel industries. And yet if you think this new housing freewheel marks the end of the RINGSPANN innovation spiral, think again. "We are already planning the next frame size. It follows the design principles of all FH freewheels, but will achieve enormous nominal torques of up to 122,000 Nm at speeds of 1,200 rpm", announces division manager Thomas Heubach.

By the way: all housing freewheels from the FH series can also be equipped with a heater and the sensor and telematics tools of RINGSPANN's new Condition Monitoring System on request. This CMS system enables operators of complex multi-motor systems and their maintenance staff to monitor all the key power and MRO parameters of the installed freewheels in real time. This complete solution includes data analysis, remote maintenance and functional integration into higher-level control systems. <<



# November

## You can rely on the length – even in the curve!



**Christian Kny**  
General Manager of  
RINGSPANN RCS GmbH

RINGSPANN RCS' mechanical cable systems are high-quality processed products. They are designed for more than 1.0 million kinematic cycles and boast optimal gliding properties. As intrinsically safe and maintenance-free machine elements, they are proven wherever forces have to be transmitted between locally separated and stationary components, but where it must always be possible to separate the connection between input and output force by means of a flexible system. Thanks in particular to their length-preserving properties, they prove to be precise and reliable control elements even in applications with winding installation layouts.

What happens with simple Bowden cables or substandard Push/Pull Cables if the application or the installation situation requires a winding installation with tight bending radii? Correct: Not only do they become stiff, but their travel length is also "shortened". This means that their functionality is impaired, their dimensional stability is lost and, in most cases, frictional resistance increases as a result of the change in cross-section. None of this, however, occurs with high-quality

Push/Pull Cable systems from RINGSPANN RCS. Thanks to their four-part inner construction, these quality products have excellent gliding and length-preservation properties. Christian Kny, General Manager of RINGSPANN RCS, explains: "Assuming the correct design, the internal structure of our cable systems enables a high-precision mechanical compensation of the length variance caused by the installation. The functional solution is in the interaction of the inner-member, the elastic guide tube, the longitudinal wire with its supporting wire winding and the plastic coating. Thanks to their sophisticated design, these layers can interact tribologically with each other and compensate changes in length."

### Emergency safety device for spring core brakes

Another positive consequence of the multi-part detailed engineering of RINGSPANN RCS Push/Pull Cables is their high degree of resistance to impact, vibration and shock. The trilogy of good properties – slip resistance, length preservation and mechanical stability – is a key reason why these power cable systems have firmly established themselves, for example, as actuator support elements and control elements in railway technology (wagon construction), as well as truck and bus technology. One main field of application is the realisation of (emergency) safe ventilation and release devices for spring-loaded brakes frequently used in these sectors of road and rail vehicle construction. Push/Pull Cables here, among other things, are used for the mechanical release or unlocking of hydraulically or pneumatically released brakes during normal operation. In particular, RINGSPANN RCS supplies the Push/Pull Cables of its successful 283/284 and 274/275 series as ready-to-install components with project-specific end and operating parts (T-handles, hand levers, hinged tube connectors, etc.) just in time to the assembly lines of its customers in vehicle construction and railway technology. RINGSPANN RCS' Push/Pull Cables are also used in the design of automatic doors - for example in wagon and elevator technology.



### Standard or customised

RINGSPANN RCS offers four bi-directional Push/Pull Cable series as standard. Depending on the version and the travel, pushing forces of up to 3,150 N and pulling forces of up to 4,500 N can be transferred. With these standard values, the company covers a wide range of applications across all industries. In day to day project work, however, these parameters mostly serve just as a general orientation for RINGSPANN RCS' engineering department. General Manager Christian Kny explains: "Our great strength is in realising customer-specific system solutions for vehicle construction, railway technology, airport technology or increasingly for the e-mobility sector. Here you often have completely different factors playing an important role. For example, continuous running safety, feasible laying radii, response behaviour or length-dimensional stability".

In such cases where there is little time for a comprehensive development project, RINGSPANN RCS also offers the option, from a certain batch size, to quickly customise and configure common standard versions of its Push/Pull Cables from the series range.



# November

## Innovative Smart Solutions for the drive



With international commitment and great consistency, RINGSPANN continues to pursue its development towards being a one-stop supplier of high-quality components for industrial drive technology. The company's ability to equip machine and plant manufacturers in many industries with innovative smart solutions for the drive train is also growing. A current example of this are ready-to-install "packages" consisting of shaft couplings and overload protection, which simplify the work of designers and significantly reduce assembly work.

By founding further subsidiaries and consistently expanding its portfolio, RINGSPANN has recently considerably strengthened its position as an international one-stop supplier of drive components for machine and plant construction. Thanks in particular to targeted expansions in all product groups, the company is now able to offer its customers a wide range of innovative smart solutions that significantly reduce the time and cost involved in both engineering and assembly. A good example of this is the combination of elastic shaft couplings with high-temperature resistant overload clutches. Martin Schneweis, product manager responsible for RINGSPANN's shaft couplings, specifies: "In this specific case, we combine



# ve train

size REB 0198 DCO pin couplings, which were only recently added to our product range, with our successful type RSHD 250E special RIMOSTAT® friction torque limiters. This resulted in an innovative package solution for the drive train of a screening drum in a new plant for bulk material processing." While the pin and bush coupling compensates for the misalignment between the shafts of the drive train and dampens operational shocks and vibrations, the RIMOSTAT® friction torque limiter serves as overload protection when blocking the screen drum – caused, for example, by overloading.

## Components from two product groups

The elastic pin and bush couplings from the REB ... DCO series are part of RINGSPANN's wide range of non-switchable shaft couplings, which also includes rigid flange couplings and clamping clutches, torsionally stiff disc couplings and jaw couplings, along with a host of other types. The pin and bush couplings operate lubricant-free and are suitable for vertical or horizontal mounting. They are also available as ATEX variants and are frequently installed in the drive trains of fluid technology and logistics systems – for example in the drives of pumps, fans and belt conveyors.

RINGSPANN's RSHD series RIMOSTAT® friction torque limiters, on the other hand, are considered classics among overload clutches and are used all over the world. They are designed for slipping torques of up to 60,000 Nm and have highly wear-resistant sinter friction linings. Such a friction torque limiter achieves maximum service life, is absolutely corrosion resistant and can also be equipped with electronic speed monitoring. The RIMOSTAT® RSHD friction torque limiters are in good company with the numerous friction torque limiter series of the SIKUMAT® family in RINGSPANN's overload clutch range.

## Tailor-made functional unit

As a ready-to-install smart solution, the package consisting of the 13 kg REB 0198 DCO pin and bush coupling and the 39 kg RIMOSTAT® friction torque limiter RSHD 250E special forms

**Martin Schneweis**  
Product manager  
Shaft Couplings  
of RINGSPANN GmbH



a customer-oriented compensation and safety solution. RINGSPANN's product manager Martin Schneweis explains: "With regards to the interaction of the technical parameters of its two components, the unit is precisely tailored to its application in the drive system of the screen drum. The pin and bush coupling is designed for a maximum speed of 3,400 1/min and – depending on the damping elements used – has nominal torques ranging between 1,240 Nm and 3,150 Nm; the friction torque limiter, meanwhile, is defined for speeds of up to 2,100 1/min and its slipping torque is adjustable from 1,200 Nm to 6,000 Nm."

The example described is representative of many other smart solutions that RINGSPANN is able to implement thanks to its broad – and growing – product range. The current catalogues on shaft couplings and overload clutches alone give an idea of the potential synergies. Both catalogues are already available in the latest issues 2019-2020 at [www.ringspann.com](http://www.ringspann.com) for free download. <<



## Responding to the demands of the market

In the area of Shaft-Hub-Connections connected via friction lining, Shrink Discs rank among the most important drive elements for mechanical engineers and plant manufacturers. As one of the leading manufacturers of these components worldwide, RINGSPANN is therefore responding to the current demands of design engineers and developers with regular expansions of its range. Just a few days ago, additional three-part Shrink Discs were introduced to the successful standard series RLK 603 S. Those who stand to profit are, for example, manufacturers of drive systems for conveyor systems, stirrers, mixing plants, construction machinery and wind turbines.

Almost two years ago now, RINGSPANN integrated a number of new Shaft-Hub-Connections into its overall range and upgraded many series in performance on the basis of a new, improved method for frictional locking calculation. Since then, the range of Shrink Discs, Cone Clamping Elements and Star Discs has been subject to constant further optimisation, supplementation and refinement. A few days ago, the next gap in RINGSPANN's range of Shaft-Hub-Connections connected via frictional lining was closed with the expansion of the globally successful Shrink Disc series RLK 603 S. "To be able to more comprehensively meet the increasing demands of our customers for compact and cost-efficient three-part Shrink Discs with high power densities, we have expanded our RLK 603 S series with additional versions in new sizes and intermediate sizes. The complete series now spans shaft diameters ranging from 14 to 190 mm, which means the current demands of the market are almost fully covered", explains Marvin Raquet, product manager for RINGSPANN's Shaft-Hub-Connections. Like all Shrink Discs in the RLK 603 S series, the new designs are also already available with descriptions, data sheets and CAD models in the company's online shop for selection and are quickly available from stock.

### Extremely high torque capacity

The RLK 603 S series Shrink Discs are powerful externally clamping connections for the play-free connection of hollow shafts or hubs on shafts. Among the significant advantages of these frictional connections are their very high torque capacity across a range from 18 Nm to 156,700 Nm, as well as their compatibility with key industry and supplier standards in drive technology. Installation and setup are carried out very easily via the clamping screws of the Shrink Discs. Design engineers and developers of drive units for use in bulk goods conveyor systems, stirrers, mixing plants and crushers, plants for energy generation, and construction, forestry and agricultural machinery particularly stand to profit from the expansion of the RLK 603 S series. RINGSPANN's engineering department also implements customer-specific and project-specific versions beyond the standard RLK 603 S series Shrink Discs at short notice for many OEMs in these sectors.



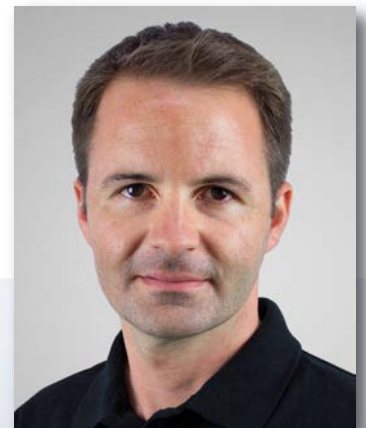




**Ideally positioned worldwide**

Across all 30 series, RINGSPANN currently offers Shaft-Hub-Connections connected via friction lining for torques ranging from 0.16 Nm to 4,225,000 Nm. At the same time, the current catalogue range spans all technically relevant designs of Shaft-Hub-Connections. In addition to the externally clamping Shrink Discs, you can also find internally clamping Cone Clamping Elements, internally clamping Star Discs and individual Star Spring Washers for ball bearing compensation, as well as clamping systems for fixing torque motors onto machine shafts connected via friction lining. The highlights include – besides the cost-efficient three-part Shrink Discs in the RLK 603 S series – the double-slotted premium elements RLK ... TC (true centring), which convince with very high centring accuracies. Measured by its technical bandwidth, the current RINGSPANN range of Shaft-Hub-Connections ranks amongst the best offers worldwide. "It exemplifies the development of the company into an international one-stop supplier for industrial drive elements", emphasises product manager Marvin Raquet.

By the way: On RINGSPANN's website, design engineers and developers can also find the new online calculation tool for the Shaft-Hub-Connections, which is based on the improved frictional locking calculation method. It not only takes into account all the important parameters (hub dimensions, surface pressure, torque, tightening torque etc.), but can also calculate the transmissible torque, even factoring in axial forces and additional bending moments. <<



**Marvin Raquet**  
RINGSPANN  
Product Manager of  
Shaft-Hub-Connections



# Advertising motifs

## SHAFT-HUB-CONNECTIONS

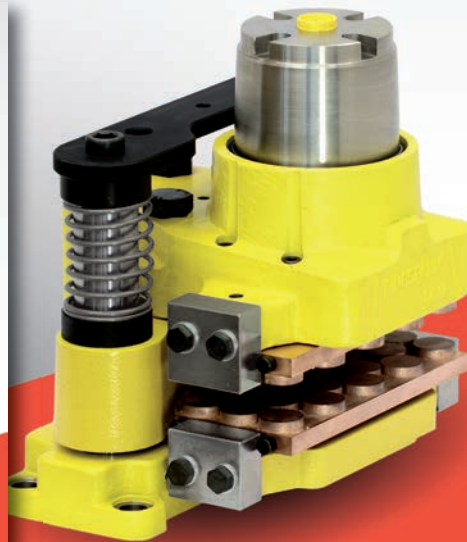
Shrink Discs • Cone Clamping Elements  
6,5 - 4 225 000 Nm

## BRAKES

hydraulic • pneumatic • electrical  
0,5 - 325 000 Nm

## FREEWHEELS

Backstops • Overrunning Clutches • Indexing Freewheels  
2 - 1 230 000 Nm



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## CLAMPING FIXTURES

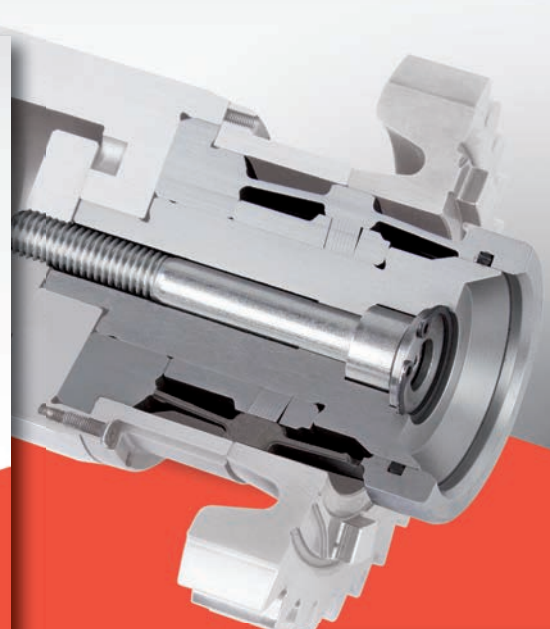
Clamping Chucks • Clamping Mandrels • Clamping Clutches  
7 - 560 mm

## COUPLINGS

rigid • torsionally rigid • elastic  
2 - 1 300 000 Nm

## CONNECTIONS

Flanges • Clamping Systems



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