

RENK

COUPLING SOLUTIONS

Intelligent coupling  
solutions for  
all applications.

# Highest requirements. The ideal prerequisite for a long-term connection.



### Quality from a single source.

Precision, innovation and performance are the cornerstones of technical leadership. This guiding principle has defined RENK as a technology company for over 140 years. We are a leading manufacturer in the field of drive train technology. Our extensive product portfolio is used in many applications and industries. The portfolio ranges from standard products to customized solutions. Teamwork is the key to sustained success – it's how creativity, dedication and personal commitment result in excellent products and solutions for our customers.

## / Precision

Uncompromising functionality and quality down to the smallest detail

## / Performance

Maximum transmission performance for all applications

## / Innovation

Pioneering developments for minimal total cost of ownership

### Designed for individual targets. Innovative components achieve precise performance.

We are passionate about designing the best products and quality commitment in manufacturing:

This makes RENK a leading specialist in solutions for controlling extreme requirements in the drive-train in: industrial applications, power generation, demanding maritime applications and in tracked vehicles.

The results are innovative products and solutions that set standards when it comes to quality, precision, and reliability. We provide cutting edge technology for the global industry.

Uncompromising expertise and our focus on holistic solutions ensure success in every project.

RENK is available for you with worldwide commitment and dedication, creativity, and expert knowledge. Our service portfolio is complete from innovative services throughout the entire life-cycle, from consultation and development to maintenance, condition monitoring.

### RENK coupling solutions

- Maximizing torque transmission
- Optimization of the drivetrain
- Reducing service cost
- Precise interaction of the components





# Real customer focus in many industries.



### Conventional power generation

Whether the energy comes from coal, gas, the combustion of biomass or waste: The quality of the couplings used in the field of conventional power production is determined by a high degree of robustness and reliability. This is why designers, plant builders and plant operators have trusted RENK products and solutions for many decades.



### Hydrogen industry

The transformation of today's industry requires new products and processes for the production, transportation, storage, and utilization of hydrogen.



### Marine technology

Quality and safety reliability of the coupling play a particularly important role on the ocean. Whether couplings for rear drives, thrusters, alternative drives or for on-deck applications: RENK offers customized coupling solutions for any situation. Application experience and our commitment to set new innovative technological standards ensure development advances in this industry.



### Hydropower

Where expertise meets innovation. Hydropower plants play an important role in producing electricity from renewable energy sources nowadays. Maximum efficiency and sustainability requires sophisticated and precisely designed solutions. RENK provides the optimal coupling solution, both for new and for retrofit projects.

### Wind power

Innovative and flexible propulsion technology is the key driver for reducing the costs of energy production in the long term. RENK couplings offer maximum reliability and service life for powerful applications up to the multiple megawatt range.



### Oil, gas and petrochemical industries

RENK couplings are suitable for use under extreme operating conditions in special environments. Typical applications are pumps, turbines, and compressors.



### Material handling

Operators of conveyor and crane systems around the world rely on the exceptional load capacity and service life of RENK couplings. With custom solutions, RENK helps its customers to position themselves as marked leaders.

### Mining

Whether in conveyor systems, crushers, mills, fans, in open pit mining or underground: Drive components are exposed to extreme conditions in mining. The experience and knowledge that we put into the development of our couplings creates the perfect combination of long service life and maximum safety.



### Railway technology

High standards apply to couplings in railway drives. After all, the mobility of people and goods depend on the reliability of these systems. Since the 1980s, RENK has been producing coupling series which ensure maximum torque transmission and the compensation of large displacements. We have the ability to consider international, as well as localized national standards to ensure conformity and safety.



### Paper industry

Speed and flexibility play a crucial role in the production and processing of paper and pulp. The optimization of these factors ensures competitiveness.



### Steel and metal industry

Competitive steel mills combine the use of state-of-the-art processes and production technologies with a high degree of reliability. This makes it possible to keep the life-cycle costs of the plants low. Whether in rolling mills, continuous casting lines, roller tables or in reel drives: Low-wear couplings from RENK achieve a very high level of safety.

# Innovative coupling solutions from RENK.

			<b>Gear couplings</b>	<b>Safety couplings</b>	<b>Maintenance-free couplings</b>	<b>Flexible couplings</b>	<b>Synchro-self-shifting clutches</b>
			Gear coupling, Gear joint, Gear spindle	HYGUARD® safety coupling, TORLOC clamping element	RAFLEX® flexible disc coupling, Diaphragm coupling	ELCO coupling	Synchronous clutch coupling
			Page <b>8</b>	Page <b>16</b>	Page <b>20</b>	Page <b>26</b>	Page <b>30</b>
<b>Industries</b>	<b>Field of application</b>	<b>Applications</b>					
<b>Conventional power generation</b>	Power plants (coal, gas, nuclear), waste incineration plants, biomass power plants, synchronous condensing/grid stability	Turbines, generators, pumps	■	■	■	■	■
<b>Hydrogen industry, carbon capture, utilization &amp; storage (CCUS), energy storage, green power generation</b>	Pipelines, gas processing, DRI, CAES, LAES, heat pumps	Compressors, turbines	■		■		■
<b>Hydropower</b>	Pumped storage power plants, Run-of-river power plants	Turbines, generators, pumps	■			■	■
<b>Marine technology</b>	Dredgers, government container and supply ships, yachts, ferries, tug boats, bulk carriers, LNG tankers, oil rigs	Main drives, thrusters, alternative drives, on-deck applications (winches, dredgers, pumps)	■		■		■
<b>Material handling</b>	Material transports	Conveyor systems, crane systems	■	■	■	■	
<b>Mining</b>	Open pit, underground	Conveyor systems, crushers (dredgers), mills, ventilation	■	■	■	■	■
<b>Oil, gas and petrochemical industry</b>	Refinery, oil rig, LNG terminals	Pumps, compressors, turbines	■		■	■	■
<b>Paper industry</b>	Paper production	Paper machines, refiners, pulp preparation, printing machines	■	■	■		
<b>Railway technology</b>	High speed trains, regional trains, trams, subways, freight	Bogie (axle-mounted transmissions, engines), engines, transmissions	■	■	■		
<b>Steel and metal industry</b>	Steel and metal industry	Rolling mills (hot, cold), continuous casting systems, roller conveyors (production, finishing, etc.), reel drives, energy recovery	■	■	■	■	■



# RENK gear couplings.

## / Performance

High misalignment capability  
in harsh environments

## / Quality

High power density for  
continuous use

## / Standard

Broad range for  
custom needs



Gear couplings from RENK impress with a high power density and a variety of possible combinations. They are particularly suitable for compensating axial, radial and angular misalignments as torsionally rigid shaft connections for torque transmissions. Their absolute reliability is also guaranteed in harsh environments or potentially explosive areas such as in mining.



# Gear couplings. Sturdy and powerful.

## Advantages at a glance.

- More than 1 million couplings sold worldwide
- Self-lubrication with oil or grease filling or continuous oil lubrication
- Misalignment of up to  $\pm 1.5^\circ$  for each half of the coupling, up to  $\pm 3^\circ$  in special versions
- Different toothing versions: normalized, hardened, or hardened and ground
- Special requirements such as class approvals, API conformity or ATEX are possible

## RENK gear couplings have a long service life and high power density.

Our customers focus on their business and success. Focus on what matters to you.

Solutions from RENK ensure absolute functionality and smooth operation – even in a demanding environment.

The basis for this is our unique experience in developing and operating gear couplings. This results in ultimate performance in every application while offering a long service life and excellent flexibility.

Gear couplings from RENK work across a multitude of applications.

Successful operators benefit from a variety of possible combinations. Variations include brake discs or spacers shafts, as well as switchgears for versions that can be disengaged during stops as well as those with our HYGUARD® safety coupling.

We also equip RENK's high speed series with our hardened external and internal gearing. This creates light-weight and high-performance couplings that work efficiently and reliably, especially in systems with demanding rotor dynamics.



/ 1939

Patent for the first gear coupling

/  $\leq 40,000$  rpm

Speed range

/  $\leq 8,300$  kNm

Nominal torque

## High speed gear coupling Type ZTKH

- For high and maximum speeds
- Hardened and ground internal and external toothing
- API 671 compliant
- Different sizes upon request



## Basic series (Type SB, SBk, LBk)

Uncompromising freedom to choose: The range of gear couplings from RENK has become the most comprehensive in the world since it was patented in 1939. This opens up countless possibilities for the design of the shaft connection, ensuring that the optimum solution can be found for even the most complex drive applications.



## High speed series (Type ZTKH, TF, TSBL)

The gear couplings of RENK's high speed series are ideal and high-quality solutions for the transmission of high torques at maximum speeds.

# Shifting gear coupling. Ensures availability where needed. For variability in operation.

/ 600 rpm  
Speed range

/ Engagement  
from any position  
due to pre-selection teeth

/ 2,000 kNm  
Nominal torque

### Advantages at a glance.

- Engagement and disengagement of toothed parts, also in synchronous operation
- Connection or disconnection of drives on demand
- Smart oil lubrication cools and cleans the system
- Customized solutions for every need

### Shifting gear coupling. Engagement or disengagement. In any position.

Complete flexibility: The gear coupling from RENK has always been available in a connectable design.

The geared components can be engaged or disengaged at a standstill as well as during the synchronous operation of connected units. If necessary, operators can thus temporarily disconnect certain machines of a drive train and connect auxiliary or alternative drives.

Tailor-made couplings from RENK are available in both horizontal and vertical designs. Shifting gear couplings are usually structured in a double cardanic design. This structure allows for the compensation of radial, axial and angular misalignments of machine shafts.

Consistency leads to success: The running and switching behavior of couplings always remains the same.

The system automatically compensates for any change in the coupling alignment (e.g. caused by a sagging foundation). In the process, an injection lubrication system ensures the constant supply of oil and thus cooling of the component. It also enables dirt particles to be filtered out when changing the oil.

The individual switchgear is either pneumatic or hydraulic while the control system of the clutch coupling is integrated into the entire system's existing control unit. It takes over and controls the optimal engagement and disengagement of the coupling – always as part of a customer-specific solution in accordance with the system's individual requirements.

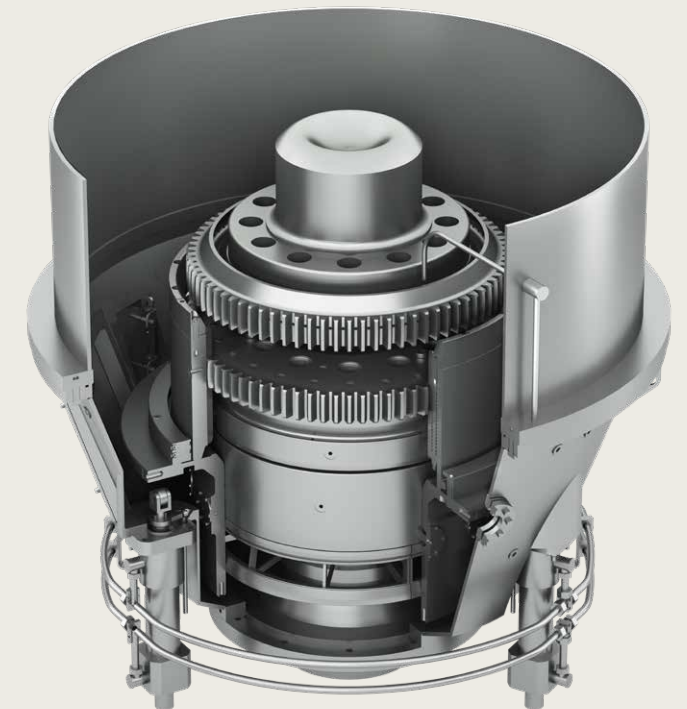


### Shifting gear coupling Type HAW

- Engagement and disengagement at a standstill
- Manual or hydraulic switchgear
- Self-lubrication with grease

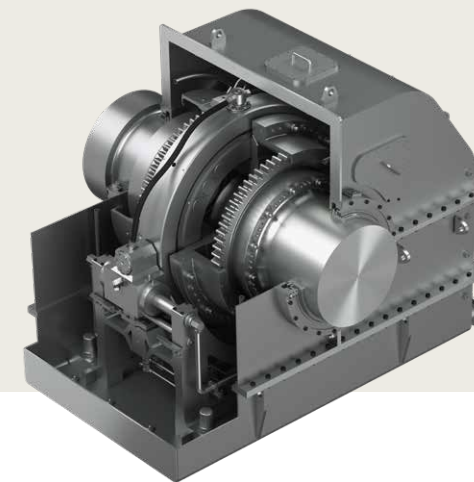
### Vertical shifting gear coupling Type VHBA

- Easy engagement from any position due to pre-selection teeth technology
- Maintenance-free due to continuous lubrication of the toothing



### Horizontal shifting gear coupling Type HBA

- Engagement and disengagement at synchronous speeds
- Hydraulic switchgear
- Maintenance-free due to continuous lubrication



# Gear joint and gear spindle.

/ Maneuverability / Compact design / Reliability

**Mechanical flexibility thanks to the unique shape of the gear coupling**

**High capacity for optimal use of space**

**Proven and sophisticated technology for decades**

**Advantages at a glance.**

- High transmission of torque
- Compact design
- Large angular misalignment
- Misalignment values  $\pm 3^\circ$  valid only for gear spindle
- Lubrication with choice of grease or oil for the gear spindle

**RENK gear joint and gear spindle. Completely interlocking. For complete control under extreme forces.**

RENK gear joints connect the drive unit and lifting device. Nevertheless, the joint connection remains flexible on all sides.

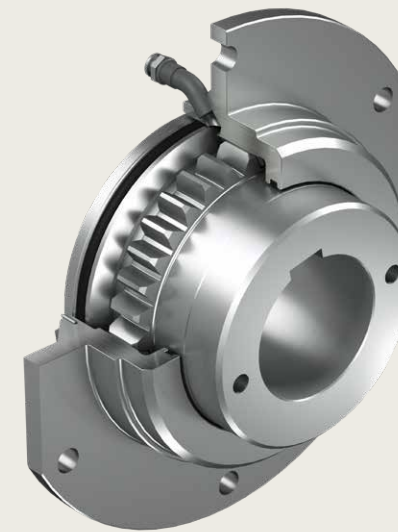
As a connecting element between the drive unit and lifting device, RENK gear joints perform an important dual function for efficient and successful systems.

In addition to transmitting torque, the joint supports the forces acting radial on the drum. A significant advantage compared to a rigid coupling: The joint connection is torsionally rigid, but flexible to all sides.

The RENK gear spindle is completely interlocking and contributes to an extremely high performance capability and reliability.

RENK gear spindles are a logical addition in the product portfolio to the globally well recognized gear couplings. This shaft connection, which is torsionally rigid yet flexible in all directions, does not contain any flexible transmission elements and is therefore the ideal form lock fixing. The purely mechanical flexibility of the RENK gear spindle can be attributed to the special shape of the curved teeth.

Axial, angular and radial shaft misalignments are compensated by a flexibility in all directions. The tooth flanks remain capable of bearing the full load, resulting in the exceptionally high level of performance. Operators also benefit from the high level of availability and simple exchange of the elements.



**RENK gear joint Type FS**

RENK gear joints serve as connecting elements between the drive unit and lifting device. The RENK gear joint is torsionally rigid, yet flexible to all directions, which offers significant advantages in comparison with a rigid coupling. RENK gear joints are primarily used in applications of hoisting and conveyor technology in crane hoists and hoisting drum drive systems.

**RENK gear spindle Type GS**

RENK Gear spindles are primarily used where large torques need to be transmitted uniformly without cardan effects in conjunction with small external diameters. At the same time, a high capability to compensate for misalignments is required. This is especially the case for hot and cold rolling mills, continuous casting systems and straightening presses.





# 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 safety couplings offer a constant, individually adjustable release torque – throughout the entire operation.



# HYGUARD® safety couplings. Perfect system protection and quick recommissioning.

### Advantages at a glance.

- Can be combined with all types of couplings
- Constant trigger torque throughout the entire period of operation
- No operation interruption due to material fatigue, therefore low downtime costs
- Quick availability
- No cost-intensive stocking of spare parts

### Reliable connection with individual limitation of torques.

The HYGUARD® safety coupling extends the service life of machines and protects drivetrains and its systems from damage.

Specially equipped for continuous use with high torque applications and for the torsionally rigid connection of shafts. The torque is transmitted exclusively by frictional engagement. The individually adjustable torque limitation protects against overload, thereby increasing productivity in operation.

The tripping torque is generated by oil-hydraulic pressure and remains constant throughout the operating period.

If the torque exceeds the individually adjusted value, the HYGUARD® safety coupling triggers instantly and the oil pressure drops. Recommissioning requires little time. The system simply needs to be re-pressurized.



/ ≤ 1,600 mm

External diameter

/ ≤ 7,500 rpm

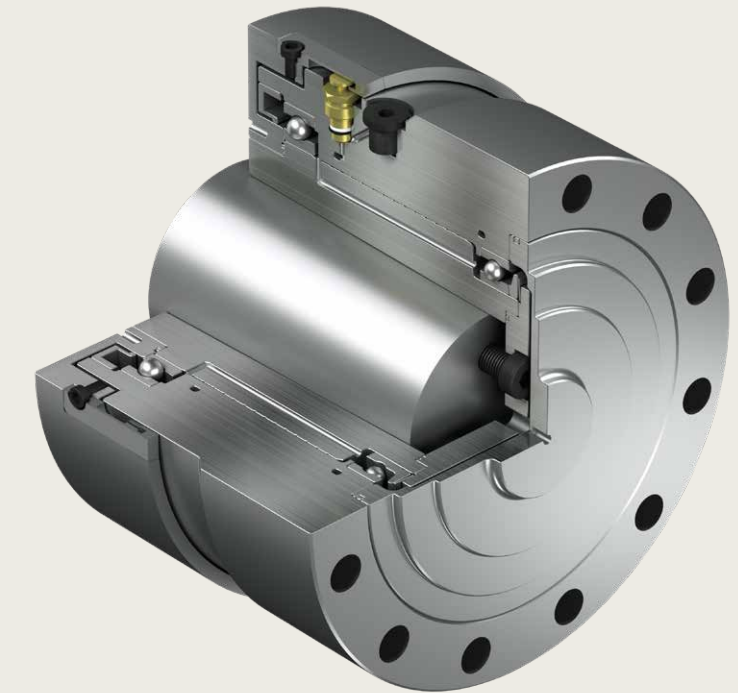
Speed range

/ ≤ 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



### 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.



### HYGUARD® safety coupling series (Type BW, BWL, HDW)

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



## Maintenance-free couplings.

### / Maintenance

Wear-free, low-maintenance materials ensure optimal system operation

### / Performance

High power density combined with a long service life

### / Variability

Usable to numerous applications



Our maintenance-free couplings are another key factor for success. The RAFLEX® flexible disc coupling portfolio offers the ideal solution with our products from basic to high speed series. RENK diaphragm couplings are optimized to the customer and system requirements and can also be designed as dual-diaphragm couplings.

# RAFLEX® flexible disc couplings. Reliable. In any application.

/ -20 °C to  
+200 °C

Temperature range

/ ≤ 36,000 rpm

Speed range

/ ≤ 350 kNm

Nominal torque

### Advantages at a glance.

- Minimal wear therefore high uptime and low maintenance demand
- Torsionally rigid and compensating for offset
- High power density
- 3 – 4 – 5 standard bolt designs
- API 610 and 671 compliant

### RAFLEX® flexible disc couplings. Success through quality. For the system's whole life.

A long service life, even in the most demanding environmental conditions – and complete control over restoring forces in operation.

The alternating bolted disc packs are made of stainless spring steel. Due to the layered structure of the specially shaped discs, these couplings compensate for axial, radial, and angular misalignments between the drive and working machines without generating high restoring forces. High-quality materials ensure a long service life even under the toughest of environmental conditions.

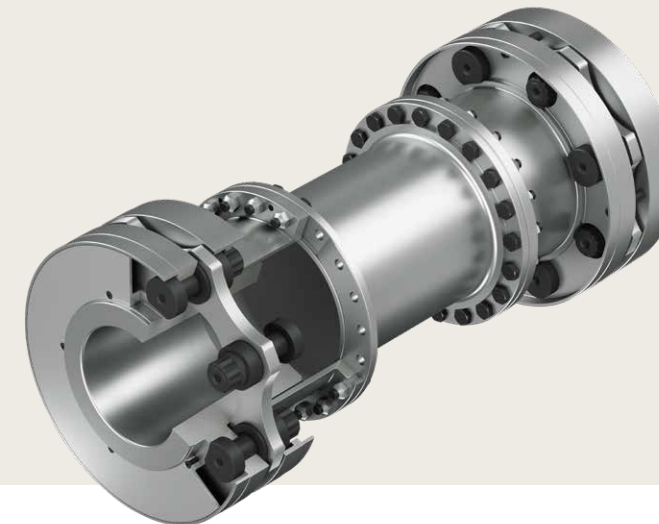
The couplings fulfill the requirements of API 610 or 671, depending on the product family. Use in potentially explosive atmospheres is also possible according to ATEX.

RAFLEX® couplings are specially designed for high-speed applications such as turbines, compressors or generators.



### RAFLEX® flexible disc coupling Type DTL

- API 671 compliant
- High power density



### RAFLEX® flexible disc coupling Type DTR

The RAFLEX® flexible disc couplings of the DTR series are noted for their high power density at maximum speeds.



# Diaphragm couplings. Loss free transmission, even in the event of extreme forces.

/ ≤ 150 MW  
Power

/ ≤ 35,000 rpm  
Speed range

/ ≤ 350 kNm  
Nominal torque

### Advantages at a glance.

- Maintenance-free operation
- Compensation of axial and angular misalignments
- High temperature-resistance
- Low restoring and bending moments
- Lightweight
- Very high balance quality
- High concentricity and axial run-out accuracy

### Superior control and long service life. Even at extremely high torques.

A unique diaphragm secures misalignments, even under load. A long service life and freedom from maintenance ensure a high level of availability.

A profiled single-disc diaphragm transmits the highest torques at the highest speeds safely, reliably and always without any problems – even in performance ranges of up to 150 MW – making it suitable for our high speed series. The individually shaped diaphragm for every application gives the coupling its flexibility to compensate for axial, radial, and angular misalignments, even under load, without generating high restoring forces in the process.

The basic design consists of just a few structural elements. This makes assembly and handling much easier for the operator.

Diaphragm couplings from RENK impress for every custom made solution with the highest production quality.

The production process of our diaphragm couplings forms the basis for their outstanding availability. Every single component is characterized by absolute concentricity and axial run-out accuracy. A final overall balancing enables low-vibration operation of the system.

Every diaphragm coupling is designed for the specified application using FEM calculation method. This results in customer-specific solutions for the maximum success of each system.



### Diaphragm coupling Type MCM

- API 610 and 671 compliant
- Up to 0.33° misalignment
- Temperature range – 60 °C to +200 °C
- Up to 200 m/s circumferential speed



Customization is the standard with the MC series. Customized diaphragm shape and quantity according to technical requirements.

# Flexible couplings.

## / Versatility


Flexible in use  
for many industries

## / Quality

Durable and reliable  
operation

## / Safety

Effective damping  
of impacts and vibrations



Due to the adaptability and high-quality design, RENK ELCO couplings have proven in tens of thousands of drives used in conventional energy production, in mining and hydropower, as well as in the oil, gas, and the petrochemical industry. Torsionally flexible couplings have the task of effectively damping operational shocks and vibrations in drive systems. They also absorb longitudinal displacements and permit limited radial and angular displacements of the shafts to be connected.



# Torsionally flexible coupling, type ELCO. Safety and protection. For every system.

- / Compensation  
of angular and radial misalignments
- / 10 – 500 mm  
Shaft diameter
- / ≤ 540 kNm  
Nominal torque

### Advantages at a glance.

- Particularly good torsion spring and damping properties
- Reduction of torque and speed shocks
- Reduction of torsional vibrations
- Failsafe and consistent transmission of torque
- Compensation of radial and angular misalignments
- Compensation of longitudinal displacements
- Easy axial removal of the profile sleeves and bolts

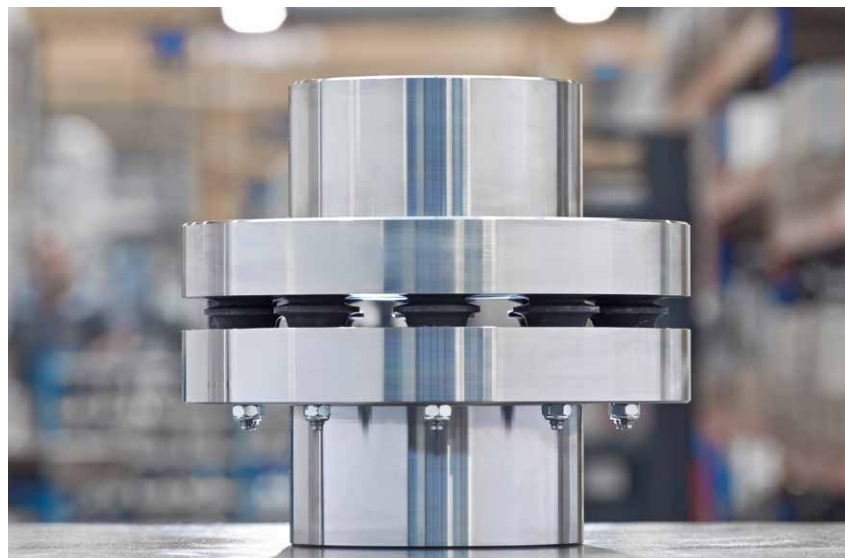
### ELCO bush pin type couplings dampen impacts and vibrations. Effectively, reliably and in all types of systems.

The installation of a correctly designed ELCO coupling reduces torque and speed shocks and protects systems from damage and consequential costs.

The spring and damping properties of the profiled coupling sleeves effectively limit torsional vibrations. The special design of the ELCO coupling ensures the failsafe and consistent transmission of torque. It permits limited radial and angular misalignments of the shafts being connected and absorbs longitudinal displacements.

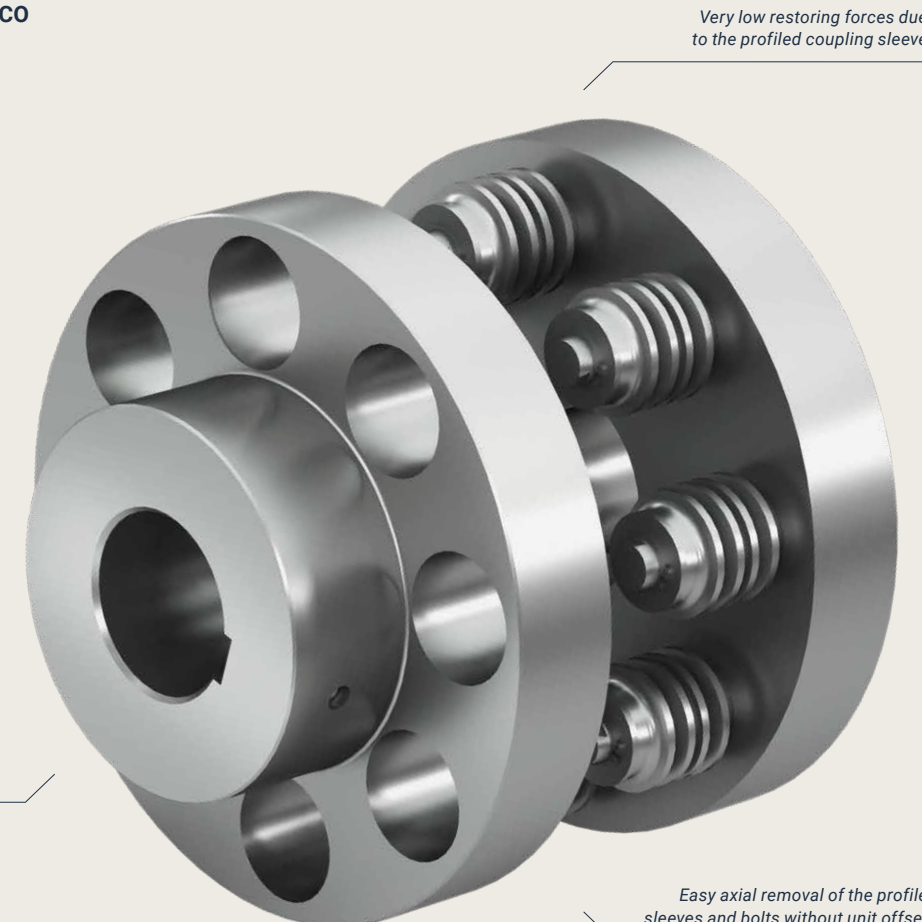
The versatility of the ELCO coupling makes it a popular component in many industries.

The coupling flanges of the adaptable ELCO coupling consist of steel or a special material. The standard design has one-sided or alternately arranged transmission elements. Of course, custom designs are also possible upon request. The sleeve material is usually made from a modified Natural Rubber (NR), alternatively from Chloroprene Polymer (CP) or Nitrile Rubber (NR).



### Flexible coupling bush pin type ELCO

- Design: Standard design with one-sided or alternately arranged transmission elements, special designs
- Sleeve material: Modified natural rubber, chloroprene polymer or nitrile rubber



If you have any questions about this product, please contact:  
RENK GmbH Hannover



# Synchro-self-shifting clutches.

## / Functionality

Purely mechanical automatic engaging and disengaging

## / Individuality

Solutions for challenging applications

## / Durability

Wear-free couplings due to hydrodynamic lubrication



Customized and successful: High-quality synchro-self-shifting clutches from RENK are the ideal solution for demanding applications. In addition to functioning as a synchro-self-shifting clutch, the integrated flexible gear coupling ensures that the two connected machines are balanced. The integrated flexible gear coupling results in a reduced number of bearings. Hence the total dimensions of the drive train might be further reduced. These couplings enable constant and effective operation when standard methods reach their limits.



# Engage. Disengage. Automatic. Synchronous clutch couplings.

## Advantages at a glance.

- Automatic engagement up to very high speeds
- Most compact and robust clutch coupling in the market
- Compensation of angular errors, radial misalignment and axial movements
- On-site maintenance possible
- Many additional design features to suit the applications

## Additional features.

- Locking device to prevent disengaging of clutch (transmission of negative torque)
- Isolating devices to prevent clutch engagement by hand lever, centrifugal force or hydraulics/remote
- Overload protection (torque limiting and/or separating)
- Thrust bearing
- Encased solutions (up to 4 bearings and 2 shafts)
- Electrical insulation
- Balked protection to safely reactivate pawls from silent mode

## Synchronous clutch couplings are synchro-self-shifting clutches with an integrated gear coupling.

RENK-MAAG couplings can compensate large axial displacements, radial misalignment and angular errors.

Synchronous clutch couplings type MS and HS automatically engage as soon the input machine is overrunning the output machine - and allow mode changes within seconds without stopping the drive train.

They consist of pawls sliding over a ratchet toothing, detecting the synchronicity of the machines. This principle is well known from a bicycle. As soon as the input catches up with the output, pawls engage and the clutch screws itself into engagement via the helical teeth and transmits the positive torque (form fit). Thanks to hydrodynamic lubrication the pawls are wear-free.

The mechanical synchronizing clutch type MS disengages automatically due to the helical load teeth as soon as the input speed falls below the output (freewheeling, ratcheting). For high speed applications, the MS clutch is equipped with a spring damper system to withstand high acceleration rates and engagement speeds.

Additional design features (see box) permit the optimum use of the self-shifting clutch to suite a wide range of applications and industries.

The hydraulic supported HS clutch stays engaged thanks to the straight load teeth and can therefore transmit positive and negative torque like a classic gear coupling.

The HS clutch can be disengaged on command by the hydraulic unit (remote controlled) at full speed after reducing the transmitted torque below 10% of the allowable operating torque.

The HS clutch engages automatically similar to the MS clutch using pawls and ratchet teeth, but uses the hydraulic unit to finalize the engagement of the the spur teeth.

### Typical applications MS:

- Synchronous condensing (SynCon)
- Combined cycle power plants (CCPP)
- Combined heat and power plants (CHP)
- Energy recovery systems
- Combined marine propulsion systems (e.g. CODELAG, CODAG, COGAG)

### Typical applications HS:

- Synchronous condensing with generator start-up converter for the gas turbine
- Applications above 1,100 kNm

If you have any questions about this product, please contact:  
RENK-MAAG GmbH, Winterthur

## / Economy

Shorter, more efficient system layouts possible

## / Maintenance

Wear-free and on-site service

## / ≤ 4,000 kNm

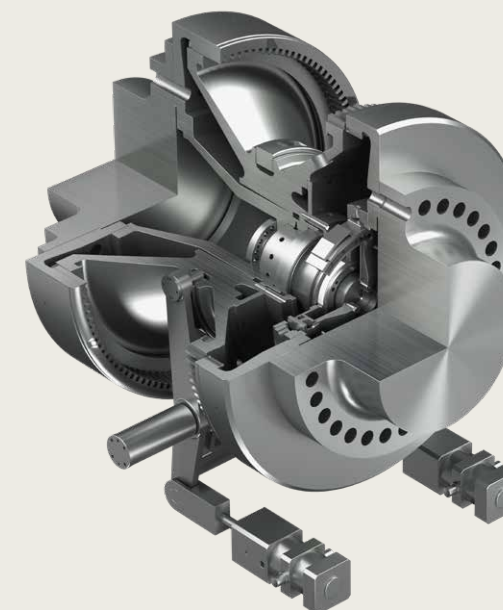
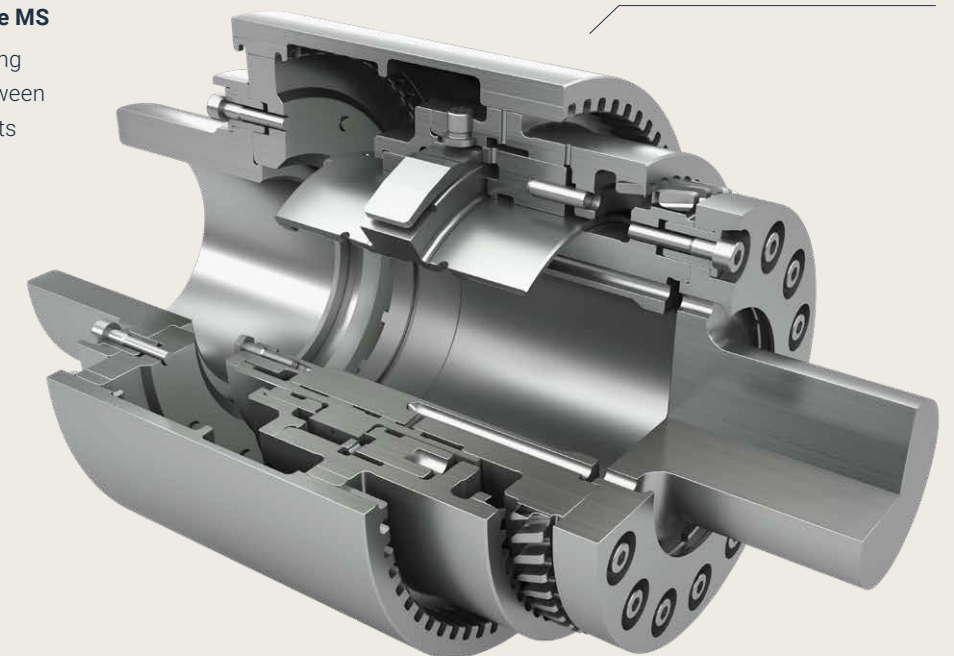
Nominal torque

### Synchronous clutch coupling Type MS

The MS synchronous clutch coupling provides a form-fit connection between synchronously rotating system parts and separates automatically at non-synchronous speeds.

≤ 1,100 kNm nominal torque

≤ 18,500 speed range rpm



≤ 4,000 kNm nominal torque

### Synchronous clutch coupling Type HS

Due to their straight load toothing, synchronous clutch couplings of the HS type enable the transmission of the full torque in both directions without disengaging (disengaging on command).

# Engage. Disengage. Shifting gear coupling.

## Advantages at a glance.

- Disengage on demand at nominal speed <10% load.
- High speed and high torque capability.
- Compensation of angular, radial and axial deflection.
- Full separation of input from output (no drag).
- Maintenance of decoupled machines possible.

## Shifting gear couplings type ZD engage and disengage on command (not automatically).

The ZD shiftable gear coupling is the simplest clutch version that allows engagement in standstill using a hydraulic shift unit similar to the HS clutch.

After engagement, the ZD clutch operates like a classic gear coupling, i.e. can transmit full positive and negative torque (without disengaging).

The ZD clutch can be disengaged on command at full speed after reducing the transmitted torque below 10% of the allowable operating torque.

The hydraulic shift unit pulls out the shiftable clutch part, so that the first tooth pair is fully disengaged, while the second tooth pair is just axially shifted.

When disengaged the ZD clutch is completely separated and has no drag.

This allows maintenance work on the decoupled machines, that are in standstill, e.g. compressor or turbine.

### Typical applications:

Compressed air energy storage (CAES) with multiple compressors and turbines.

## / High speed

Up to 11,200 rpm speed and high torque capability

## / Maintenance

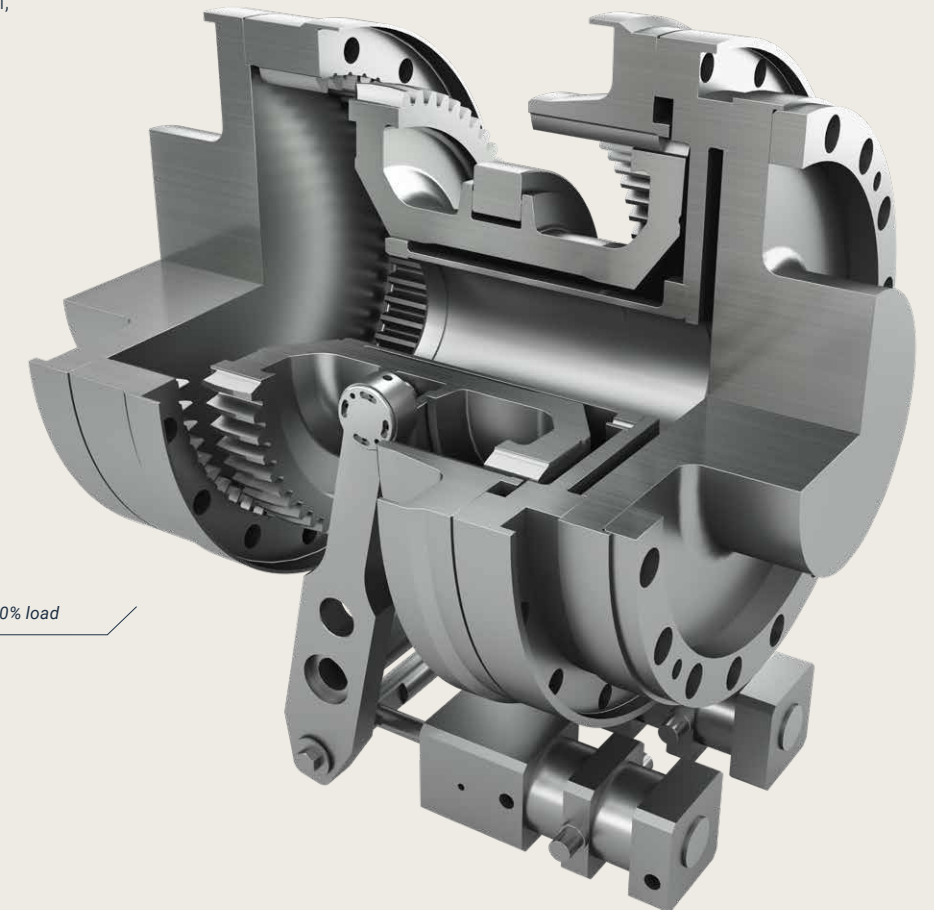
Full separation allows maintenance work on decoupled machines

## / ≤ 4,000 kNm

Nominal torque

## Shiftable gear coupling Type ZD (Disengagable toothed coupling)

Engage on command in standstill, no drag, complete separation.



disengage at full speed < 10% load

If you have any questions about this product, please contact:  
RENK-MAAG GmbH, Winterthur



# RENK Services.

## / Maintenance

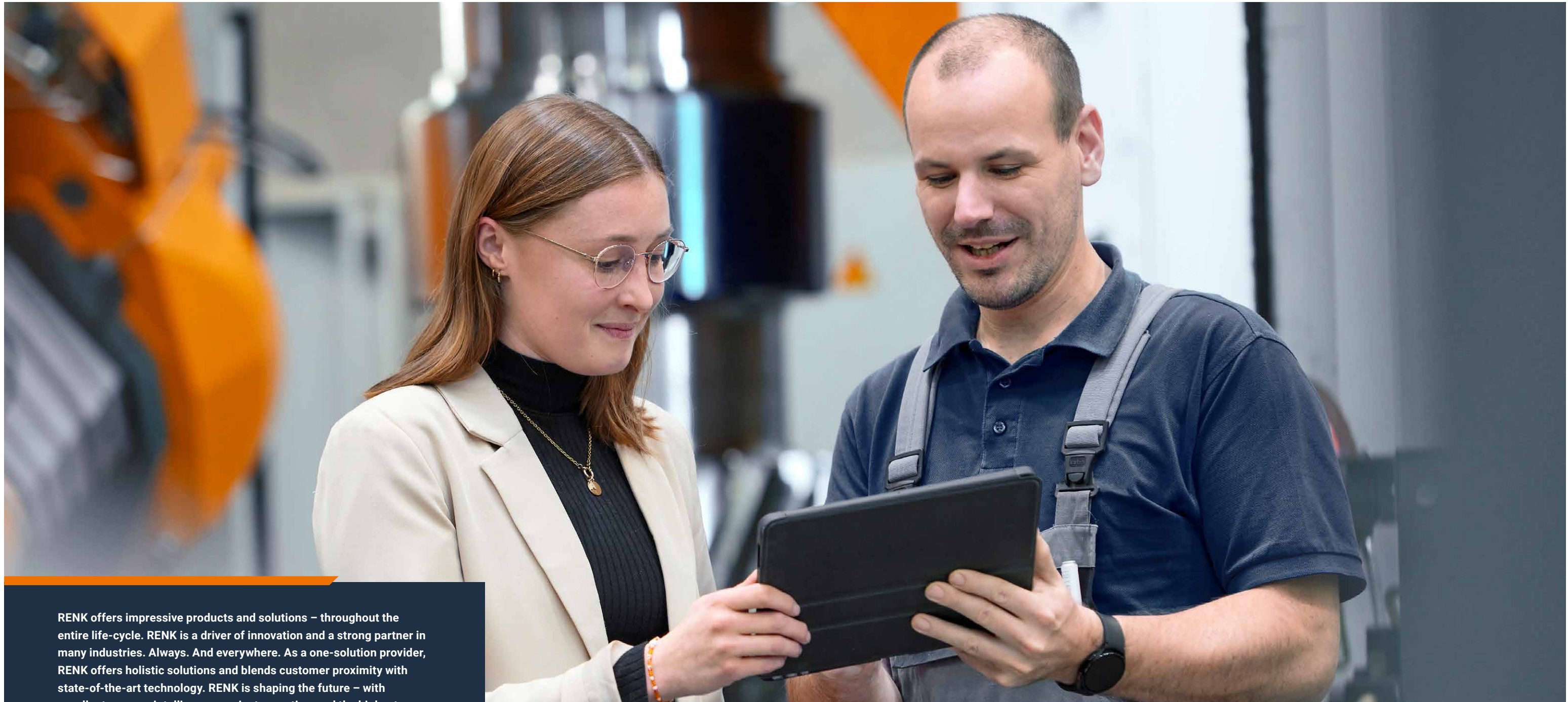
Worldwide service  
for maximum availability

## / Development

Custom solutions  
for demanding challenges

## / Commitment

Dedicated employees advise  
with expertise and Know-How



RENK offers impressive products and solutions – throughout the entire life-cycle. RENK is a driver of innovation and a strong partner in many industries. Always. And everywhere. As a one-solution provider, RENK offers holistic solutions and blends customer proximity with state-of-the-art technology. RENK is shaping the future – with excellent process intelligence, project expertise, and the highest quality standards for methods and materials.

# RENK life-cycle. Successful solutions for all systems.

RENK is a driver of innovation and a strong partner. The unique RENK life-cycle makes us the ideal one-solution provider for holistic and reliable solutions from a single source.

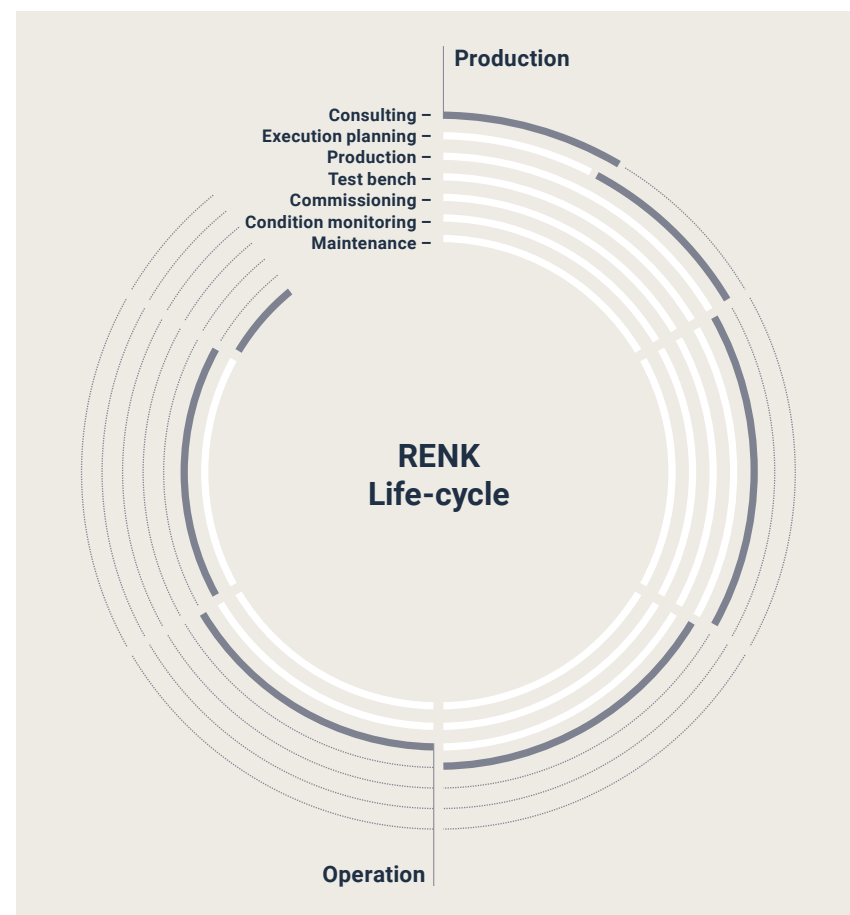
**Consultation, production, control: Custom solutions from the start.**

Expertise and experience – always applied appropriately and with commitment: The perfect basis for reliable and profitable systems.

The RENK life-cycle ensures success and efficiency – for every system. Operators benefit from our unique expertise. Experts accompany every project step-by-step. They advise, plan, produce and optimize with modern testing systems. This results in superior system solutions. Application-specific. Innovative. Future-proof.

**Commissioning, condition monitoring, maintenance – ensuring economic efficiency.**

Intelligent maintenance strategies create space for savings and increased efficiency. Highest production resources availability. Always and in every environment. The RENK life-cycle creates the ideal prerequisites for this before the first work cycle even begins. It forms the solid basis for individual systems that analyze and continuously optimize ongoing operations in real-time. The longer service life of the components and the longer maintenance intervals ensure maximum utilization of system performance.



RENK takes global responsibility for efficient and sustainable systems. We do everything to ensure the availability of components and the competitiveness of the system.

**More than maintenance: On-site service, upgrades and genuine parts.**

Maintenance from RENK means service without compromise – anywhere, anytime. RENK takes care of planning and executing all the tasks involved in new assemblies, commissioning, inspection, and maintenance work. Our qualified assembly and commissioning personnel also carry out standard upgrades and overhauls. In this way, RENK guarantees the operational reliability of all systems.

Optimal planning, the availability of qualified personnel, and the necessary parts and tools ensure that all work runs smoothly. You can depend on the work being performed professionally and on time. You will receive a transparent cost breakdown from RENK. Thanks to our expertise, we offer quick service to guarantee the maximum availability of your systems.

**Comprehensive services for maximum system availability.**

**On-site service:** Many repairs can be carried out on-site at our customers. Our competent service techs have the necessary skills and certifications to be able to provide actual field service.

**Examination and repair:** If it is not possible to repair the system directly, then we will analyze the issue and optimize our products at our local service sites or at the manufacturing plant. Then it is like new.

**Upgrades:** Upgrades can increase the efficiency and thus the value of existing systems – they can often be carried out on site by our specialized personnel. This saves money and reduces down time.

**Genuine parts:** RENK parts are unmatched in terms of their performance, functionality and quality. Genuine parts ensure decisive advantages in efficiency and success.

**RENK Maintenance and Services**

Maintenance around the world. RENK works precisely and successfully. Our experts stand for expertise and reliability at every location.

- On-site service
- Examination and repair
- Upgrades
- Genuine parts





## Trusted Partner.

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