We power freedom.

RENK

COUPLING SOLUTIONS

HYGUARD®
Safety Couplings.

HYGUARD® Safety Couplings.

/ Performance

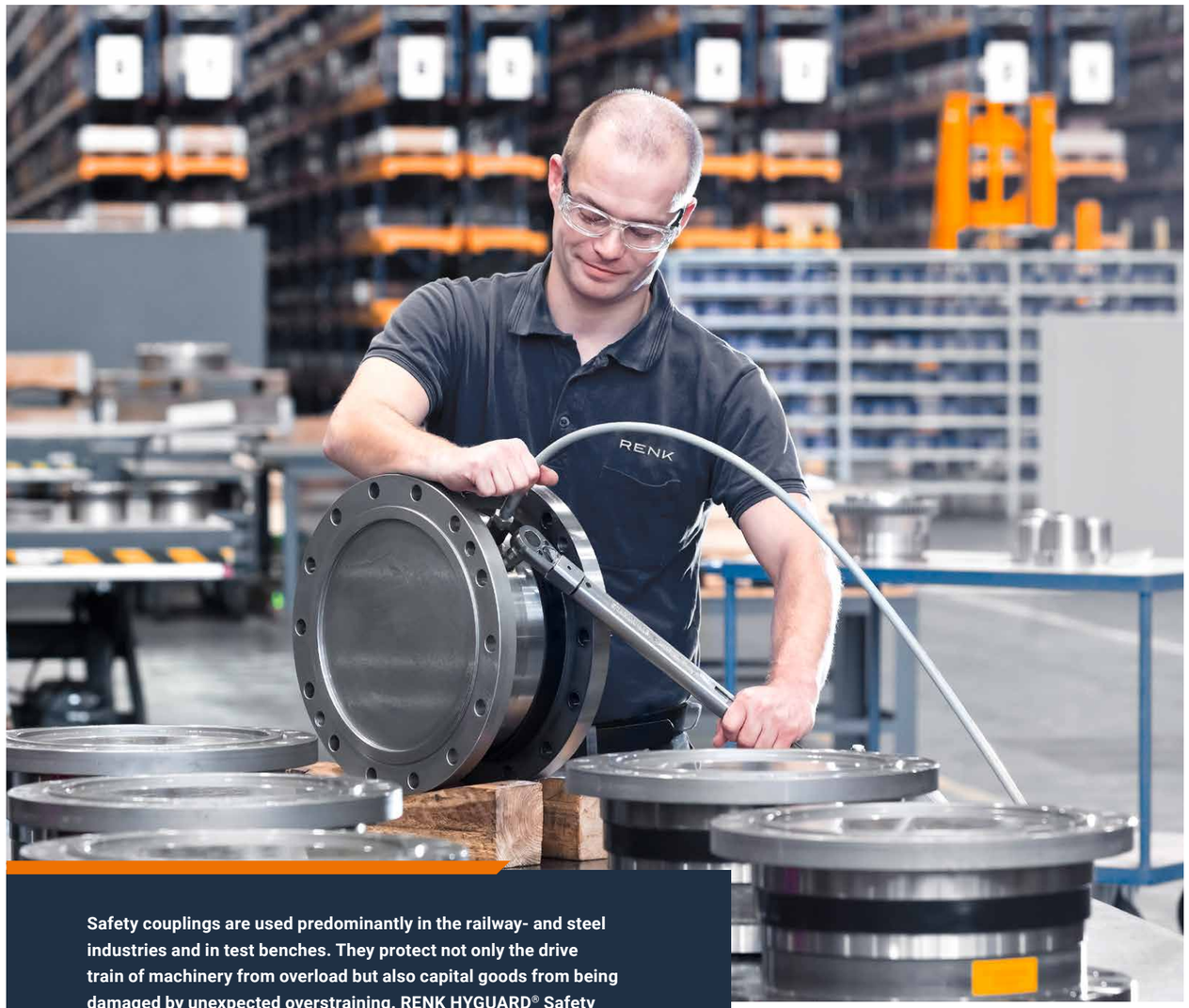
High torque within limited cross section

/ Flexibility

Individual protection through adjustable pressure values

/ Availability

Low downtimes due to quick recommissioning



Safety couplings are used predominantly in the railway- and steel industries and in test benches. They protect not only the drive train of machinery from overload but also capital goods from being damaged by unexpected overstraining. RENK HYGUARD® Safety Couplings offer a constant, individually adjustable release torque – throughout the entire operation.

Reliable protection for valuable machinery
The HYGUARD® Safety Coupling extends the service life of machines and protects drivetrains and its systems from damage. It is specially equipped for continuous use in critical torque applications and for the torsional rigid connection of shafts. The release torque is adjustable and remains constant during the operation.

The HYGUARD® element, integrated into the coupling, consists of two interlocking bushes with pressure-tight sealed ends. Hydraulic oil is injected through a valve bore into the small gap between these bushes. When pressurized, the diameter expands.

The system is mounted between the shaft and hub, acting as a clamping bush. It transmits torque through frictional engagement at the contact faces. The transmissible torque depends on the oil pressure in the ring gap. Since this pressure is adjustable, the torque can be precisely controlled.

The Safety Disconnect
provides protection through speed. Its main components are the shear ring and the shear tube. There is a fixed connection between the shear ring and the shaft, while the shear tube sits in the movable part. If the operating torque exceeds the preset value, the safety element slips on the profiled surfaces and the shear ring cuts off the top of the shear tube. The system is depressurised within milliseconds and the connection is released.

Recommissioning requires little time
The HYGUARD® Safety Coupling can be easily reactivated using a high-pressure pump with a pressure gauge and hydraulic oil. The pump is connected to the injector, and with the shear tube open, hydraulic oil is pressed into the ring gap. Once the predefined pressure for torque transmission is reached, the shear tube has to be tightened. The pressure chamber is then hermetically sealed, and the coupling is ready for use.

When the system is disconnected due to an overload, then only the shear tube needs to be replaced. The system can then be restarted as described above, eliminating the need for the time-consuming replacement of shear pins or similar parts. Spare parts storage is limited to a small number of shear tubes and oil for recommissioning.

Application ranges
The versatility of HYGUARD® Safety Couplings and TORLOC clamping elements makes them ideal for a wide range of applications, even under severe conditions. In rolling mills, for example, they have enabled significant cost savings. These products are for machines that may be subjected to overload or jamming. Examples include longitudinal shafts in paper mills, drafting equipment in the fibre industries, circular clamps, and solid pumps.

When used with differential speed monitoring, the safety coupling becomes controllable. If the coupling is released due to overload, an alarm is triggered or the coupling is disengaged, leading to differing speeds between the shaft and the hub.

Advantages at a glance:

- Excellent price/performance ratio (CAPEX)
- Can be combined with all types of couplings
- Quick availability
- No additional energy costs for operation
- Constant trigger torque
- Torsionally rigid-flexible connection of shafts
- Overload protection with adjustable torque limitation
- No decline in triggering accuracy over time
- Low downtime costs
- Quick re-commissioning
- No operational wear and tear, therefore no maintenance costs
- No cost-intensive stocking of spare parts

HYGUARD® Safety Couplings. Perfect system protection and quick recommissioning.

/ ≤ 1,600 mm
External diameter

/ ≤ 7,500 rpm
Speed range

/ ≤10,000 kNm
Nominal torque

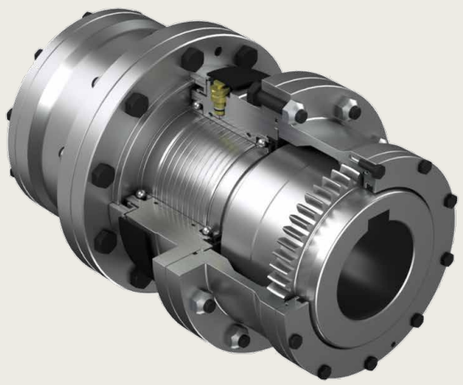
HYGUARD® Safety Coupling Type HEW

- Transmission of high torques in a small space
- Torsionally rigid/articulated shaft connections in conjunction with gear couplings
- Overload protection with adjustable torque limitation, trigger accuracy of ±7-10%
- < 20 msec for a torque trigger

HYGUARD® Safety Coupling series Type BW, BWL, HDW

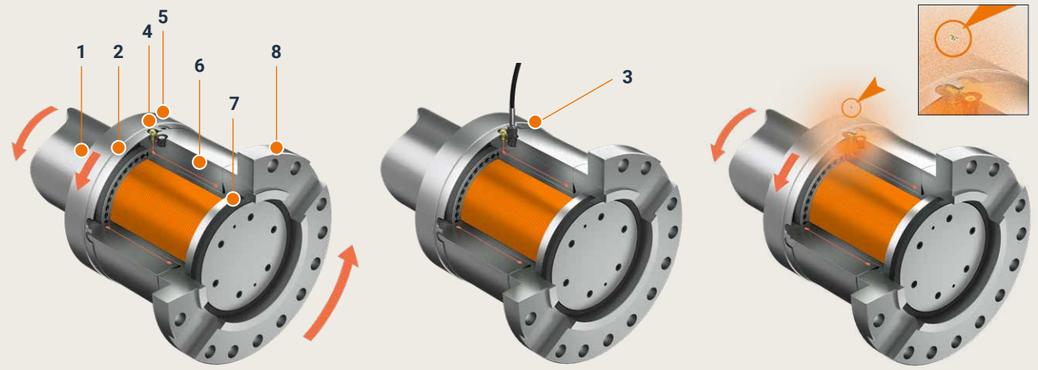
Variable adjustments to the different design types are possible according to customer requirements.

HYGUARD® Safety Coupling in combination with curved-tooth coupling®



TORLOC clamping element

The TORLOC clamping element is ideal wherever quick and safe clamping of machine parts is needed. For example, it is used on test benches as a quick-release coupling, while in tool- and production machines it is used as a clamping coupling with fine-adjustment options.



Components of the HYGUARD® Safety Coupling

1 Shaft
2 Shear ring
3 Injector connection
4 Shear tube
5 Screw plug for lubricant filling
6 Double-walled clamping element
7 Seal for lubricant filling
8 Coupling hub, gear wheel, or other driving element

Principle of operation

- Two bushes are inserted into each other, both ends of which are closed in pressure-tight manner.
- The gap gets pressurized with a hand pump.
- Torque is transmitted by frictional engagement between the contact surfaces.
- Torque vs. pressure according to the calibration diagram provided by RENK.
- When the release torque is exceeded, the safety element will slip on the profiled surfaces and the shear ring will cut off the shear tube.
- The pressure drops within milliseconds, and the hydraulic safety coupling releases the connection.

Tailored solutions for your needs.

HYGUARD® Safety Couplings are used in a variety of applications and industries, including steel, test stands, locomotives, extrusion, mining, and cement. The broad range of torque-limiting couplings from RENK covers capacities up to 10,000 kNm and speeds up to 7,500 rpm.

For Test Stands
HYGUARD® Safety Couplings are utilised by car manufacturers in their gearbox test stands. The rapid and safe decoupling of the gearbox in the event of cut-off has demonstrated the effectiveness of this safety coupling in protecting valuable measuring facilities. The test equipment comprises an electric motor, an electric brake and the gearbox to be tested. The measuring equipment is incorporated into the test setup. The units to be tested are started up to the individual gear speeds with a gradual increase in load.

In the event of a failure, it is imperative that the gearbox is disconnected from the motor without delay to prevent further damage. This is the only way to ascertain the precise cause of the failure. Given the high speeds involved, only safety couplings with roller bearings are used in such installations.

All HYGUARD® Safety Couplings have the same connection dimensions and can be used depending on the test specimen and the required torque.

Technical details:
Safety coupling
BWL 90 | BWL 125 | BWL 160
Release torque:
10-25 kNm | 20-50 kNm | 45-100 kNm
Weight: 103 kg | 118 kg | 152 kg
Speed max.: 1.700 min^{-1}

For Rolling Mills
Billet mills have particularly high torque-limiting coupling requirements due to the heavy-duty nature of the drives involved. In the event of an overload or sudden standstill of the rolls due to a blockage, the coupling will release immediately. This therefore prevents damage to the pinion stand caused by the high mass moment of inertia of the driving motor.

Technical details:
Safety coupling HDW 1100
Release torque 5.000-10.000 kNm
Speed max. 200 1/min
Outer diameter 1.560 mm
Weight 11.343 kg

For HPGR System
It is essential that high pressure grinding rolls (HGPR) are equipped with a reliable and torque-limiting safety coupling that can withstand the rigours of use. A coupling that is capable of performing its function effectively despite the vibrations that occur in grinding systems.

HYGUARD® Safety Couplings have been successfully used by manufacturers of such grinding systems for years. These couplings have no moving parts and are suitable for use in harsh operating conditions. The HEW 190 model is employed in HPGR systems.

Technical details:
Safety coupling HEW 180
Release torque 49-98 kNm
Speed max. 2.400 1/min
Shaft diameter 180 mm

/ Maintenance

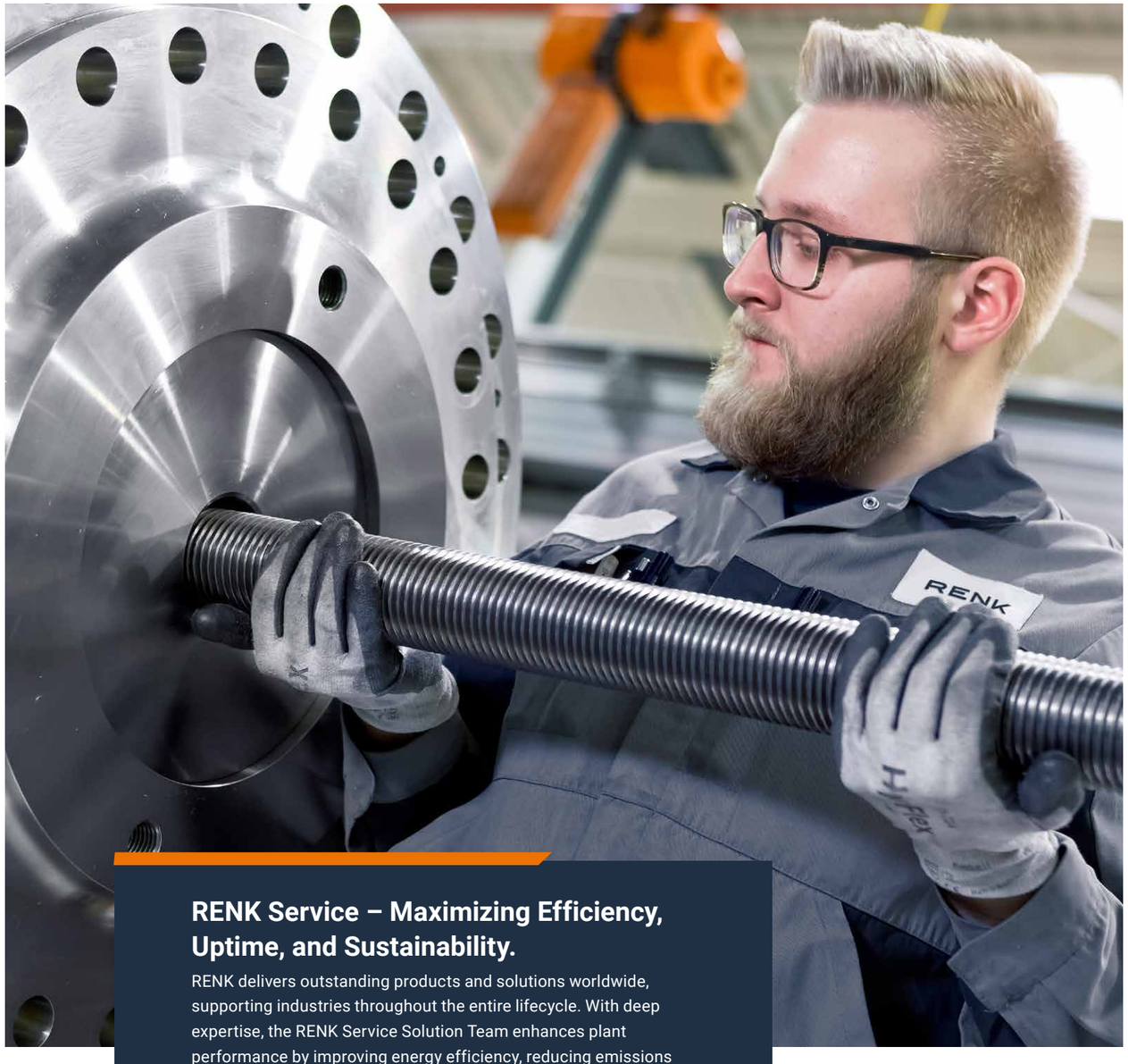
**Worldwide service
for maximum availability**

/ Development

**Custom solutions
for demanding challenges**

/ Commitment

**Dedicated employees advise
with expertise and Know-How**



RENK Service – Maximizing Efficiency, Uptime, and Sustainability.

RENK delivers outstanding products and solutions worldwide, supporting industries throughout the entire lifecycle. With deep expertise, the RENK Service Solution Team enhances plant performance by improving energy efficiency, reducing emissions and costs, and increasing uptime and safety.

We
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freedom.

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