

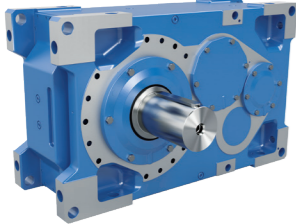
Drive solutions for the crane industry

Complete drive solutions from a single source

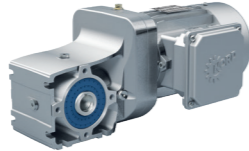


DRIVESYSTEMS

Our Solution. Your Success.



Industrial gear units



Geared motors



Frequency inverters and motor starters

- ▶ Headquarters and technology centre in Bargteheide near Hamburg.
- ▶ Innovative drive solutions for more than 100 branches of industry.
- ▶ 7 production locations with cutting edge technology produce gear units, motors and drive electronics for complete drive systems from a single source.
- ▶ NORD has 48 subsidiaries in 36 countries and further sales partners in more than 50 countries, providing local stocks, assembly centres, technical support and customer service.
- ▶ More than 4,900 employees throughout the world create customised solutions.



Headquarters in Bargteheide

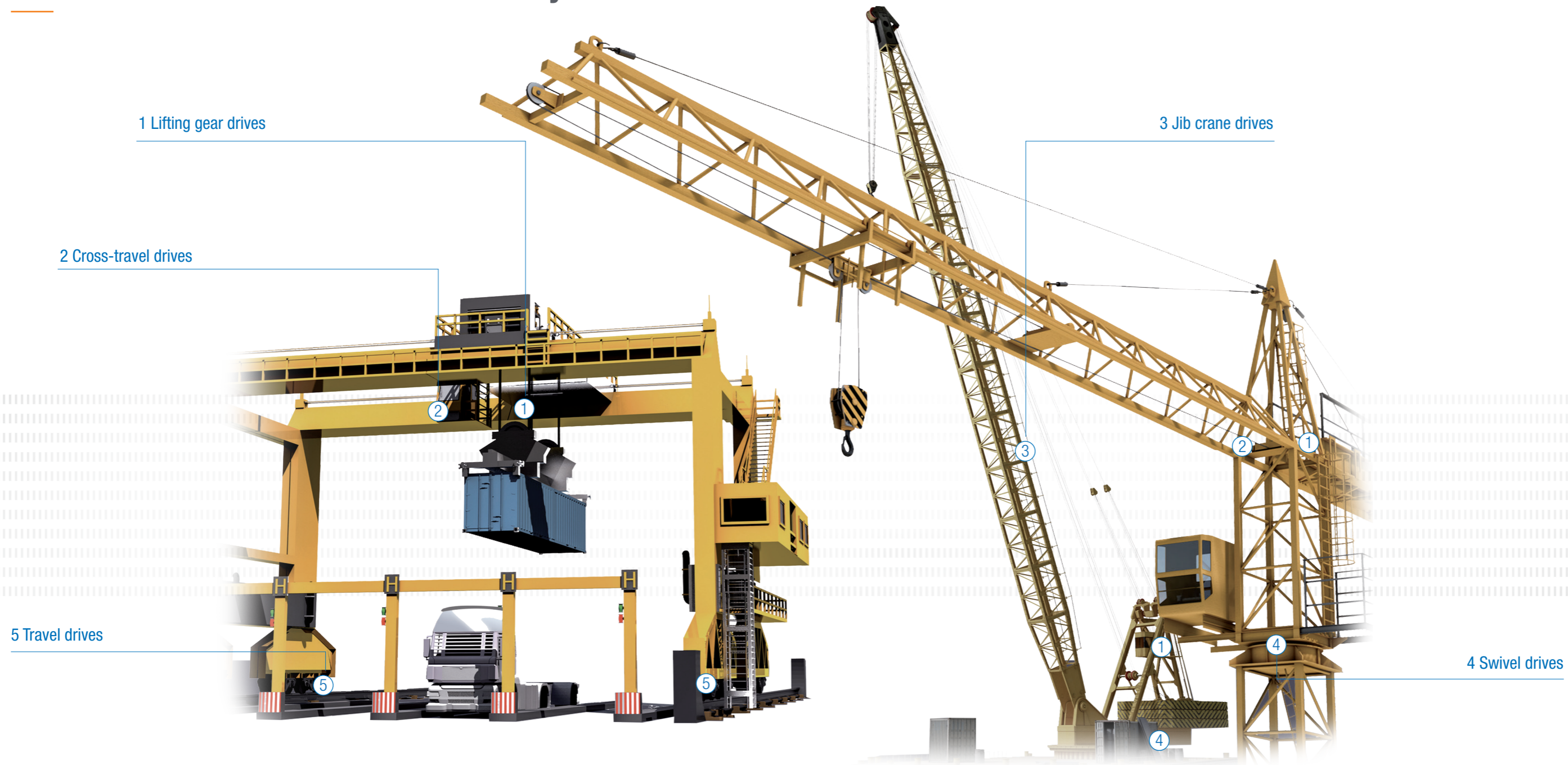
Motor production

Production and assembly

Motor assembly

Advantages of NORD solutions:

- ▶ Specially designed for crane systems
- ▶ Long service life
- ▶ Energy savings
- ▶ Simple commissioning and maintenance
- ▶ Easy to service
- ▶ Global service by extensive NORD network
- ▶ Project support in all planning phases



NORD DRIVESYSTEMS is one of the world's leading drive technology companies whose solutions are used in crane systems all over the world. With its expertise in drive solutions for crane systems, NORD creates economic drive solutions that meet all current and future requirements.

Drive solutions for:

- ▶ Bridge cranes
- ▶ Wall mounted cranes
- ▶ Portal cranes
- ▶ Travelling cranes
- ▶ Building cranes
- ▶ Jib cranes
- ▶ Floating cranes
- ▶ Container cranes
- ▶ Harbour cranes and many other types of crane

NORD DRIVESYSTEMS provides:

- ▶ Extensive knowledge of applications and technical support
- ▶ Complete drive solutions from a single source
- ▶ Strong global presence and service
- ▶ Experience from the installation of thousands of drive units in the crane industry
- ▶ Wide range of products with high quality standards
- ▶ Great reliability, economy and service life
- ▶ Recognised product quality compliant with international standards

Drive solutions for the crane industry

The tasks of cranes, in picking up loads and setting them down gently at a precise location, requires special drives and integrated brakes as well as a frequency inverter technology that ensures a soft start and generator braking via defined adjustable ramps. Smooth motion with high positioning accuracy is essential – and is often required with the simultaneous movement of the crane and the trolley as well as the control and synchronous operation for travelling drives.

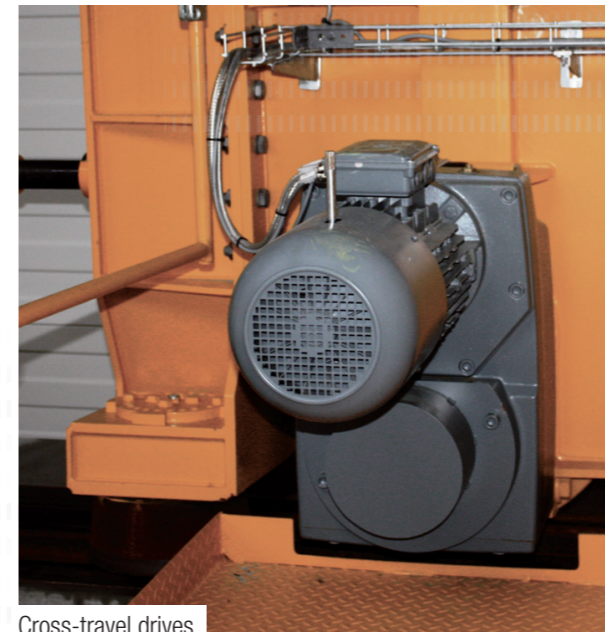
Travel drives / Cross-travel drives / Lifting gear drives

Crane drives have to meet special requirements in terms of compact design and reliability. NORD offers drive solutions that can be configured for all types of cranes and load ranges.

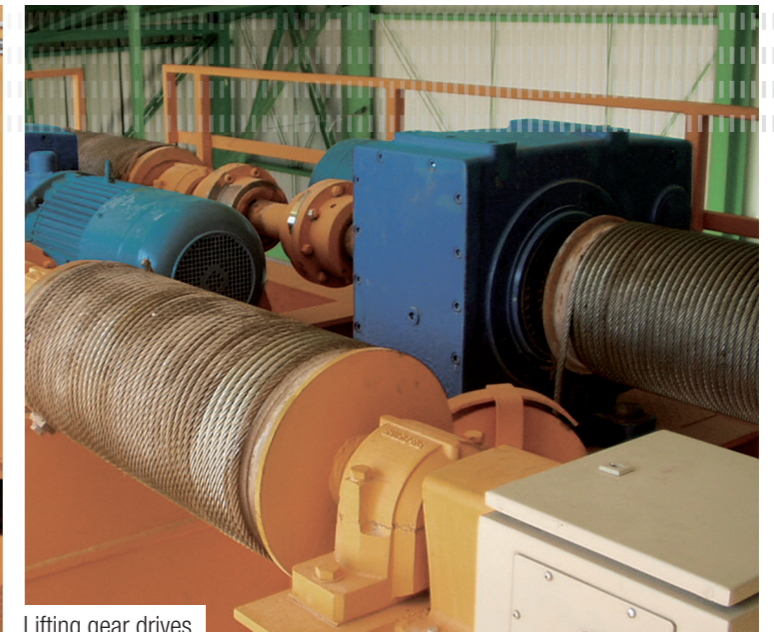
- ▶ Compact design
- ▶ Precise positioning
- ▶ Easy to service and maintain
- ▶ Energy-efficient
- ▶ High overload capacity
- ▶ With integrated PLC function
- ▶ Brake design for gentle braking
- ▶ Paint systems / Sealing systems
- ▶ Torque supports decoupled with metal instead of elastomers



Travel drives



Cross-travel drives



Lifting gear drives

We support you with:

Design

- ▶ myNORD
- ▶ Reduced number of variants
- ▶ Project design / optimisation
- ▶ Drive system design
- ▶ Application solutions
- ▶ Green solutions
- ▶ CAD drawings

Commissioning

- ▶ Plug-and-Play
- ▶ Support
- ▶ Training
- ▶ Documentation
- ▶ Smart commissioning

Service

- ▶ Predictive maintenance (PLC function)
- ▶ Spare parts, express shipping
- ▶ Global presence
- ▶ 24/7 Support

Efficient, reliable and proven drive solutions from a single source



Efficient

NORD drive solutions are environmentally friendly and help to minimise CO₂ emissions.

- ▶ NORD motors with low mass inertia are designed for inverter operation and comply with the latest international energy requirements.
- ▶ NORD frequency inverters ensure efficient operation, improved process control and optimised motor performance.
- ▶ Easy to service and maintain, NORD drives reduce standstill times and thus contribute to an increased efficiency and availability of the entire system.

Reliable

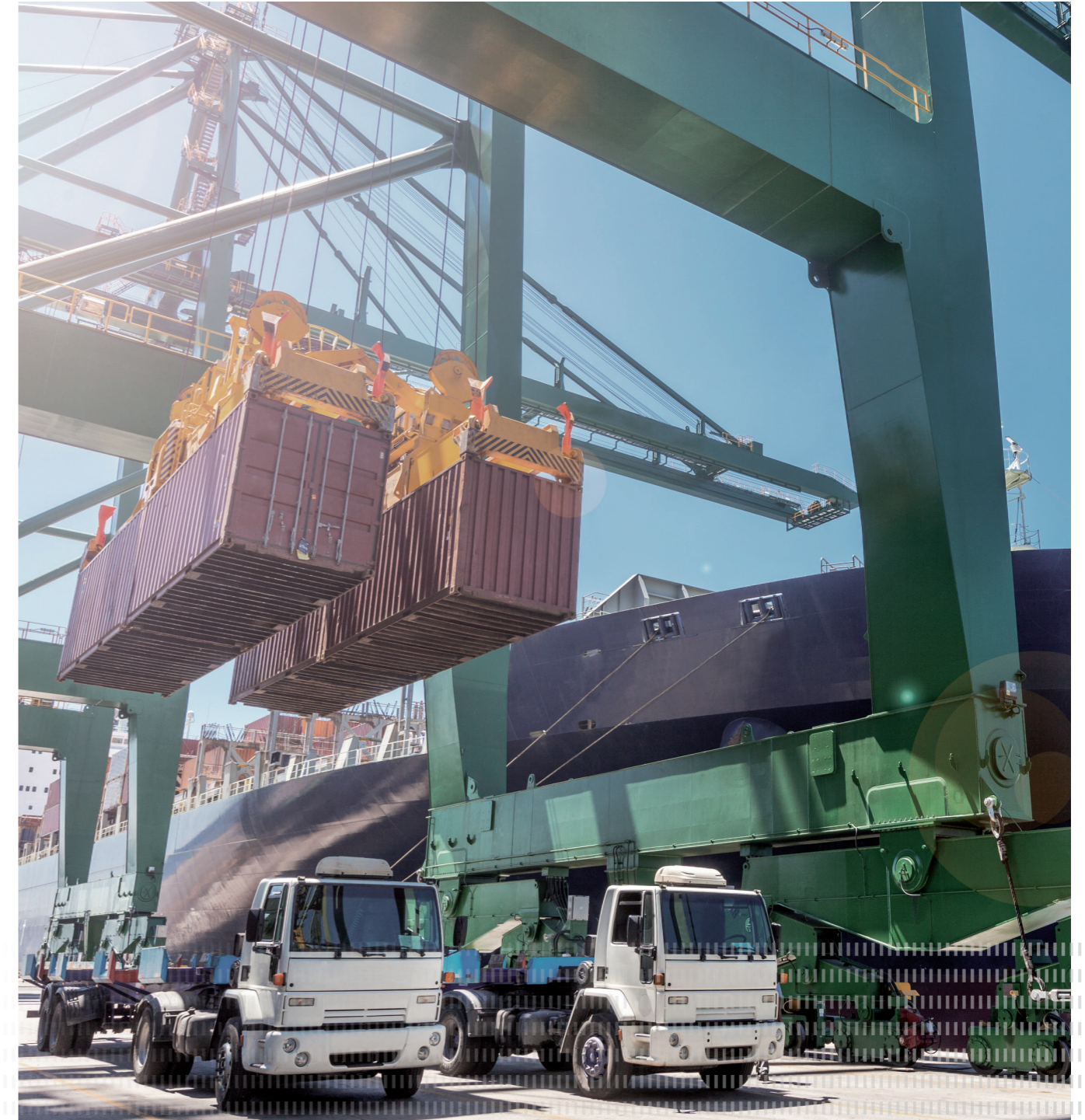
It is vital to prevent breakdowns in crane systems. For this reason, reliability is our main focus when developing drive solutions. All of our system components are precisely matched to each other and ensure smooth operation.

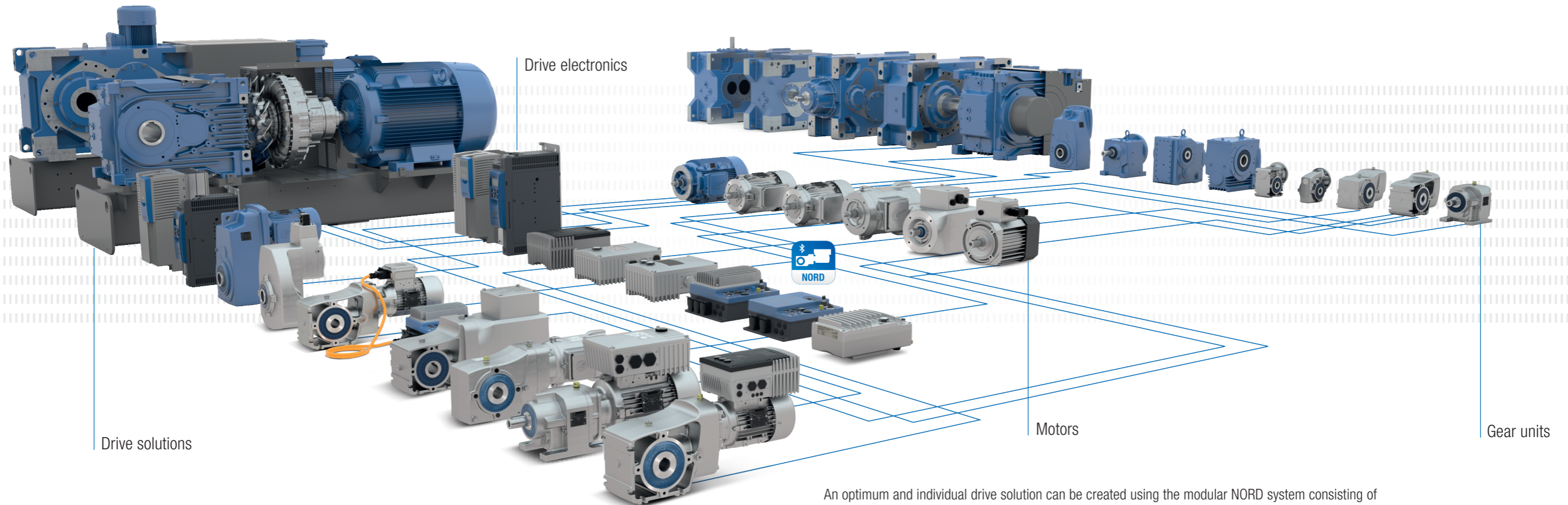
- ▶ UNICASE gear units ensure precise positioning of bearings and shafts.
- ▶ AUTOVENT ensures a leak free design.
- ▶ Precisely machined gear wheels with minimum wear are used.
- ▶ The gear units are extraordinarily robust, run very quietly and have a particularly long service life.
- ▶ NORD inverters electronically protect the drive system and can visualise the operating data.

Tried-and-tested

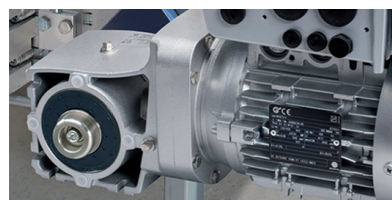
NORD special solutions for crane systems have proven themselves throughout the world. The reasons for this include:

- ▶ Gear units withstand a wide range of ambient conditions. They function both in dusty environments, as well as in environments with high humidity and heat, and large temperature differences.
- ▶ We provide our customers with individual solutions which are tailored to their requirements, so that functionality in all situations is ensured.





An optimum and individual drive solution can be created using the modular NORD system consisting of the gear unit, motor and drive electronics. Each of the variants combine: the highest product quality, short planning and assembly times, high delivery availability, and a good price / performance ratio.



Reliable gear units with one-piece UNICASE housing can cater for any load.

- ▶ High power density
- ▶ Long service life



Powerful motors up to IE4 keep drive systems in motion in all operating situations.

- ▶ Designed in compliance with international standards
- ▶ High overload capacity
- ▶ Energy-efficient



Intelligent drive electronics provide exactly the control options which you need.

- ▶ Scalable functions
- ▶ Full field bus connection facilities
- ▶ Wide power range
- ▶ PLC integrated at no extra cost



Extensive communication options enable access to drives from all levels to enable a wide variety of setting options.

- ▶ All common bus systems
- ▶ Quick and simple commissioning with plug-in control box or using NORDCON software
- ▶ Convenient hand held console for local operation
- ▶ Optionally with intralogistics options



Switches and keys are located directly on the drives and enable direct starting and stopping as well as mode switching.

- ▶ Mains switch
- ▶ Selector switch for local or remote control
- ▶ Start/Stop and Forward/Reverse switch
- ▶ Energy-efficient



All interfaces are designed for ease of use. Drives can be easily configured and installed.

- ▶ Simple Plug-and-Play with all common connection plugs
- ▶ Plug-in supply cable and motor output
- ▶ Plug-in sensors and encoders
- ▶ Pre-assembled cables
- ▶ PLC integrated at no extra cost

UNICASE helical in-line gear units (Catalogue G1000)



- ✓ Foot or flange mounted
- ✓ Long life, low-maintenance
- ✓ Optimum sealing
- ✓ UNICASE housing

Sizes: 11
 Power: 0.12 – 160 kW
 Torque: 10 – 26,000 Nm
 Speed ratio: 1.35 – 14,340.31:1

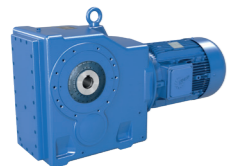
UNICASE parallel shaft gear units (Catalogue G1000)



- ✓ Foot, flange or face mounted
- ✓ Hollow or solid shaft
- ✓ Compact design
- ✓ UNICASE housing

Sizes: 15
 Power: 0.12 – 200 kW
 Torque: 110 – 100,000 Nm
 Speed ratio: 4.03 – 15,685.03:1

UNICASE bevel gear units (Catalogue G1000)



- ✓ Foot, flange or face mounted
- ✓ Hollow or solid shaft
- ✓ UNICASE housing

Sizes: 11
 Power: 0.12 – 200 kW
 Torque: 180 – 50,000 Nm
 Speed ratio: 8.04 – 13,432.68:1

NORDAC FLEX SK 200E frequency inverters (Catalogue E3000)



- ✓ Energy-saving functions
- ✓ Integrated POSICON positioning control
- ✓ Integrated PLC

Sizes: 4
 Voltage: 1~ 110 – 120 V, 1~ 200 – 240 V, 3~ 200 – 240 V, 3~ 380 – 500 V
 Power: 0.25 – 22 kW

NORDAC PRO SK 500E frequency inverters (Catalogue E3000)



- ✓ Stand-alone operation
- ✓ 4 parameter sets
- ✓ Sensorless current vector control (ISD control)
- ✓ Integrated PLC

Sizes: 11
 Voltage: 1~ 110 – 120 V, 1~ 200 – 240 V, 3~ 200 – 240 V, 3~ 380 – 480 V
 Power: 0.25 – 160 kW

Motors (Catalogue M7000)



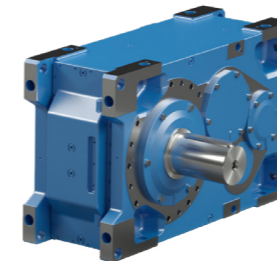
- ✓ IE3 motors from 0.12 kW (Size 63)
- ✓ IE4 synchron- and asynchronous motors



International energy efficiency standards

- ▶ EU: IE1 – IE4 as per IEC 60034-30
- ▶ US: ee labeling as per EISA 2014 (Dept. of Energy)
- ▶ CA: CSA energy verified as per EER 2010
- ▶ CN: CEL as per GB 18613
- ▶ KR: KEL as per REELS 2010
- ▶ BR: Alto Rendimento as per Decreto nº 4.508
- ▶ AU: MEPS as per AS/NZS 1359.5

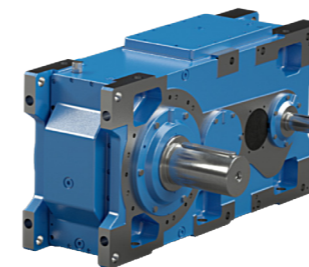
MAXXDRIVE® industrial gear units (Catalogue G1050)



- ✓ Parallel and angled gear units
- ✓ High precision axis alignment
- ✓ Long life, low-maintenance
- ✓ UNICASE housing

Sizes: 11
 Power: 1.5 – 6,000 kW
 Torque: 15,000 – 282,000 Nm
 Speed ratio: 5.54 – 30,000:1

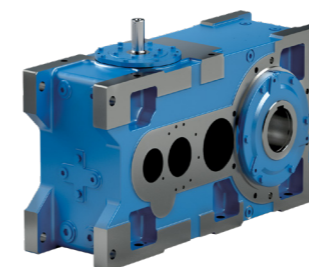
MAXXDRIVE® XD parallel gear units (Flyer S1056)



- ✓ 3- and 4-stage
- ✓ Housing with increased centre distance
- ✓ Inspection cover
- ✓ Housing optimised for downward radial loads
- ✓ Ideal for lifting equipment

Size: 5
 Power: 1.5 – 925 kW
 Torque: 15,000 – 112,000 Nm
 Ratio: 22,4 – 355:1

MAXXDRIVE® XJ right-angle gear unit



- ✓ 3-stage
- ✓ New input shaft position “J-Mount”
- ✓ Horizontal and vertical installation positions
- ✓ Modular
- ✓ Flexible

Size: 5
 Power: 5.5 – 1.275 kW
 Torque: 15,000 – 107,000 Nm
 Ratio: 12,5 – 100:1



In Wugang harbour, located about 250 kilometres south of Shanghai at the mouth of the Yangtze River, up to 15 million tons of imported iron ore are unloaded every year for the WISCO steelworks in Wuhan. More than 170 NORD geared motors ensure the reliable operation of the crane systems and bucket wheels, including:

- ▶ three grabs at a mooring for 300,000 dwt ships with
- ▶ a total of 72 three-stage bevel geared motors.

All of the NORD geared motors in Wugang are equipped with heavy-duty housings for outdoor use. They are effectively protected against the entry of fluids and equipped with corrosion- and moisture-proof components. Special paints are used for protection against the salty atmosphere. Most of the units are equipped with application-specific optional components. These include dust and corrosion protected brakes, micro-switches for continuous brake monitoring and double protective shields on the motor fans.



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