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GRUPA **MARAT**



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**MARAT GROUP** is a team of passionate people striving together for continuous improvement of the quality of our products and services. Poised for excellence in our field, we offer a comprehensive development of large, challenging and ambitious projects. We continue to develop our business service and manufacturing capabilities, whilst also providing professional consultation services to ensure increased productivity, enhanced optimization and reduced costs.

Our mission is to provide comprehensive customer service from design through production, delivery, installation and supervision.

MARAT Group includes companies with complementary production capabilities and business activities.





**MARAT GROUP** is a hybrid type of organization in a sense that it manufactures its own line of industrial products in addition to being an authorized distributor of some of the world's leading manufacturers. Our production portfolio includes:

- ▶ Planetary gear reducers and gear motors intended for scraper conveyors, belt conveyors and other similar devices used in mining and other related industries
- ▶ Devices such as:
  - Underground mine ventilation systems
  - Coal granulator and crusher
  - Conveyor systems

Marat Group is a group of companies consisting of:

**MARAT LTD** was founded in 1991. Throughout the last two decades, the company has been widening its distributorship network by becoming an authorized distributor of the world's most recognizable brands such as SKF, NTN-SNR, FŁT KRAŚNIK, KRW, NKE, HIMIN, Optibelt, Kaydon Cooper, TAS Schäfer, Rossi, Tentec, ABB, and Loctite. Cooperation with the world's leading manufacturers has led to increased customer satisfaction by allowing us to meet our customers' needs in a quick and efficient manner.

We provide industrial products and services to a wide array of industries, customer sectors, and countries.



**ELROW LTD** offers a wide range of electric installation and metalworking services.



**WANAR LTD** is an authorized representative of Kopania Węglowa S.A specializing in the supply of coal.

**Prolift LTD** – supplier of forklifts and forklift parts



# CONSTRUCTION OFFICE

Design Services

Marat Group's engineering department implements complex turnkey projects and provides designing solutions for a wide range of industrial machinery and equipment. We implement engineering work for complete machinery as well as machinery components. Comprehensive technical documentation is prepared for each machine and device using the latest CAD 3D tool and other specialized software applications.

### We specialize in:

- ▶ Gearboxes
- ▶ Mechanical drive systems
- ▶ Steel Structures
- ▶ Conveyors and transport equipment
- ▶ Machinery for mining industry.

Our engineering team also specializes in carrying out projects in the field of bearing technology.

The main scope of our projects is:

- ▶ Designing bearings
- ▶ Providing technical advice and system optimization on bearing technology
- ▶ Providing assistance with choosing appropriate alternatives to existing bearing solutions.

Supplied machinery and equipment utilize premium class products of the world's foremost manufacturers, whom we represent as an authorized distributor. For instance, we use SKF bearings in most of our gearboxes.

MARAT mining gearboxes are optimized alternatives to the existing solutions on the market. Each MARAT gearbox goes through a meticulous optimization process that leads to the increased capacity for transferring torque and power.

**Application:**

Drives of scraper and other types of conveyors used in mining, power, cement, sugar refinery and other branches of heavy industry.

**Main benefits:**

- ▶ Full compliance with the requirements of the RAG N 335000
- ▶ Full set of approvals and certifications required by mining law
- ▶ Solid design
- ▶ Transmission gears can be assembled in several options with varying transmission ratios and output power
- ▶ Ease of change of the gear ratio – gearboxes are constructed in a way that would enable easy changing of the gear ratio
- ▶ Possibility of in-building a diagnostic system, thereby monitoring the technical condition of the gearbox throughout its lifecycle.

Each manufactured and refurbished gearbox is subjected to comprehensive testing and diagnostic assessment on the test bench that was specially designed by ABB.



# GEARS

## Characteristics

MPL-15



Transmission ratio	Nominal power (kW)	Torque M	Rotation speed n (min) (r.p.m.)
21:1	250	1630	70,2
25:1	250	1630	59,6
28:1	250	1630	52,3
33:1	250	1630	44,0
39:1	200	1300	37,4

MPL-25



Transmission ratio	Nominal power (kW)	Torque M	Rotation speed n (min) (r.p.m.)
16:1	450	3000	91,5
21:1	450	3000	70,2
25:1	450	3000	52,3
33:1	450	3000	44,0
39:1	400	2600	37,5

MPL-35



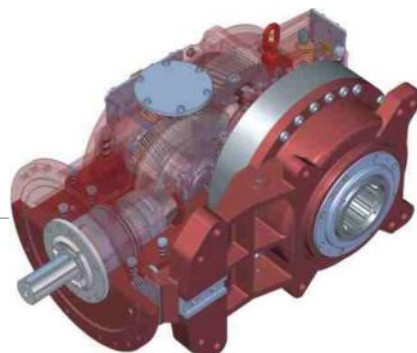
Transmission ratio	Nominal power (kW)	Torque M	Rotation speed n (min) (r.p.m.)
33:1	615	4000	44,0
39:1	615	4000	37,4

MKPL-15



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MKPL-25



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33:1	450	3000	44,0
39:1	400	2600	37,4

MKPL-35



Transmission ratio	Nominal power (kW)	Torque M	Rotation speed n (min) (r.p.m.)
33:1	615	4000	44,0
39:1	615	4000	37,4

Z-100



Transmitted power	to 30 kW
Overall gear ratio	$i = 29,948$
Nominal output speed at $n=1450$ RPM	48.42 U/min
Inclination	$0 + 20^\circ$
Oil volume in the gearbox	ca. 10 dm <sup>3</sup>
Dimensions	935x350x327 mm
Gearbox weight (without oil)	259 kg

MG-1000



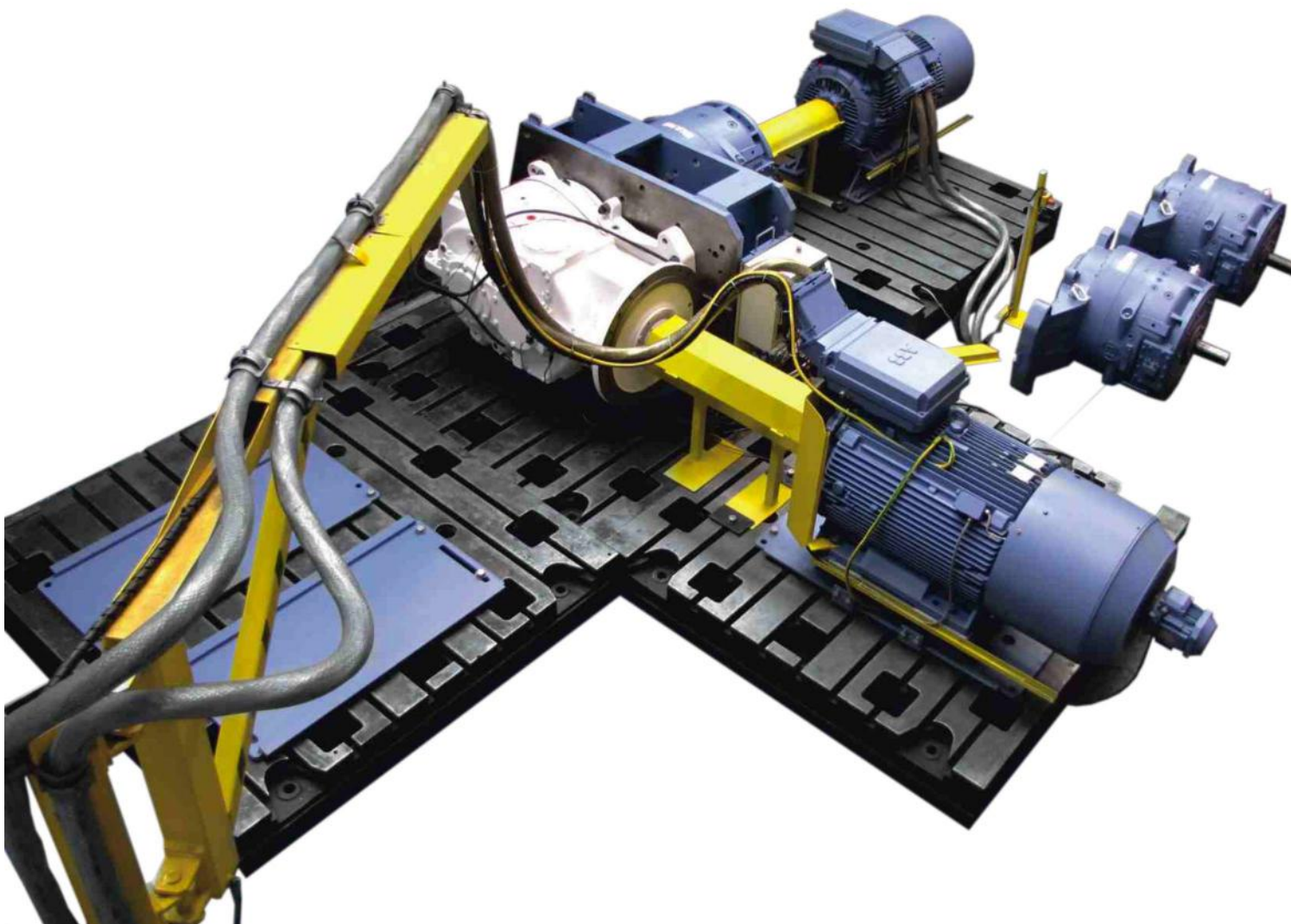
Transmitted power output (KM)	55 / 75 / /90 / 132 / 160
Range of transmission ratios	12,68-32,5
Output rotation speed (RPM)	44,6-93,7
Gearbox weight (kg)	1017-1090

MK-250



Transmitted power output (KM)	250
Input motor RPM	1470
Range of transmission ratios	19:1/25:1/32:1
Gearbox weight (kg)	2600

## TEST BENCH



Marat Group performs comprehensive diagnostic tests and measurements of various types of industrial gearboxes on its modern test bench that was designed by ABB.

Advantages of using the test bench:

- ▶ Enables the control of work conditions (e.g. torque, vibration levels, etc.)
- ▶ Enables the control of oil temperature in the gear reducer's engine
- ▶ Allows for preventive interference
- ▶ Enables data recording, data processing, reporting and plotting
- ▶ Ensures that gearboxes can be tested under real operating conditions

The test bench enables to test:

- ▶ Power, torque, bearing temperature, vibration velocity, vibration acceleration, enveloped acceleration of bearing, and shaft speeds.
- ▶ Changes in drive shaft load – up to 400kW
- ▶ Changes in drive shaft rotational speed – from 0 to 1800 rpm both clockwise and anti-clockwise,
- ▶ Changes in drive shaft torque – from 0 to 2565 Nm
- ▶ Programmable load variation of tested gearboxes (incremental or sinusoidal). This enables testing of a gearbox under real operation conditions.

Analyses of the collected measurements are conducted using SKF's specialized software @plitude Observer and online vibration monitoring system IMx that allow for:

- ▶ Direct monitoring of 16 channels with 24-bit resolution and frequency from 0 to 44 kHz
- ▶ Automatic analysis of the collected data
- ▶ Review and control of archived data
- ▶ Control and monitoring from virtually anywhere in the world
- ▶ Around-the-clock monitoring of machinery

We also use thermal imaging methods to test motors and gearboxes.



## DRIVE TECHNOLOGY

### Gearboxes and Drive Systems

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MARAT Group specializes in the field of manufacture, assembly, renovation and modernization of industrial gearboxes. We provide almost all types of industrial gearboxes for a host of applications and industrial segments.

Types of gearboxes:

- ▶ Bevel Gearbox
- ▶ Planetary Gearbox
- ▶ Helical Gearbox
- ▶ Spur Gearbox
- ▶ Worm Gearbox
- ▶ Parallel and right angle shaft gearboxes
- ▶ Other custom-made gearboxes

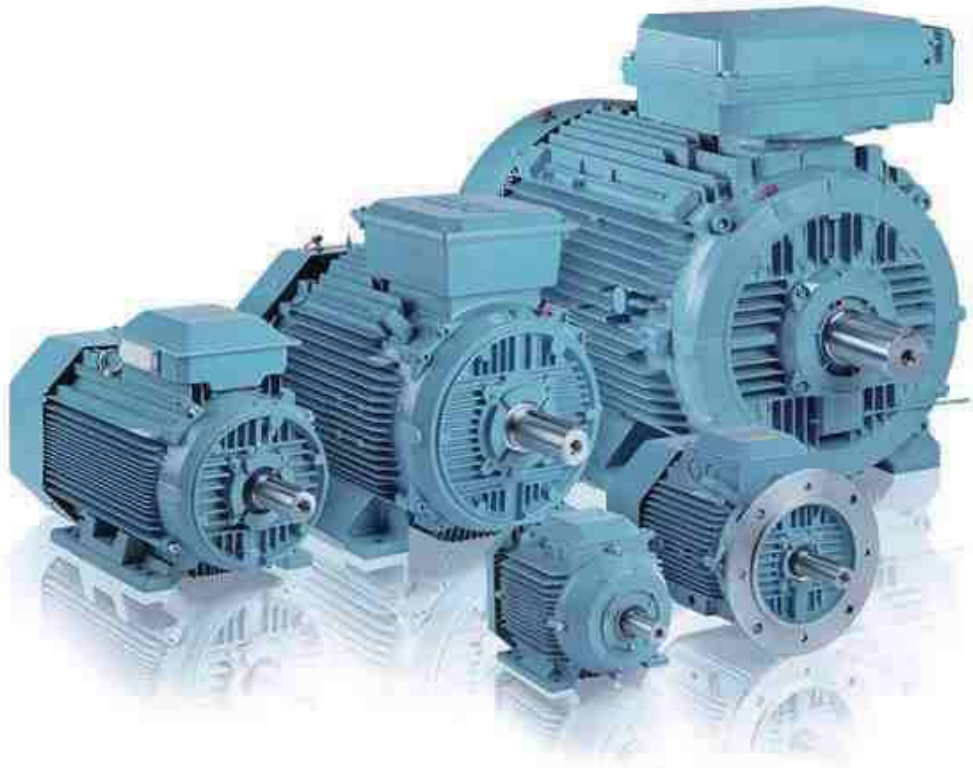
Typical industries served by Marat gearboxes:

- ▶ Mining
- ▶ Rolling Mills
- ▶ Presses
- ▶ Conveying systems
- ▶ Cranes
- ▶ Slewing Drives
- ▶ Packaging
- ▶ Power Plants
- ▶ Food and labelling
- ▶ Oil industry

# SERVICE

## Gearboxes

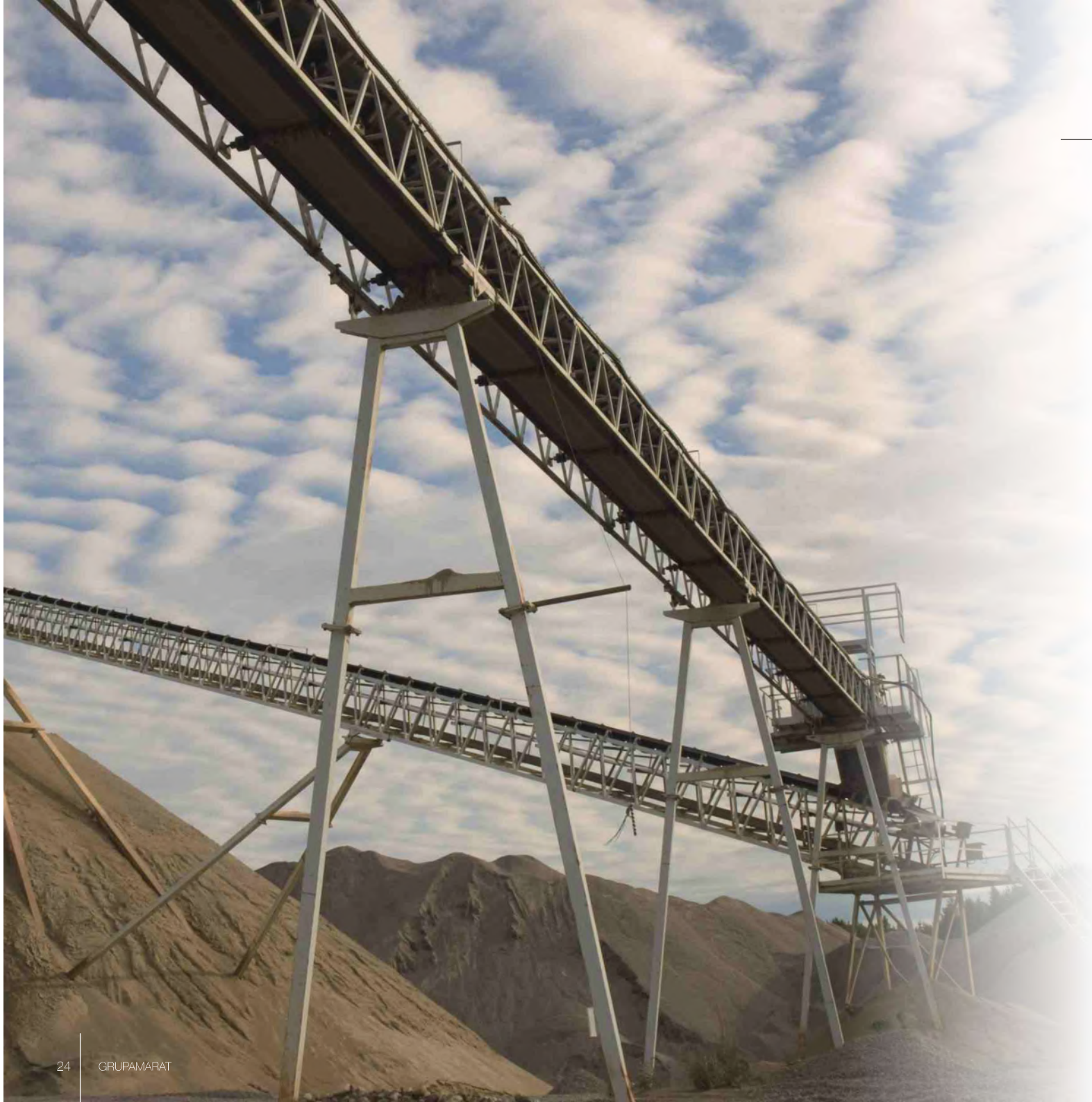
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- ▶ Restoration of the gearbox parts on the basis of submitted documentation
- ▶ Replacement of bearing and bearing units
- ▶ Regeneration, production and replacement of toothed gear
- ▶ Regeneration of gearbox housings
- ▶ Gearbox diagnostics and assessment on a test bench with variable or constant load
- ▶ Assembly and disassembly of the gearbox and powertrain

MARAT GROUP is an authorized service partner of ABB.





## TRANSPORT EQUIPMENT

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We offer an extensive gamut of conveyors and associated components for conveying a wide range of products. We supply transport equipment for aggregates mines, power stations, chemical plants and other users of conveyors.

We offer full-fledged implementation (delivery, assembly, and start-up supervision) of:

- ▶ Belt conveyors
- ▶ Screw conveyors
- ▶ Bucket conveyors
- ▶ Roller conveyors
- ▶ Vibrating screens and feeders
- ▶ Crushers
- ▶ Mixers
- ▶ Steel structures
- ▶ Rotary valves

Parts:

- ▶ Motion controls
- ▶ Rollers
- ▶ Aerator
- ▶ Clamps
- ▶ Belt cleaners
- ▶ Safety controls
- ▶ Conveyor bearings
- ▶ Conveyor gates
- ▶ Conveyor belt tensioners
- ▶ Pulleys
- ▶ Conveyor tables
- ▶ Flow rails
- ▶ Vibratory feeders
- ▶ Skatewheel conveyors
- ▶ Other accessories



## CRANES AND LIFTING

Marat Group offers single and double-girder cranes with lifting capacity of up to 100 tons as well as workshop cranes with lifting capacity from 100 to 100,000 kg and the arm span ranging from 2 to 10 m.

We are an authorized representative of the German VETTER Krantechnik GmbH.

Types of cranes:

- ▶ Gantry Cranes
- ▶ Bridge Cranes
- ▶ Jib Cranes
- ▶ Special purpose cranes

Industries served:

- ▶ Automotive
- ▶ Chemical industry
- ▶ Energy industry
- ▶ Foundry industry
- ▶ Infrastructure and traffic
- ▶ Marine
- ▶ Machine and plant engineering
- ▶ Processing industry

We can deliver complete cranes as well as necessary spare parts for all major types of cranes:

- ▶ Wire Rope and Chain Hoists
- ▶ Hoists, Crab Units, Jibs and Below Hook Items
- ▶ Below Hook Attachments
- ▶ Inverter Drives
- ▶ Gearboxes
- ▶ Clutches
- ▶ Electric motors
- ▶ Disc brakes
- ▶ Radio Control Systems
- ▶ Winches (POLBLOK, PODEM, ABUS, SWF, DEMAG and others)
- ▶ Load Limiters
- ▶ Lifting Assemblies and Beams
- ▶ Web Slings, Chain Slings, Eye Bolts, and Plate Clamps

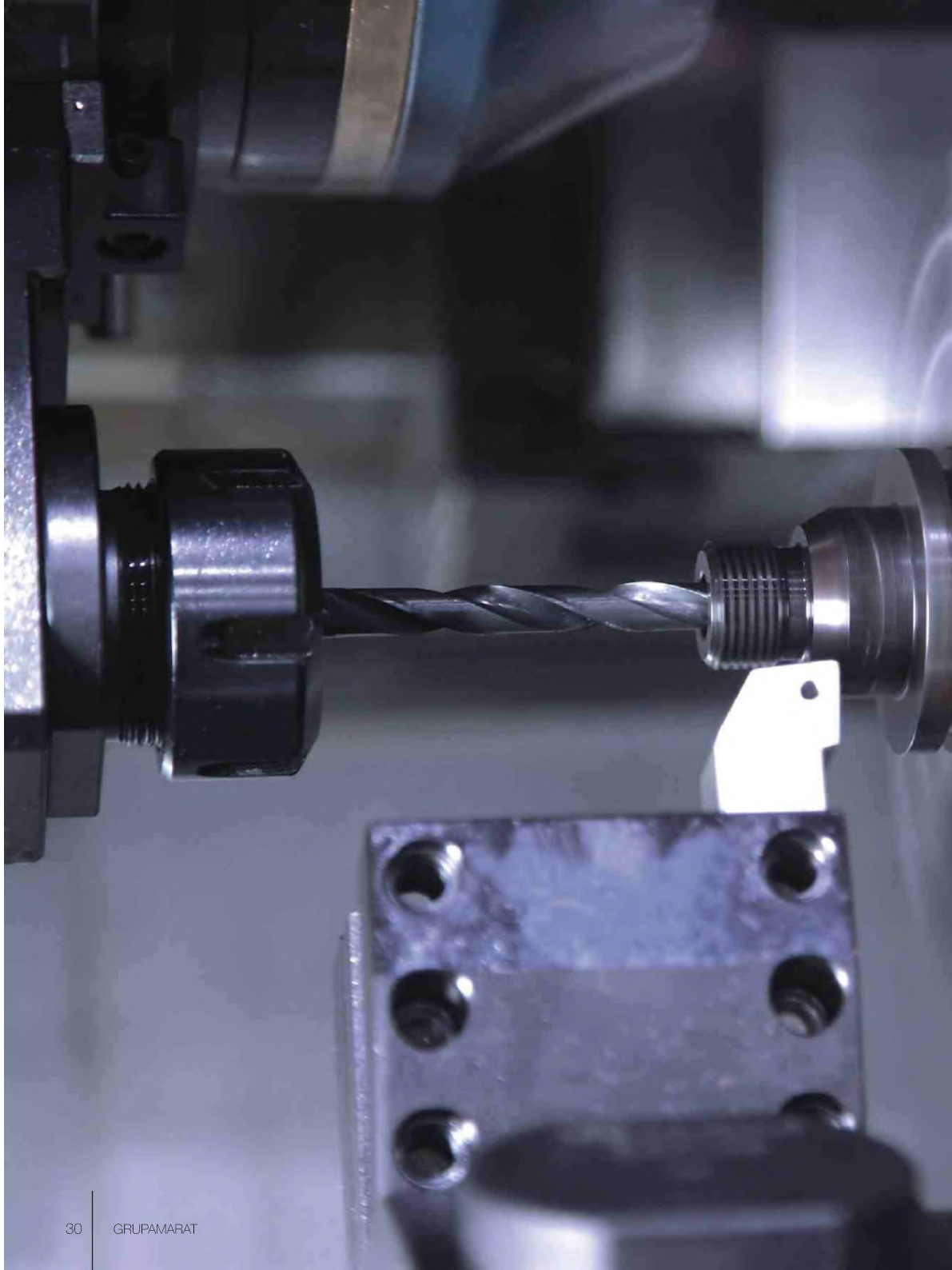


## MAINTENANCE OF WIND TURBINES

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The field of wind turbine operations and maintenance represents a rapidly growing segment and business opportunity in the wind energy industry. Marat Group, responding proactively to this tendency, offers maintenance services and solutions for wind turbines.

- ▶ Technical diagnostic services on equipment and mechanical assemblies
- ▶ Inspection, assessment, and repair of wind turbine gearboxes
- ▶ Replacement of gearboxes
- ▶ Implementation of lubrication systems and solutions for wind turbines
- ▶ Delivery of hydraulic tensioning systems
- ▶ Mounting and maintenance services of hydraulic tensioning systems and torque wrenches



## WORKSHOP SERVICES

### Shot blasting

Shot blasting parts in the cabinet with dimensions of 6.8 x 3.9 x 2.9 (h) - possibility of blasting parts of any shape within the dimensions of the cabinet.

### Plasma welding and Oxy-fuel welding

► Plasma welding - ability to handle parts of any shape in thicknesses of up to 30 mm the working area of the welding table 8000 x 2500

► Oxygen welding- ability to handle parts of any shape in thicknesses of up to 100 mm the working area of the welding table 8000 x 2500

### Welding methods: MAG (135), MIG (131), Coated-electrode welding (111), and TIG (141)

Assembly and welding of all types of building and machinery structures. All welders are certified in accordance with EN-287-1. We meet quality requirements for fusion welding: DIN EN.3834-2 and EN-1090.

### Sheet metal cutting on guillotines

Steel sheets are guillotined in the thickness range of 1 to 10 mm, and the length of 3000 mm

### Sheet metal working

Our advanced CNC machine and other machining equipment allow us to make use of edge presses with the length of up to 4100 mm and with the working pressure of up to 240 tons.

### Bevelling

We are able to produce a variety of bevels across a range of thicknesses by using versatile bevelling techniques and machines (e.g. plasma and high definition, multi-torch oxy, etc.)

### Deburring, grinding

We offer deburring/grinding solutions to ensure effective sheet metal processing and best machining results.

### Lacquer coating/varnish coating

During this phase, varnish is applied to the surface of a welding part or structure in a special drying cabinet (Dimensions - 7,7x3,9x2,9 (h)). We only use varnishes produced by the world's leading producers.

#### TURNING

- Our lathes have power tools to perform various advanced types of turning for complex products.
  - 1000 mm and the lengths of up to 1000 mm (lathe)
  - 1250 mm and the lengths of up to 3000mm (lathe)

#### MILLING

- In order to bolster the turning we offer a rigorous processing in the milling machine.

#### DRILLING

- Drilling work is carried out on our pillar drilling machines

#### BORING

- Longitudinal traverse, "X" axis - 3500 mm
- Vertical traverse, „Y" axis - 2500 mm
- Cross traverse „Z" axis - 1250 mm
- W-axis travel - 800 mm
- Nominal workpiece weight - 12 ton
- Mounting table-size - 1800 x 2500 mm

#### SLOTTING

- Slotting - pieces with the height of 700 mm and the stroke length of 500 mm and the overall dimensions of 1000 mm x 1000mm

#### GRINDING

- Rollers having a diameter of 300 mm, the length 1000 mm and the weight of 50 kg.
- Table dimensions: 200 x 600 mm; can accommodate the heights of up to 485 mm.



## DIAGNOSTIC SERVICES

Cooperation with our company enables savings that earlier seemed impossible to obtain. We have required knowledge and tools to detect and prevent machine failures.

Our preventive maintenance programs make sure to:

- ▶ Eliminate dangerous machine failures
- ▶ Reduce maintenance costs
- ▶ Reduce overall cost of operations
- ▶ Increase productivity

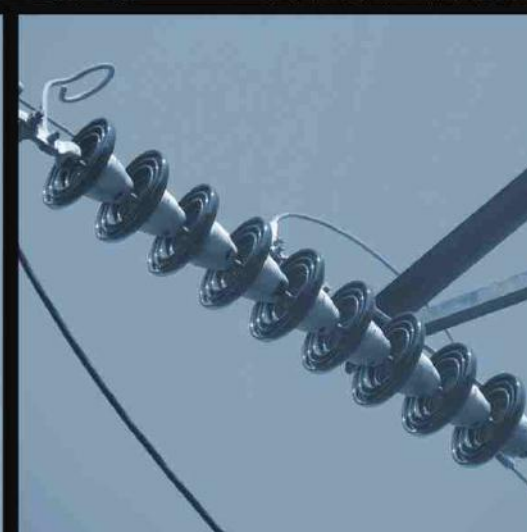
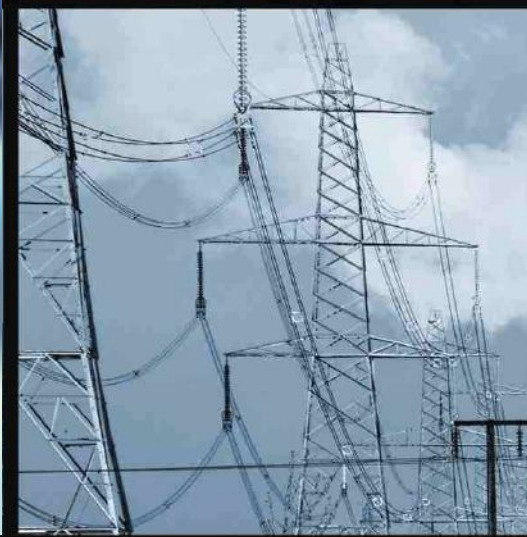
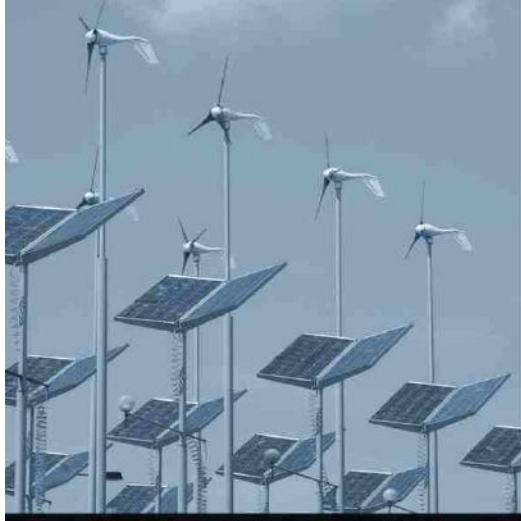
Scope of services:

- ▶ Diagnostic services on bearings, machinery and equipment
- ▶ Implementation of projects that supervise machines and production lines
- ▶ Condition monitoring
- ▶ Machine alignment (shaft alignment, belt alignment, etc.)
- ▶ Supervision of assembly and disassembly of bearings
- ▶ Design and implementation of centralized lubrication systems

Range:

- ▶ Maintenance, upgrade, and repair of machines and the entire production line
- ▶ Emergency service - providing our customers with necessary spare parts in a speedy manner
- ▶ Assembly and welding services
- ▶ Electrical service
- ▶ Installation services
- ▶ Mechanical services
- ▶ Design & Construction

\* Image source SKF



# ELECTRICAL SERVICES

We provide the following services:

- ▶ Renovation and modernization of electrical installations
- ▶ Assembly of electrical equipment and systems
- ▶ Installation of signaling systems
- ▶ Cabling Installation & Maintenance
- ▶ Installation of power supply systems and control devices
- ▶ Construction and modernization of power grids
- ▶ Complex Electrical work implemented in mines and underground locomotive depot
- ▶ Low and medium voltage equipment installations and testing
- ▶ Modernization of the main drainage pumping stations
- ▶ Modernization of fans
- ▶ Electrical Maintenance and Support Services



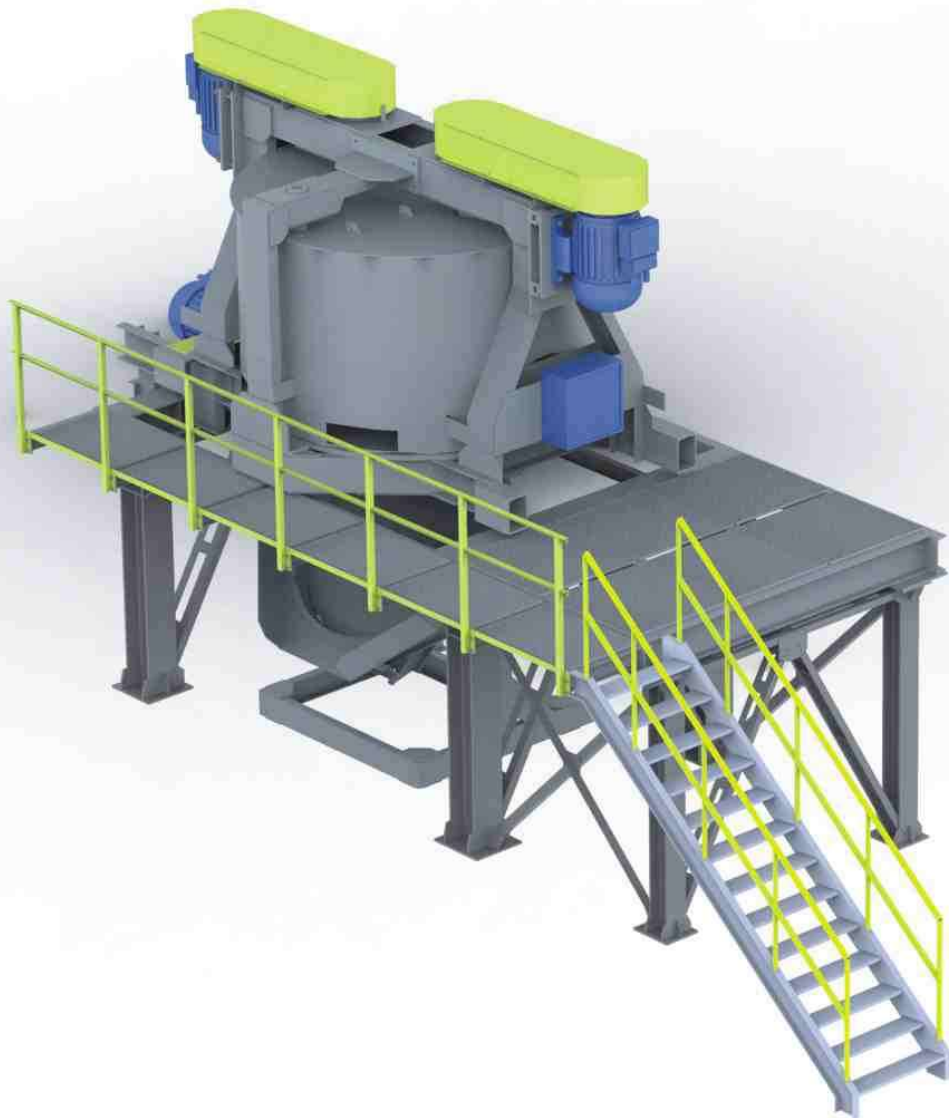
## TELECOMMUNICATIONS SERVICE

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We provide comprehensive solutions in the field of implementation and integration of ICT (Information and Communications Technology) systems. Our solutions are tailored to the individual needs of our customers. We ensure data security and reliable communication as well as significant reduction in costs of installation and running the IT infrastructure.

Our dedicated technical consultants and specialists are always ready to provide complete solutions and assistance to our customers.

- ▶ Implementation of comprehensive communication systems – PBX/IP-PBX
- ▶ Videoconferencing
- ▶ VoiceGate Service
- ▶ Design and implementation of LAN/WLAN networks
- ▶ Other telecommunication services



Coal crushing by compression and impact action.

Granulator is a device that can handle coal slurry with ease and is commonly used to crush coal in power plants, mines, cement plants, and other applications. Coal slurry is eventually converted into granules by a granulator. Granulation is conducted by use of a drum. Coal can be fed to a drum by means of a conveyor belt or other transport device. After the granules are produced, they are emptied through a hole in the bottom of the drum directly onto the conveyor belt. Finished granules can then be either stored or transported for further processing.

We design granulators in full compliance with our customers' specifications and needs.

Here you can see the standard specifications of our granulators:

- ▶ Coal handling capacity: 50 tons/hour (this depends on the quality and performance of the feed)
- ▶ Power: ~300kW
  - without conveyor drives; can be fully adjusted to the needs of a particular installation
- ▶ Machinery accessories:
  - Dimensions of the mixing drum : 6,000 x 3,000 mm
  - Adjustable speed of the drum: 25 ÷ 50 rev. / Min.; can be fully adjusted to the needs of a particular installation
- ▶ Material storage silos, quicklime, supporting the processes:
  - Capacity: 18m<sup>3</sup>
  - Dimensions: 9,200 x 2,300 mm
  - Electrically-operated knife gate valve
  - Material dispenser
  - Feeding screw L=11,000 mm

# AIR-DUCT FAN

## WLE-MARAT-900

Parameters	Measurement unit	WLE-MARAT-900	
Duct diameter	mm	1000	1200
The gross amount of air circulated through the fan	m <sup>3</sup> /s	10,7	20,67
	m <sup>3</sup> /min	640	1240
Rated pressure for the given performance and air density c=1,2 kg/m <sup>3</sup>	Pa	1080	4000
	kg/m <sup>2</sup>	108	400
Unit efficiency with nominal parameters not less than	0,60		
Nominal rotation speed of the electric motor	1/min	1491	2981
Nominal power of the electric motor	kW	15	132
Power supply	V	500 lub 1000*	
Total Weight (incl. the electric engine and silencers)	kg	~2.200	

WLE-MARAT-900 is an axial-flow fan with an electric motor. The fan is particularly well suited for ventilation purposes in coal mines. It conforms to the existing standards and regulations for devices operating in potentially explosive environment. The fan can reliably and efficiently meet our customers' specifications and duties in the most demanding environments in the world.

### Conditions of use:

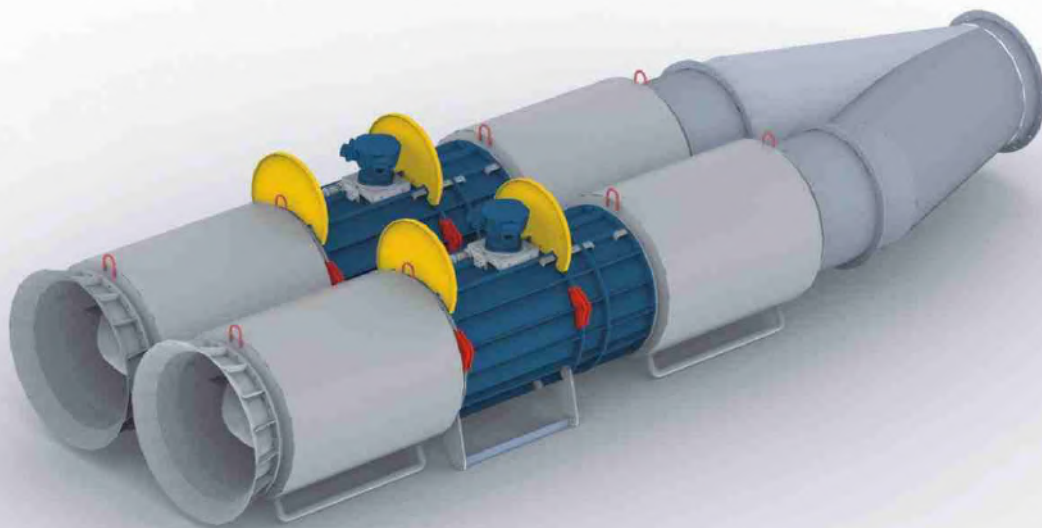
- ▶ Fan can be used in any industrial plant that needs air supplied in the amount of ~1200m<sup>3</sup>/min,
- ▶ Example of use: underground works (mining), in places with high methane concentration
- ▶ Ambient temperature: 10 C to 40 C.

### Standard equipment:

- ▶ Self-lubricating motor bearing with the automatic lubricator LAGD 60 (125) /AWA 2, filled with universal grease,
- ▶ Silencers
- ▶ Duct-mounted terminal box (ø 1000 or ø 1200 mm).

### Additional equipment:

- ▶ Electric switches
- ▶ Feedback controller



## INDUSTRIAL BEARINGS AND ACCESSORIES

We offer a wide range of standard and super-precision ball bearings in a variety of sizes, types, designs, and material execution. In addition to bearings, our customers can take advantage of our extensive range of bearing accessories.

- Product Range:
- ▶ Ball bearings
  - ▶ Angular contact ball bearings
  - ▶ Self-aligning ball bearings
  - ▶ Thrust ball bearings
  - ▶ Cylindrical roller bearings
  - ▶ Thrust roller bearings
  - ▶ Spherical roller bearings
  - ▶ CARB toroidal roller bearings
  - ▶ Tapered roller bearings
  - ▶ Slewing bearings
  - ▶ Linear bearings
  - ▶ Bearings for special applications
  - ▶ Housings
  - ▶ Nuts
  - ▶ Washers
  - ▶ Bushings and sleeves





## DIAGNOSTIC DEVICES

- ▶ Thermal imaging cameras
- ▶ Endoscopes
- ▶ Stroboscopes
- ▶ Thermometers
- ▶ Vibration pen
- ▶ Ultrasound probes
- ▶ Stethoscopes
- ▶ Electrical discharge detectors
- ▶ Portable inspection systems
- ▶ Tachometers
- ▶ Portable vibration analyzers
- ▶ Condition monitoring devices
- ▶ Wireless machine condition sensor and devices for difficult-to-access applications

## BEARING MAINTENANCE PRODUCTS

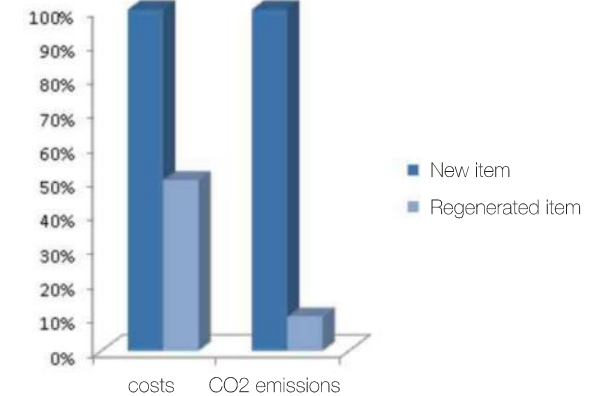
- ▶ Adjustable hook spanners
- ▶ SPEEDI-SLEEVE shaft repair kits
- ▶ Mechanical bearing puller kits
- ▶ Hydraulic pullers
- ▶ Induction heaters for various bearing diameters & weight
- ▶ Multi-core induction heaters
- ▶ Aluminum heating rings
- ▶ Hydraulic nuts
- ▶ Pumps and injectors
- ▶ Oil injection kits
- ▶ Manual and electrical lubricators
- ▶ Feeler gauges for measuring radial clearance
- ▶ Heat and oil resistant gloves

## REGENERATION OF PARTS

We provide inspection and regeneration services of spare parts such as:

- ▶ Bearings and housings
- ▶ Railway bearing units
- ▶ Hydraulic cylinder
- ▶ Rolled ball screws
- ▶ Machine tool spindles
- ▶ Plain bearings
- ▶ Gearboxes
- ▶ Hydraulic spindles

Regeneration of parts in many cases enables to save up to 50% value of a new part, in addition to being a more environmental friendly approach. During bearing regeneration there is 90% less carbon dioxide (CO<sub>2</sub>) emission than during production of a new part.





## TRAINING CENTER

We organize theoretical and practical trainings related to bearings and diagnostics. The trainings are carried out by certified specialists in our training center, which is located at the headquarters of our company.

We organize courses on the following subjects:

### 1. Construction and maintenance of bearings

- ▶ Bearing symbols and types
- ▶ Maintenance & Reliability
- ▶ Mounting and dismounting of bearings
- ▶ Practical exercises on mounting and dismounting of bearings
- ▶ CARB and hybrid bearings
- ▶ SPEEDI-sleeves

### 2. Construction, maintenance and operation of bearings

- ▶ Bearing symbols, references and types
- ▶ Maintenance & Reliability
- ▶ Mounting and dismounting of bearings
- ▶ Practical exercises on mounting and dismounting of bearings
- ▶ Grease, oil and lubrication technology
- ▶ CARB toroidal, hybrid and energy-efficient bearings
- ▶ Adapter and withdrawal sleeves
- ▶ Basics of diagnostics (measuring vibration, temperature; interpretation of measurements)

### 3. Other trainings focusing on the following subjects:

- ▶ Mounting large-size bearings
- ▶ Machinery and equipment diagnostics
- ▶ Mounting of hydraulic nuts and other bolt tightening solutions
- ▶ Dynamic balancing
- ▶ Shaft Alignment
- ▶ Belt alignment
- ▶ Construction, maintenance and operation of roller bearings
- ▶ Advance/d diagnostics on machines and equipment

After the training is completed you will receive a certificate of attendance or confirmation of your qualification in the given course. Optionally you can receive a training completion certificate issued by SKF.



MARAT offers a wide range of standard industrial seals and customized products for your individual needs. Seals have a critical impact on machine performance as they prevent contaminants from entering into its immediate environment. Service life and overall reliability of seal can make significant difference to the effective performance of your equipment. MARAT can support the key aspects of the sealing system through its knowledge of bearings, sealing solutions, lubrication and diagnostics.



#### Dynamic seals

shaft seal (simmering), V-rings, radial & axial seals, and sliding seals.



#### Static Seals

O-rings, X-rings, back-up rings, seals for pipe and screw connections, and gaskets.



#### Hydraulic Seals

piston seals, rod and buffer seals, wiper seals, guide rings and guide strips, and O-rings and back-up rings.

MARAT also offers customized products to better meet individual and specific needs of our customers.



\* Image source SKF

# LINEAR TECHNOLOGY



We offer a wide range of linear motion products in variety of types, accuracy classes, preload levels and sealing options.

- Linear motion products include:
- ▶ Linear bushings
  - ▶ Precision rollers and shafts
  - ▶ Linear ball bearings, roller guides and telescopic pillars
  - ▶ Circular and angular linear motion guides
  - ▶ Ball and roller screws
  - ▶ Positioning systems with or without the drive
  - ▶ Linear modules
  - ▶ Linear actuators

We also offer regeneration services for ball screw bearings.



\* Image source SKF



## POWER TRANSMISSION

We offer a comprehensive range of power transmission products to our customers worldwide. We serve almost all industries by providing access to premium-class power transmission parts.

### Product range:

- ▶ V-belts, ribbed belts
- ▶ Chains
- ▶ Pulleys
- ▶ Sprockets
- ▶ Sleeves
- ▶ Hubs
- ▶ Coupling and Cardan joints

### Industrial segments:

- ▶ CEMENT
- ▶ ROAD CONSTRUCTION
- ▶ FANS & COMPRESSORS
- ▶ TEXTILE
- ▶ PULP & PAPER
- ▶ GENERAL MACHINERY
- ▶ CERAMIC
- ▶ FOOD & BEVERAGE
- ▶ OIL & GAS
- ▶ AGRICULTURE



\* Image source SKF



## CLAMPING DEVICES & SHRINK DISCS

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- ▶ Clamping devices (for internal and external hub to shaft connections) - carefully crafted using the most advanced CNC technology
- ▶ Shrink discs with a diameter of up to 1400 mm. Hydraulic shrink discs are enjoying a growing interest in the market. Nowadays, these products are increasingly found in the drivelines of wind energy plants as well as in applications where transmission of large torques is required.
- ▶ Hydraulic shrink discs – are very often used in hollow shaft gearboxes. The basic principle of operation is to transmit power through friction surface. Friction surfaces are strictly separated from the hydraulic system, thereby preventing these surfaces from being exposed to oil. One of the main advantages of hydraulic shrink discs is a wide range of possible applications. However, most frequently they are to be encountered in the turret of a wind turbine. These discs can be tensioned at a pressure of between 120 bar and 200 bar, thus considerably reducing the installation time.

**TAS**  
SCHÄFER



## HYDRAULIC BOLT TENSIONERS

We supply premium class bolt tensioning solutions for a wide range of applications and industrial sectors. Our hydraulic bolt tensioning solutions ensure ease of use, reliability and safety.

As an authorized distributor of TENTEC, one of the world's leading manufacturers of bolt tensioning systems from UK, we can supply general purpose as well as customized bolt tensioning tools and equipment for a variety of industries. Generally, the bolt sizes vary from M20 to M100 with the max. bolt load of 265 tons. Upon request, bolts larger than M100 can be designed and supplied.

### Solutions:

Topside tensioning, Subsea tensioning, Wind Turbine, Compact Flange, Multi Stud, Permanent Tensioning.

### Industries:

Petrochemical, Diesel Engines, Offshore, Nuclear, Steel, Hydraulic Press, Power Generation, Wind Turbine, Mining.

## HYDRAULIC NUTS

TENTEC hydraulic nuts are technologically advanced tools providing a novel approach to bolt tensioning. Standard TENTEC Hydraulic Nuts are suitable for use in temperatures up to 100°C.

For higher temperatures, certain sealing options exist. Special protection caps are available to protect against corrosion. Their compact design allows the use in almost all applications. Standard hydraulic nuts are manufactured in the size range of M22 to M150.

TENTEC torque wrenches are innovative solutions comprising of many unique features not available in conventional torque wrenches.

### Hydraulic Torque Wrenches - CD Series

- ▶ For the nut sizes of 13 to 200 mm
- ▶ Torque from 61 to 64 000 Nm
- ▶ Dual independent hose swivels (360° by 360°)
- ▶ Ultra slim profile of the cassette and cylinder assembly
- ▶ High Strength Construction
- ▶ Accessories

### Hydraulic Torque Wrenches - SD Series

- ▶ Torque from 172 to 78 000 Nm
- ▶ One drive for all sizes of nuts
- ▶ Accessories

### Pneumatic Torque Wrenches - PN Series

Industrial pneumatic torque wrenches featuring continuous and repeatable torque with an accuracy of +/- 5%

- ▶ Torque output from 162 to 8134 Nm
- ▶ Rotational speeds of up to 45 rpm
- ▶ Accessories



## INDUSTRIAL CHEMISTRY

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We offer a wide range of adhesive, sealant and coating solutions for a variety of industrial applications and sectors.

Product range by application:

- ▶ Threadlocking
- ▶ Thread Sealing
- ▶ Gasketing
- ▶ Retaining
- ▶ Instant Adhesive
- ▶ Light Cure Adhesive
- ▶ Structural Bonding
- ▶ Metal-filled Compounds
- ▶ Protective Coatings and Compounds
- ▶ Cleaning
- ▶ Lubrication and Protection
- ▶ Surface Treatment



## COOLANTS

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Emulsifying mineral oils miscible with water providing optimum processing efficiency.

- ▶ Advantages:
- ▶ High dilution
- ▶ Exceptional cutting performance
- ▶ Enhanced service life
- ▶ Operator-friendly
- ▶ Compatible with metal deactivators
- ▶ Low foaming
- ▶ No biocides
- ▶ No harmful factors
- ▶ No skin irritation



## LUBRICANTS AND COOLANTS

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Lubricants have a tremendous impact on your business operations. Proper lubrication can increase efficiency and reduce premature machine failure and downtime. Choosing, storing and managing lubricants correctly can be indispensable to your business performance. Marat Group offers a comprehensive range of lubricants and lubrication systems for a variety of applications and industrial segments. We are an authorized distributor of a host of internationally renowned lubricant manufacturers.

### Product range:

- ▶ Compressor Oil
- ▶ Gear oil
- ▶ Hydraulic fluid
- ▶ Machine oil
- ▶ Circulating Oil
- ▶ Heating Oil
- ▶ Oils for textile machinery
- ▶ Oils for food industry
- ▶ Automotive oil



## TOOLS

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- ▶ Manual tools
- ▶ Workshop furniture
- ▶ Measurement tools
- ▶ Power tools
- ▶ Pneumatic tools
- ▶ Welding
- ▶ Abrasives
- ▶ Cutting & machining tools

## WORKPLACE SAFETY PRODUCTS

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- ▶ Hearing protection
- ▶ Respiratory protection
- ▶ Eye and face protection
- ▶ Head protection
- ▶ Protective gloves
- ▶ Protective clothing
- ▶ Work clothing for short-term use
- ▶ Working and protective boots
- ▶ Equipment for working at height



## HYDRAULICS & PNEUMATICS

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We provide a comprehensive range of products for customers in the field of hydraulics and pneumatics. We offer unique solutions that are tailored to specific working conditions and customer needs.

### PNEUMATICS

- ▶ Compressors
- ▶ Pressure gauges
- ▶ Actuators
- ▶ Valves
- ▶ Filters
- ▶ Connectors
- ▶ Fasteners
- ▶ Pressure reducing valves
- ▶ Controllers
- ▶ Sensors

### HYDRAULICS

- ▶ Hydraulic pumps
- ▶ Flow dividers
- ▶ Valves
- ▶ Hydraulic hoses
- ▶ Grease guns
- ▶ Fasteners
- ▶ Filters and cartridges

## FILTERS

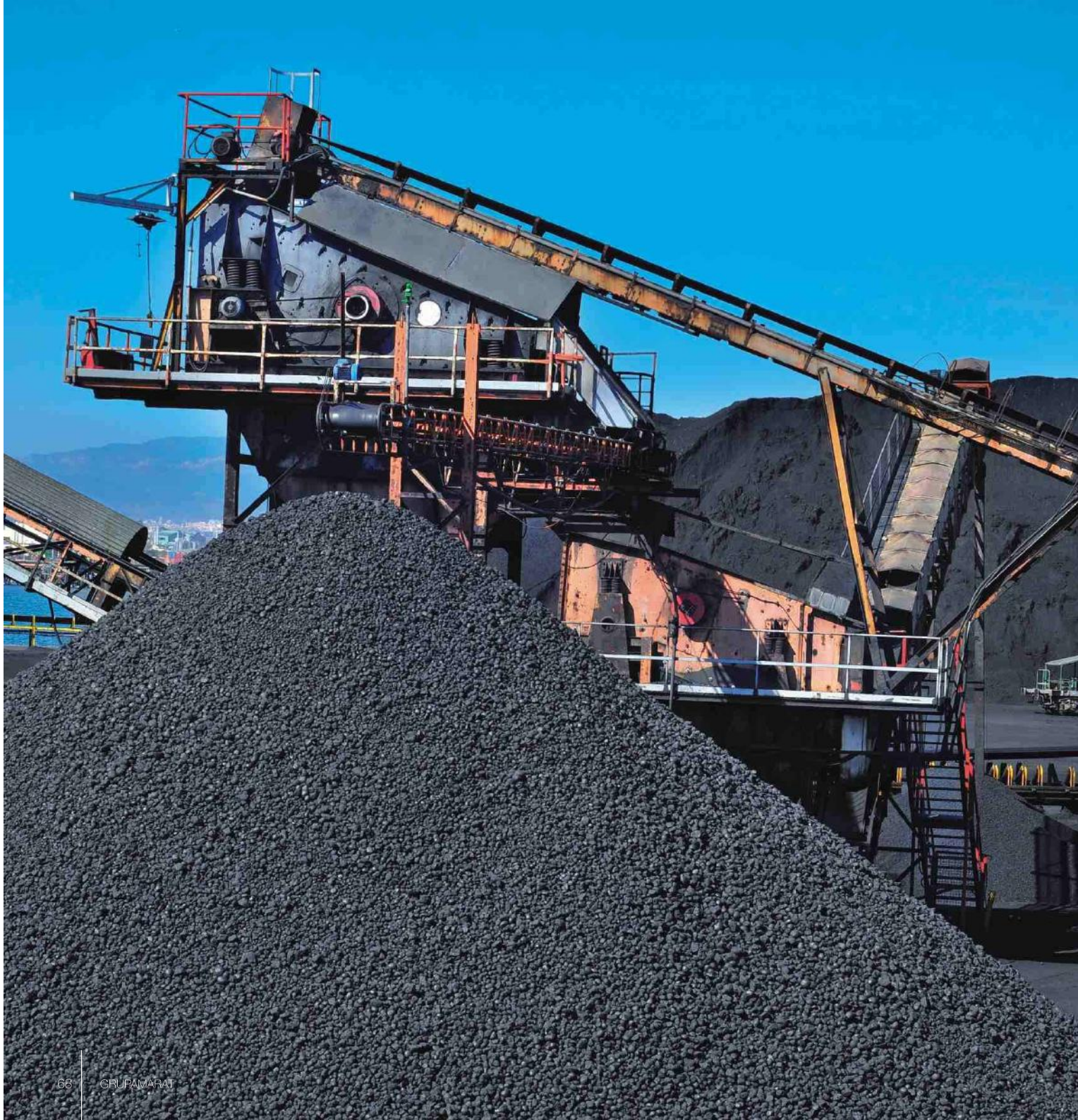
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As an authorized SKF distributor we offer:

- ▶ Cartridges equipped with glass fiber material
- ▶ Cartridges made of stainless fiber media element (Dynafuzz)
- ▶ Filter cartridges made of stainless steel wire mesh
- ▶ Cartridges made of water absorbing materials
- ▶ Traditional cellulose cartridges
- ▶ Dualglass type filtration cartridges

The main advantages of Dualglass cartridge are:

- ▶ Better fluid cleanliness
- ▶ Longer filter life
- ▶ Greater capacity for absorption of impurities
- ▶ Availability of coreless design
- ▶ Extended life for other system components
- ▶ Usability in mobile applications



## COAL

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WANAR is an authorized representative of Kopalnia Węglowa S.A. with over 10 years of experience in the supply of coal. WANAR supplies all coal sizes. At customers request, we also supply other fuel types including: coke, brown coal, fireplace wood, briquettes and coal from the mines of Katowicki Holding Węglowy S.A. and Południowy Koncern Węglowy S.A.

Coal deliveries can be made by road or rail transport directly from mines associated with Kopalnia Węglowa S.A.



## Tailift forklift – Z series

### Main features:

- ▶ Lifting capacity: 2 – 3,5 tons
- ▶ Available in diesel, gasoline, LPG, electric
- ▶ Low noise vibration of 79db
- ▶ High performance and low fuel consumption
- ▶ Latest axle provides wider steering angles and smaller turning radius
- ▶ Faster lifting speed
- ▶ Increased service life of multi-disc hydraulic brake
- ▶ Safety valves in the hydraulic system
- ▶ Multi-functional LCD instrument panel
- ▶ Internal hidden tilt cylinder
- ▶ Pedal parking brake
- ▶ Standard 300 mm free lift
- ▶ Clear view and enlarged operator space providing greater comfort
- ▶ Integral heavy duty chassis
- ▶ Hydraulic lock out system
- ▶ Easy to service
- ▶ Resistant to moisture - all cable connections are waterproof
- ▶ 3 year warranty

# COMPLETED PROJECTS



## International Project

Marat Group has successfully carried out many international projects in the area of bearing technology and mechanical drive systems. We have been supplying mechanical parts and assemblies to some of the leading German gearbox manufacturers. Our gears, shafts and bearings have been widely used in the production of bevel-helical gearboxes. Similarly, we have been the major supplier of planetary and bevel gearboxes for a variety of renowned Czech manufacturers. We have performed mounting and maintenance services on large-size bearings for Alstom – one of the world's leading operators of rail transportation. Marat Group has successfully completed installation of diagnostic systems in one of Ukraine's most important mines – "Heroes of the Space" (Шахта имени Героев Космоса). Apart from implementing diagnostic systems, MARAT has serviced bearings and bearing units for hoists in the mine shaft.

### Modernization of the belt conveyor drive system.

1. Installation of the complete mechanical and electric drive
2. Drum drive shaft assembly and installation
3. Modernization of the electric power and control system
4. Supervising the modernization of ash loading system

The investment was made for "ENEA-Wytwarzanie - Elektrownia Kozienice"

### Comprehensive servicing of the central lubrication system for transporting devices in biomass power plant:

1. Periodic inspections of equipment and lubrication system components

The investment was made in behalf of "GDF Suez Energia Polska SA - Elektrownia Polaniec".

### Comprehensive modernization of the ventilation system at the central ventilation station

1. Design, manufacture and supply of electric motors
2. Modernization of the power system and electrical control
3. Delivery and assembly of the complete fan in conjunction with accessories
4. Constant supervision of the ventilation station
5. Full implementation and warranty solutions

The investment was made for Kompania Węglowa S.A.

### Diagnostics and condition monitoring of the bearing units used in the winding engine

1. Determining the state of bearing units
2. Supply and installation of crankshaft bearings
3. Constant monitoring of the technical condition of the bearing after modernization

The investment was made in behalf of Kompania Węglowa S.A.

### Modernization of the mine shaft hoist Nr. 2 - PG Silesia:

1. Supply and commissioning of the power supply system for the hoist
2. Design and implementation of a shaft signaling system
3. Delivery and commissioning of the power supply and control systems for skip loading

The investment was made for the mine "PG Silesia".

### Delivery of a complete coal slurry granulation technology

1. Design, manufacture and supply of self-lubricating bearing and bearings unit for the granulator drum
2. Modernization of a drum bearing of the granulator mixer
  - ▶ Replacement of main bearing and support rollers
  - ▶ Modernization of lubrication system
  - ▶ Modernization of anti-dust protection system

The investment was made for Kompania Węglowa S.A. in KWK „Piast”.

### Gearbox repair carried out in a rolling mill. Technical parameters of the gearbox: transmitted power - 6 MW, the number of gearbox stages: 28:

1. Evaluation of the technical condition of the bearing
2. Comprehensive replacement of bearing systems (for 368 pieces of bearings)
3. Assessment of the toothed gear, preparation of technical documentation
4. Production and regeneration of toothed gear for planetary and cylindrical gearboxes
5. Installation and commissioning of the final device

The investment was made for „Walcownia Rur Andrzej”.