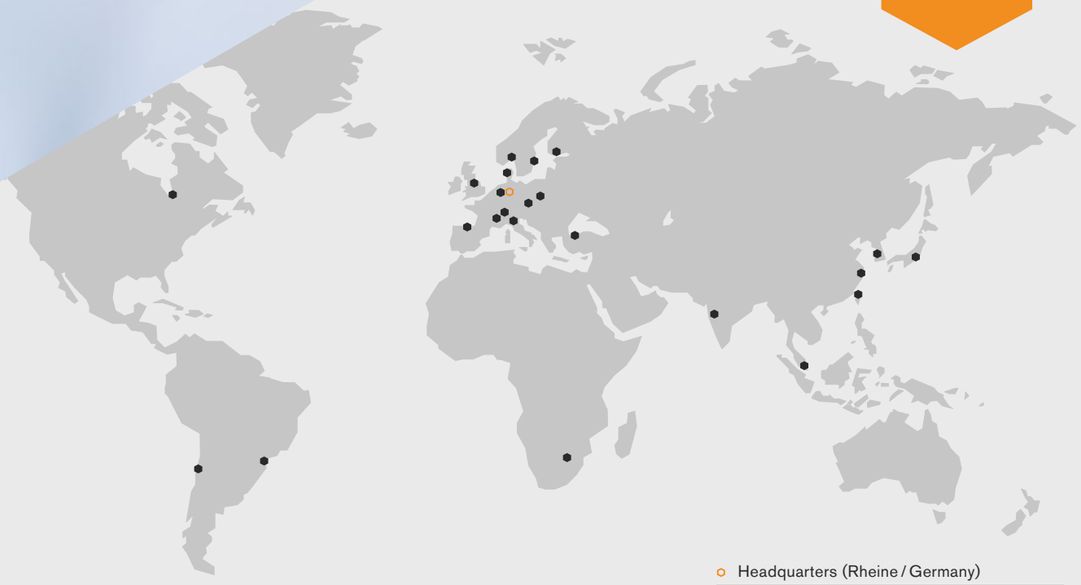
PART OF EXCELLENCE

Reliable performance in demanding fields

Components for Off-Highway

Made for Motion KTR

KTR worldwide – Our locations for quality and service.



- Headquarters (Rheine / Germany)
- **24** subsidiaries

90 sales partners

More than 1,200 employees worldwide

KTR Systems – Solutions across industries for a global market.

As a progressive and innovative knowledge partner for our customers, we actively shape the technological future. By consciously responding to the needs of our customers and having a deep understanding of their technology, it is possible for us to develop cross-industry solutions. In doing so, we always strive for excellence and optimise existing approaches. And this has been the case since 1959.

PART OF EXCELLENCE

Our philosophy of PART OF EXCELLENCE is reflected in every single component and service we provide. With our expertise and innovation, we achieve top performance together with our customers. KTR is at home in industrial markets on all continents with more than 500 employees at its headquarters in Rheine, more than 1,200 employees worldwide, 24 subsidiaries and over 90 sales partners. As a **leading manufacturer of high-quality drive technology, braking and cooling systems and hydraulic components** KTR is a reliable partner for all companies that want to keep moving. As a leading expert in these fields, we take pride in offering our versatile solutions in the following industry:

→ Off-Highway

Our components for Off-Highway

USE FOR E-MOBILITY

Ever stricter emission standards, ever higher demands on efficiency and productivity – the industry Off-Highway is under constant innovative pressure.

A steady increase in output is expected in the agricultural machinery segment. Farming widths and speeds are increasing, IT-supported precision farming and driverless concepts are becoming more and more established.

The construction machinery sector is confronted with ever more compact dimensions and ever stricter exhaust emission standards. The entire drivetrain has to be redesigned every time new standards are adapted.

Couplings, coolers and brake systems are vital for the development of efficient and solid mobile machines. As a development partner and supplier to international manufacturers, KTR supports its customers in adapting drives to new requirements and emission regulations. The results of the required torsional vibration calculations and designs can be verified in the KTR test field afterwards.

Our products are primarily used in the following sectors:

Applications:

Construction machinery	Agriculture
Diesel generators	Balers
Dewatering pumps	Biogas plants
Forklift trucks	Drills
Hydraulic excavators	Forestry machinery
Mobile compressors	Mixer-wagons
Wheel loaders	Farm loaders
Asphalt finishers	Combine harvesters
Road cutters	Mowers / cutting systems
Telescopic handlers	Grape harvesters
Single drum compactors	Telescopic handlers

DRIVE COMPONENTS

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5 **BoWex®** Curved-tooth gear coupling®

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NEW!

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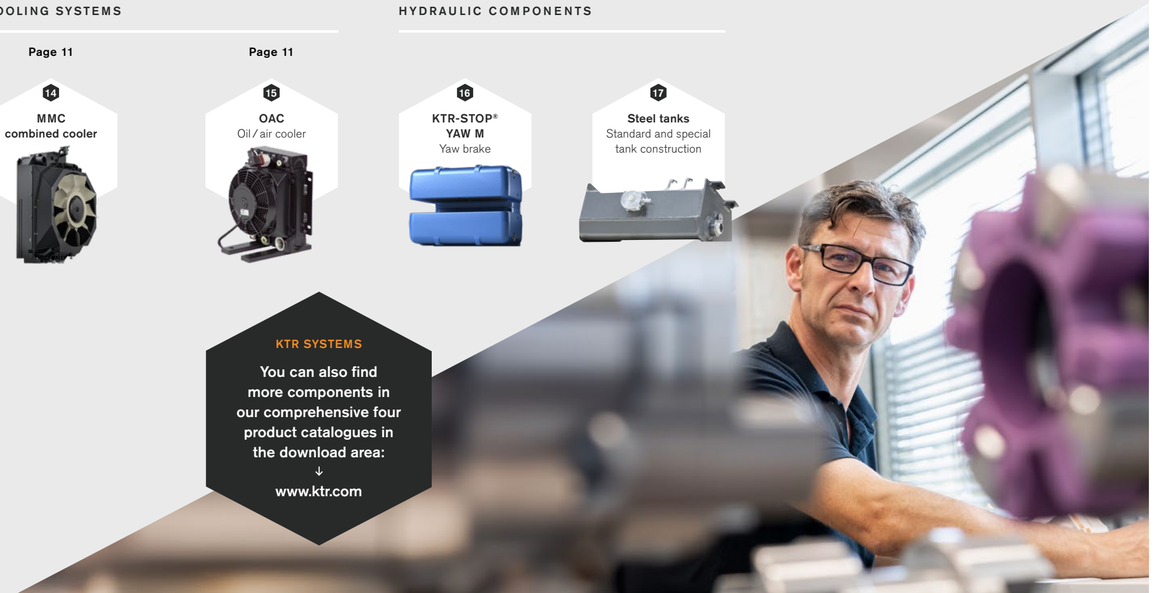
HYDRAULIC COMPONENTS

16 **KTR-STOP® YAW M** Yaw brake

17 **Steel tanks** Standard and special tank construction

KTR SYSTEMS

You can also find more components in our comprehensive four product catalogues in the download area:
↓
www.ktr.com



You can find more information on our website **www.ktr.com/en/industries**

Our components for Off-Highway
in comparison

1 up to 7

KTR components

	1	2	3	5	6	7
Max. torque [Nm]	6,600	1,850	70,000	2,500	6,000	25,000
Max. bore diameter [mm]	125	60	275	125	110	240
Torsionally stiff	⬡			⬡		
Torsionally flexible		⬡				
Highly torsionally flexible			⬡		⬡	⬡
Maintenance-free	⬡	⬡	⬡	⬡	⬡	⬡
Shear type	⬡	⬡	⬡	⬡		⬡
Compact dimensions	⬡	⬡	⬡	⬡	⬡	⬡
Single-cardanic	⬡	⬡	⬡	⬡	⬡	⬡
Double-cardanic				⬡		
Axial plug-in	⬡	⬡	⬡	⬡	⬡	⬡

8 up to 13

KTR components

	8	9	11	12	13
Max. torque [Nm]	5,600	35,000	4,500	5,600	520
Max. bore diameter [mm]	140	200	100	140	55
Torsionally stiff					
Torsionally flexible		⬡	⬡		⬡
Highly torsionally flexible	⬡			⬡	
Maintenance-free	⬡	⬡	⬡	⬡	⬡
Shear type					
Compact dimensions	⬡	⬡	⬡	⬡	⬡
Single-cardanic	⬡	⬡	⬡		
Double-cardanic	⬡	⬡	⬡	⬡	⬡
Axial plug-in	⬡	⬡	⬡		⬡

You can find more information on our website **www.ktr.com/en/industries**

The requirements are manifold: zero emissions, noise reduction, reduction of fossil fuels or minimising production waste. Our wide range of couplings, coolers, brakes and hydraulic components for Off-Highway offers solutions and sets the course for long-term and trusting partnerships. We make our contribution with passion and creativity, true to our motto PART OF EXCELLENCE.

Wide range of couplings for torque ranges up to 70,000 Nm

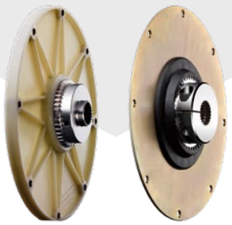
0 to 6,600 Nm nominal torque

1

BoWex® FLE-PA / FLE-PAC
Torsionally stiff flange couplings

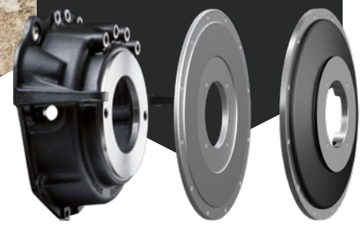
The **BoWex® FLE-PA** and the **BoWex® FLE-PAC** are torsionally stiff curved-tooth flange couplings in the material combination of nylon / steel for diesel engine drives in combination with hydraulic pumps. While the PA flange is characterised by high mechanical rigidity, the PAC flange is characterised by excellent wear resistance.

- Torsionally stiff curved-tooth flange couplings
- High torsion spring stiffness, resonance-free operation
- Maintenance-free due to material combination nylon / steel
- Excellent resistance to wear with high loads



4

Pump mounting flange
Mounting flanges



For mounting hydraulic pumps to the diesel engine KTR supplies **mounting flanges** sizes SAE-1 to SAE-6 according to the SAE mounting dimensions. The pump mounting flanges are made of steel and cast iron for hydraulic pumps with flange connections according to SAE-A, -B, -C, -D and -E as a design with 2 holes and 4 holes.

- Mounting flanges according to SAE sizes SAE-1 to SAE-6
- Special flange connections available
- Pump connection housing made of cast iron for direct mounting to the back plate of the engine

0 to 1,850 Nm nominal torque

2

MONOLASTIC®
One-piece, flexible flange coupling

The **MONOLASTIC®** flange coupling is ideal for use in diesel engines and hydraulic pumps up to an output of 300 kW. Different shore hardnesses enable optimum adaptation to the respective requirements. The coupling is available for both SAE and DIN pump spline shafts. The **MONOLASTIC®** is available with 3-hole and SAE connection.

- One-piece, torsionally flexible flange coupling
- For the drive in diesel engine / hydraulic pump up to 250 kW
- Available in various kinds of Shore hardness
- Axial plug-in in combination with pump spline shaft

0 to 2,500 Nm nominal torque

5

BoWex®
Curved-tooth gear coupling®

The double-cardanic curved-tooth gear coupling **BoWex®** is suitable for all applications of mechanical engineering and hydraulics. The material pairing of nylon / steel in our gear coupling enables maintenance-free operation and eliminates the need for grease or oil lubrication.

- For all applications in the field of mechanical engineering and hydraulics
- Maintenance-free due to material combination nylon / steel
- Taper and inch bores for hydraulic pumps

→ Also available as a carbon fibre-reinforced sleeve

3

BoWex-ELASTIC®
Highly flexible flange coupling

The coupling type **BoWex-ELASTIC®** is a highly flexible flange coupling with SAE and special flange dimensions for mounting to I.C.-engines. The design is characterized by a mounting flange made of either polyamide or steel.

- Highly flexible flange coupling
- Damping torsional vibrations
- Compensating for displacements on the driving and driven side
- Axial fitting without subsequent screwing

6

VAROLASTIC®
Highly flexible flange coupling

0 to 6,000 Nm nominal torque

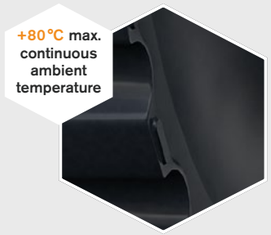
The new **VAROLASTIC®** is a highly flexible main drive coupling with variable torsion spring stiffness, for example for use between the motor and gearbox. At low loads or idling operation, the coupling is very torsionally soft. As the operating load increases, the torsion spring stiffness rises disproportionately.

- Series available for nominal torques up to 6,000 Nm
- High overload capability
- Variable, progressive torque characteristic
- Temperature range +120 °C

KTR FOCUS

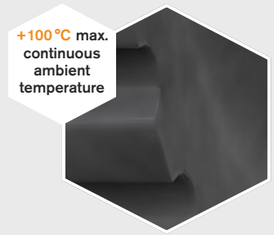
Materials for flange couplings

Elastomer compounds



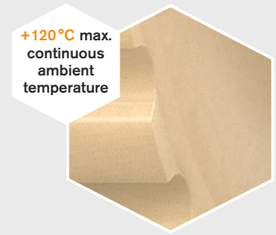
Natural rubber (NR)

- Linear torsion spring stiffness
- Good abrasion resistance and strength
- Tear-resistant and high impact elasticity



Synthetic rubber (EPDM)

- Long service life
- Nearly linear torsion spring stiffness
- High weather and aging resistance
- High damping power



Silicone rubber (SI)

- Very good resistance to greases and oils
- Lightly progressive torsion spring stiffness
- High weather and aging resistance
- Very high damping power

7

SINULASTIC®
Highly flexible flange coupling

SINULASTIC® is a modularly structured series of highly flexible flange couplings based on a disk-shaped coupling body. Four practical basic versions with individual properties cover a wide range of applications primarily for diesel engine drives, but also general drive tasks.

- Highly flexible flange coupling with SAE and special dimensions
- Damping torsional vibrations
- Compensating for displacements on the driving and driven side
- Elastomer element available in various qualities

8

EVOLASTIC®
Highly flexible shaft coupling

The **EVOLASTIC®** is a highly flexible shaft coupling. Being an all-rounder coupling it can be used in a large number of main and auxiliary drives in mechanical and plant engineering. Due to its torsionally flexible characteristics, it provides vibration and acoustic insulation in the drivetrain.

- Highly flexible coupling
- Flexible use in mechanical and plant engineering
- Damping torsional vibrations
- Maintenance-free by material combination elastomer / steel

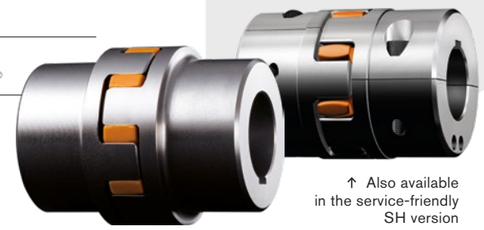
0 to 35,000 Nm nominal torque

9

ROTEX®
Torsionally flexible jaw coupling

ROTEX® torsionally flexible jaw couplings are elastomer couplings characterized by a compact design. In spite of low weights and mass moments of inertia of the elastomer couplings they are able to transmit high torques.

- Jaw coupling for power transmission ' damping torsional vibrations
- Axial plug-in, easy assembly, maintenance-free
- Standard spiders made of high-temperature resistant T-PUR®



↑ Also available in the service-friendly SH version

10

CLAMPEX®
Clamping set

CLAMPEX® clamping elements (clamping sets) enable a backlash-free and frictionally engaged connection between cylindrical shafts without keyway and hubs are preferred, among other things, as an alternative to a feather key connection considering their benefits.

- Backlash-free shaft-hub-connection
- Simultaneous transmission of torque and axial force
- Maintenance-free
- Operating temperature from -20 °C to +160 °C

Serviceability, safety and reliability! That is what KTR couplings stand for!

KTR FOCUS

Intermediate shaft coupling – The perfect solution for agricultural engineering

Available in lengths up to 2,500 mm DBSE

ROTEX® with p.t.o. shaft connection
Intermediate shaft coupling

11

The **ROTEX® coupling with p.t.o. shaft connection** was specifically developed for connectable mechanical auxiliary drives of agricultural machines of agricultural machines and other mobile machines. The application range comprises, as an example, forestry mulchers, loading wagons, presses, manure spreaders and back winches as well as rotary piston pumps and compressors.

- Single- or double-cardanic
- Damping vibrations
- Backlash-free shaft-hub-connection
- Axial plug-in
- Compact dimensions

0 to 5,600 Nm nominal torque

12

EVOLASTIC® D2H
Highly flexible intermediate shaft coupling

EVOLASTIC® D2H is a highly flexible intermediate shaft coupling for the use in main and auxiliary drives in mechanical and plant engineering. The intermediate shaft serving for bridging large shaft distances is available in customised lengths. Subject to its torsionally soft feature it serves for insulating vibrations and acoustics in the drive train.

- Highly flexible intermediate shaft coupling
- Flexible use in mechanical and plant engineering
- Damping torsional vibrations
- Maintenance-free by material combination elastomer / steel

ROTEX® ZRS jaw coupling for bridging smaller and bigger shaft distances. The lightweight ZRS made of high-strength aluminium captivates by a very high overall stiffness. The high stiffness of the aluminium pipe arises from the structure.

- Double-cardanic jaw coupling with half shells (half shell coupling) and intermediate shaft (cardan shaft)
- Lightweight made of high-strength aluminium impresses with a very high overall stiffness
- For bridging large shaft distances
- Good damping properties due to double arrangement of spiders

0 to 520 Nm nominal torque

13

ROTEX® ZRS
Torsionally flexible intermediate shaft coupling

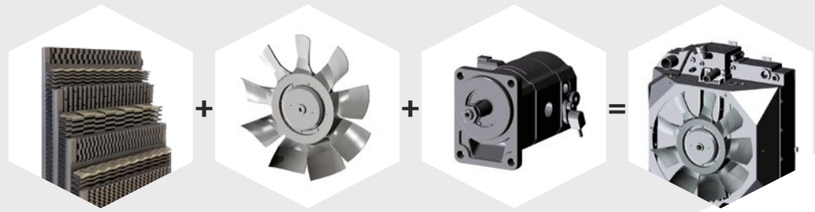
KTR FOCUS

Customized cooling systems – adapted to our customers' needs

Our KTR wind tunnel

Find out more in our news:

Our **MMC combined coolers** are tailor-made and adapted to the needs and conditions of the respective application. Being used as a water cooler, series MMC tempers the cooling water. As an **oil cooler**, it cools the hydraulic or transmission oil, and as a charge air cooler, it cools the combustion air. Such a high-performance cooling system fulfils all requirements for the management of media temperatures, such as use as a fuel cooler.



Laminae | Fans | Drive | MMC combined cooler

14

MMC combined cooler

Plate and bar design

Depending on the application, our **MMC (Mobile Machinery Cooler) series** combined coolers combine different media such as oil, water, fuel and air in a cooling system that is designed and dimensioned for the specific application.

- Tailor-made, compact and efficient system solutions
- System for various media (charge air, water glycol, oil, fuel, etc.)
- Engineering, project management and personal advice

Compact and high-performance oil cooler type **OAC standard.** Standard fan drive consisting of 230 / 400 V motor, 12 V / 24 V fan and hydraulic fan drive. In addition available with electric motor and 60 Hz frequency. Besides the “marine” and “ATEX” versions, this series is available in combination with thermal or pressure bypass valves as well.

- Easy to service and good options of cleaning
- Low sound pressure level
- CE certification
- Painting for salty environment / near the coast (CDP + powder painting)
- Pressure bypass 4 and 6 bars

2 to 350 kW cooling capacity

15

OAC
Oil/air cooler

E-mobility

Take a look at our new white paper:

KTR FOCUS

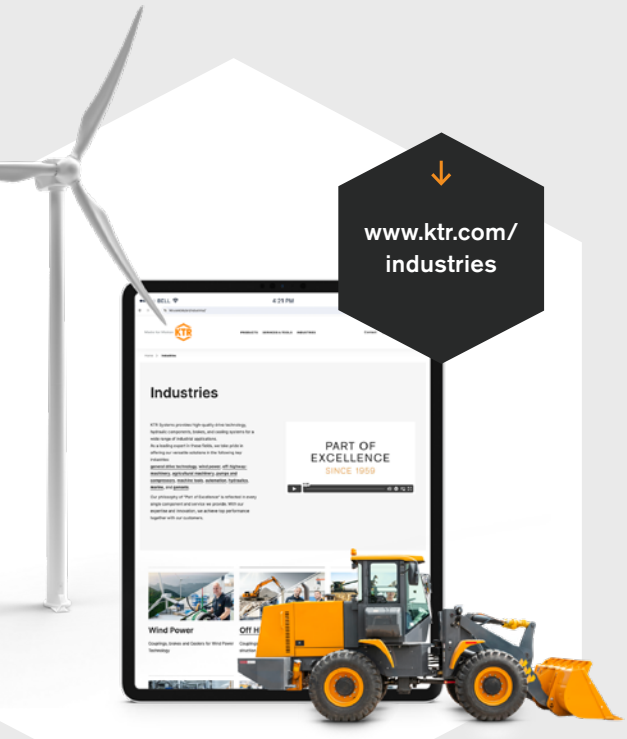
E-mobility for Off-Highway machines – will the upper power ranges soon follow?

For decades, the combustion engine was the predominant drive concept for agricultural and construction machinery. In the future, however, other concepts will probably replace the combustion engine. First and foremost e-mobility.

Battery-electric primary drives for mobile agricultural and construction machinery are already available in the lower power range. This results in different parameters for coupling selection. The flange coupling is replaced by a shaft coupling to connect the electric motor to the mechanical gearbox. Being a development partner and supplier of international manufacturers, we are happy to help you adapt the drives to new specifications and emission standards.

Changing conditions
due to new drive concepts

ROTEX® or BoWex® M(-C)
suitable as shaft couplings



Solutions across all industries on our KTR website.

KTR Systems supplies high-quality products for a wide range of industrial applications. We are proud to be able to offer versatile solutions across all key industries with our drive technology, hydraulic components, brakes and cooling systems.

No matter what industry you need components for, we look forward to supporting you with our expertise and innovative strength to meet your challenges. Achieve peak performance with us! Find out more about the diversity of our portfolio on our website:

www.ktr.com

Headquarters
KTR Systems GmbH
Carl-Zeiss-Straße 25
48432 Rheine, Germany
P: +49 5971 798-0
F: +49 5971 798-698 or 798-450
mail@ktr.com, www.ktr.com

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