ŽOLLERN

Solid metals. Fine solutions.

Rotary table systems

Always a revolution ahead

Solid Metals.
Fine Solutions.
The knowledge about metal, molding and the manufacturing of components is a solid base for customized solutions beyond the usual – and have proved for the success of ZOLLERN worldwide.«

For 100 years:
Always one revolution ahead

1910 Rückle GmbH Werkzeugfabrik was set up in Esslingen on Neckar by Hermann Rückle.
The company starts production of cutting and stamping tools, as well as boring and clamping devices.

1938 Delivery of the first motorized rotary table

1972 Company moves to Römerstein-Böhringen

2009 Acquisition of Fördertechnik Mayer's know-how

Since 1925 - development and manufacture of machine jaw vices and and angle plates.

1968 Delivery of the first NC rotary table.
In the very same year Ottmar Schöller takes over the management as executive partner

2015 Absorption of ZOLLERN Group.
Integration in drive segment.

The ZOLLERN-factory
The ZOLLERN-group is a worldwide acting company with more than 3.000 employees. We are counting drive (automation, gearing and winches), friction bearing, machine-building elements, cast technics and steel section to our segments.

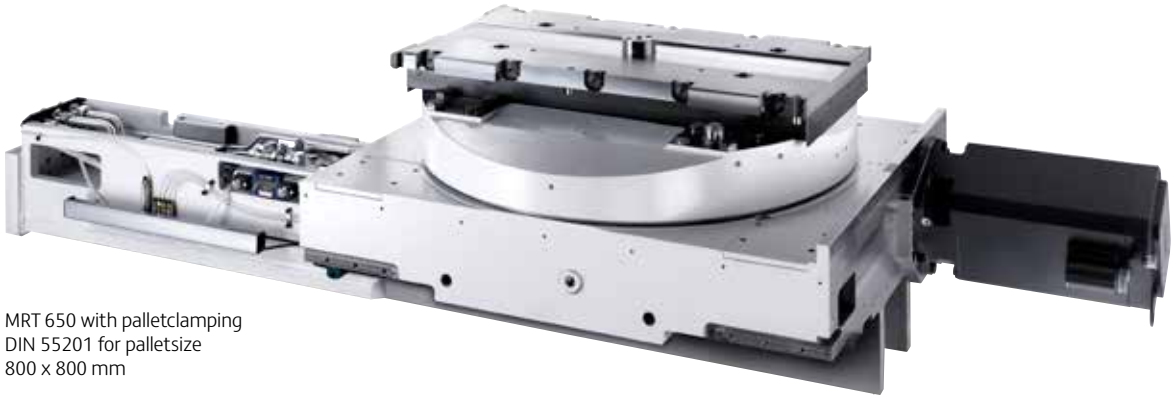
The ZOLLERN-group
The ZOLLERN-Rückle group, with a rich history that dates back almost seven decades, is one of the most venerable among all the current suppliers of rotary table systems for machine tools. Since then ZOLLERN-Rückle has been developing customized solutions and unique models, along with standard products, tried and tested a thousend times, always bearing in mind that it can do better than others. This is why now the most important machine tool manufaturers worldwide appreciate and seek information about the professional competence of that traditional, Swabian, family-run company.

Modular rotary tables are in the focus of our attention. They can easily be customized to machine requirements through our in-house engineering personnel. ZOLLERN-Rückle's products have been tried and trusted in production over several decades. Besides this customers benefit from a comprehensive, worldwide and reliable service which includes commissioning, maintenance & repair, documentation, warehousing and training.

Beyond the commonplace
The Maschinenfabrik Eimeldingen GmbH, a specialist of world-wide renown in precision rotary tables and pallet changer systems, successfully joined the ZOLLERN-Rückle group in 2004. With this strategic acquisition the company aimed to extend its own production range in the field of standard rotary tables for machining centers and milling machines by absolute high-end applications in tailored machine building. As a result, the customers can now be satisfied in almost all their requirements in terms of dimension, load capacity and performance as well as an unique flexibility and the best ease of variation ever.

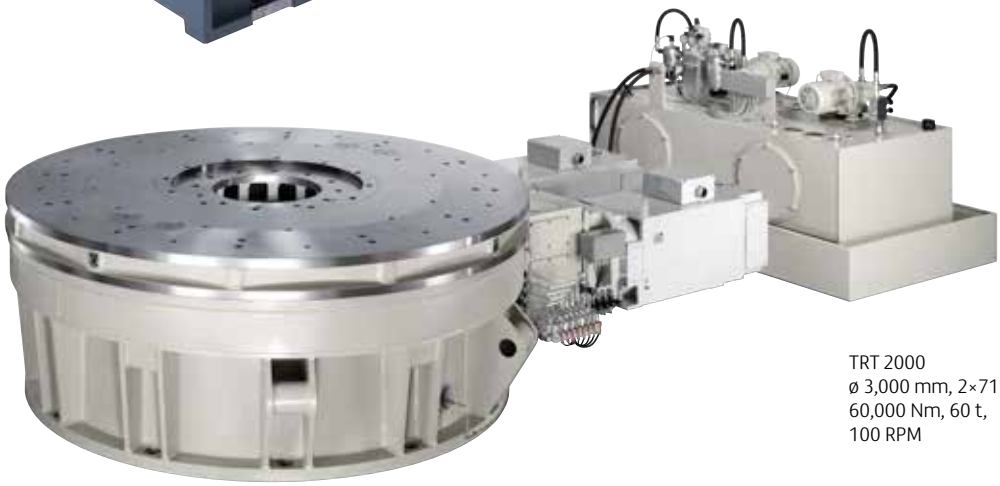
With the acquisition of Fördertechnik Mayer's know-how in 2009 ZOLLERN-Rückle further extended its portfolio in the state-of-the-art conveying and pallet systems sector.

Rotary axes and rotary tables
Milling, grinding and turning



MRT 650 with palletclamping
DIN 55201 for palletsize
800 x 800 mm

MRT 2000 with LA 2000
(3,000× 3,000 mm, 100 t,
W=2,000 mm)

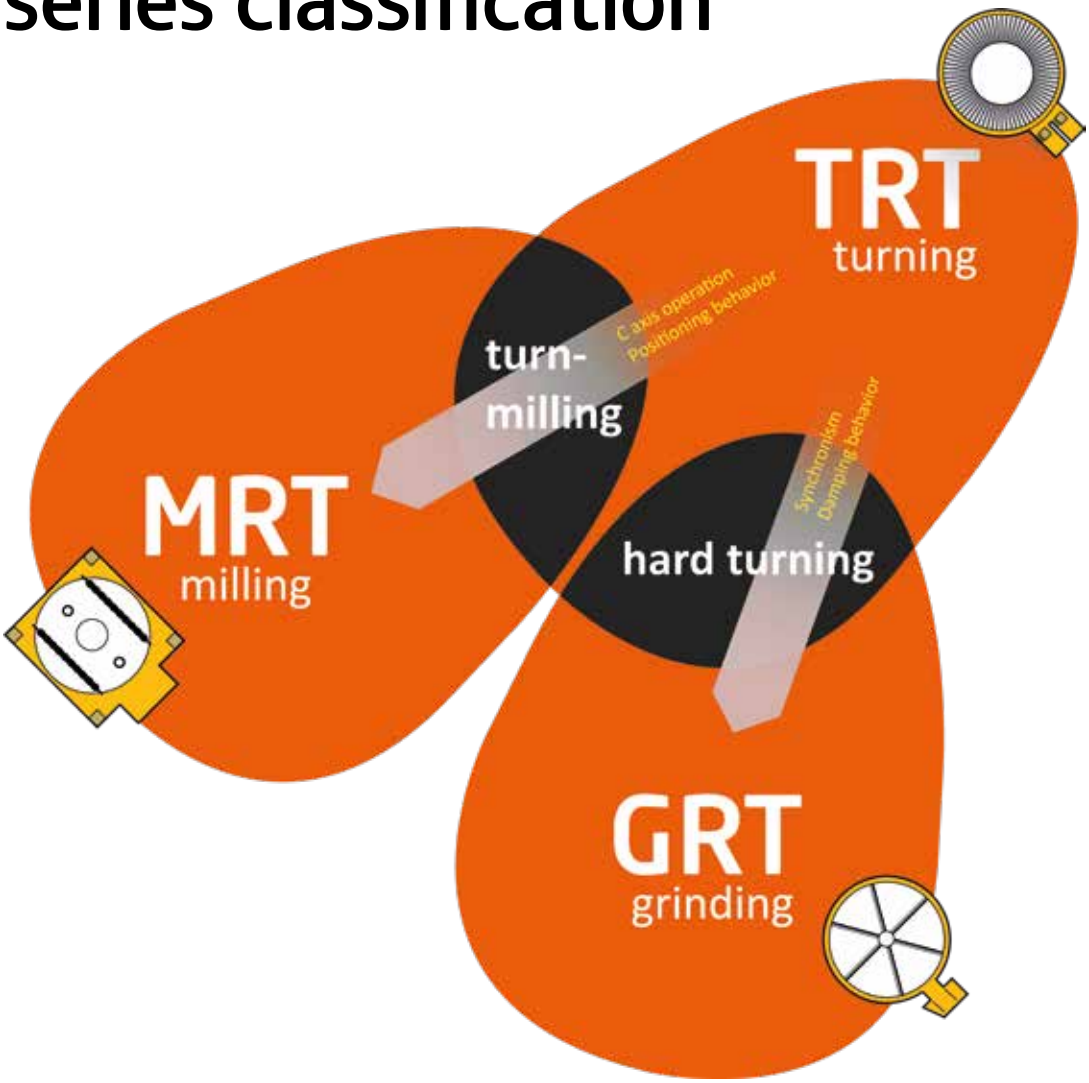


TRT 2000
ø 3,000 mm, 2×71 KW,
60,000 Nm, 60 t,
100 RPM

Within ZOLLERN-Rückle, the product field rotary axes and rotary tables is split up into three concise, clearly separated design series which, any on its own, refer to one of the three applications milling, grinding or turning.

We are also prepared to accept even such challenges arising from borderline applications like hard turning or turn-milling: No matter what the customer‘s special requirements are – ZOLLERN-Rückle has the solution.

ZOLLERN-Rückle‘s series classification



The GRT series
is ideally suited for use in vertical circular grinding machines in single column or gantry design.

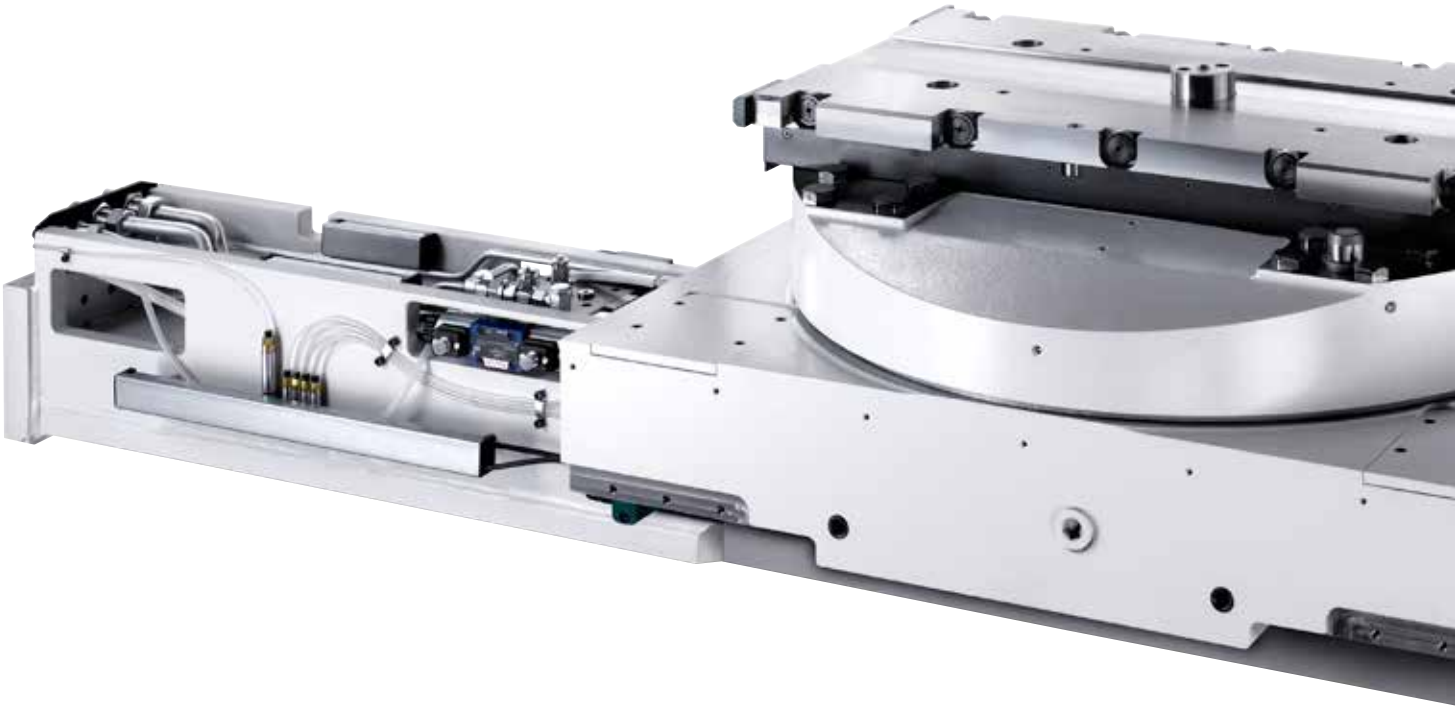
The table is fully integrated in the machine. The running features of the direct drive allow uniform rotary motion. Any construction size may have customized parameters.The basically hydrostatic mounting in axial and radial directions provides excellent damping features and pinpoint accuracy.

The TRT series
is suited for vertical lathes and gantry-type milling machines. It can be designed as integrated axis, stand-alone variant or traversing unit, according to the customer‘s application. The master-slave configuration provides an excellent control performance in positioning and milling operations. We also offer customized linear axes which perfectly suit your current application.

The MRT series
is designed for bore, drill & mill machines in gantry or travelling column design and for machining centers. It is intended for milling, boring and drilling, in positioning and continuous operation. The design will always be tailored to the actual machine. Variable mounting configurations within one and the same construction size allow for different load capacities.

We also offer customized linear axes and pallet changer systems which perfectly suit your current application.

MRT milling – Milling Rotary Table
up to size 1250



The MRT milling table series up to size 1250 is designed for horizontal and vertical machining centers and used in milling, boring and drilling in positioning and continuous operation.

The table design can be customized to the respective machine concept, for example, a variable mounting configuration, and allows different load capacities within one size. ZOLLERN-Rückle also offers customized pallet changer systems and swiveling tables for a wide range of applications.

MRT 650 with palletclamping DIN 55201 for palletsize 800 x 800 mm

ZOLLERN-Rückle milling tables: engineering solutions
At ZOLLERN-Rückle, Customizing starts with a capital C. Because it is only when all the elements of a rotary table system have the best possible performance parameters that specific requirements can be optimally fulfilled. The MRT milling table series gives customers the option to select any pallet changer system in compliance with DIN 55201 or customer specifications. Customers are free to choose the servomotor manufacturer, and the milling table housings can be adapted specifically to the machine concept. On request, we provide hydraulic aggregates and cooling systems and interfaces customized for the machine.

Our standard milling tables come with roller contact bearings or, as an option, ZOLLERN-Rückle also offers hydrostatic bearings in this series. Customers then choose between different drive system variants: worm gears, bevel gears, spur gears as well as torque motors.

For all sizes, the measuring systems are mounted directly onto the table axis. The milling tables can also be equipped with a Hirth serration as an option. This configuration allows for compensatation of extremely high machining forces. And, almost all of our milling tables can also be delivered as horizontal axis systems.

Milling tables for specific requirements
The requirements of our customers determine the characteristic features of our products and are something we devote top priority to. The MRT milling table series ≤ 1250 includes various pallet clamping systems in addition to different table platforms. They also have rigid mounting for workpiece weights up to 35t and tilting moments up to 160kNm. Our milling table drive systems are reliable and free from backlash. This guarantees good control quality for optimum positioning and continuous operation. It also ensures high acceleration rates, even when the direction is reversed, and thus supplies excellent machining quality for heavy workpieces.

The clamping system withstands machining moments up to 65 kNm; the positioning accuracy is less than +/- 2 arcsec, and repeatability is less than +/- 1 arcsec.

The axial runout of the milling tables is 10 µm at ø 1000 mm and the radial runout is 5 µm at ø 50 mm. A central bore for oil distributors also delivers media to the fixtures. Due to the flexible design of the housing, the milling table can also be integrated directly in the machine.

MRT 12 50 (2.000 x 2.500 mm. 40 t)

MRT Milling - Milling Rotary Table
up to size 1250

Type / Model		MRT 160	MRT 200	MRT 250
Table sizes	mm	320 / 380	380 / 460	460 / 550
Load capacity, vertical rotation axis	kg	600	800	1.000
Load capacity, horizontal rotation axis [1]	kg	300	400	500
Anti-friction mounting				
Bearing diameter	mm	200	250	320
Safe max, tilting Torque up to	Nm	1.500	4.000	6.000
Drive [2]				
max. speed S6 up to	U/min	30	20	20
max. torque S6 up to	Nm	580	900	1.800
Nominal Speed up to	U/min	400	200	100
Nominal torque up to	Nm	120	320	720
max. speed up to	U/min	800	400	200
Locking system				
Tangential Torque up to	Nm	1.000	1.700	2.800
Accuracy				
Dividing accuracy [3]	arcsec	+/- 2	+/- 2	+/- 2
Axial runout	mm	0,01	0,01	0,01
Radial runout [4]	mm	0,01	0,01	0,01

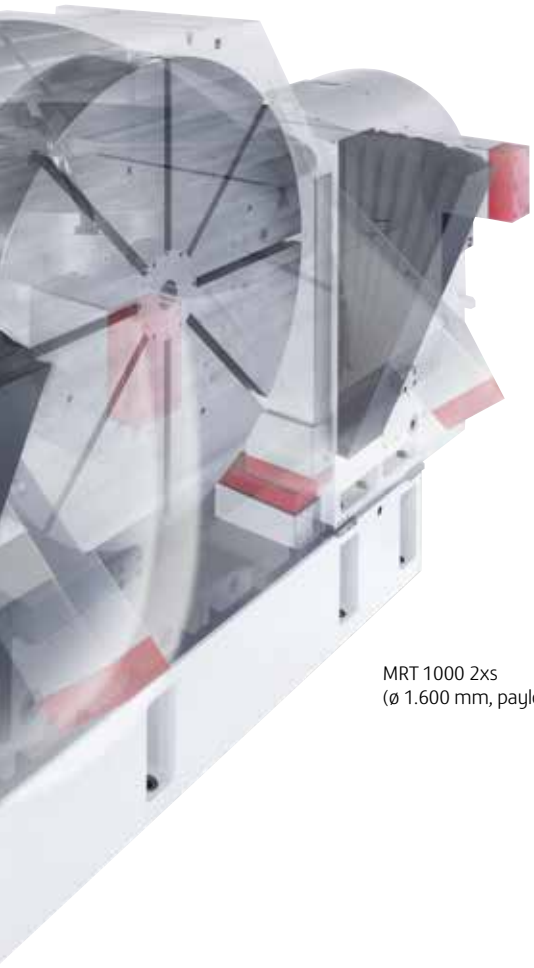
[1] Load capacity without counter-bearing / [2] Drive data are not associated one with another; they will be customized according to the application.
[3] Depending on the measuring system / [4] Hub centering Further information and customized modifications on request. Technical data are subject to change.

the same value for both drive systems / worm gear / torque motor

MRT 320	MRT 400	MRT 500	MRT 650	MRT 800	MRT 1000	MRT 1250
520 / 630	630 / 800	650 / 800 / 1.000	1.000 / 1.200 / 1.400	1.200 / 1.400 / 1.600	1.400 / 1.600 / 1.800	1.600 / 2.000 / 2.500
3.500	4.500	6.000	10.000	15.000	25.000	35.000 / -
1.750	2.250	3.000	5.000	7.500	12.500	17.500 / -
400	460	540	670	760	980	1.250
12.000	18.000	28.000	40.000	60.000	90.000	120.000 / -
15	15	15	10	8	7	6
2.700	3.500	4.000	8.000	10.500	13.500	15.500
100	75	40	40	20	10	-
1.300	2.000	3.000	3.000	6.500	10.000	-
200	150	75	75	40	20	-
3.500	5.500	12.000	20.000	25.000	30.000	35.000 / -
+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2 / -
0,01	0,015	0,02	0,02	0,02	0,025	0,03 / -
0,01	0,01	0,01	0,01	0,01	0,01	0,01 / -

MRT milling – Milling Rotary Table
swiveling tables

Swiveling tables consist of a combined turning and swivel unit. The elements used for the turning and swivel axis stem from the MRT milling table series and are combined to meet customer requirements. The units can be included in the machines or adapted to the customer‘s machine bed as linear slides. They feature optimum workpiece clamping systems and machining zones and can also be combined with pallet changer systems and linear axes as needed.



MRT 1000 2xs
(ø 1.600 mm, payload 15 to)

Milling tables for specific requirements
The requirements of our customers determine the characteristic features of our products and are something we devote top priority to. The MRT milling table series ≤ 1250 includes various pallet clamping systems in addition to different table platforms. They also have rigid mounting for workpiece weights up to 35t and tilting moments up to 160kNm. Our milling table drive systems are reliable and free from backlash. This guarantees good control quality for optimum positioning and continuous operation. It also ensures high acceleration rates, even when the direction is reversed, and thus supplies excellent machining quality for heavy workpieces.

The clamping system withstands machining moments up to 65 kNm; the positioning accuracy is less than +/- 2 arcsec, and repeatability is less than +/- 1 arcsec.

The axial runout of the milling tables is 10 µm at ø 1000 mm and the radial runout is 5 µm at ø 50 mm. A central bore for oil distributors also delivers media to the fixtures. Due to the flexible design of the housing, the milling table can also be integrated directly in the machine.

MRT 400 2xs (Ø 800 mm, 1,4 t)

MRT milling – Milling Rotary Table
swiveling tables

Type / Model		MRT 200 2xs	MRT 250 2xs
Table sizes	mm	320 / 460	460 / 500
max. centric load capacity up to	kg	400	600
Anti-friction mounting			
Bearing diameter	mm	200 / 250	250 / 320
Safe max, tilting Torque up to	Nm	- / 2.000	- / 5.000
Drive system (gear) [1]			
max. speed S6 up to	U/min	15 / 20	15 / 20
max. torque S6 up to	Nm	800 / 600	3.000 / 2.000
Locking system			
Tangential Torque up to	Nm	5.000 / 1.900	6.000 / 3.000
Accuracy			
Dividing accuracy [2]	arcsec	+/- 2	+/- 2
Axial runout	mm	- / 0,01	- / 0,01
Radial runout [4]	mm	- / 0,01	- / 0,01

[1] Drive data are not associated one with another; they will be customized according to the application. / [2] Depending on the measuring system

[3] Hub centering Further information and customized modifications on request. Technical data are subject to change.

the same value for both axes / swivel axis / rotary axis

MRT 320 2xs	MRT 400 2xs	MRT 500 2xs	MRT 650 2xs	MRT 800 2xs	MRT 1000 2xs
520 / 630	630 / 800	800 / 900 / 1.000	800 / 1.000 / 1.200	1.200 / 1.400 / 1.600	1.600 / 1.800 / 2.000
1.000	1.400	2.000	3.000	4.000	8.000
320 / 400	400 / 460	460 / 540	540 / 670	670 / 760	760 / 980
- / 8.000	- / 10.000	- / 13.000	- / 16.000	- / 20.000	- / 30.000
15 / 15	10 / 15	10 / 15	5 / 10	5 / 5	5 / 5
4.500 / 2.700	5.500 / 3.500	6.200 / 4.000	12.000 / 8.000	20.000 / 10.500	30.000 / 13.500
8.000 / 4.000	10.000 / 5.000	13.000 / 8.000	20.000 / 15.000	30.000 / 20.000	35.000 / 25.000
+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2
- / 0,01	- / 0,015	- / 0,02	- / 0,02	- / 0,02	- / 0,03
- / 0,01	- / 0,01	- / 0,01	- / 0,01	- / 0,01	- / 0,01

MRT Milling – Milling Rotary Table
Milling table from size 1000

The MRT milling tables series ≥ 1000 is designed for milling and boring machines in gantry or traveling column design and is used in milling, boring and drilling in positioning and continuous operation. Because bearing arrangements vary, different load capacities are possible within the same size. Customized linear axes adapted to a specific application are also available.

MRT 2000 with LA 2000
(3.000 x 3.000 mm, 100 t, W=2.000 mm)

Milling tables: we make it work
The MRT milling table series ≥ 1000 not only comes with different table tops, it also features bearing arrangements for component weights up to 200 t and tilting moments up to 300 kNm. The drive of our milling tables is reliable and backlash-free to guarantee excellent control quality for optimum positioning and continuous operation. High accelerations are also guaranteed, even during changes of direction, as is perfect machining quality for heavy component weights.

The clamping system withstands machining moments up to 200 kNm; the positioning accuracy is less than +/- 2 arcsec, and repeatability is less than +/- 1 arcsec. The axial runout of the milling tables is 20 µm at a ø 2,500 mm and the radial runout is 5 µm at ø 100 mm. A central bore for oil distributors also delivers media to the fixtures. Due to the flexible design of the housing, the milling table can also be integrated directly in the machine.

Linear axes
ZOLLERN-Rückle's linear axes can be combined for use both with the MRT milling table series as well as with the TRT rotary table series. The slideways are available in different traverse paths. The distance between the guideways is always optimally designed to the table's bearing diameter and ensures the rigidity of the overall system. The drives are also generously dimensioned.

Milling table by ZOLLERN-Rückle: original and tailor-made
At ZOLLERN-Rückle, Customizing starts with a capital C. The MRT milling table series size ≥ 1000 comes in a wide range of table tops. The tables are offered with worm drive, spur gear with twin pinion drive or electronically pre-loaded. All clamping systems are hydraulic. The measuring systems are mounted directly on the table axis on all frame sizes.

The MRT milling table also features high tilt resistance and excellent operating smoothness. Mounted hydrostatically or on an anti-friction bearing, the bearing arrangement guarantees excellent workpiece machining quality in positioning and continuous operation. The ambient temperature is also no probelm: the milling tables are also available with temperature control. ZOLLERN-Rückle also equips the tables with an optional Hirth serration on request. The advantage: this option can compensate for extremely high machining forces. Almost all milling tables can also be manufactured with a horizontal axis.

MRT 1600
(Ø 2.000 mm, 15 t)

MRT 1600
(2500 x 2500 mm, load capacity 50 t)

MRT Milling – Milling Rotary Table
Milling table from size 1000

Type / Model		MRT 1000	MRT 1250
Table sizes	mm	1.400 / 1.600 / 1.800	1.600 / 2.000 / 2.500
Load capacity, vertical rotation axis	kg	25.000 / 30.000	35.000 / 45.000
Load capacity, horizontal rotation axis [1]	kg	10.000 / -	15.000 / -
Mounting features			
Bearing diameter	mm	1.000	1.250
Safe max, tilting Torque up to	Nm	70.000 / 80.000	160.000 / 180.000
Drive gear [2]			
max. speed S6 up to	U/min	9	8
max. torque S6 up to	Nm	18.000	23.000
Locking system			
Tangential Torque up to	Nm	35.000	40.000
Accuracy			
Dividing accuracy [3]	arcsec	+/- 2	+/- 2
Axial runout	mm	0,015	0,02
Radial runout [4]	mm	0,01	0,01

Type / Model		LA 1000	LA 1250
travel	mm	1000 / 1.500 / 2.000 / 2.500	1000 / 1.500 / 2.000 / 2.500
Storage			
number of guideways	Stk.	2	2
size of roller block		55	65
Transmission / ballscrew drive [2]			
speed	m/min	20	20
force	N	25.000	25.000
Accuracy			
position uncertainty	µm	7	7
position deviation	µm	5	5

[1] Load capacity without counter-bearing / [2] Drive data are not associated one with another; they will be customized according to the application.
[3] Depending on the measuring system / [4] Hub centering Further information and customized modifications on request. Technical data are subject to change.

same value in both mounting systems / antifriction mounting / hydrostatic mounting

MRT 1600	MRT 2000	MRT 2500	MRT 3200
2.000 / 2.500 / 3.000	2.500 / 3.000 / 3.500	3.000 / 3.500 / 4.000	3.500 / 4.000 / 4.500
60.000 / 70.000	100.000 / 120.000	150.000 / 180.000	220.000 / 260.000
30.000 / -	- / -	- / -	- / -
1.600	2.000	2.600	3.200
220.000 / 240.000	280.000 / 310.000	350.000 / 400.000	420.000 / 480.000
6	5	4	1,5
28.000	35.000	40.000	60.000
60.000	90.000	120.000	150.000
+/- 2	+/- 2	+/- 2	+/- 2
0,025	0,035	0,05	0,06
0,01	0,01	0,01	0,01

LA 1600	LA 2000	LA 2500	LA 3200
1000 / 1.500 / 2.000 / 2.500	1000 / 1.500 / 2.000 / 2.500	1000 / 1.500 / 2.000 / 2.500	1000 / 1.500 / 2.000 / 2.500
3	4	4	4
65	65	65	65
20	15	12	10
25.000	25.000	25.000	25.000
7	7	7	7
5	5	5	5

TRT Turning – Turning Rotary Table

The TRT rotary table series from ZOLLERN-Rückle was designed for use in vertical lathes and in milling machines. Depending on the intended application, the rotary tables can be designed with an integrated axis, as a stand-alone variant or as a sliding unit. Excellent control quality for positioning and milling operations is guaranteed by carefully selected torque motors in the TRT 400 to TRT 1000 rotary table series as well as by the the master-slave configuration in the TRT 1000 to TRT 4000 rotary table series. Customized linear axes are also available.

TRT 2000
(Ø 3.000 mm, 2 x 71 KW, 60.000 Nm, 60 t, 100 U/min)

Rotary tables: ZOLLERN-Rückle is adding a new twist
It is only when all of the elements in a rotary table have the best possible performance parameters that the system can meet the customer's unique requirements. The rotary tables of our TRT series are all based on the same design principles, but are easily modified. An intermediate table top means that different table top sizes and chucks as well as variable bearing arrangements for different load capacities can be used. The drive train has a wide range of speeds and torques.

The bearing arrangement of the rotary tables with axial pre-load ensures high rigidity and uses anti-friction bearings or hydrostatic bearings, depending on the current application and the size. The oil distributer for the hydraulic chuck is seated in a large center boring. The measuring system can be mounted directly on the rotary table axis or indirectly using a gear mechanism. Another advantage: a labyrinth seal between table top and housing reliably prevents the ingress of chips or coolant emulsion.

Rotary tables from ZOLLERN-Rückle: solution to meet every requirement
For the TRT rotary table series we offer our customers a wide range of table tops and chucks to choose from as well as flexible drive configurations for speeds from 10 rpm to 500 rpm and torques up to 180 kNm. The rotary tables also feature high rigidity to accommodate workpieces up to 5 m in height and a load of up to 200 t.

The optional clamping system withstands machining moments up to 80 kNm; the positioning accuracy is less than +/- 5 arcsec. The rotary table also comes with a through-hole for power-operated chucks and a seal to prevent the ingress of chips and coolant emulsion. The axial runout is 20 µm at ø 2,500 mm and the radial runout is 5 µm at ø 500 mm.

Linear axes
ZOLLERN-Rückle's linear axes can be combined for use both with the TRT rotary table series as well as the MRT milling table series. The slideways are available in different traverse paths. The distance between the guideways is always optimally designed to the table's bearing diameter and ensures the rigidity of the overall system. The drives are also generously dimensioned.

TRT 1000 (Ø 2.000 mm, 2 x 51 KW,
12.000 Nm, 15 t, 250 U/min)

TRT Turning – Turning Rotary Table

Type / Model		TRT 400	TRT 500	TRT 650
Table sizes	mm	600 / 700 / 800	700 / 800 / 1.000	1.000 / 1.250 / 1.500
max. centric load capacity up to	kg	2.000	3.000	6.000
Anti-friction mounting				
Bearing diameter	mm	400	460	650
Safe max. tilting Torque up to	Nm	19.000	27.000	45.000
Torque motor drive [1]				
Nominal Speed up to	U/min	265	250	200
Nominal torque up to	Nm	1.650	2.800	3.800
max. speed up to	U/min	650	500	400
Hydrostatic bearing				
bearing diameter	mm			
safe max. tilting torque up to	Nm			
Drive gear [1]				
motor power up to	KW			
max. speed up to	U/min			
max. torque up to	Nm			
Locking system				
Tangential Torque up to	Nm	5.500	12.000	20.000
Accuracy				
Dividing accuracy [2]	arcsec	+/- 2	+/- 2	+/- 2
Axial runout [3]	mm	0,01	0,01	0,015
Radial runout [4]	mm	0,01	0,01	0,01

[1] Drive data are not associated one with another; they will be customized according to the application.

[2] Depending on the measuring system / [3] O.D. turning on customer's machine and referred to bearing diameter

[4] Hub centering Further information and customized modifications on request. Technical data are subject to change

TRT 800	TRT 1000	TRT 1400	TRT 2000	TRT 2800	TRT 4000
1.250 / 1.500 / 1.800	1.500 / 1.800 / 2.000	2.000 / 2.500 / 3.000	2.500 / 3.000 / 4.000	3.500 / 4.000 / 5.000	4.500 / 5.500 / 6.500
10.000	15.000	30.000	60.000	125.000	250.000
850	1.050	1.370			
70.000	100.000	130.000			
150	75	50			
6.500	10.000	15.000			
300	200	150			
	1.000	1.400	2.000	2.800	3.900
	100.000	180.000	280.000	400.000	520.000
	2 x 71	2 x 100	2 x 100	2 x 100	2 x 120
	250	200	150	100	75
	45.000	85.000	125.000	165.000	330.000
25.000	30.000	40.000	60.000	100.000	150.000
+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2
0,02	0,02	0,02	0,02	0,025	0,03
0,01	0,01	0,01	0,01	0,01	0,01

GRT Grinding – Grinding Rotary Table

The GRT grinding table series is intended for use in vertical cylindrical grinding machines in single-column or gantry design. The table is fully integrated in the machine. The anti-friction performance of the direct drive guarantees uniform rotary motion. The hydrostatic bearing arrangement is designed as a separate bearing in both an axial and radial direction. The advantage: outstanding damping properties as well as a long service life for the grinding tables.

GRT 2000
(Ø 3.000 mm, load capacity 30 t)

Grinding tables at the head of technology
Customized down with attention to details: In the GRT grinding table series, an intermediate table top means that different table top sizes and chuck systems can be used. The measuring system on all machine sizes is mounted directly on the grinding table axis.

The drive consists of a torque motor available in two different performance classes. Both guarantee high speeds and acceleration as well as excellent control quality. An optional clamping system compensates for tangential moments that occur during special machining situations. Magnetic clamping chucks can be used to accommodate the use of slip rings which also allow the use of measuring systems with a large center bore. Another advantage: a labyrinth seal between table top and housing reliably prevents the ingress of chips or coolant emulsion. The grinding table housing can be adapted to the customer‘s machine design.

It‘s knowing how that matters
Customer requirements decisively determine a product‘s characteristics - this is something the ZOLLERN-Rückle Group gives top priority to. A wide range of table tops and magnetic clamping chucks are generally requested for the GRT grinding table series. Another important feature: a rigid mounting with excellent damping properties to bear component weights up to 15 t.

A back-lash free drive ensures optimum positioning and continuous operation and its running properties reach speeds of up to 200 rpm and sustain uniform rotary motion. The optional clamping system withstands machining moments up to 40 kNm and the positioning accurancy is less than +/- 5 arcsec. The axial runout is 1 µm at ø 1,600 mm and the radial runout is 1 µm at ø 200 mm.

ZHA GRT 400
(Ø 750 mm,
load capacity 4 t)

GRT Grinding – Grinding Rotary Table

Type / Model		GRT 400	GRT 500
Table sizes	mm	600 / 700 / 800	700 / 800 / 1.000
max. centric load capacity up to	kg	3.000	4.000
Hydrostatic bearing			
Bearing diameter	mm	400	500
Safe max, tilting Torque up to	Nm	5.000	10.000
Torque motor drive [1]			
Nominal speed up to	U/min	250	200
Nominal torque up to	Nm	1.000	1.500
max. speed up to	U/min	500	400
Locking system			
Tangential Torque up to	Nm	5.500	12.000
Accuracy			
Dividing accuracy [2]	arcsec	+/- 2	+/- 2
Axial runout [3]	mm	0,001	0,001
Radial runout	mm	0,001	0,001

[1] Drive data are not associated one with another; they will be customized according to the application. / [2] Depending on the measuring system

[3] Referred to the bearing diameter Further information and customized modifications on request. Technical data are subject to change.

GRT 650	GRT 800	GRT 1000	GRT 1400	GRT 2000	GRT 2800
1.000 / 1.200 / 1.400	1.250 / 1.400 / 1.600	1.400 / 1.600 / 1.800	1.800 / 2.000 / 2.200	2.200 / 2.600 / 3.000	3.000 / 3.500 / 4.000
5.000	6.000	8.000	10.000	15.000	25.000
650	800	1.000	1.400	2.000	2.800
15.000	25.000	40.000	70.000	150.000	220.000
175	150	125	100	75	50
2.000	2.500	3.500	7.000	10.000	14.000
350	300	250	200	150	100
20.000	25.000	30.000	40.000	60.000	100.000
+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2
0,001	0,001	0,001	0,001	0,001	0,002
0,001	0,001	0,001	0,002	0,002	0,003

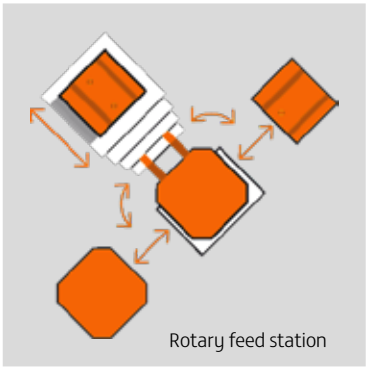
APC – Automatic pallet changers and linear axes

APC 1250 with MRT 1000

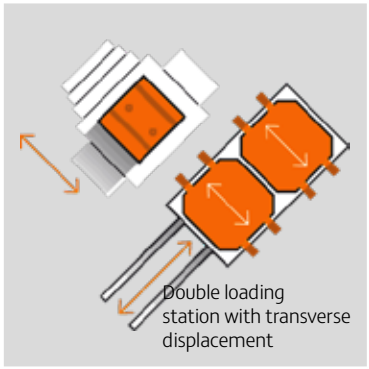
Our aim is to be able to offer customers a complete package from a single source. This is why we are constantly expanding our product range - for example, by including pallet changers and linear axes in our offerings. This was made possible by the acquisition of Maschinenfabrik Eimeldingen and the expertise of Fördertechnik Mayer.

APC – Automatic pallet changers from ZOLLERN-Rückle: unlimited flexibility
Thanks to their modular design, the pallet changers from ZOLLERN-Rückle come in a variety of configurations. Individual components, such as e.g. storage, straightening and feed stations can be equipped with different pallet clamping systems. The standard version is available for pallet sizes up to 2,500 x 2,500 mm - and larger on request.

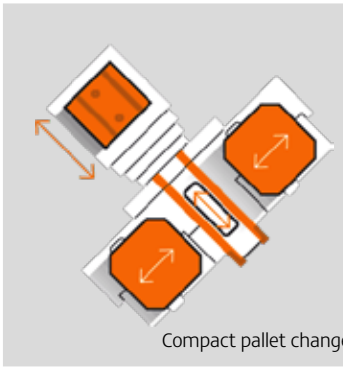
The pallet changers are rugged in design and also constructed for high load capacities. At the same time, users also profit from minimal pallet changing times.



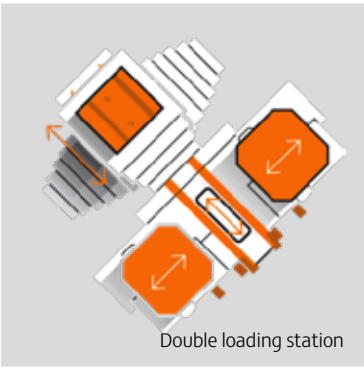
Rotary feed station



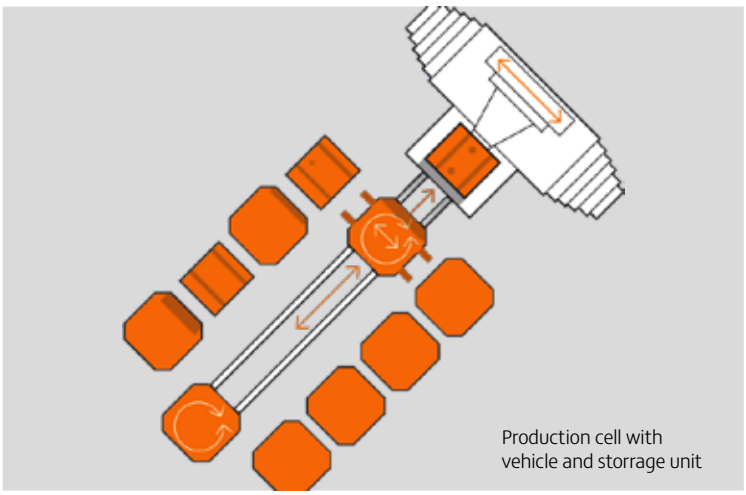
Double loading station with transverse displacement



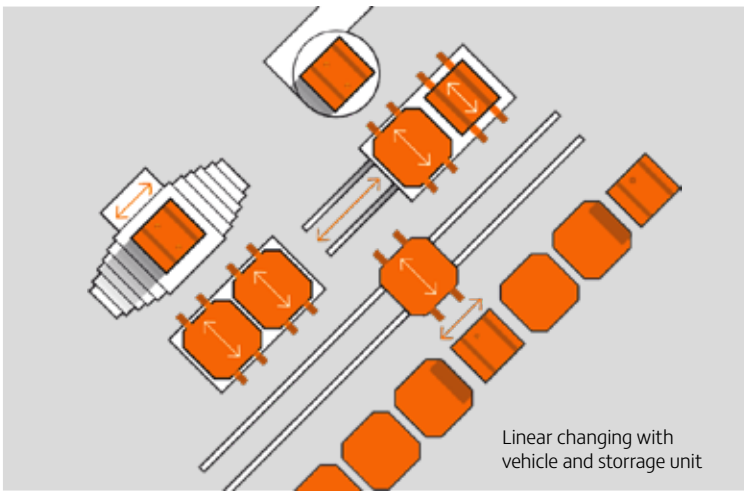
Compact pallet changer



Double loading station



Production cell with vehicle and storage unit



Linear changing with vehicle and storage unit

Torque motors

The ZOLLERN torque-motors are ring shape high precision motors. They are made of a stator with windings and a permanent magnetized rotor. This motor is made for high torque at low speed. Other features are high energy efficiency and good controlling characteristics. It has low attrition and maintenance and no backlash. The whole product range is up to 2.500 mm diameter and a maximum torque of 58.000 Nm.

Applications

- Rotary table and swivel axes in machine tools
- Roboter
- Synthetic machines
- Wood machining
- Special-purpose machines
- Printing machines
- Measuring machines

Properties

- Constant torque up to double the nominal rate of rotation
- Torque ripple < 0.6 %
- Position scatter band (not compensated) Ps < 3“
- Rated current up to 15% lower than normal solutions on the market
- Power loss up to 25% lower than normal solutions on the market
- Lower heat absorption into surrounding components
- Closed cooling jacket available
- Low-wear and low-maintenance
- No backlash
- Good controllability
- Application-specific motor design possible

Motor type	Stator Ø (mm)	Rotor Ø (mm)	Stator height (mm)	Torque air-cooled (Nm)	Torque water-cooled (Nm)	Torque maximum* (Nm)
TM 140/089-030	160	60	65	9	20	26
TM 140/089-050	160	60	85	16	33	43
TM 140/089-070	160	60	105	21	45	60
TM 140/089-100	160	60	135	31	66	85
TM 140/089-150	160	60	185	45	100	128
TM 175/119-030	198	90	75	16	33	45
TM 175/119-050	198	90	95	25	55	75
TM 175/119-070	198	90	115	34	78	105
TM 175/119-100	198	90	145	48	113	150
TM 175/119-150	198	90	195	71	170	230
TM 210/169-030	230	140	70	28	70	95
TM 210/169-050	230	140	90	47	120	165
TM 210/169-070	230	140	110	66	170	230
TM 210/169-100	230	140	140	92	245	330
TM 210/169-150	230	140	190	140	370	500
TM 290/225-030	310	190	70/65	65	135	245
TM 290/225-050	310	190	90	105	225	300
TM 290/225-070	310	190	110	145	320	420
TM 290/225-100	310	190	140	205	460	600
TM 290/225-150	310	190	190	305	700	900
TM 360/299-030	385	265	75	115	240	325
TM 360/299-050	385	265	95	195	405	540
TM 360/299-070	385	265	115	255	560	750
TM 360/299-100	385	265	145	355	825	1080
TM 360/299-150	385	265	210/195	530	1230	1600
TM 420/350-030	450	300	75	130	270	365
TM 420/350-050	450	300	95	210	445	605
TM 420/350-070	450	300	115	290	625	845
TM 420/350-100	450	300	145	405	890	1220
TM 420/350-120	450	300	165	480	1070	1455
TM 420/350-150	450	300	195	590	1340	1780
TM 450/384-030	485	345	75	185	370	490
TM 450/384-050	485	345	95	300	640	835
TM 450/384-070	485	345	115	415	890	1200
TM 450/384-100	485	345	145	580	1350	1760
TM 450/384-150	485	345	195	850	1930	2510
TM 530/459-030	565	420	75	275	525	740
TM 530/459-050	565	420	95	435	910	1230
TM 530/459-070	565	420	115	600	1285	1720
TM 530/459-100	565	420	145	820	1820	2460
TM 530/459-150	565	420	210/195	1310	2740	3700
TM 760/688-030	795	640	85	630	1230	1680
TM 760/688-050	795	640	110	1050	2100	2800
TM 760/688-070	795	640	130	1430	2915	3920
TM 760/688-100	795	640	160	2010	4150	5600
TM 760/688-150	795	640	210	3000	6420	8400
TM 990/919-030	1030	860	85	1100	2100	2700
TM 990/919-050	1030	860	110	1800	3650	5000
TM 990/919-070	1030	860	130	2475	5100	7000
TM 990/919-100	1030	860	160	3400	7300	10000
TM 990/919-150	1030	860	210	5025	11000	15000
TM 1220/1149-030	1288	1070	90	1725	3150	4100
TM 1220/1149-050	1288	1070	110	2800	5500	7150
TM 1220/1149-070	1288	1070	130	3625	7450	9680
TM 1220/1149-100	1288	1070	160	5150	11200	14470
TM 1220/1149-150	1288	1070	210	7200	16300	21080
TM 1440/1360-030	1510	1280	95	2200	4375	5600
TM 1440/1360-050	1510	1280	115	3675	7275	9300
TM 1440/1360-070	1510	1280	135	5125	10170	13100
TM 1440/1360-100	1510	1280	165	7325	14500	18660
TM 1440/1360-150	1510	1280	215	11000	21800	28000
TM 2070/1920-030	2200	1720	137	2975	6000	8000
TM 2070/1920-050	2200	1720	157	4950	10000	13300
TM 2070/1920-070	2200	1720	177	6925	14000	18660
TM 2070/1920-100	2200	1720	207	9900	20000	26600
TM 2070/1920-150	2200	1720	257	14850	30000	40000
TM 2070/1920-210	2200	1720	317	21500	43500	58000

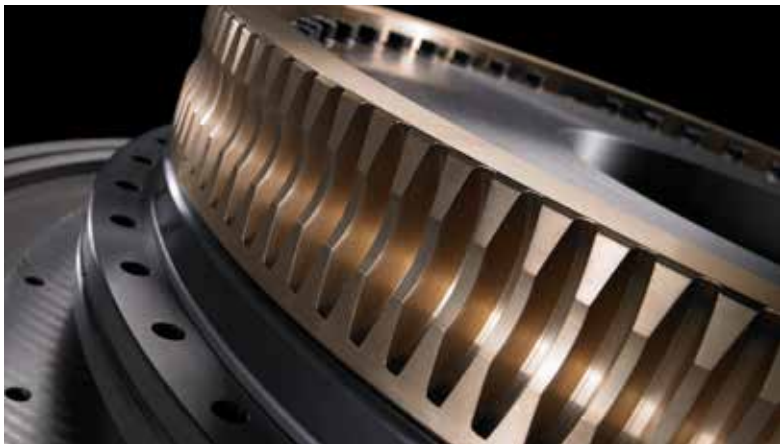
* on customers requirement bigger max. torque possible

Customers of the ZOLLERN- Rückle group benefit from the advantages of this traditional company: a flat hierarchy, competent and reliable contact persons with optimal availability, a world-wide service and distribution network with diverse subsidiaries and agencies, an extremely flexible and effectiv company organization split up into small, self-contained divisions and a high in-house production depth – all this contributes to ZOLLERN-Rückle's success.

Customer service and Technical support
Always top-level

stage of development due to short production cycles and increasing quality requirements. The Finite Elements Method (FEM) has become an efficient simulation and optimization tool in this matter. ZOLLERN-Rückle's engineers specialize in FEM calculations.
Using their state-of-the-art hard- and software they give customers support in optimizing their products - from the very first concept to series production. And of course Rückle also offers its customers the implementation of all parameters into any current control system, if required.

Ample experience gathered over several decades of successful activity for customers all over the world has resulted in a perfect customization of Rückle's engineering. Highly-skilled engineers, technicians and draftsmen participate activley in nearly all fields of design and development to satisfy customers' demands. Some universities and polytechnical colleges, using state-of-the-art simulation tools, cooperate to continuously optimize control of the mechatronic drive concepts for Rückle's rotary tables, linear axes and swivel axes.



Measuring technics / support

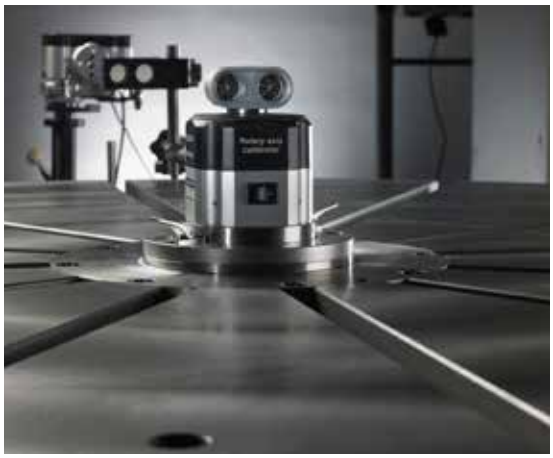
Quality measuring is at ZOLLERN-Rückle not only “measuring on norms”. It is elaboration and interpretation of the problematic issues in all variations “.«

Measuring technics / support in house and on site
Appointed in different areas with necessary and available measuring tool in house.
Our qualified staff are available with their experience!

Laser measuring

Linear movement measuring in all axes possible.

Length:
Up to 80 m at positioning
Up to 15 m at flatness, straightness and arc
Maximum deviation +/- 1,5 mm
Accuracy at best requirements:
Position +/- 0,5 µm/m
Flatness, straightness and arc +/- 0,1 µm/m

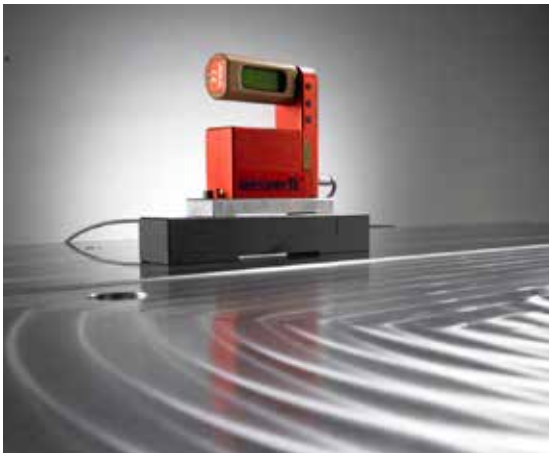


Measuring of turning axes in all accuracies and sizes.

Length:
Table diameter 150 mm up to 30.000 mmm

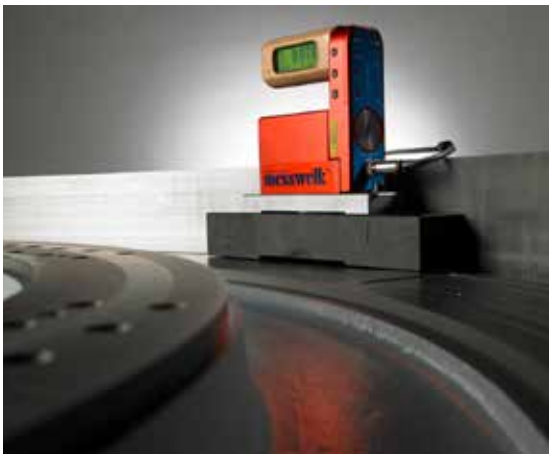
Accuracy at best requirements:
+/- 1 arcsec (Laser)
+/- 0,2 arcsec (Autokollimator)

Niveltronic



Flatness measuring in different variations:

- In installed machines
- Align to machine parts, normal level or existing areas

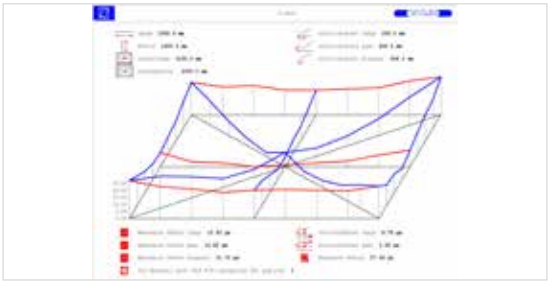


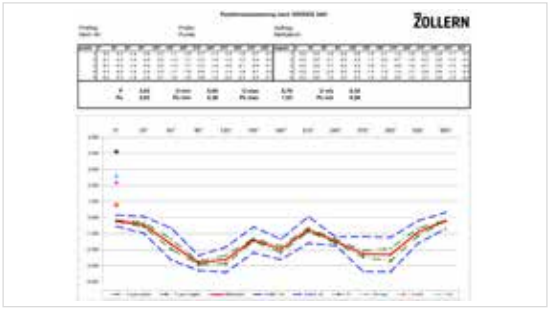
Different solutions at ring flatness.

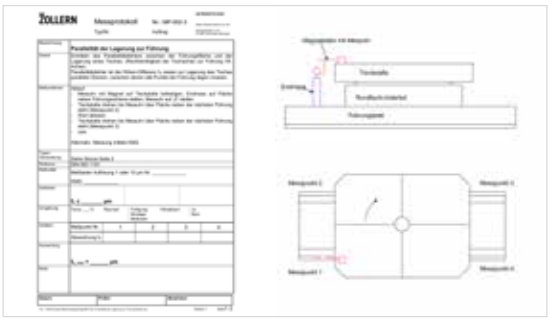
Measuring of ring flatness for using all types of bearings.

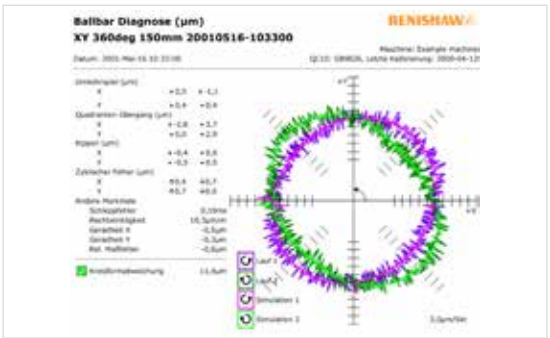
Resolution: 1 µm/m

Documentation of measuring results





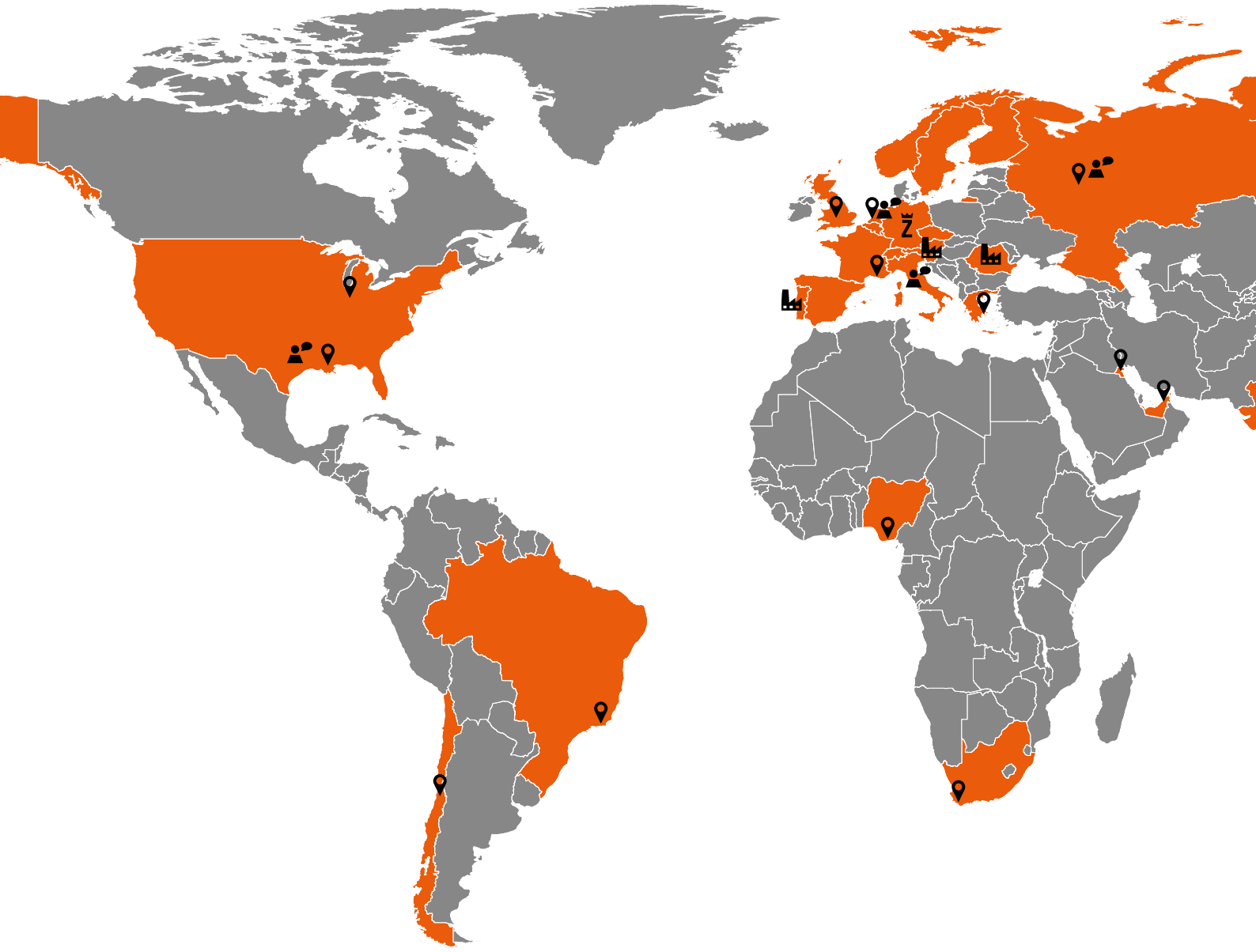


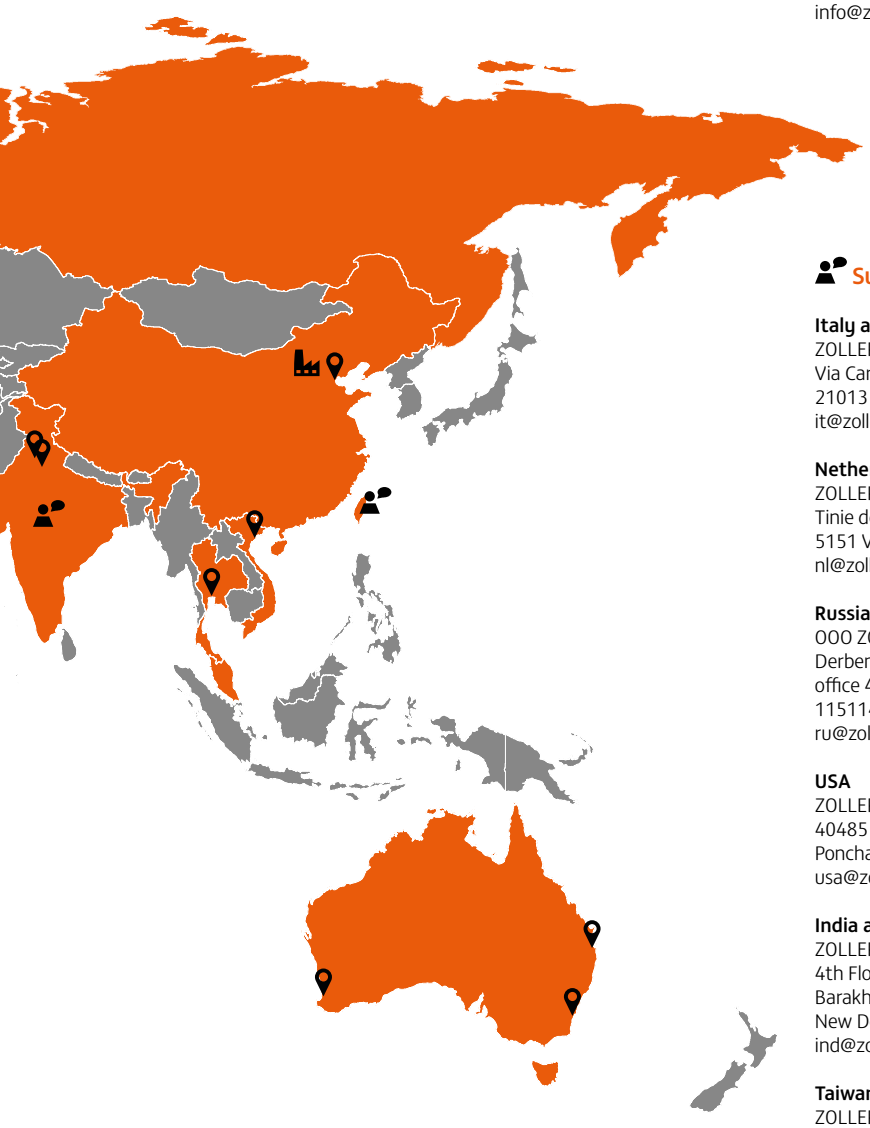


- Detailed documentation of all measuring results
- Graphical presentation for better understanding
- Documentation of measuring procedure
- Short forms (your manager just reading the facts)
- Interpretation of significant deviation of expected worth
- Analysis in different international norms, for example DIN 230, VDI/DQG 3441

ZOLLERN-Rückle worldwide

Reachable always and everywhere





Group headquarters

ZOLLERN GmbH & Co. KG
Hitzkofer Str. 1
72517 Sigmaringendorf-Laucherthal
Germany
T +49 7571 70-0
F +49 7571 70-602
info@zollern.com

Subsidiaries

Italy and Southern Europe
ZOLLERN Italiana S.r.L.
Via Carlo Noè, 45
21013 Gallarate (VA)
it@zollern.com

Netherlands and Northern Europe
ZOLLERN Nederland B.V.
Tinie de Munnikstraat 49
5151 VW Drunen
nl@zollern.com

Russia
OOO ZOLLERN Antriebstechnik
Derbenevskaya nab., 7 bld. 2,
office 432
115114 Moscow
ru@zollern.com

USA
ZOLLERN North America L.P.
40485 West I55 Service Road
Ponchatoula, LA 70454
usa@zollern.com

India and South-East Asia
ZOLLERN India Private Ltd.
4th Floor Statesman House Building
Barakhamba Road Connaught Place
New Delhi 110001
ind@zollern.com

Taiwan
ZOLLERN East Asia Ltd.
6th Floor., No. 4, Ren Ai Rd., Sec. 4
106091 Taipei
zea@zollern.com

Factories

China
ZOLLERN (Tianjin) Machinery Co. Ltd
No. 79, 11th Avenue Teda
300457 Tianjin P.r. of China
zac@zollern.com

Germany
Friedrich Blickle & Co. GmbH
Precision grinding
Flandernstraße 86, 72474 Winterlingen
fbg@zollern.com

ZOLLERN GmbH & Co. KG
Heustraße 1, 88518 Herbertingen
zat@zollern.com

Portugal
ZOLLERN & COMANDITA
Rua Jorge Ferreirinha 1095
4470-314 Maia-Vermoim
zcp@zollern.com

Romania
S.C. ZOLLERN S.R.L.
Ferma 20 FN, 317235 Pecica-Arad
zro@zollern.com

Slovenia
ZOLLERN Ravne d.o.o.
Koroška cesta 14
2390 Ravne na Koroškem, Slovenija
Sodni register Ok.Sod. v Slovenj Gradcu,
št.:1/09521/00
zrs@zollern.com

Service partner

ZOLLERN

ZOLLERN GmbH & Co. KG

Heustrasse 1
88518 Herbertingen
Germany
T +49 7586 959-0
F +49 7586 959-715
zra@zollern.com
www.zollern.com