

## **Achieving Great Things Together**

An introduction to our company

## MADE FOR MOTION: WHAT IT IS ALL ABOUT.

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## We have set all sorts of things in motion for more than 50 years.

Since its foundation in 1959, KTR has engaged in developing powerful drive and brake components. More than 50 years later the family-owned company located in the Münsterland region is a reliable partner for all those who want to set things in motion.

Can you spare a minute for a short journey through time? It all started in Rheine, KTR's headquarters in Westphalia. In 1958 the design engineers of our parent company set out for further developing the proven curved-tooth gear coupling. The result was revolutionary: a maintenance-free coupling combining nylon and steel for the first time. Its name was BoWex. The ROTEX followed shortly after which was the first registered trademark coupling to become a DIN standard. When hydraulics entered machinery and plant engineering in the 1960s, the product

portfolio was extended by hydraulic components. In the subsequent years numerous new products made by KTR were developed.

And that already brings us to the present time. Now our engineers and the innovation team implement innumerable new developments in our state-of-the-art R & D center in Rheine and the new competence center for brakes in Schloß Holte-Stukenbrock every year. The remarkable aspect is that many of the new products build on one another, supplement and complete each other, in this way forming closely linked system components that can be applied crossfunctionally.



### Future with a system.

KTR have consistently continued to extend their expertise in building systems over the past few decades. Today we are a leading manufacturer providing solutions with highest quality standards in the fields of drive technology, brake and cooling systems as well as hydraulic components to our global business partners.

So what would be more obvious than adapting our company name to this development? KTR Kupplungstechnik GmbH has become KTR Systems GmbH.

The change of name takes account of the growing diversity of our performance range demonstrating the global markets and our customers that we are prepared to take over just more responsibility in machines and plants. "You can only make big things happen bearing small details in mind."

Andreas Nauen, CEO of KTR

### Our portfolio covers almost everything except for "it does not work" and "it does not exist".

#### **Drive Technology**



Always a good connection: It started with BoWex®. The first curved-tooth gear coupling comprising a steel hub free from wear forms the foundation of KTR's product portfolio. In the course of decades many couplings were added the most widely known of which are the jaw-type couplings ROTEX® and ROTEX GS® and the steel lamina coupling RADEX®. In addition KTR generates new impetus to drive technology in terms of numerous new couplings for applications from mining to clean room technology time and again. We also set standards with clamping sets, precision joints, torque limiters and torque measuring shafts while continuing to develop our product portfolio constantly. It goes without saying that KTR adapts each of those components to the specifications of your project following your particular requests.

#### **Brake systems**



You must be able to brake what you drive. According to this motto KTR revolutionized the hydraulic brake first, then tripled the performance range of electromechanical brakes and finally instructed both systems of ramp-controlled braking via Intelli-Ramp®. Today the long-established company is among the world's very few manufacturers providing their customers with two brake systems that operate in a totally different way yet supply optimum results: the hydraulic KTR-STOP® and the electromechanical EMB-STOP®.

#### Cooling systems



Wherever hard work is performed, temperature compensation must be provided – whether with mobile or stationary hydraulics or wind turbines. For that purpose KTR supplies various cooling systems covering oil/air coolers, oil/water coolers and combined coolers. Among those are the new high-performance coolers MMC eco and OAC eco generating only as much cooling air as required based on sensors.

#### Hydraulic components



Hydraulics always makes things moving – and KTR is always the right contact with respect to motion. That is why our hydraulic components have a solid position in stationary hydraulics. Even the standard range covers almost all demands: bellhousings, damping elements, tanks, temperature control and monitoring and many more. Apart from that KTR supplies individual special sizes and customized products. As requested and adapted to your needs.

## Local roots, global presence.

Those who are always on the move get around a lot – in case of KTR even around the whole world.

Our tight service network made up of 8 production sites and 24 subsidiary companies meanwhile spreads from Brazil to Japan, from Norway to Australia. Just like KTR Systems, all these company are part of a group of highly motivated specialists. All in all more than 1100 employees of the KTR Group worldwide together with more than 90 sales partners ensure to satisfy the high quality standard accompanying the name of KTR. That is why you can be sure that wherever KTR is written our proven quality is included.

To date the home of this quality is the place where KTR was founded more than 50 years ago: Rheine in the northern Münsterland region. Even if we act as a global player, we are still a family-owned company entirely self-financed having strong roots in our home region. Rheine is not only the local production site, but here at the headquarters is where the heart of KTR beats. The know-how developed here is shared globally by training schemes in KTR's subsidiary companies. In this way we make sure that the expertise of German engineering is available throughout the world.



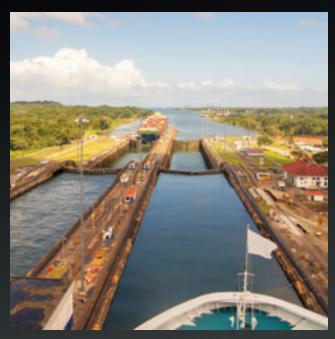
### KTR sets things in motion around the world.



In the turbines of the tidal power plant MeyGen off the northern coast of Scotland.



In the tunnel drilling machines for the Gotthard base tunnel in Switzerland.



In the new lock gates of the Panama Canal.



In the drive of the new Zugspitze cableway in Germany.



In the drives of the mobile panoramic tower City Skyriser in the Netherlands.



In the conveyor belts of the copper mine Antucoya in Chile.



In the boiler feed pumps of the steam power plant Shuqaiq in Saudi Arabia.



In the concrete pumps for building the access roads to the stadiums of the Soccer World Cup in Brazil.

## We are happy to have our quality standards verified by third parties.

If you are satisfied, we are starting to tick the right boxes. If you are happy, then we are here to stay. Just like you, KTR makes strict demands of its products. To ensure that this is the case, we offer maximum quality assurance along the entire value chain. This begins right at the production planning stage: integrating all operating data into the ERP system ensures that production progress is carefully recorded every step of the way. This prevents breakdowns, speeds up all processes and guarantees that orders are fulfilled without a hitch.

Many components and systems are developed and tested in the Power Transmission Center, a modern R&D centre with a multifunctional assembly hall. In this centre alone, engineers have more than 25 hydraulic and electric test benches at their disposal on which extensive durability and load tests are carried out. For example, KTR uses 3D measurement devices to check the dimensional stability of couplings and then compares the data with results from other tests, such as a finite element analysis (FEA). Torsional vibration

calculations are also made for complete power transmission systems to ensure that they not only run smoothly, but also for a long time.

As there is nothing tougher than reality, KTR likes to test its products in near-realistic conditions. In the purpose-built environmental chamber, for example. Here, components are put through their paces and must prove that they can reliably perform their tasks in extreme environmental conditions at temperatures as low as -50°C.

"Made by KTR is not a promise, it's a duty."

Guido Butscher, Head of Quality Management



#### Certifications

KTR also meets special requirements in external tests. KTR was one of the first companies working with power transmission technology to receive DIN EN ISO 9001 certification, which it also holds for its production plants in Poland, China, India and the USA. Approval has also been received from all major classification societies.















Certificate















## We have the right answer wherever movement is required.

On land, on water and high in the air: KTR products are a driving force whenever it comes to keeping things moving. KTR is a global market leader in wind power technology and is at the forefront of pump technology. Many renowned organisations also place their trust in KTR's expertise and reliability in many other industries such as marine engineering, agricultural and construction machinery engineering, railway and transport engineering, and materials handling technology and tooling machine engineering.

That should come as no surprise as, after all, KTR offers an extensive selection of products. From the small 10 mm coupling weighing 6 grams for adjustment drives in car headrests through to the 2-tonne coupling that's 9 metres long and used for installations supplying entire regions with water, our products boost productivity and reduce life cycle costs in many sectors.

For instance, two thirds of all trams in Germany and numerous local trains the world over feature KTR components. This also includes THE SQUAIRE Metro, the fully automatic, cable-propelled people mover at Frankfurt airport, which features tailored high-performance couplings based on the REVOLEX® KX-D.

Our products even quietly perform their tasks on the seabed. In a research project for the world's largest tidal power sta-

tion off the north coast of Scotland, the maintenance-free steel lamina coupling RADEX®-N is already in its element – 30 m below the surface.

Incidentally, we pass on experience we gain in a sector without hesitation. For example, the anti-corrosion coating originally developed for seawater-resistant shaft connections in ship and offshore engineering now also ensures that extreme environmental influences do not cause KTR components in agricultural machine engineering to shut down.







## We do not want to predict the future, we want to prepare for it.

It's best if you set your own course for the future. KTR is an unrelenting pioneer with a high capacity for innovation and a constant stream of new designs. For example, an innovations team was set up in-house in 2012; its task is to identify potential and evaluate current trends. And in April 2015, the new Power Transmission Center was opened; it ranks amongst the most modern R&D centres in North Rhine-Westphalia.

## Tomorrow's technology? KTR laid the foundations yesterday

40% of German drivers can see themselves topping up their next new car from a power socket. Completely new challenges needed to be met in order to turn this vision into a reality, for example, preventing leakage current that attacks the gears.

KTR found a remedy suitable for production in curved tooth coupling® BoWex®. Further developed with additional clearance between the coupling hubs, it was then put to the test in automotive construction, in the Mini E. This is how a coupling with perfect properties based on a classic construction emerged as an electric isolator. Innovation can also mean seeing tried-and-tested methods from a completely new perspective – and then transporting them into the future.

KTR has already been taking new approaches to power transmission technology for some time. In hydraulics, we are the first provider ever to launch a cooling system, the OAC eco, that features staggered speed control for stationary hydraulic power transmission systems. It is sensor-based and always supplies exactly the right cooling capacity. It also features an innovatively simple auto-cleaning system. Fan rotation is reversed for 60 seconds, either automatically or at the press of a button. The air pressure can then be used to reliably sweep dust and dirt away. Impressively, this is all carried out while the system is in operation.

## Pole position in renewable energies

Our long-standing, knowledge-driven company is also continuously providing a breath of fresh air with innovative products when it comes to wind turbines. 1988 saw KTR supply the first coupling for wind power. We are now a global market leader among suppliers. Components from Rheine now feature in over 65,000 wind turbines, with thousands of new ones being added every year. Thanks to this expertise, KTR is also a supplier to many of tomorrow's other renewable energy fuels today. Whether for tidal power, wave power or solar heat, KTR will be there. And it already provides reliable quality when a particular technology is still in the experimental stage.



#### KTR takes responsibility

We take a clean approach to work – particularly when it involves the environment. People already expect us to be a cut above the rest.

Why does KTR play such a significant role in power transmission and fluid engineering? One reason is our careful approach. We simply take a closer look at everything. And you can be sure that this also applies where the environment is concerned. That's because ecology and economy are not incompatible contradictions, but do in fact go hand in hand. A conservationist approach to handling resources is increasingly becoming an economic necessity. Wastage not only damages nature but is also a huge cost factor due to rising prices in energy and raw materials.

#### Methodical green business practices

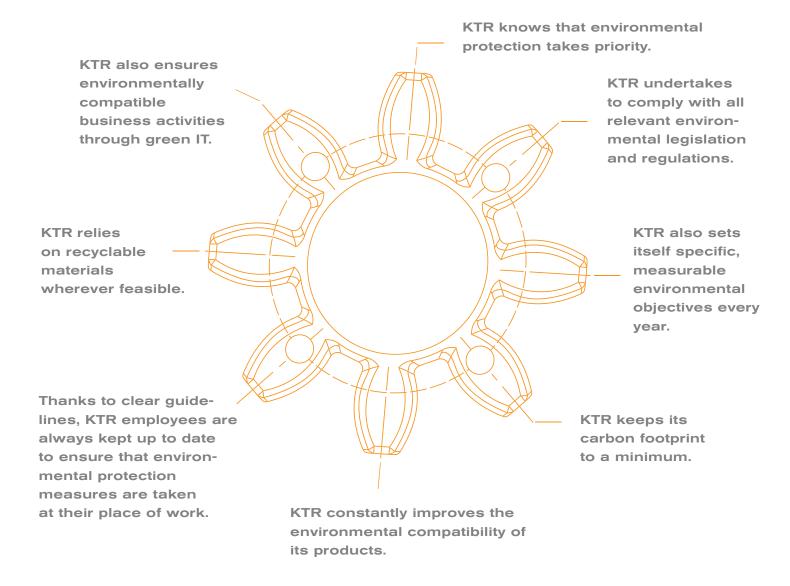
As a result, we make use of almost fully recyclable materials in production. Wherever feasible, KTR opts for recyclable materials instead of throwing materials away.

KTR is also constantly moving forwards in green IT. To cut out miles of driving and flying, we increasingly find ourselves pressing the video conference button – and not stepping on the accelerator. What's more, our IT equipment has been brought in line with our environment-, energy- and resource-conserving approach throughout its life cycle.

## The KTR environmental strategy: signed, sealed, delivered

Incidentally, an environmentally friendly approach has a long tradition at KTR. We were already certified to DIN EN ISO 14001 back in 2008. This honour is awarded to companies which take environmental protection measures in line with the PDCA method: plan, do, check and act. KTR has successfully implemented these requirements. Which is no wonder, really: after all, this method is precisely the approach that KTR takes when tackling every task.





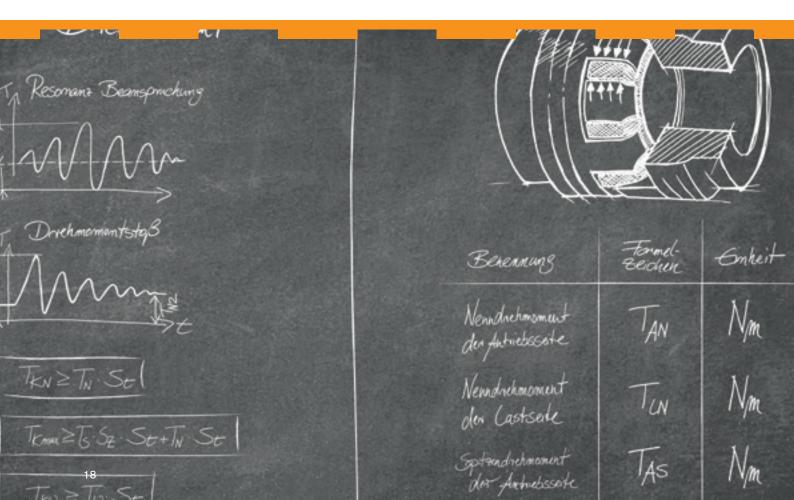
### We still deliver quality even if the product does not exist yet.

Good work requires a solid foundation. That's why KTR can assist you right from the planning stage – if you so wish. To help you, we not only put specially trained sales employees and application engineers at your disposal, but also KTR's website. Just a few clicks on www.ktr.com and you will quickly find an expert who you can bombard with questions in the 'Product manager' section.

#### Useful tools let you clock off earlier

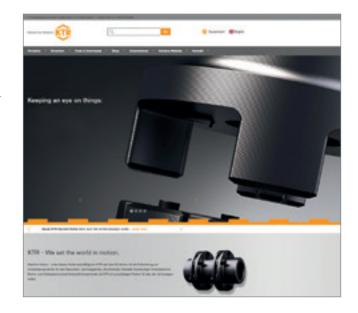
The KTR website offers yet more practical help to make your work easier, such as its extensive library of CAD models. With both 2D and 3D models, it ensures that you know what's going on at all times. What's more, there is no need to waste time searching for missing installation instructions – you can simply print them out.

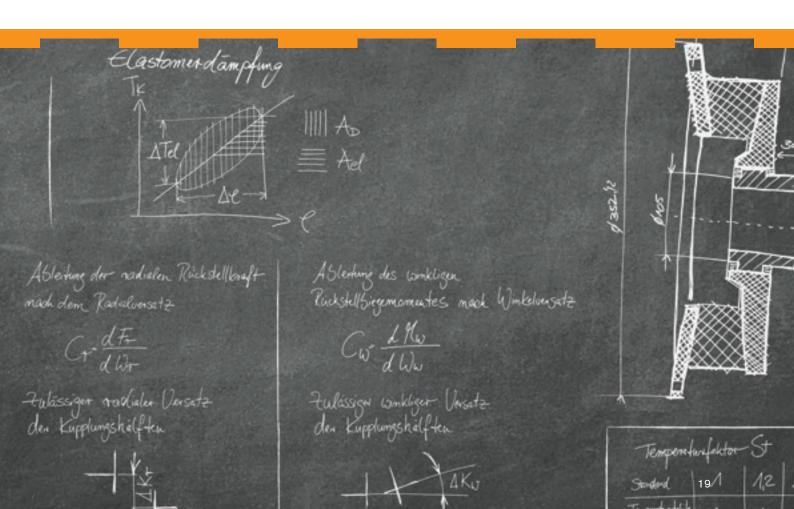
You will also find practice-based design and configuration tools for power transmission technology, hydraulic components and cooling systems on the KTR website. Simply enter the relevant parameters and a click later you'll have the right product design and size on screen – a useful service



for thousands of products. In many cases, a data set is also instantly available as a DXF file. Your design draughtsmen will be pleased that they can import the component into their CAD program right away. This ensures that you complete planning much more quickly and are ready to get your project off the ground.

Of course, you can also download the latest product catalogues and brochures and glance through the extensive range at your leisure. If you prefer to browse rather than scroll, just use the online order form and have KTR send you its literature in the traditional way: by post.







## We keep many cogs turning to get deliveries out quickly.

KTR not only provides efficiency in power transmission systems but also in its own logistics. This starts with the KTR shop, which is open 24 hours a day, continues with the constant availability of 3,500 standard KTR products and ends with orders which are delivered on the same day within Germany if placed before 2 p.m.

If you are a regular client, we will make it even easier for you. Simply rely on needs-based call-off orders as per Kanban agreements to save time on materials planning and optimise warehousing. Or would you prefer set supply times? No problem – KTR will fully adapt to your requirements.

#### Just in time, all the time

We guarantee the best connections at KTR, which is why our company is also networked with clients and business partners via an SAP data hub. This also enables direct communication with other systems via Electronic Data Interchange (EDI) and guarantees short response times for orders, changes to orders, order confirmations, dispatch

notifications and invoices. Or, to break it down: the data hub ensures speedy order processing. It is not only praised by experts, but also ensures that clients are reliably supplied when time is of the essence.

The cogs are also set in motion in our in-house logistics centre to make sure a shipment arrives at a client's premises on time. From the 61,000 holding spaces and 8,100 pallet spaces to the four loading ramps, the flow of goods is controlled by a barcode scanning system. Picking, labelling and packing run just as smoothly as the drawing up of shipping and export documents. And then it's time to hit the road: every day, our distribution partners deliver more than 800 shipments on time to locations across the world – and clients can check the status of their orders at any time using a track and trace system. Keeping up to speed is also no problem: at KTR, this is the result of an optimised logistics process.



## PRODUCT OVERVIEW DRIVE TECHNOLOGY

















Properties	ROTEX®	POLY-NORM®	POLY	REVOLEX® KX-D	ROTEX® GS	TOOLFLEX®	RADEX®-NC	COUNTEX®
Properties	Elastic jaw and pin & bush couplings				Backlash-free servo couplings			
Max. torque (Nm)	35.000	67.000	6.100	1.220.000	5.850	600	300	1
Max. peripheral speed (m/s)	60	35	35	60	80	40	35	40
Max. bore diameter (mm)	200	280	140	650	110	65	55	14
Torsionally stiff	1419.					7/19	T. 7.	
Torsionally flexible						10000		26000
Highly flexible						17/11/1		
Backlash-free			H (			10.		
Maintenance-free					700	10. ·		•
Failsafe			77		•			
Non-failsafe								
Compact design	•							
Double-cardanic			W. 1975		7	141.		
Single-cardanic								
High power density			THEF			7777	7///	
Axial plug-in								•
All-steel		4000						
Contactless	177							













Properties	RUFLEX®	KTR-SI	KTR-SI FRE	SYNTEX®	SYNTEX®-NC	KTR-SI Compact		
Properties	Torque limiters							
Max. torque (Nm)	6.800	8.200	60.000	400	265	3.100		
Max. bore diameter (mm)	120	100	200	50	42	80		
Backlash-free								
Compact design	•				•			
High power density	•		•					
All-steel								
Slipping torque limiter	•							
Ratched torque limiter								





















BoWex <sup>®</sup>	BoWex® HEW Compact	GEARex®	RADEX®-N	RIGIFLEX®-N	RIGIFLEX®-HP	BoWex® FLE-PA / FLE-PAC	BoWex- ELASTIC®	MONOLASTIC®	MINEX®-S
Gear couplings			Steel lamina couplings			Flange couplings for I. C. engines			Magnetic couplings
2.500	5.000	2.750.000	280.000	280.000	330.000	5.300	39.000	1.500	1.000
30		-	65	100	200	50	18.5	50	
125	125	630	330	400	380	125	180	60	90
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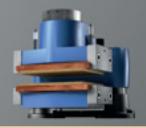


Properties	DATAFLEX®		
Properties	Torque measuring shafts		
Max. torque (Nm)	50,000		
Torsionally stiff			
Backlash-free			
Maintenance-free			
Contactless			

### PRODUCT OVERVIEW BRAKE SYSTEMS









Azimuth brakes

Active floating caliper brake

Passive floating caliper brake

Rotor Lock

Hydraulic brakes KTR-STOP®







Active floating caliner brake

Passive floating caliper brake

Potor Lock

Electromechanical brakes EMB-STOP



KTR- STOP® NO

Hydraulic clamping system



IntelliRamp

Electronic brake control

# PRODUCT OVERVIEW HYDRAULIC COMPONENTS AND COOLING SYSTEMS



### **Overview of literature**

The KTR product portfolio is as varied as its areas of use, whether you require the perfect power transmission system, effective brakes, space-saving cooling systems or precision hydraulics on land, water or high in the air. These catalogues and brochures offer an overview. Available at <a href="https://www.ktr.com">www.ktr.com</a>

#### **Product catalogues**







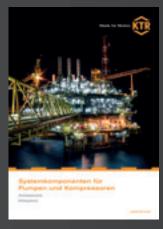


#### Individual sector brochures

















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Algeria Business Center -Pins Maritimes

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