

New safety couplings from Johannes Hübner Giessen protect against risks and loss of production

Reliably mounted encoders

In introducing its latest development in the form of the HKS series of safety couplings the sensor specialist Johannes Hübner Giessen is impressively underscoring its core competence: the development of encoder system solutions designed specifically to meet the needs of heavy duty applications.

One hundred percent safety and continuous availability are increasingly becoming decision-making criteria for plant operations. Consequently, couplings for encoder attachments need to fulfil special demands. On the one hand they must be sufficiently flexible to compensate mounting errors without overloading the ball bearings of the attached encoder - and on the other hand they must be rigid enough to also be able to permanently withstand even the harshest of operating conditions.

The requirements to be met in the design of safety couplings are defined in the IEC standard 61800-5-2. This specifies in detail which failure modes are to be applied for the mechanical connection of safety components, such as sensors for functional safety, and which safety factors are required with regard to the mechanical design. To comply with the standard it is absolutely essential that high fatigue resistance is designed into the safety couplings.

Hübner Giessen design engineers also decided in favour of maximum safety for the new HKS safety couplings during tests to verify fatigue resistance: extensive trials and tests were carried out in addition to the stipulated calculations. Amongst others these included shock tests, fatigue tests under operational stresses as well as a 96 hour salt spray test to verify corrosion resistance. In contrast to



durable couplings, whose service life is limited to a certain number of load variations, fatigue resistant safety couplings are designed to withstand an infinite number of load variations; consequently, they had to absolve more than 106 load variations during the series of tests absolutely fault-free.

Even in the event the spring washers made of special high-strength steel should fracture as a result of overloading, the additional safety claws guarantee continued availability. They take over a "drive" function to ensure the coupling and encoder continue to rotate and that the plant does not come to an unplanned standstill even in this worst case scenario.

The HKS series includes both single joint couplings to correct angular misalignments of flange attachments as well as double joint couplings with which it is possible to compensate shaft misalignments in conjunction with foot attachments. To attach encoders on inverter controlled drives Johannes Hübner Giessen recommends the optionally available coupling

version with insulation made of glass-fiber reinforced plastic. This ensures shaft currents are efficiently isolated to avoid damage to bearings.

HKS safety couplings are eminently suitable for deployment in extreme conditions thanks to their rugged design and tested safety. HKS and HKDS safety couplings operate flawlessly between -50 °C up to a maximum of +120 °C; the insulated HKSI and HKDSI product versions operate perfectly between -25 °C and +85 °C. The reasons why that is possible include tested mechanical shock resistance of 10 g to DIN EN 60068-2-27 (briefly max. 100 g) as well as vibration resistance (DIN EN 60068-2-6) of 3 g (briefly max. 20 g). A maximum torque of 3 Nm can be transmitted up to the approved top speed of 6000 rpm.

The HKS series includes a variety of couplings with total lengths ranging between 36 mm and

120 mm as well as bore diameters up to 22 mm. That means it is possible to select the optimum version from this range of couplings to fulfil the requirements of the respective application. Johannes Hübner Giessen provides a Declaration of Conformity with every HKS safety coupling that guarantees fault exclusion when operating and assembly instructions are complied with. That means it is possible to deploy the couplings in safety applications up to SIL 3 (Safety Integrity Level 3) / PL e (Performance Level e) and that they are classified in the risk analysis as a fault exclusion component.

Your benefits

- No unplanned plant downtimes thanks to a high endurance design - guaranteed
- Smooth plant operations thanks to torsion resistant and backlash free encoder connection
- Cost-savings thanks to a bearing-friendly design providing a longer service life
- Insulation made of glass-fiber reinforced plastic prevents shaft currents damaging bearing on inverter controlled drives
- Additional claws ensure availability even if spring washers fracture due to overload

About Johannes Hübner Fabrik elektrischer Maschinen GmbH

Steel and rolling mills, mining, container cranes, oil and gas production, railway technology, hydroelectric power plants, wind turbine generators and power systems: Johannes Hübner Giessen is widely recognized as the industry leader in the fields of encoders for heavy industry as well as energy and drive technologies. The specialist offers an all-round complete service from determining on-site installation conditions through to installing the complete encoder systems. The company presently employs 100 staff.