

# *SPECIAL PROJECTS*



**BUT**  
BEARINGS UNIVERSAL TECH



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- Main drive unit of tunnel boring machine
- Conveyor system for tunnel boring machine
- Disc cutter for tunnel boring machine
- Pulp and paper, converting and printing
- Bridge and dam lifting system
- Bridge vertical lifting system
- Heavy lift dockside crane winches



## Marine and Offshore

- Main shaft of navy frigate
- Azimuthal retractable thruster
- Gyrofin stabilizer system
- Masts and spars of sailing yacht
- Jacking system in offshore platform



## Metals

- Critical rolling mill work roll
- Long product rolling mill stands
- Screwdown mechanism of high reversing finishing stand
- Slab conveyor chain of hot strip mill
- Guide rolls of continuous slab casting machine
- Back-up rolls of rolling mill stand
- Work rolls of hot rolling mill stand
- Pallet cars for sintering and pelletizing
- Rolling mill drive shaft balancing device



## Mines and Mineral

- Vibrating screen application
- Tyre rolls of vertical mill
- Cone type crusher
- Bucket wheel excavator main shaft
- Vertical mill grinding roll
- Trencher flywheel gearbox
- Horizontal mill press roll



## Power Transmission

- Wind multiplier
- Motion control drivers and motors
- Concrete mixer gearbox



## Heavy Automotive

- Front and rear axles of dump truck
- Gearbox for city bus on tyres



## Other

- Electric motors for home appliances

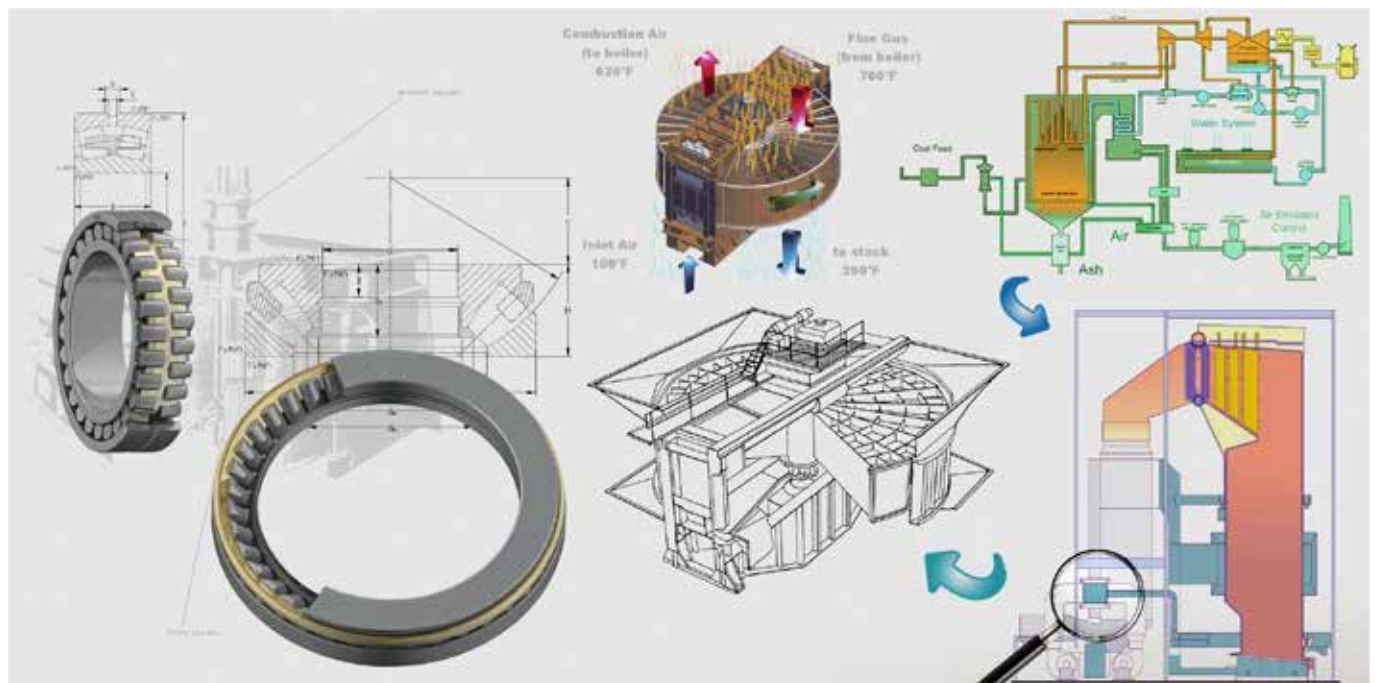


# CIVIL ENGINEERING APPLICATIONS

## AIR PREHEATER BOILER FOR POWER GENERATION

### MAIN BUT BEARINGS: T3 SEGMENT - TECHNOLOGICAL BEARINGS

- Technological spherical roller thrust bearings and spherical roller bearings for vertical rotor of bi-drum boiler regenerative air preheater
- Up to 950 mm inner diameter and bearing unit mass exceeding 2950 kg
- Optimized execution for heavy loads at low rotational speeds (3-5 rpm)

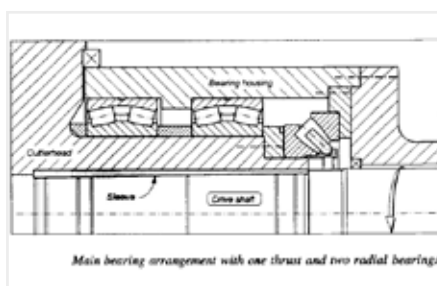
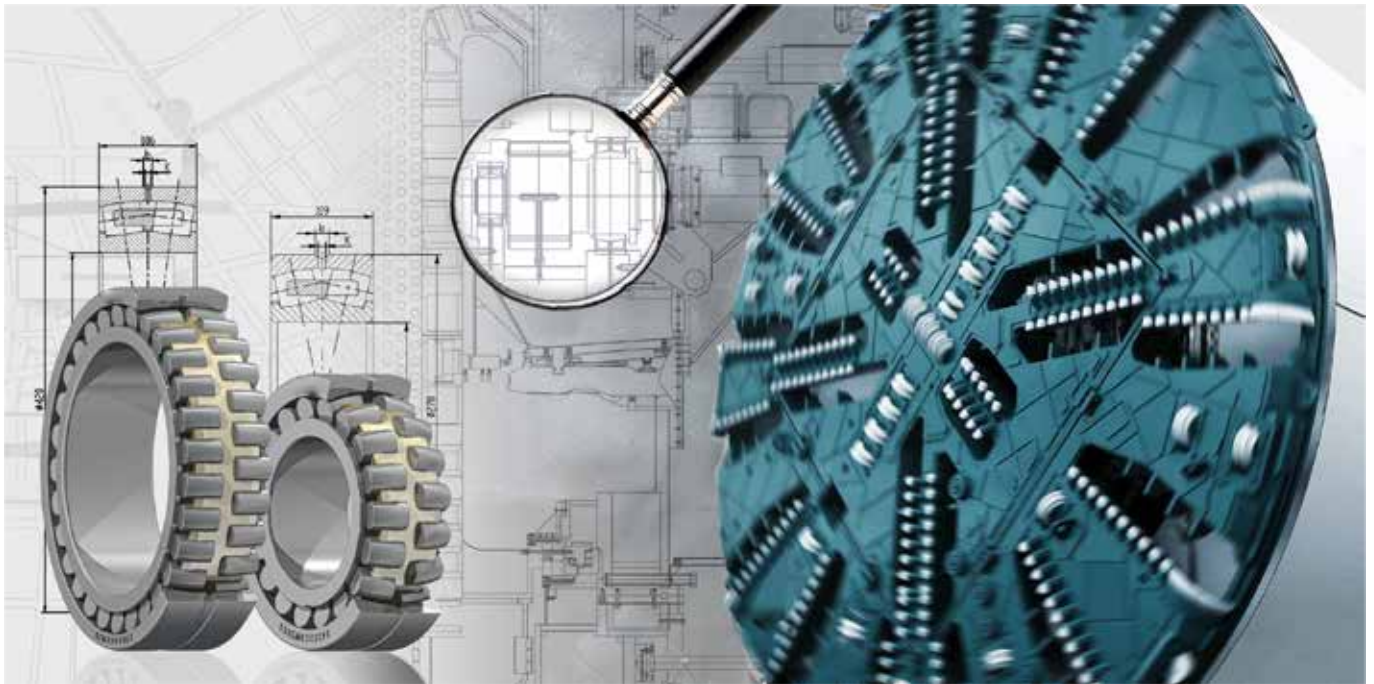




# MAIN DRIVE UNIT OF TUNNEL BORING MACHINE

## MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

- Spherical roller bearings for tunnel boring machine main drive unit
- Bearings engineered to withstand heavy radial loads, moderate/high torque and variable thrust forces
- Up to 420 mm outer diameter
- Design life ( $L_{10h}$ )  $\geq 15000$  h

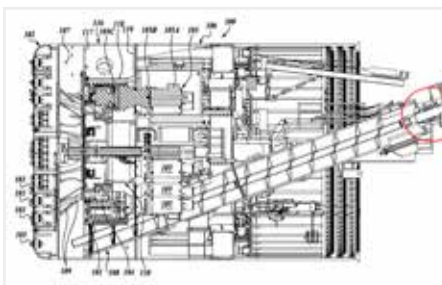
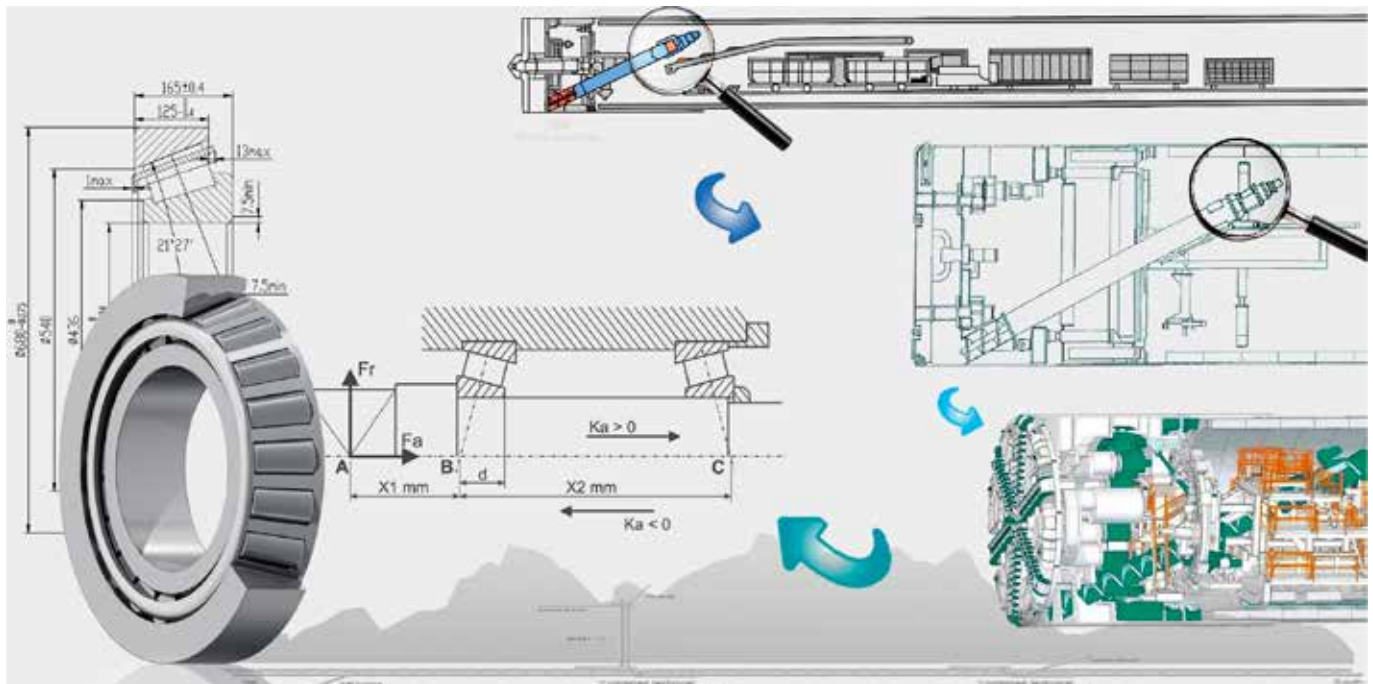


# CIVIL ENGINEERING APPLICATIONS

## CONVEYOR SYSTEM FOR TUNNEL BORING MACHINE

### MAIN BUT BEARINGS: T3 SEGMENT - TAPERED ROLLER BEARINGS

- Tapered roller bearings for screw conveyor hydraulic drive
- Up to 360 mm inner diameter and 680 mm outer diameter
- Bearings engineered to withstand heavy loads at low rotational speeds (max 22 rpm)
- Tough Roller Technology for higher safety factor ( $S_0 > 4,0$ )



# DISC CUTTER FOR TUNNEL BORING MACHINE

## MAIN BUT BEARINGS: T3 SEGMENT - SINGLE ROW TAPERED ROLLER BEARINGS

- Thin section large size single row tapered roller bearings (design and execution for heavy load applications)
- Up to 458 mm inner diameter
- $B_{10}$  life > 100000 h as per mining specifications



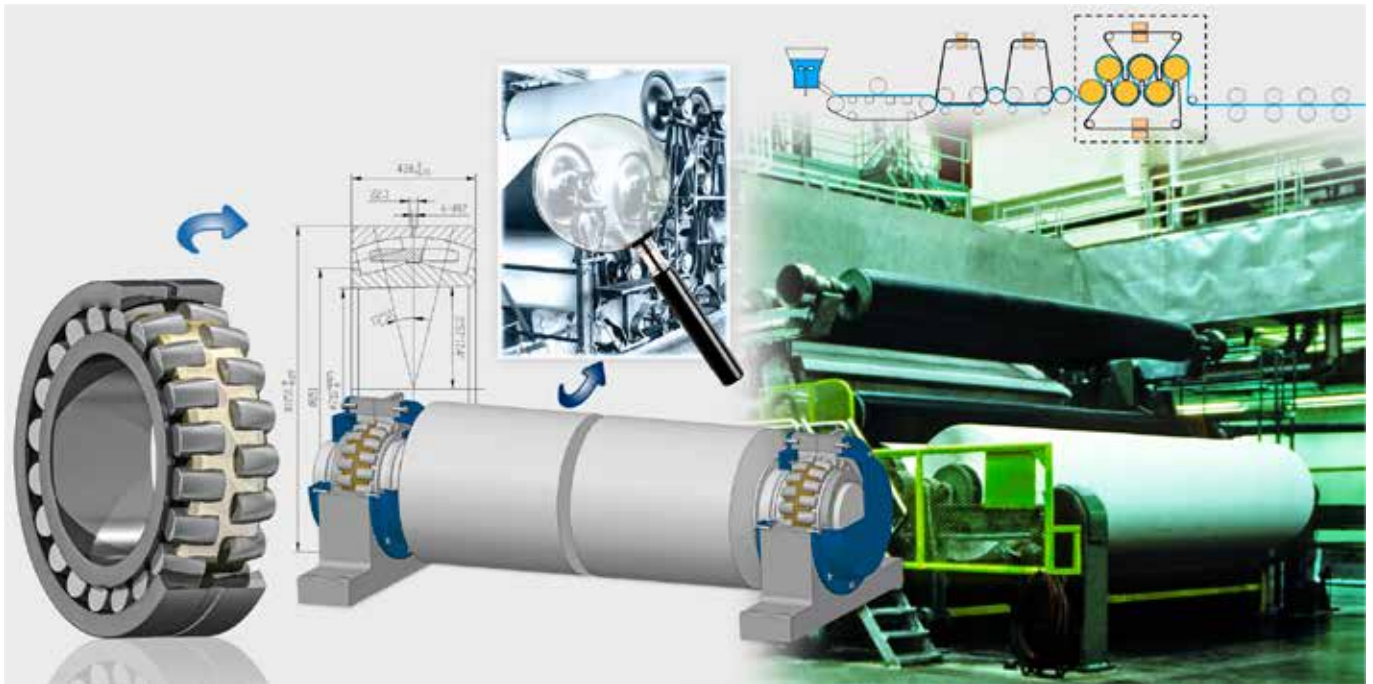


# CIVIL ENGINEERING APPLICATIONS

## PULP AND PAPER, CONVERTING AND PRINTING

### MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

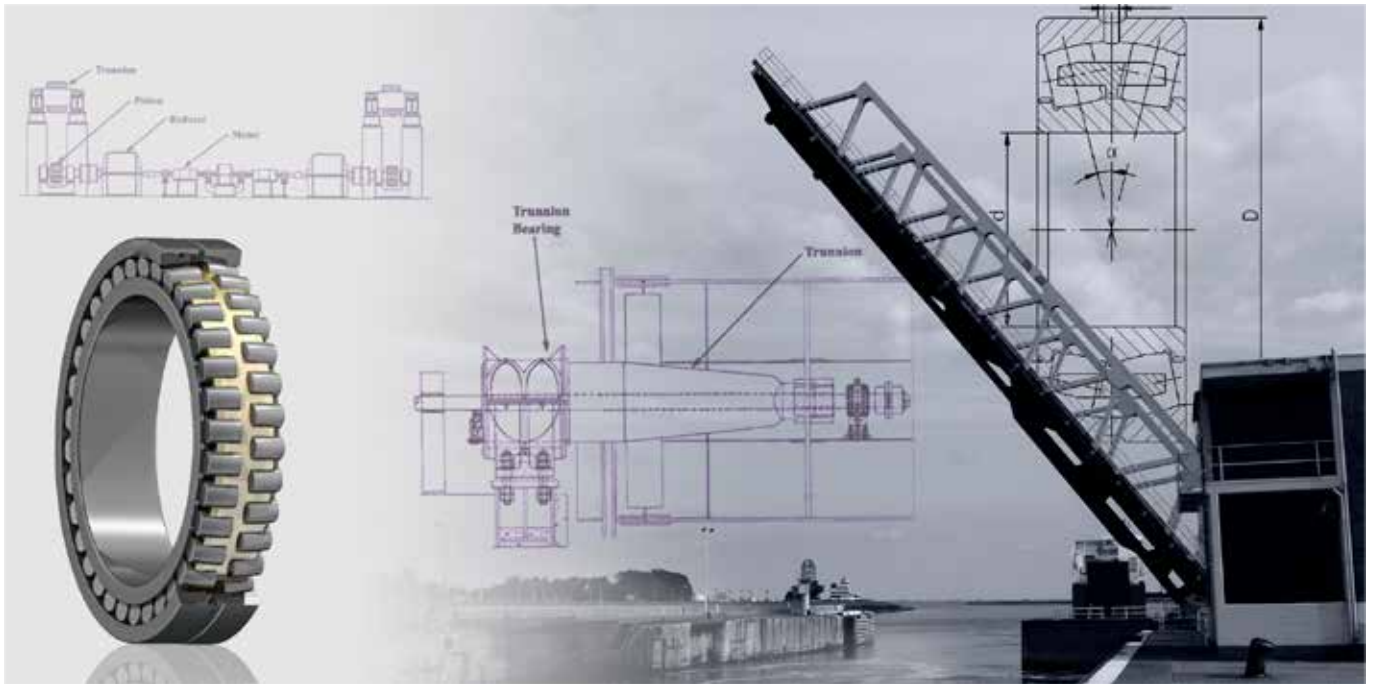
- Premium class bearings for extended service life
- Spherical, tapered and cylindrical roller bearings



# BRIDGE AND DAM LIFTING SYSTEM

## MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

- Large size spherical and cylindrical roller bearings
- Up to 560 mm inner diameter
- Safety factor ( $S_0$ ) > 7 considering material stress in the long term





# CIVIL ENGINEERING APPLICATIONS

## BRIDGE VERTICAL LIFTING SYSTEM

### MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

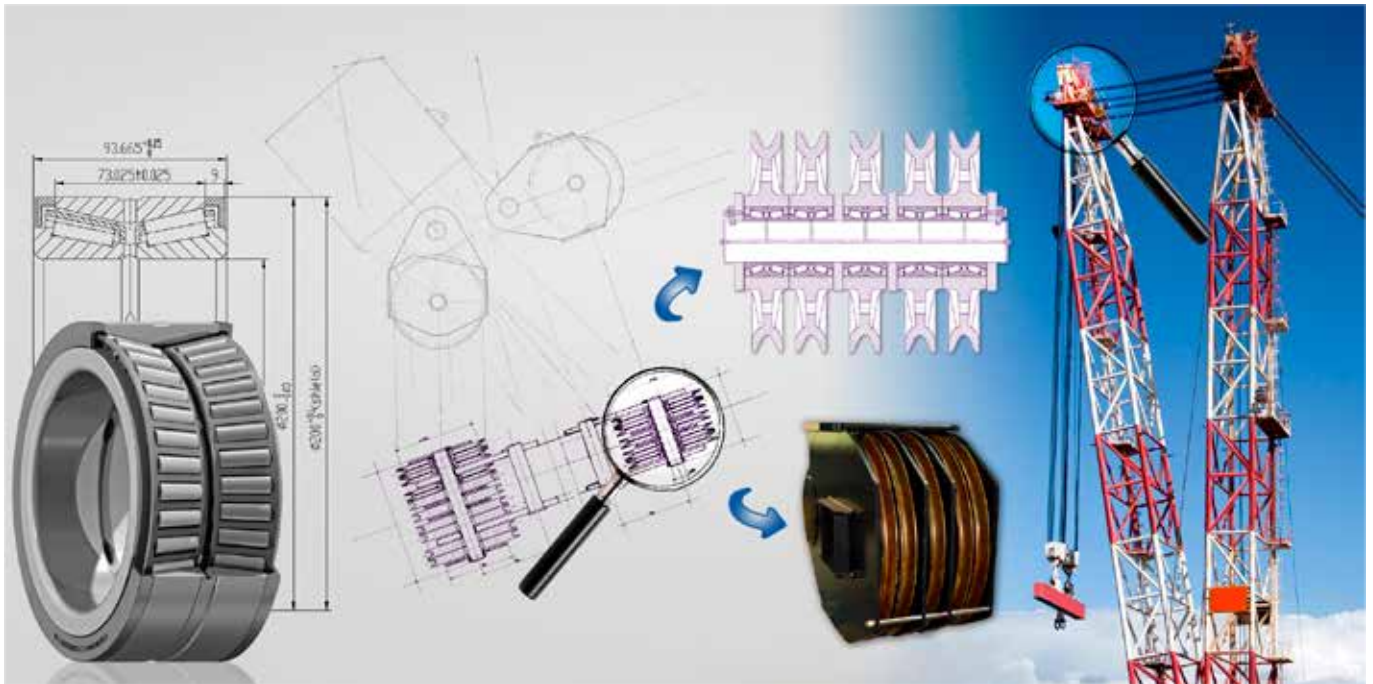
- Radial load on main bearing > 8000 kN
- Safety factor ( $S_0$ ) as per bridge design and safety specifications
- Rolling evaluated to the limits of elastohydrodynamic contact



# HEAVY LIFT DOCKSIDE CRANE WINCHES

## MAIN BUT BEARINGS: T3 SEGMENT - DOUBLE ROW TAPERED ROLLER BEARINGS WITH SHIELDS

- TDONASW series special execution for heavy lift crane winches
- Hoist axis pull up to 400 tons
- Up to 200 mm inner diameter
- $C_{0r} > 1000 \text{ kN}$

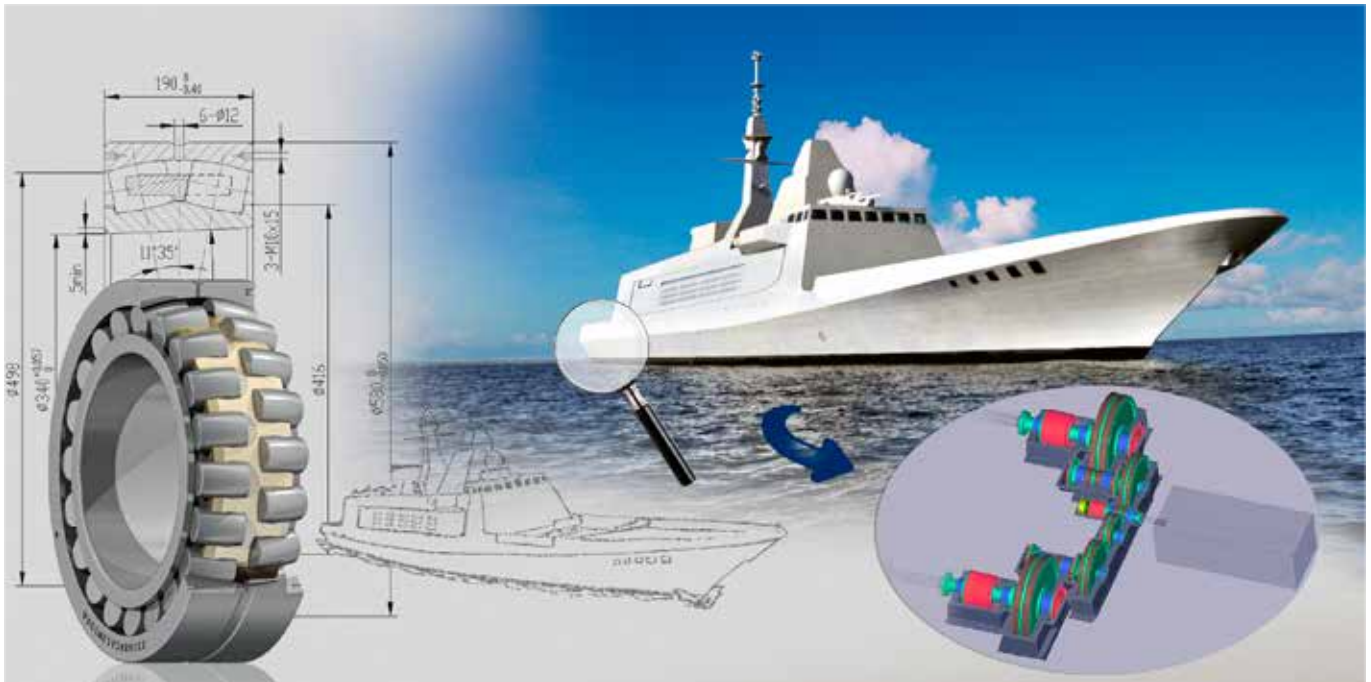


# MARINE AND OFFSHORE

## MAIN SHAFT OF NAVY FRIGATE

### MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

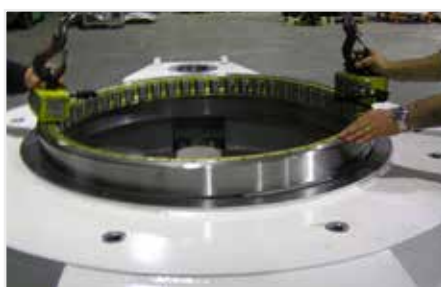
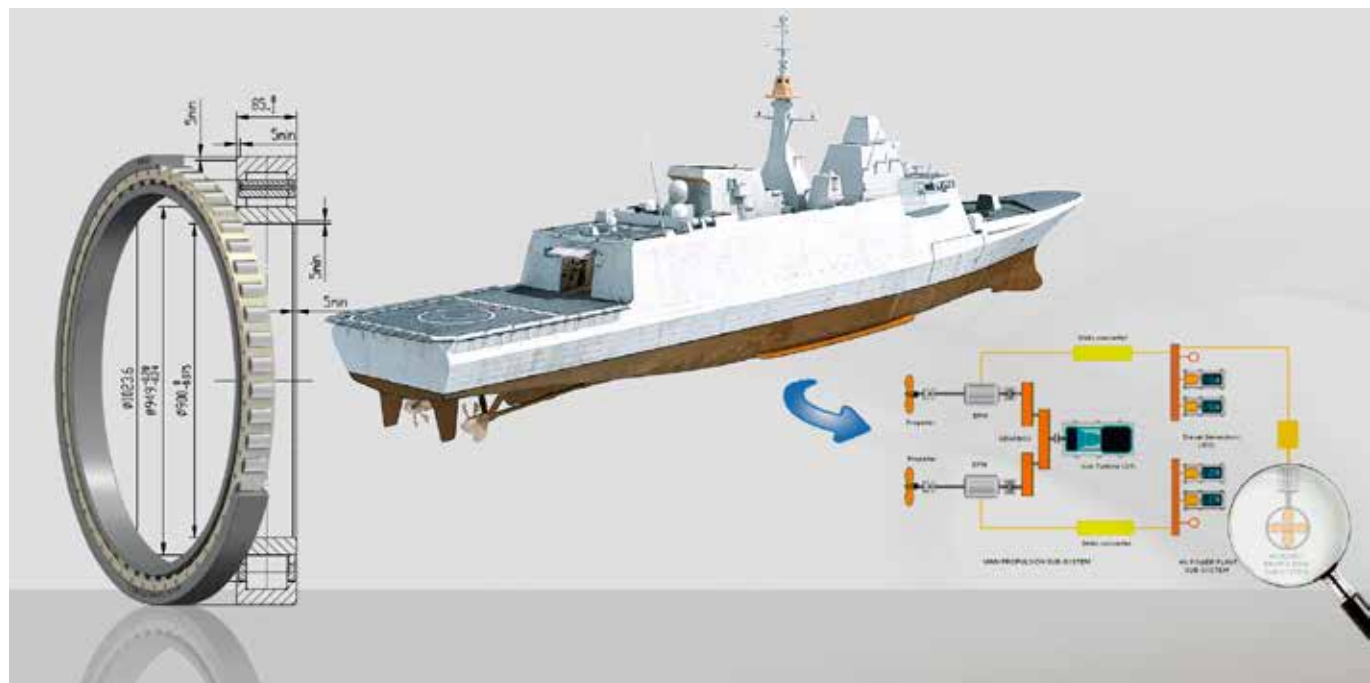
- Large size application-optimized spherical roller bearings
- Up to 340 mm inner diameter
- Safety factor ( $S_0$ ) according to military offshore equipment guidelines



# AZIMUTHAL RETRACTABLE THRUSTER

## MAIN BUT BEARINGS: T3 SEGMENT - CYLINDRICAL ROLLER BEARINGS

- Large size cylindrical roller bearings
- Up to 1090 mm outer diameter



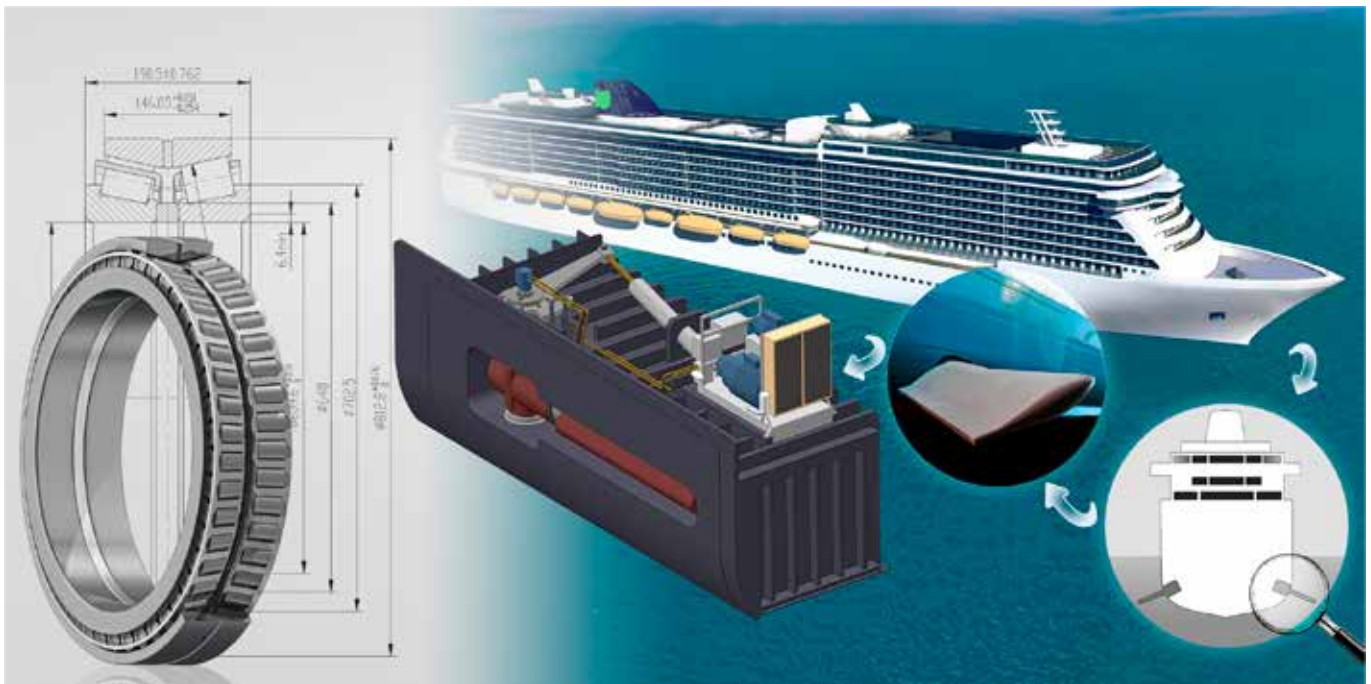


# MARINE AND OFFSHORE

## GYROFIN STABILIZER SYSTEM

### MAIN BUT BEARINGS: T3 SEGMENT - DOUBLE ROW TAPERED ROLLER BEARINGS

- Customized inch size double row tapered roller bearings (TDO configuration)
- Up to 670 mm inner diameter
- $B_{10}$  life for 750000 movements

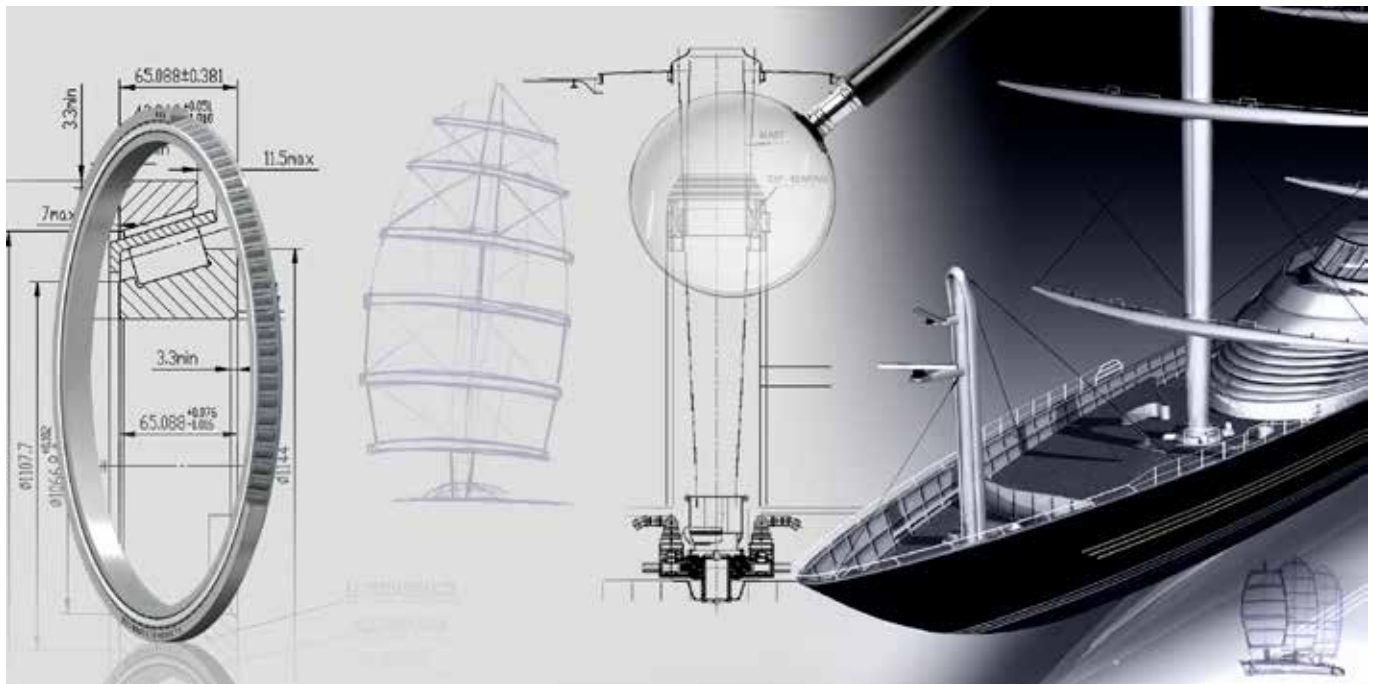




# MASTS AND SPARS OF SAILING YACHT

## MAIN BUT BEARINGS: T3 SEGMENT - SINGLE ROW TAPERED ROLLER BEARINGS

- Thin section large size single row tapered roller bearings (design and execution for heavy load applications)
- Up to 1067 mm inner diameter
- High rigidity of masts and spars with smooth rotation



# MARINE AND OFFSHORE

## JACKING SYSTEM IN OFFSHORE PLATFORM

### MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

- Spherical roller bearings for rack and pinion jacking system of NG and CJ series drilling rigs working in harsh environmental conditions
- Up to 240 mm inner diameter
- Design and execution to withstand heavy loads and variable speeds (0,3-1,2 m/min)
- Safety factor ( $S_0$ ) as per marine specifications
- Design life ( $L_{10}$ )  $\approx$  10 years service





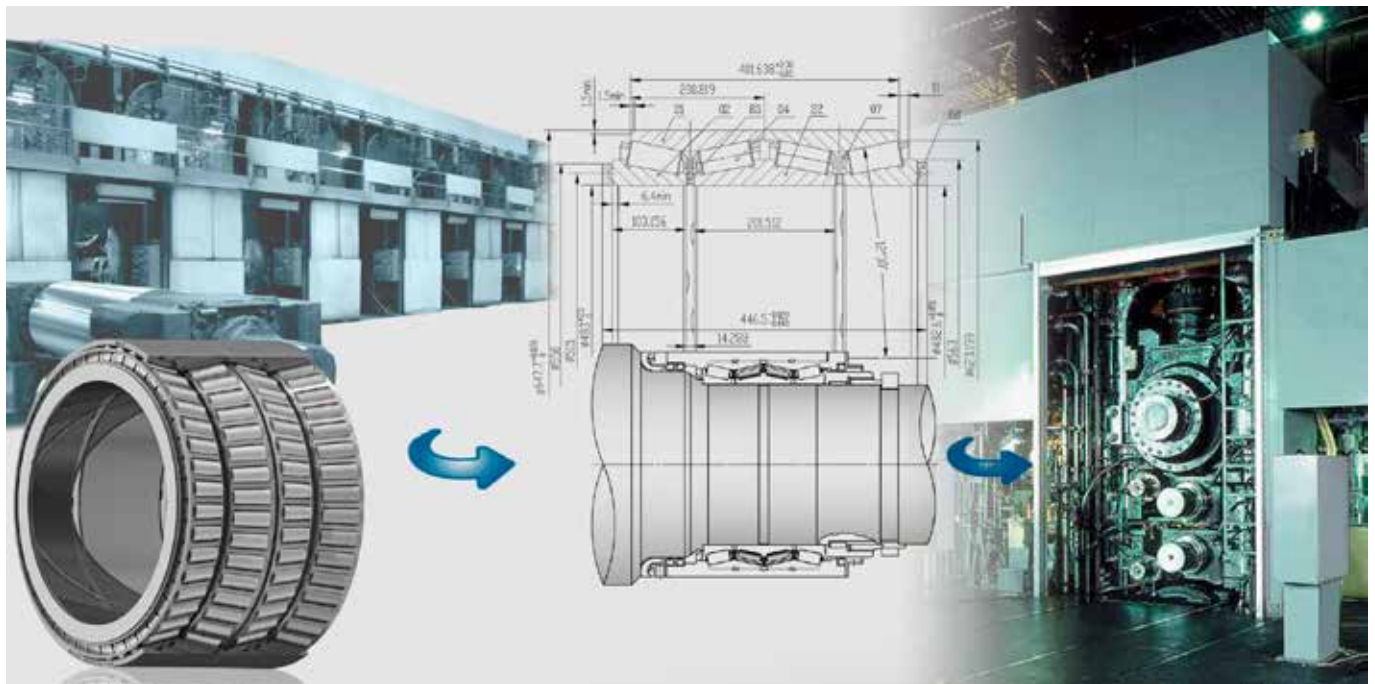
OFFSHORE JACK UP DRILLING RIG



## CRITICAL ROLLING MILL WORK ROLL

## MAIN BUT BEARINGS: T3 SEGMENT - FOUR-ROW TAPERED ROLLER BEARINGS

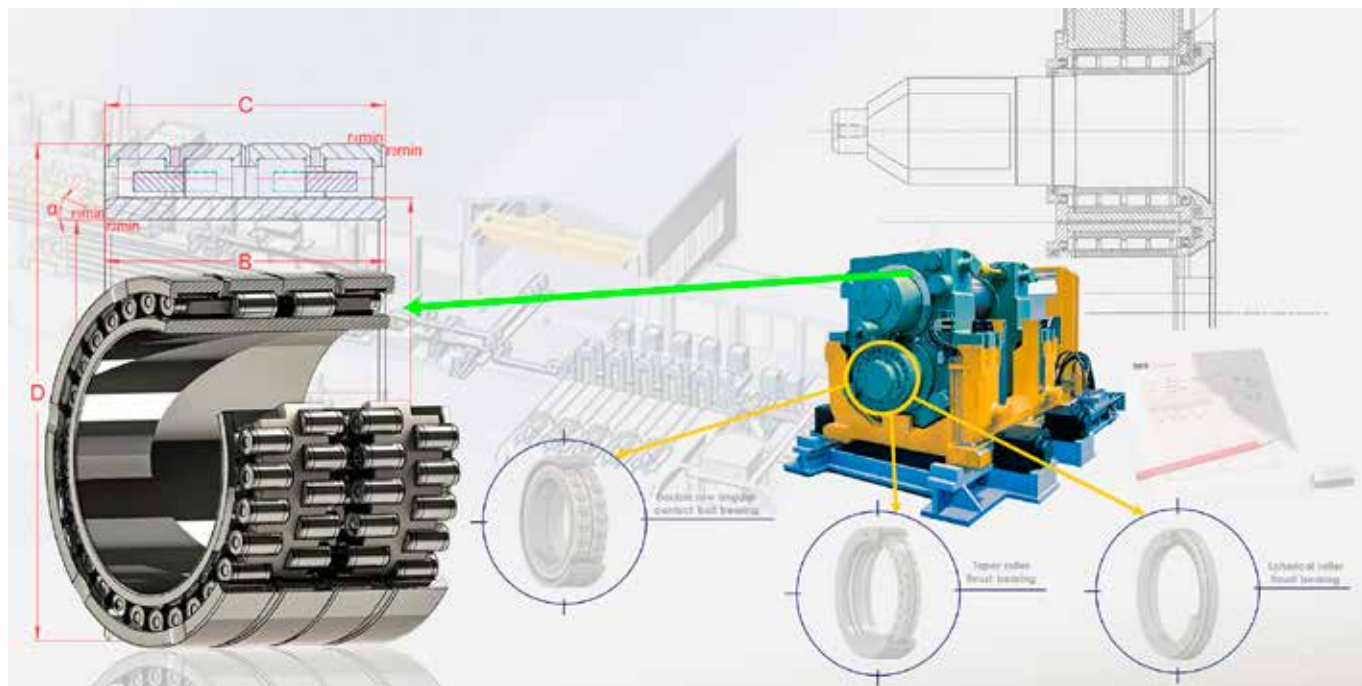
- Four-row tapered roller bearings (TQO configuration)
- Up to 28 inch inner diameter



# LONG PRODUCT ROLLING MILL STANDS

## MAIN BUT BEARINGS: T3 SEGMENT - NEW MULTI-ROW EXECUTION AF2D REINFORCED FOR ROLLING MILL STANDS

- Optimized bearing for rolling mill stand with automatic roll changing device
- Enhanced cage design with optimized pocket
- Better load distribution resulting in reduced edge contact pressure and stress concentration
- Longer service life and reliability

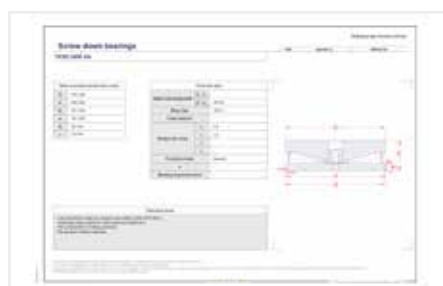
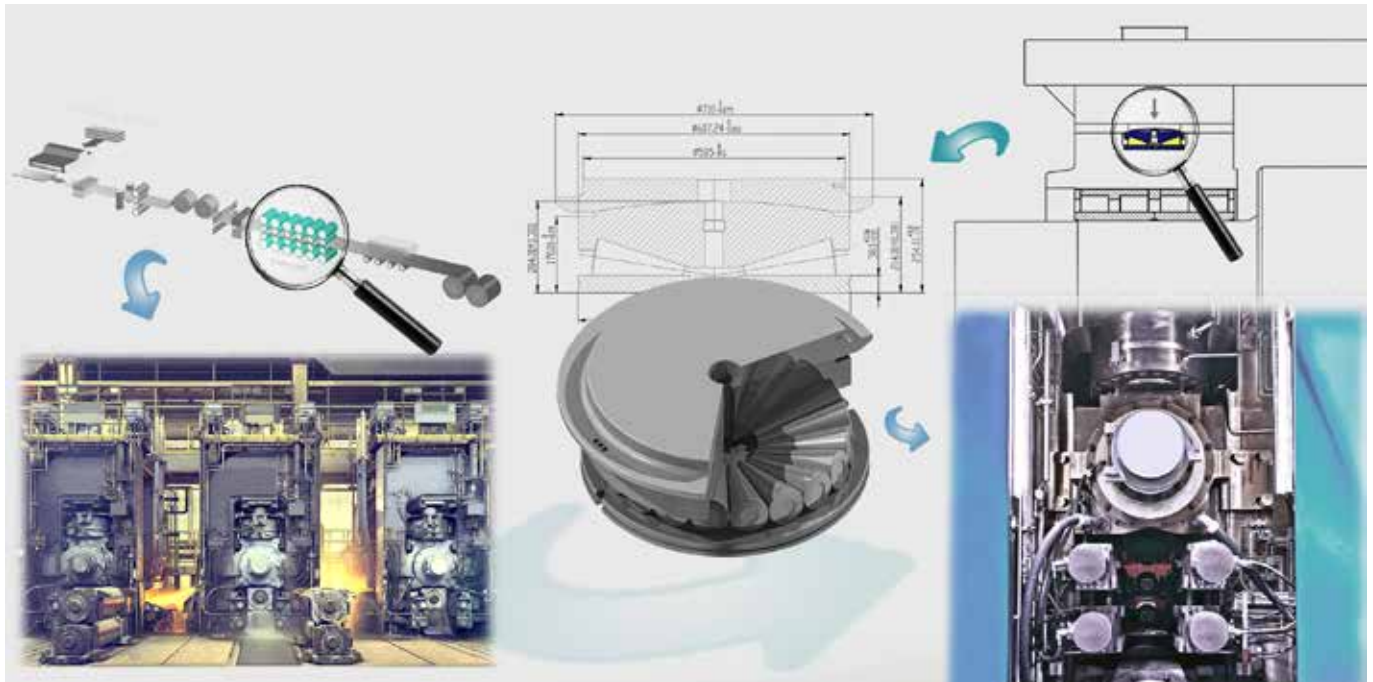




## SCREWDOWN MECHANISM OF HIGH REVERSING FINISHING STAND

## MAIN BUT BEARINGS: T3 SEGMENT - SCREWDOWN THRUST BEARINGS

- For finishing stands of hot rolling mill
- Suitable for low speeds and heavy loads
- BUT SAE 9315 case hardening steel in RAV protocol

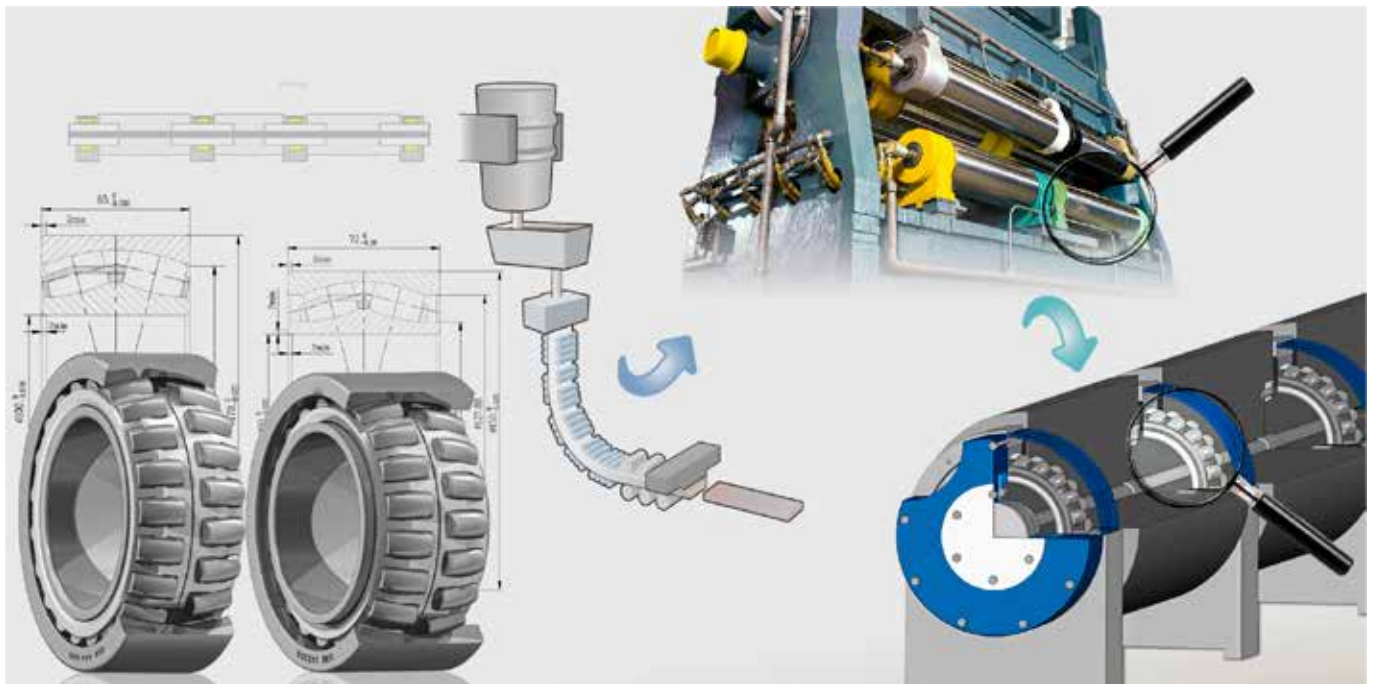




## GUIDE ROLLS OF CONTINUOUS SLAB CASTING MACHINE

### MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

- Low cross section spherical roller bearings for guide rolls of continuous slab casting in hot strip mills
- Up to 170 mm outer diameter
- Out of standard window-type cage
- Stabilizing Treatment for operating temperatures up to 300 °C (S3)

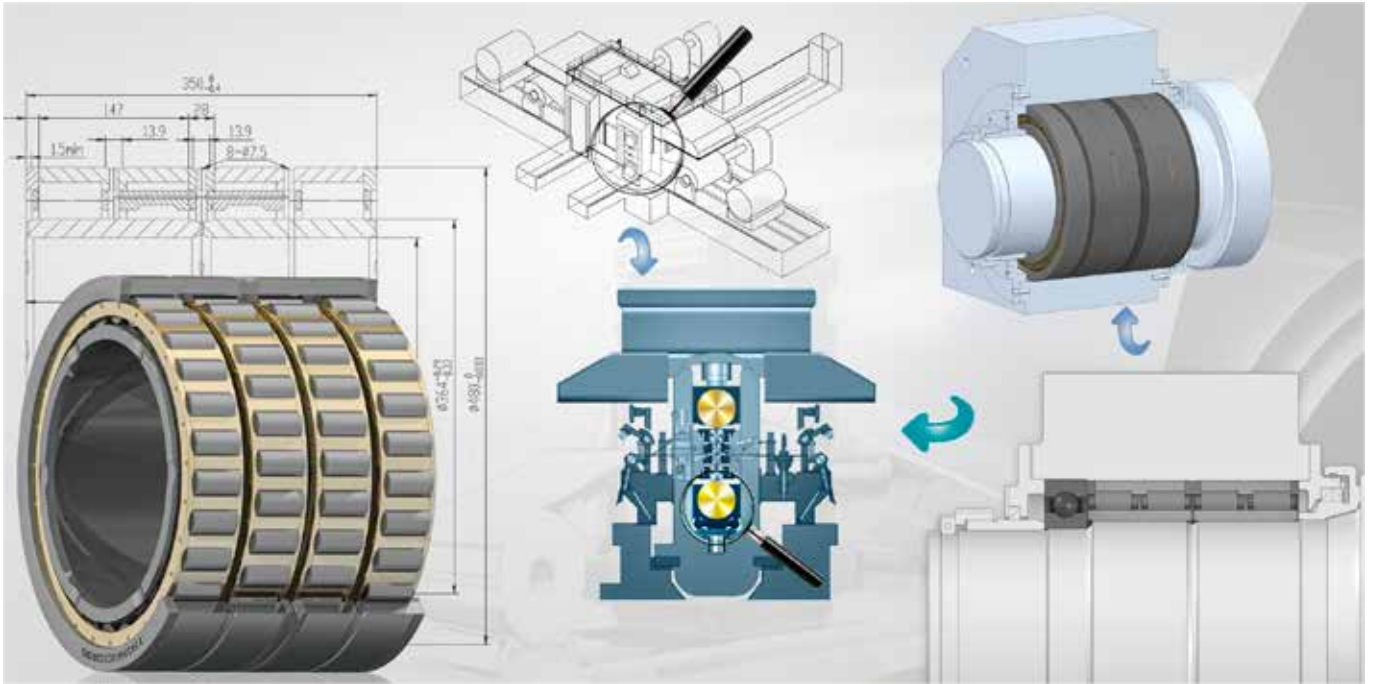




## BACK-UP ROLLS OF ROLLING MILL STAND

## MAIN BUT BEARINGS: T3 SEGMENT - FOUR-ROW CYLINDRICAL ROLLER BEARINGS

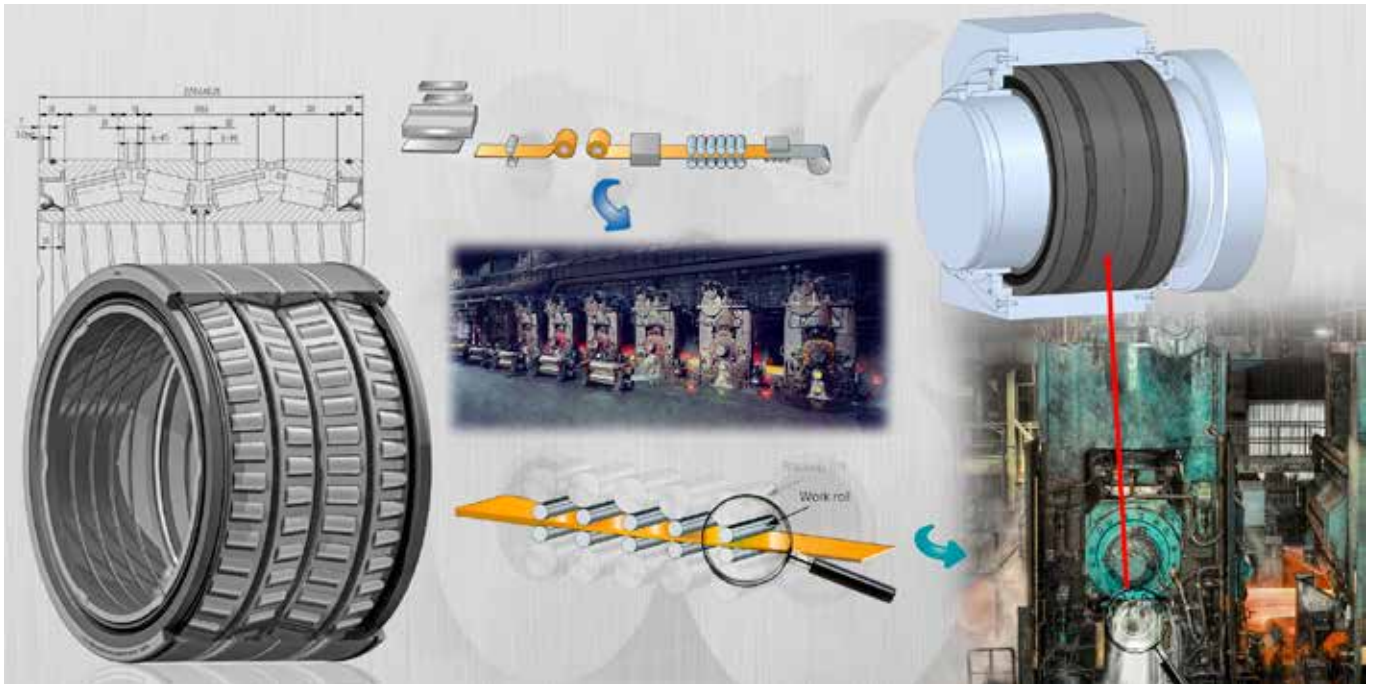
- Enhanced internal design for improved rolling accuracy at high speeds
- Cage design incorporating a large number of rollers as an alternative to pierced roller version



## WORK ROLLS OF HOT ROLLING MILL STAND

### MAIN BUT BEARINGS: T3 SEGMENT - SEALED FOUR-ROW TAPERED ROLLER BEARINGS

- Long life series bearings
- Phosphate Treatment for rings, rollers and spacers (PT4)
- Increase of rolling efficiency by stable operation
- Easier handling of seals





# PALLET CARS FOR SINTERING AND PELLETIZING

## MAIN BUT BEARINGS: T3 SEGMENT - TECHNOLOGICAL BEARINGS

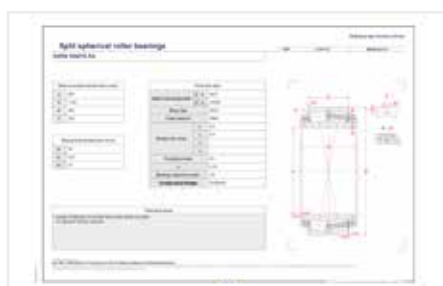
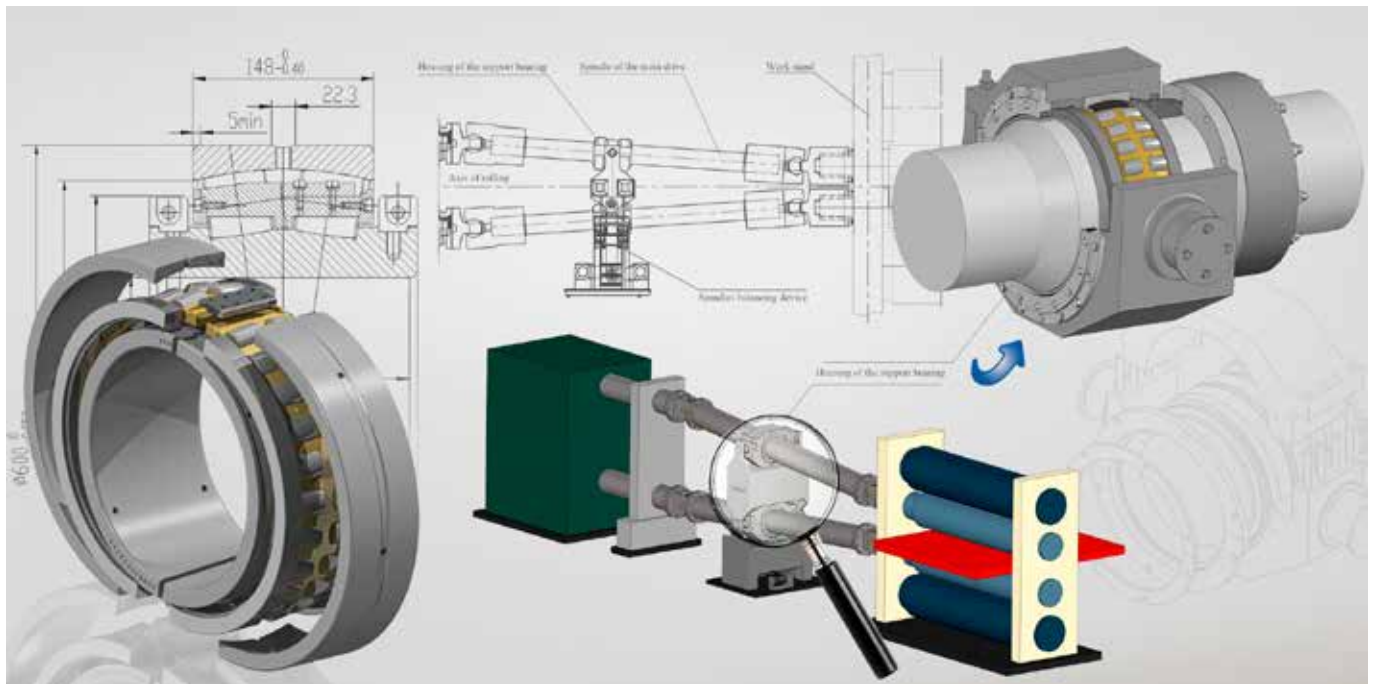
- Track roller units and single row tapered roller bearings paired back-to-back for sinter machine pallet car wheels
- Up to 140 mm inner diameter and 250 mm outer diameter
- Reinforced execution for shock loads
- High load carrying capacity achieved through full complement design
- Bainite Treatment for outer rings (HB2)
- EP grease with excellent behavior at high temperatures and pressures



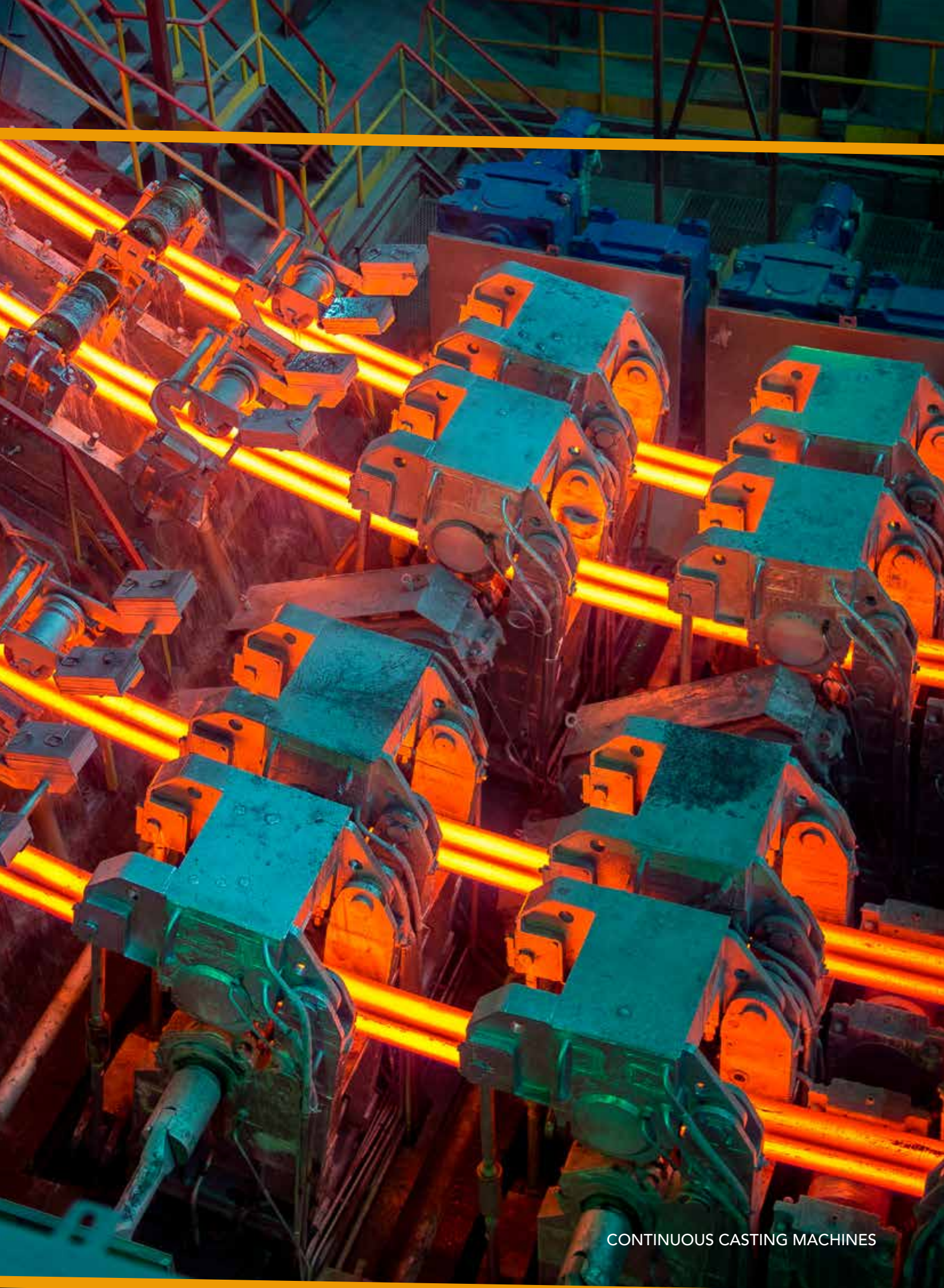
## ROLLING MILL DRIVE SHAFT BALANCING DEVICE

### MAIN BUT BEARINGS: T3 SEGMENT - SPLIT SPHERICAL ROLLER BEARINGS

- Time saving bearing replacement in hard-to-reach positions
- Up to 560 mm inner diameter
- Manufacturing technology and expertise for top reliability
- Engineered to accommodate primarily external radial loads and partially axial loads in both directions
- High load carrying capacity due to large number of spherical rollers with the largest possible diameter







CONTINUOUS CASTING MACHINES

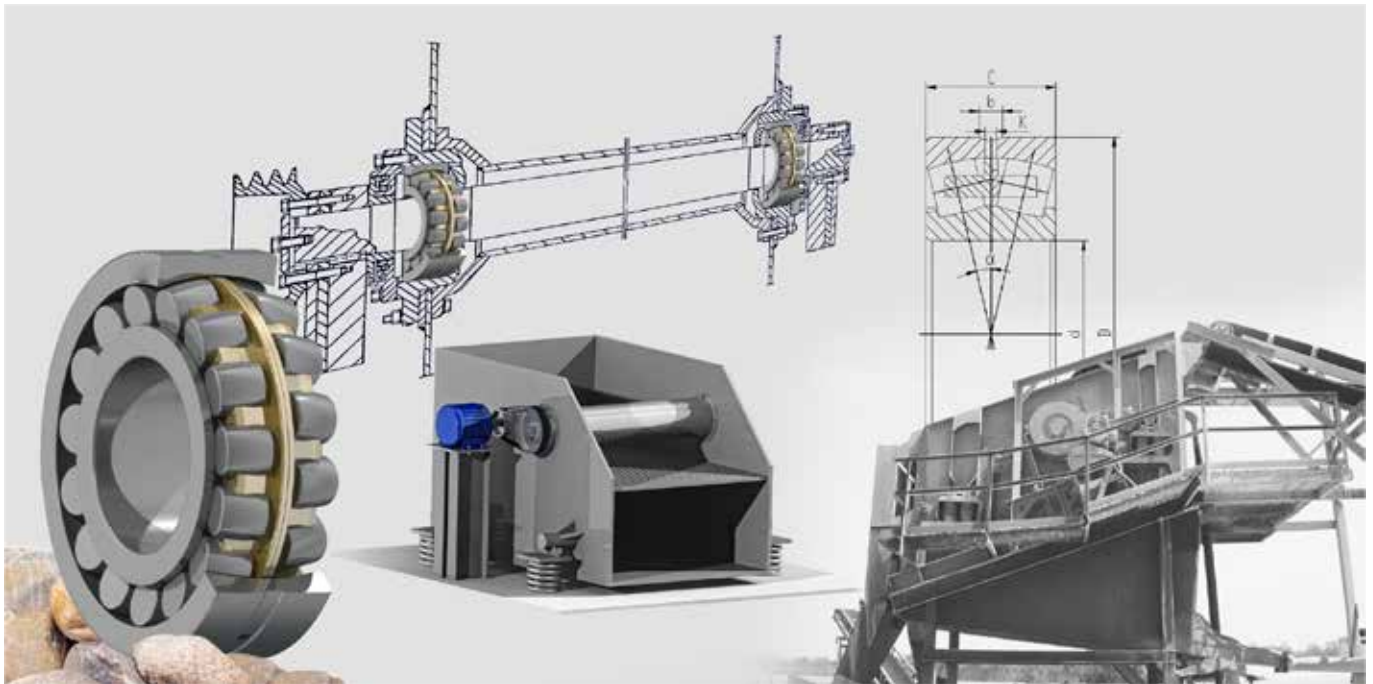


# MINES AND MINERAL

## VIBRATING SCREEN APPLICATION

### MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

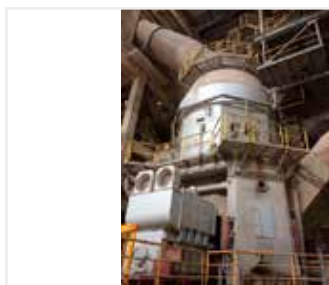
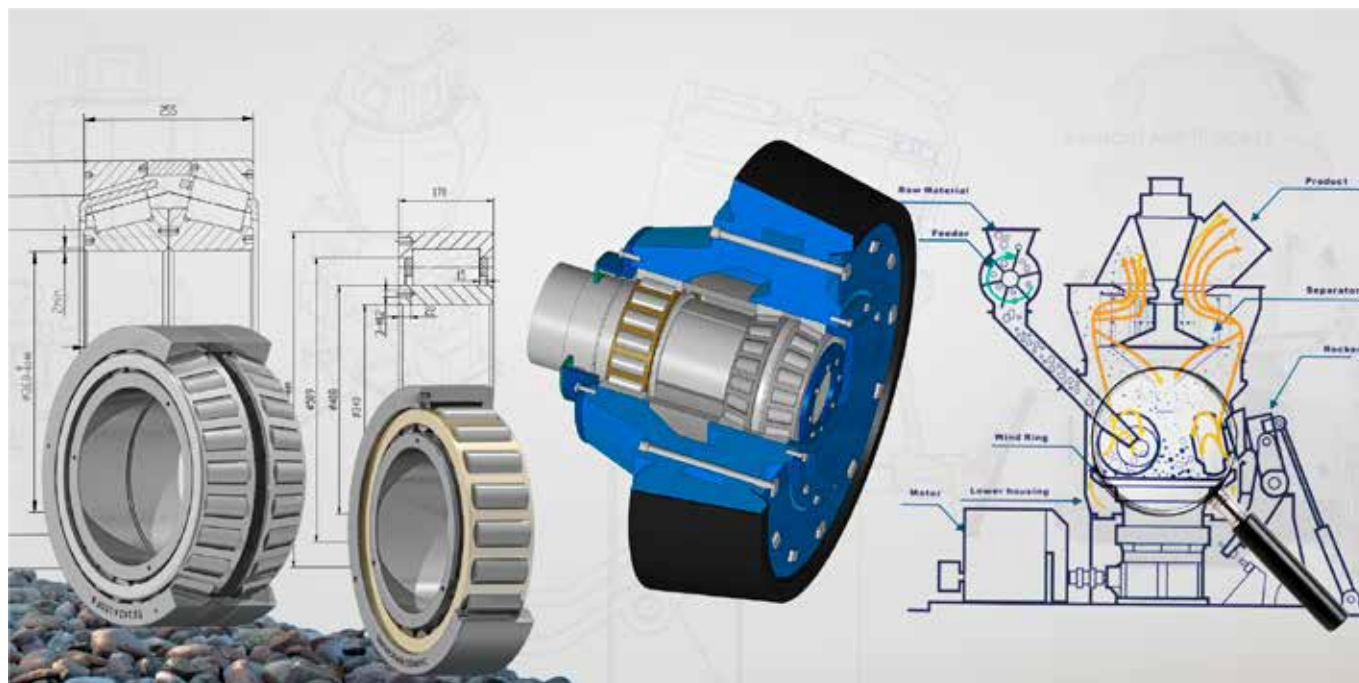
- Bainite and Stabilizing Treatments for rings (HB1+S1)
- Outer ring guided cage MA type with open-end design for better lubrication
- Controlled radial clearance in restricted range
- Higher precision class than standard 223 series



# TYRE ROLLS OF VERTICAL MILL

## MAIN BUT BEARINGS: T3 SEGMENT - TECHNOLOGICAL BEARINGS

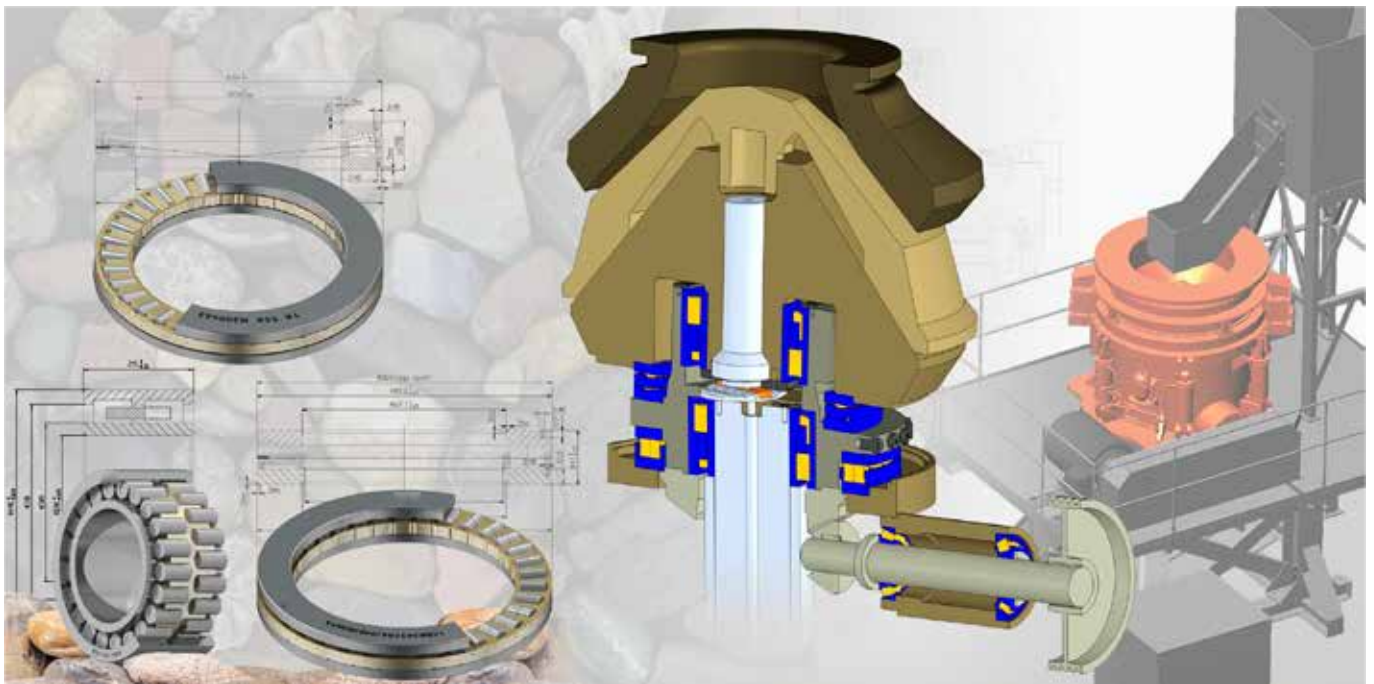
- Technological cylindrical and tapered roller bearings (DF configuration) for liftable grinding rolls of vertical mill
- Up to 440 mm inner diameter and 750 mm outer diameter
- Safety factor ( $S_0$ ) > 5 with high presence of grinding shocks
- Design life ( $L_{10mh}$ ) > 20000 h



## CONE TYPE CRUSHER

### MAIN BUT BEARINGS: T3 SEGMENT - TECHNOLOGICAL BEARINGS

- Technological double row cylindrical roller and thrust roller bearings
- Superior load capacities
- Optimized design of inner executions for improved lubrication and resistance to high vibrations/shocks

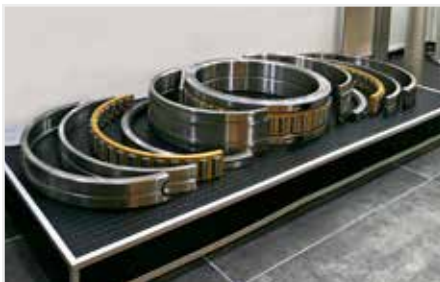
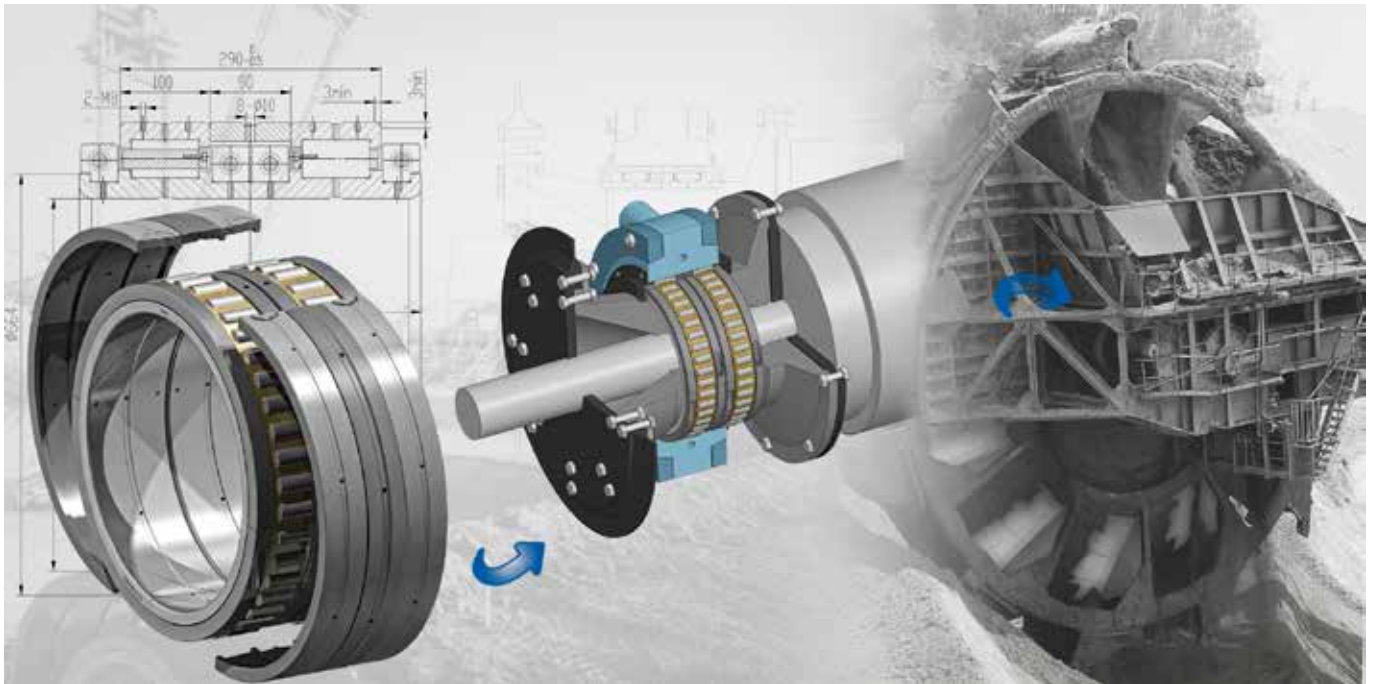




# BUCKET WHEEL EXCAVATOR MAIN SHAFT

## MAIN BEARINGS: T3 SEGMENT - SPLIT DOUBLE ROW CYLINDRICAL ROLLER BEARINGS

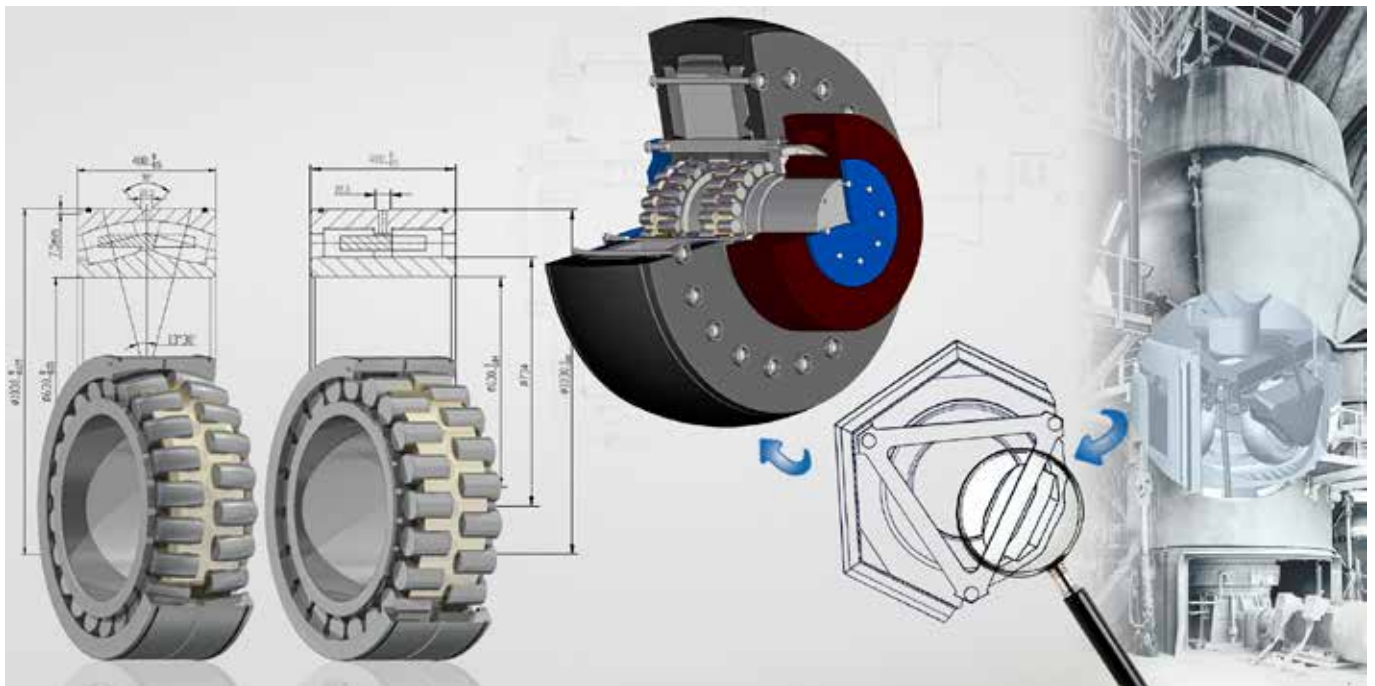
- Time saving in hard-to-reach positions
- Manufacturing technology and expertise for maximum reliability
- Engineered for modified ISO life ( $L_{10mh}$ ) > 20000 h
- Up to 780 mm outer diameter
- Safety factor ( $S_0$ ) > 3



## VERTICAL MILL GRINDING ROLL

### MAIN BUT BEARINGS: T3 SEGMENT - TECHNOLOGICAL BEARINGS

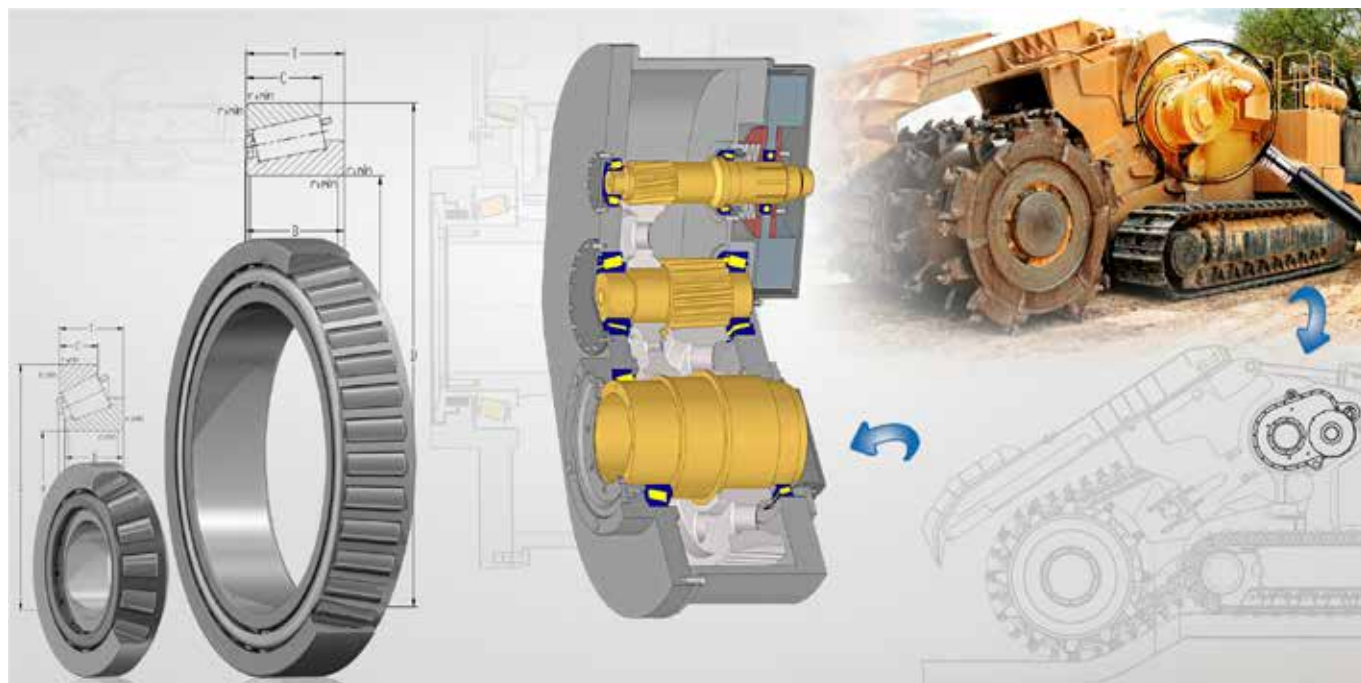
- MPS Series
- Up to 750 mm inner diameter
- Safety factor ( $S_0$ ) > 4 with high presence of shocks
- Harsh environmental conditions with suspended dust particles
- High working temperature up to 200-250 °C



# TRENCHER FLYWHEEL GEARBOX

## MAIN BEARINGS: T3 SEGMENT - TAPERED ROLLER BEARINGS

- E-Type design tapered roller bearings with optimized inner geometry for high load capacity and precise axial adjustment on shafting
- Low-speed shaft of 240 mm diameter with highly productive trenching requirements
- BUT Bainite Treatment (HB) to support heavy shock loads

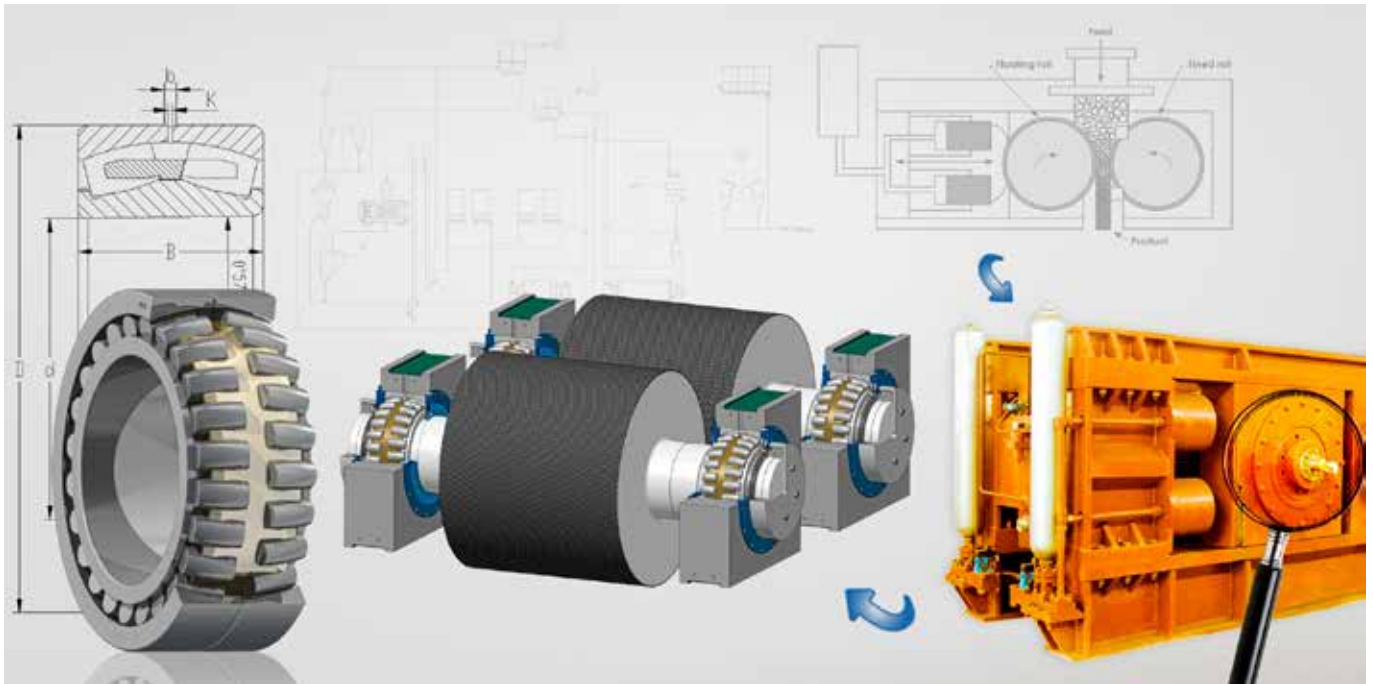




## HORIZONTAL MILL PRESS ROLL

### MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS

- Technological spherical roller bearings for floating and fixed rolls of high-locking presses
- Bearings engineered to withstand short skewing loads between rolls
- Optimized execution for high load carrying capacity at low rotational speeds
- Bearings and housings expressly designed for transmission of heavy forces by hydraulic presses







BUCKET WHEEL EXCAVATOR



# POWER TRANSMISSION

## WIND MULTIPLICATOR

### MAIN BUT BEARINGS: T3 SEGMENT - TECHNOLOGICAL BEARINGS

- Technological bearings for speed multipliers used in medium and high power wind turbines (over 850 kW)
- Maximum reliability required due to the application conditions
- Bearing optimization through BUT R&D activity

#	BEARING TYPE
BEA. 1	Full complement cylindrical roller bearings NCF18 series
BEA. 2	Full complement cylindrical roller bearings NCF18 series
BEA. 3	Paired set cylindrical roller bearings RN series
BEA. 4	Paired set cylindrical roller bearings RN series
BEA. 5	Spherical roller bearings
BEA. 6	Spherical roller bearings
BEA. 7	Single-row cylindrical roller bearings NJ series
BEA. 8	Single-row cylindrical roller bearings NJ series
BEA. 9	Single-row cylindrical roller bearings NU series
BEA. 10	Single-row taper roller bearings
BEA. 11	Single-row taper roller bearings

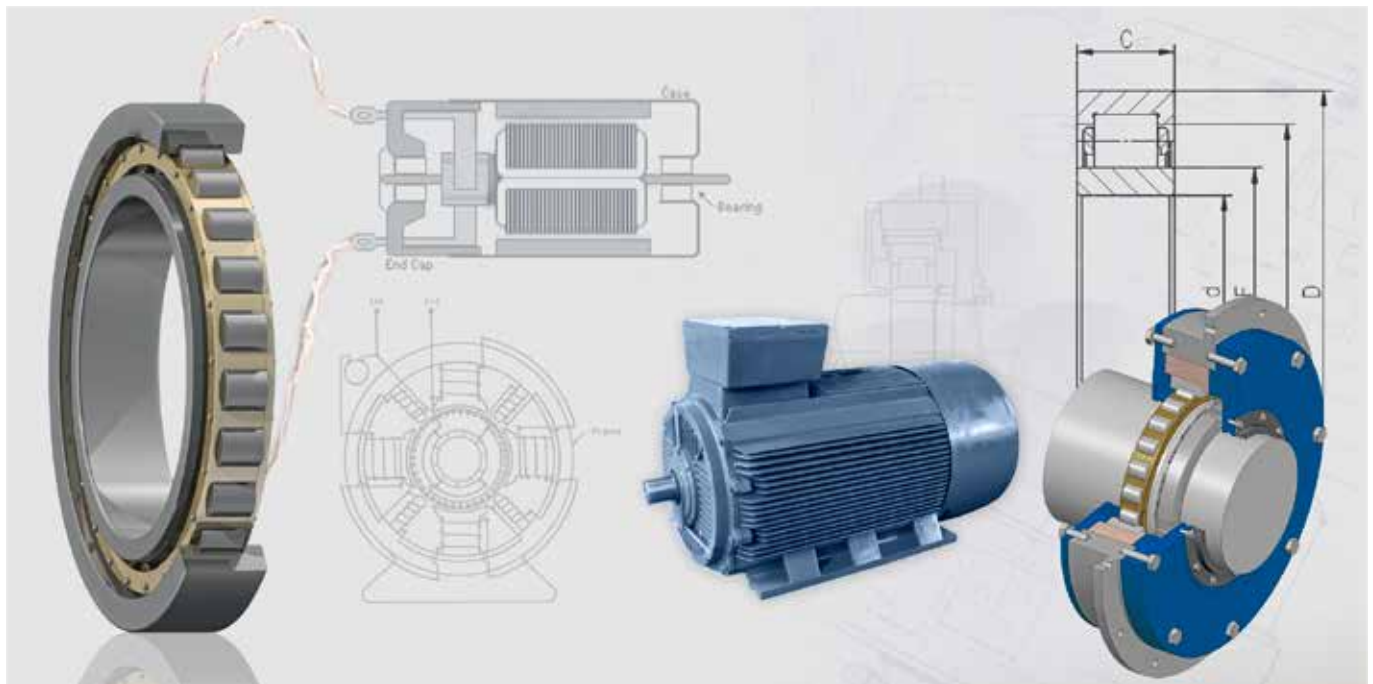




# MOTION CONTROL DRIVERS AND MOTORS

## MAIN BUT BEARINGS: T3 SEGMENT - CYLINDRICAL ROLLER BEARINGS

- Cylindrical roller bearings and deep groove ball bearings for traction motors
- Up to 320 mm inner diameter

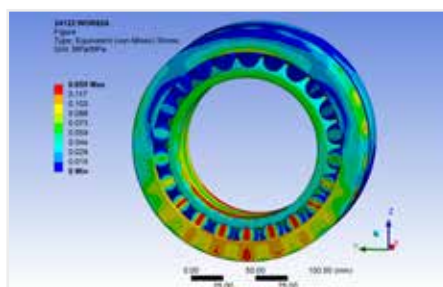


# POWER TRANSMISSION

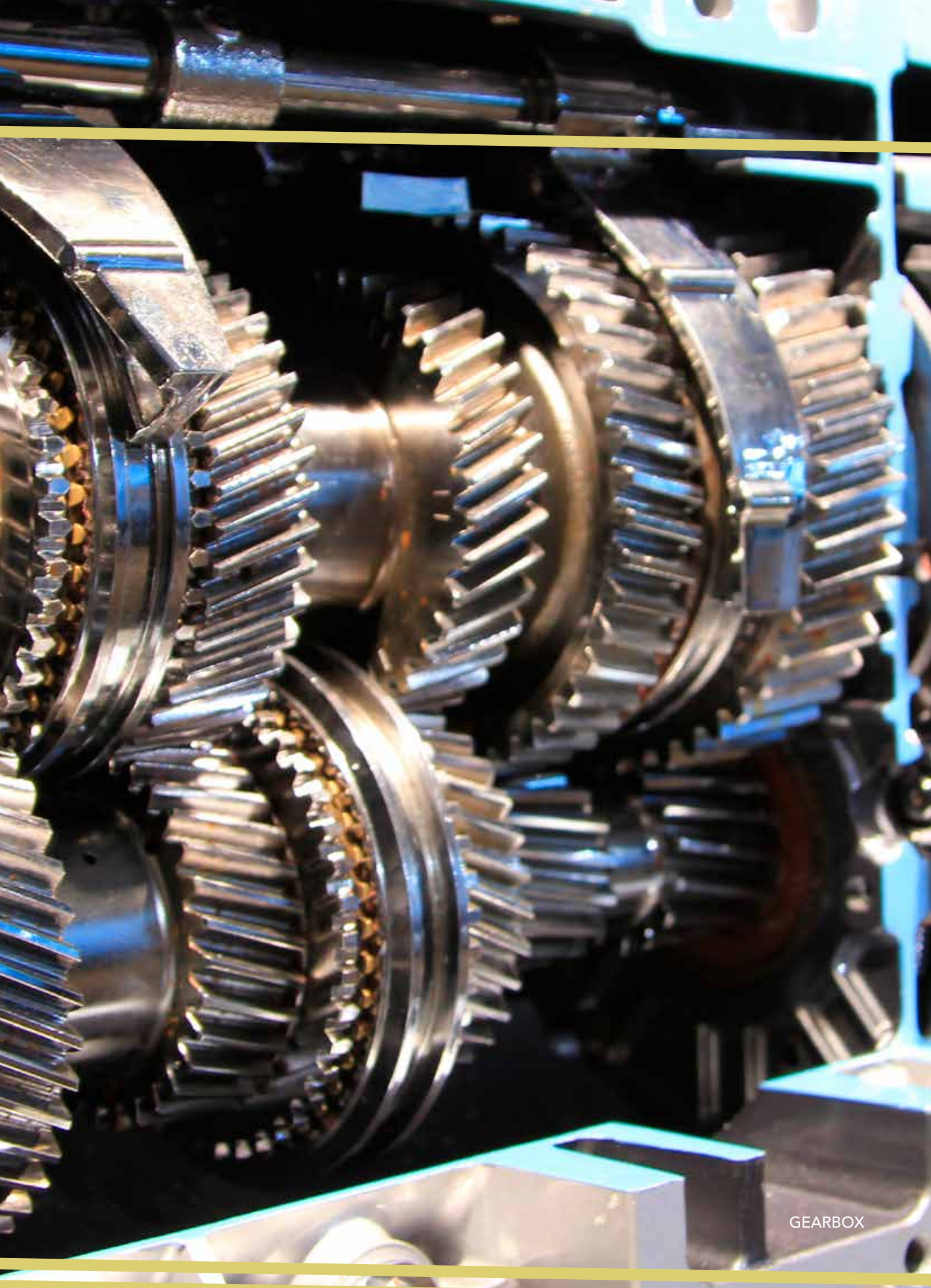
# CONCRETE MIXER GEARBOX

## MAIN BUT BEARINGS: T3 SEGMENT - SPHERICAL ROLLER BEARINGS WOR DESIGN

- Bearing internal geometry optimized through Finite Element Analysis to sustain additional loads and friction at low operating speeds (max 20 rpm)
- Increased permissible misalignment up to  $\pm 6^\circ$  (Wider Outer Ring) in transit mixer concrete gearbox
- Premium steel class for higher reliability and extended service life
- Special heat treatments to decrease incidence of cracking
- Safety factor ( $S_0$ )  $> 2,5$
- Design life ( $L_{10m}$ )  $> 2,6$  million revolutions  $\approx 10$  years service







GEARBOX



## FRONT AND REAR AXLES OF DUMP TRUCK

### MAIN BUT BEARINGS: T3 SEGMENT - SINGLE ROW TAPERED ROLLER BEARINGS

- Single row tapered roller bearings for dumper transmission (wheel hubs of front and rear axles)
- Up to 300 mm inner diameter and 422 mm outer diameter
- E-Type design and execution for high load capacity, higher accuracy and shock resistance
- Rating life ( $L_{10}$ ) > 100000 km of the vehicle



# GEARBOX FOR CITY BUS ON TYRES

## MAIN BUT BEARINGS: T3 SEGMENT - TECHNOLOGICAL BEARINGS

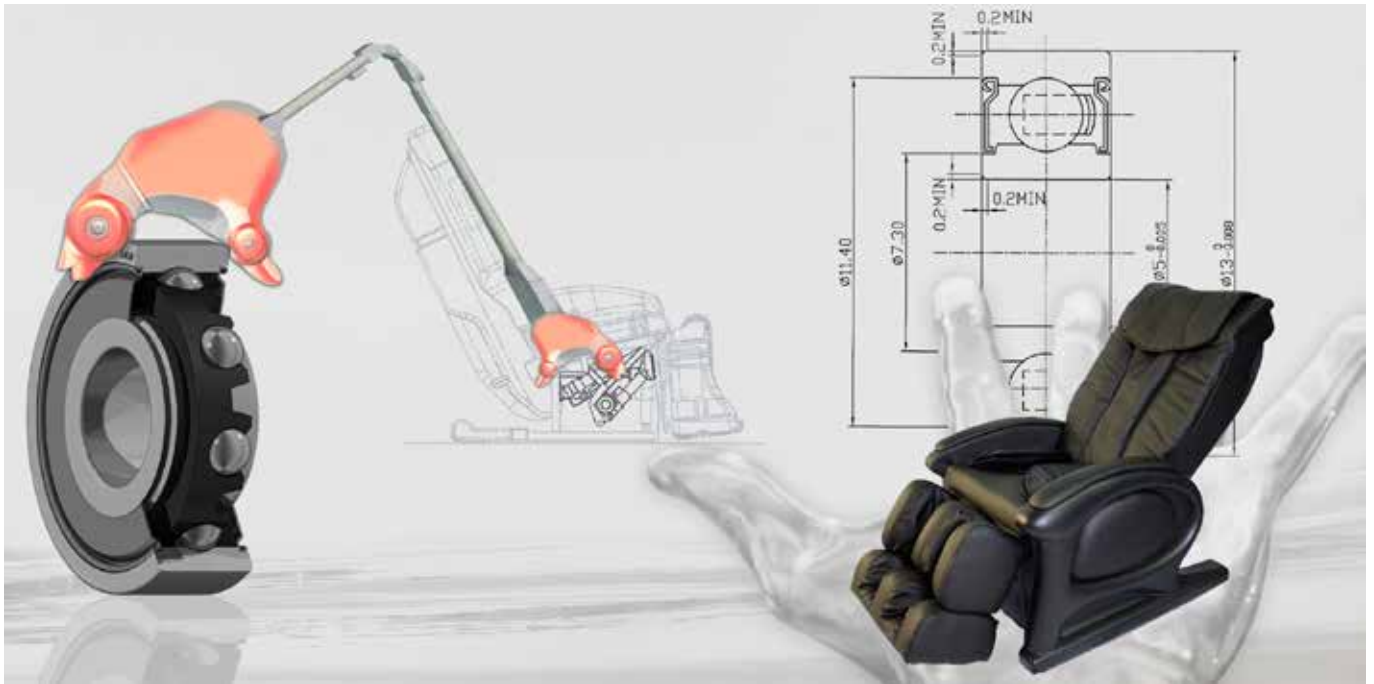
- Application optimized tapered and cylindrical roller bearings
- Up to 280 mm inner diameter
- Required operating life ( $L_{10m}$ ) > 1,8 million kilometers of the vehicle



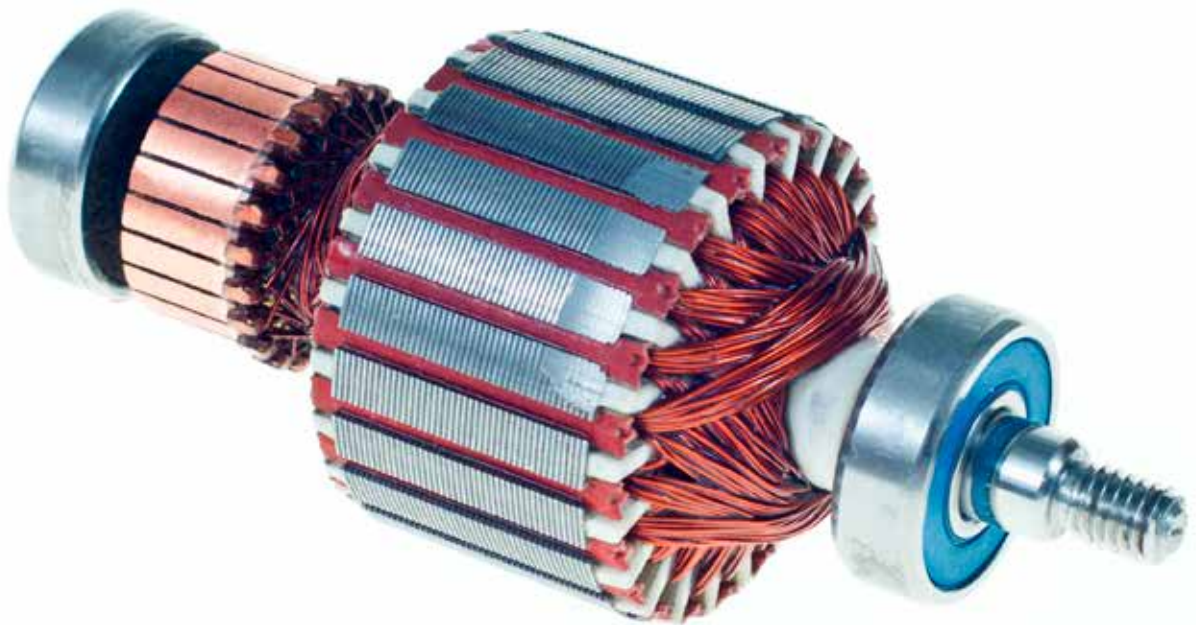
# ELECTRIC MOTORS FOR HOME APPLIANCES

## MAIN BUT BEARINGS: T1 SEGMENT - DEEP GROOVE BALL BEARINGS

- Extremely low running noise at 3000-12000 rpm
- As per EMQ V4Z4 requirements
- Kyodo Yushi Multemp SRL bearing grease







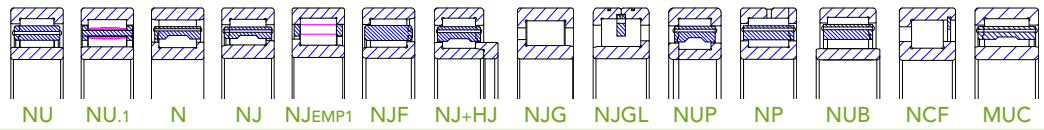
ELECTRIC MOTOR ROTOR

# PRODUCT TABLE

## Cylindrical Roller Bearings

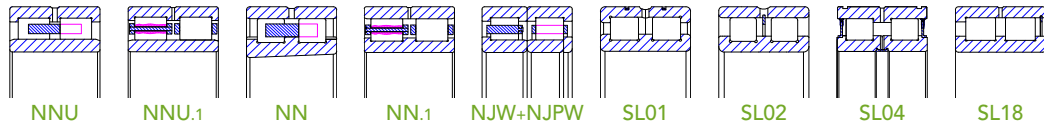
O.D. up to 1800 mm

Single Row  
Cylindrical  
Roller Bearings



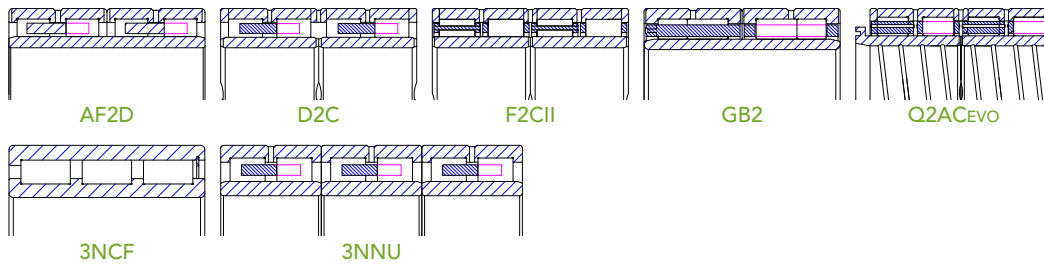
O.D. up to 1800 mm

Double Row  
Cylindrical  
Roller Bearings



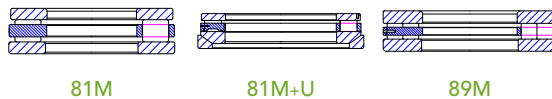
O.D. up to 1400 mm

Multi Row  
Cylindrical  
Roller Bearings

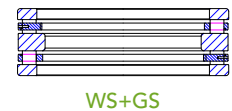


O.D. up to 1600 mm

Single Direction  
Cylindrical Roller  
Thrust Bearings



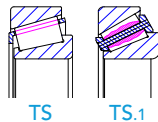
Double Direction  
Cylindrical Roller  
Thrust Bearings



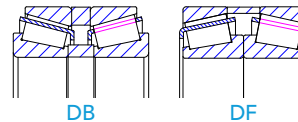
## Tapered Roller Bearings

O.D. up to 1800 mm

Single Row  
Tapered  
Roller Bearings

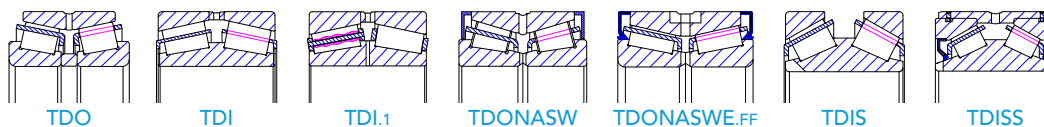


Single Row Paired  
Tapered  
Roller Bearings



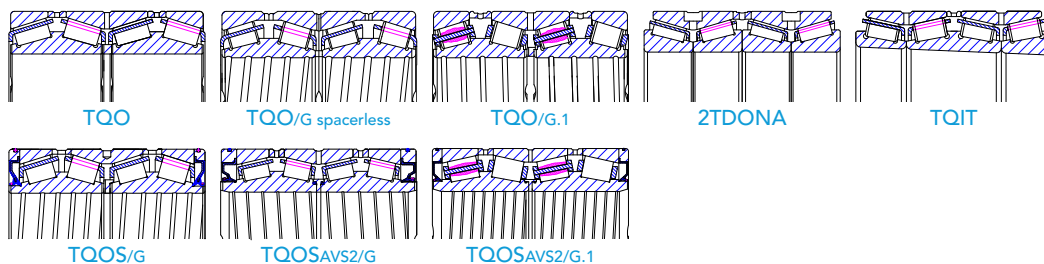
O.D. up to 1925 mm

Double Row  
Tapered  
Roller Bearings



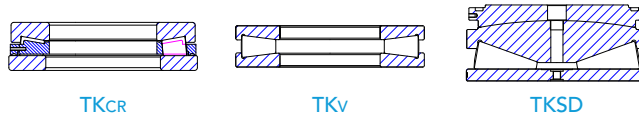
O.D. up to 1925 mm

Multi Row  
Tapered  
Roller Bearings



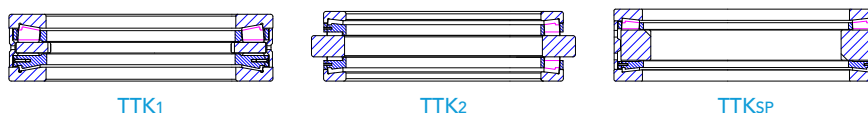
O.D. up to 1600 mm

Single Direction  
Tapered Roller  
Thrust Bearings



O.D. up to 1600 mm

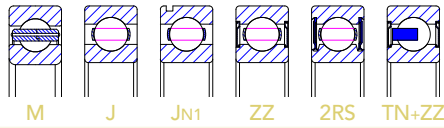
Double Direction  
Tapered Roller  
Thrust Bearings



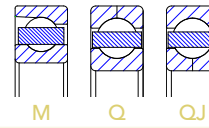
## Ball Bearings

O.D. up to 1900 mm

Single Row  
Deep Groove  
Ball Bearings

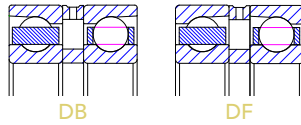


Single Row  
Angular Contact  
Ball Bearings

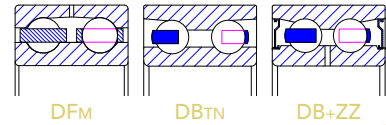


O.D. up to 1925 mm

Single Row Paired  
Angular Contact  
Ball Bearings

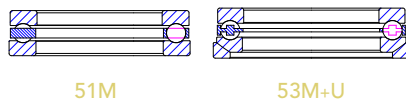


Double Row  
Angular Contact  
Ball Bearings

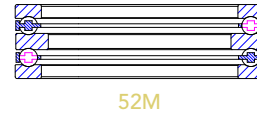


O.D. up to 1600 mm

Single Direction  
Thrust  
Ball Bearings



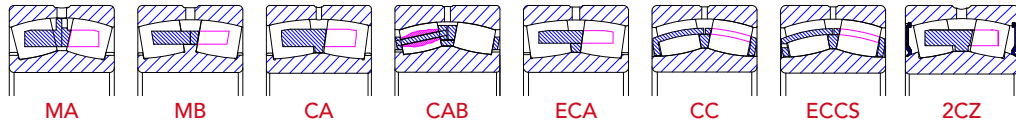
Double Direction  
Thrust  
Ball Bearings



## Spherical Roller Bearings

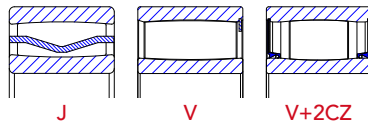
O.D. up to 1580 mm

Spherical  
Roller Bearings



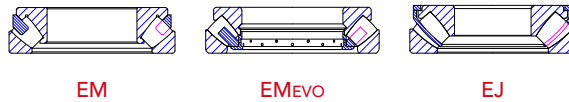
O.D. up to 1400 mm

Toroidal  
Roller Bearings



O.D. up to 1400 mm

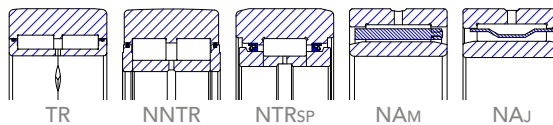
Spherical Roller  
Thrust Bearings



## Other Products

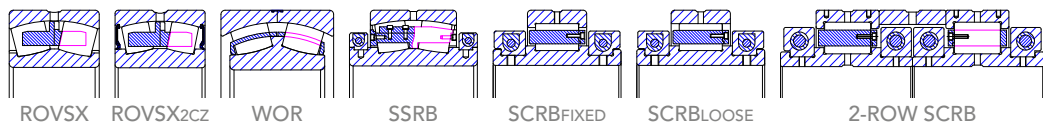
O.D. up to 400 mm

Track and Needle  
Roller Bearings

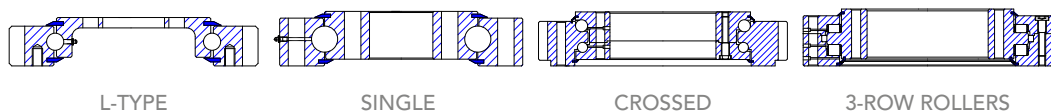


O.D. up to 1800 mm

Special and Split  
Roller Bearings



Slewing  
Bearings



## Notes

1. Bearing dimensional and running accuracy according to ISO/AFBMA/GOST standards
2. All bearings available in metric and inch sizes, with cylindrical or tapered bore
3. Special features available on request









*The Alternative Power*

