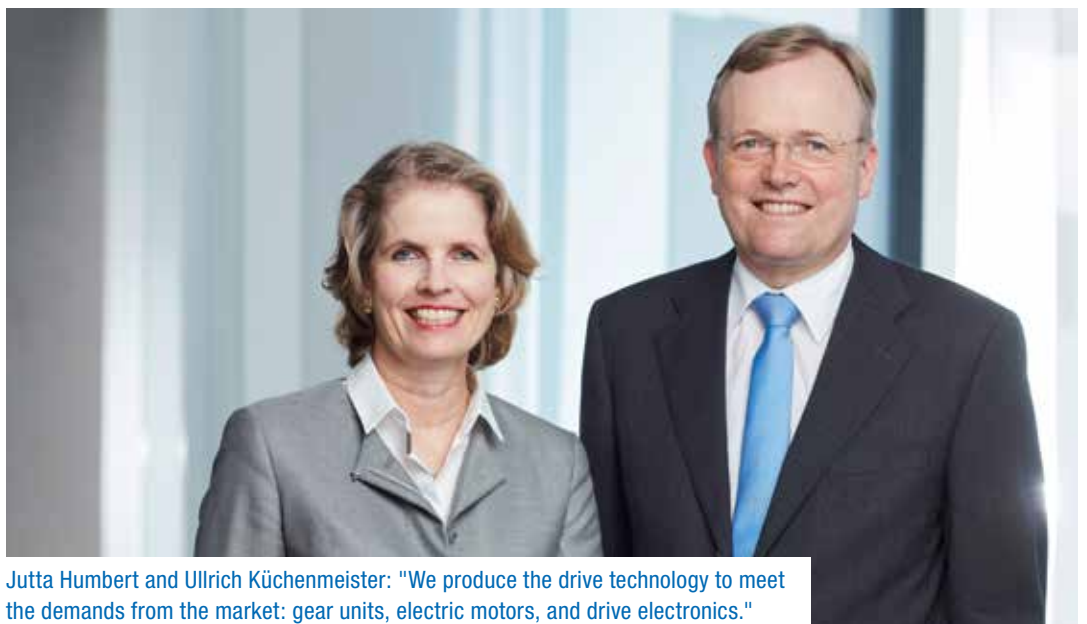


NORD DRIVESYSTEMS – The company

Intelligent drive solutions since 1965





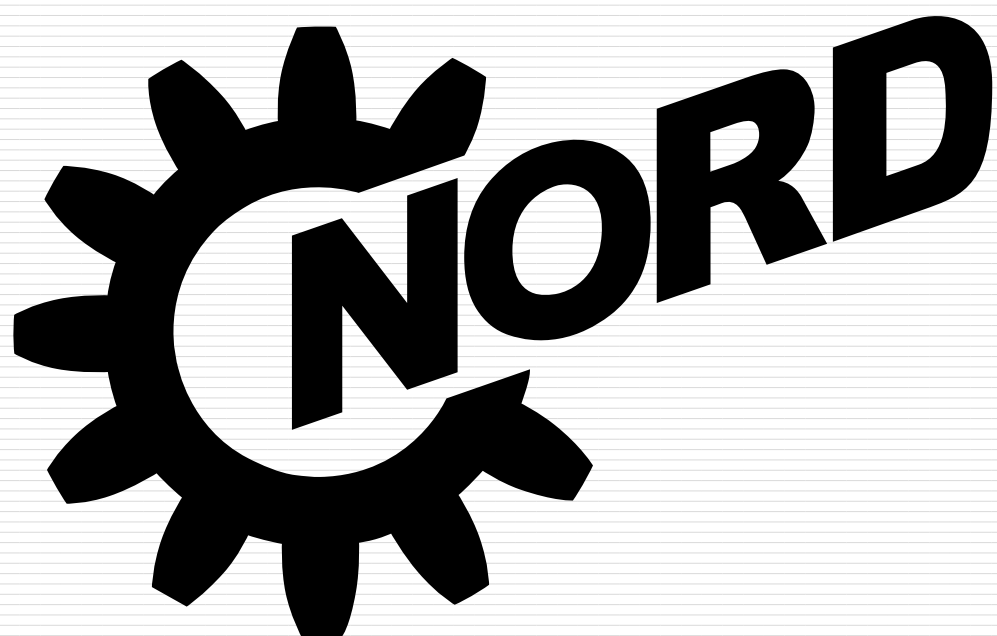
Jutta Humbert and Ullrich Küchenmeister: "We produce the drive technology to meet the demands from the market: gear units, electric motors, and drive electronics."

Since 1965, our family business has developed into one of the world's leading complete suppliers of mechanical and electronic drive technology. We supply individual drive solutions and our innovations set global standards.

Our focus is to provide you with added value.

Since 1965 we have developed and manufactured all the major components for our mechanical and electronic drive technologies (gear units, electric motors and drive electronics). This wide-ranging in-house design and production capability allows us to offer our customers individual drive solutions. Our extensive manufacturing, test and research facilities feature cutting-edge

technology and equipment. With our know-how and experience, we meet the most stringent quality demands. The UNICASE concept, which we developed in 1981 quickly became the international standard for the manufacture of gear unit housings. Today, the focus of our innovation is on intelligent, functionally variable drive technology for Industry 4.0.



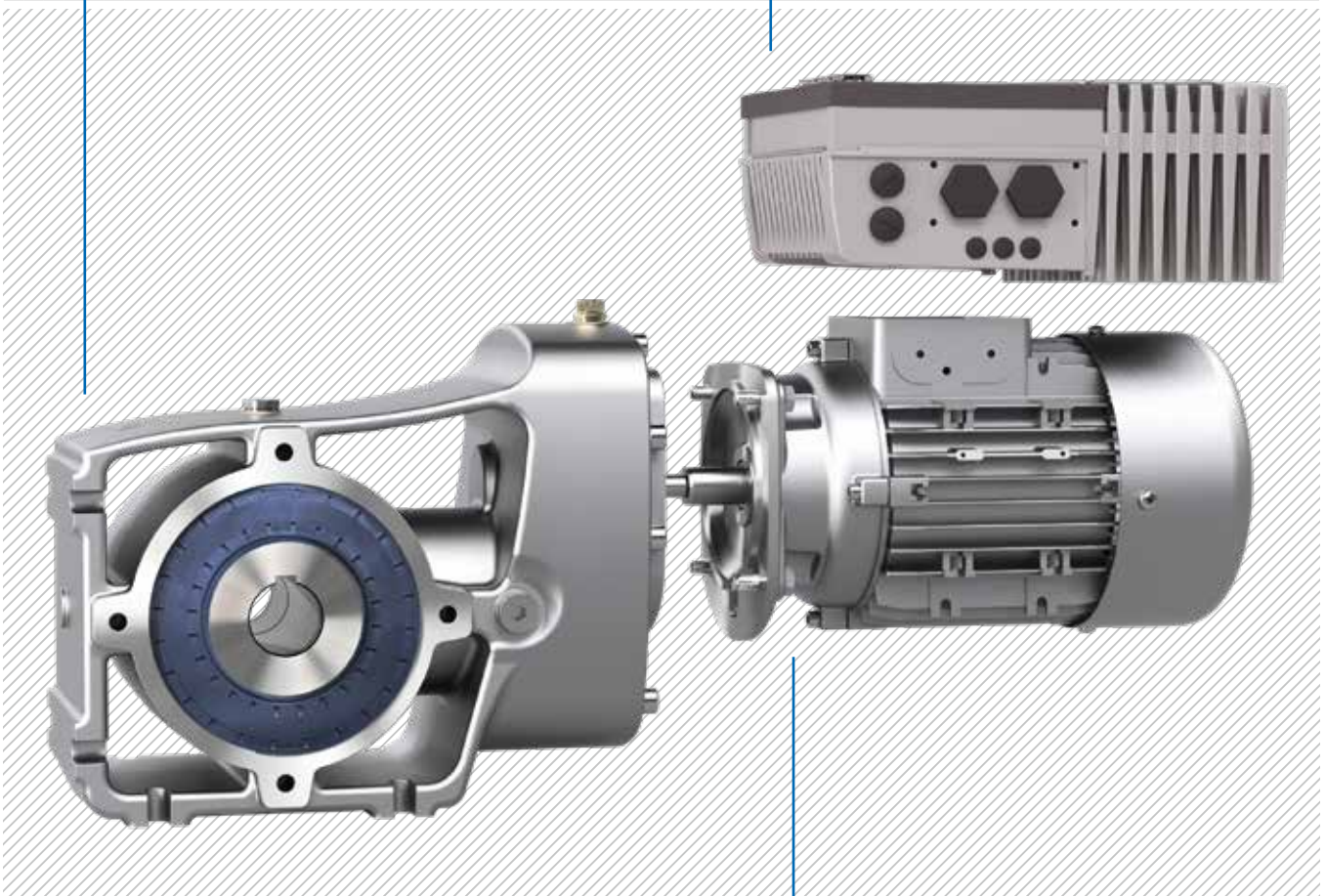
DRIVESYSTEMS

The Gear Unit

Our gear units have a high power density and are equipped with exceptionally strong bearings. This ensures high reliability, trouble-free operation and a long service life. Excellent production quality also ensures quiet running.

The Drive Electronics

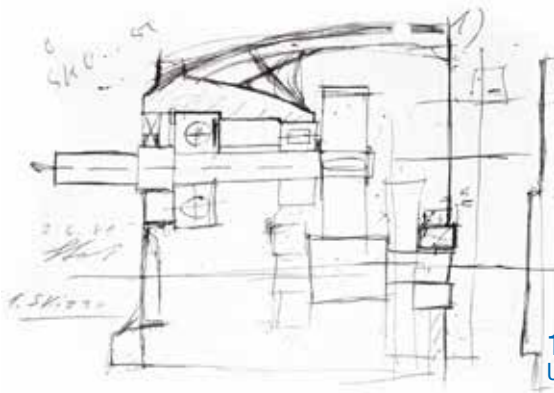
Our motor starters and frequency inverters are compact, easy to commission and have a consistent programming/parameter structure throughout the range. A comprehensive selection of versions with scalable features and functions ensure that applications are efficiently fulfilled according to requirements.



The Motor

Our high-efficiency motors comply with the highest standards in all regions and therefore can be used globally. We offer drive solutions for the most diversified operating conditions: indoor and outdoor, hot and cold, high hygiene requirements, explosive environments, and more.

History



1981 Invention of the UNICASE: »Pioneering invention for the industry.«



1990 Start of global networking: »Global NORDnet ensure fast response capability and high flexibility.«



1977 Own gear production in Glinde.



1983 Netherlands



1987 Belgium

'66 '67 '68 '69 '70 '71 '72 '73 '74 '75 '76 '78 '80 '82 '85 '88

1965

G. Schlicht and G. A. Küchenmeister establish the company.



1979



USA:
Production and assembly



France



Sweden

1986 Canada



1989 Denmark



Germany



1984 Own electronics production in Aurich.



2015
3,600 employees worldwide
subsidiaries in 36 countries
540 Mio. EUR sales

2004 China:
Production and assembly



2005 Poland:
Gear production and assembly



2002 Product introduction of the
NORD worm gear unit modules:
»Top flexibility and fast availability.«

Ukraine

Russia

2003

1996 Italy:
Motor factory and assembly



Turkey



Singapore



1993 Switzerland



1997 Slovakia



1999 Brazil



Mexico



Romania



Vietnam

2006



Korea

2012



Morocco

2013

'16

'10

'11

2001 Indonesia



2007



India

Czech
Republic

Portugal

Slovenia

1998



Croatia



Finland



Hungary



Norway

1994 Great Britain



1992 Spain



1991 Production of housings
and shafts in Gadebusch

2000 Product introduction of decentralized drive
technology: »A significant benefit for many
sectors.«

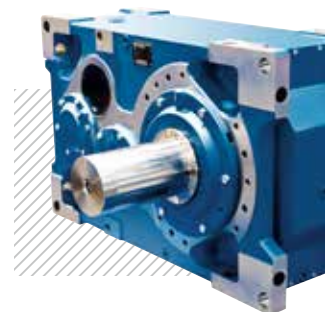


Austria



2009 Product introduction:
NORD industrial gear units
up to 242,000 Nm.

2008 Australia



- Production facilities located in Germany, Italy, Poland, the USA and China
- The latest technology for the production of gear units, motors and drive electronics
- Highest quality standards at all facilities
- Dependability, flexibility and always with a view to customer benefits

Production which is environmentally friendly and saves resources is of vital concern to the management:

- Energy-saving thanks to high efficiency
- Produced in environmentally and climate-friendly plants

We are considered to be a technological leader in the development and production of motors, gear units and drive electronics, and work to the highest quality standards. To dependably comply with these standards, we have set up a global network of production facilities for all drive components. Our headquarters with its technology and logistics centre and offices is located in Bargteheide

near Hamburg. In addition, we have seven production facilities in Germany, Italy, Poland, the USA and China. Whether it's gear wheels, shafts, housings, motors or drive electronics – all components are produced in our own production facilities with great dependability and flexibility. We therefore offer our customers throughout the world the best possible quality, regardless of the location and circumstances.



HEADQUARTERS OF GETRIEBEBAU NORD BARGTEHEIDE NEAR HAMBURG, GERMANY

Research and development, logistics centre



NOWA SOL, POLAND
Production and assembly



WAUNAKEE, WISCONSIN, USA
Production and assembly

Production



AURICH IN LOWER SAXONY, GERMANY
Frequency inverter production



GADEBUSCH IN MECKLENBURG-VORPOMMERN, GERMANY
Housing and shaft production



GLINDE NEAR HAMBURG, GERMANY
Gear production



SAN GIOVANNI IN PERSICETO, ITALY
Motor production



SUZHOU NEAR SHANGHAI, CHINA
Motor production

- Subsidiaries in 36 countries
- Agencies in 52 countries
- Fast and reliable service in the national language, thanks to local contact partners

Angola - Argentina - Australia - Austria - Bahrain - Bangladesh - Belgium - Brazil - Burkina Faso
Cameroon - Canada - Chile - China - Colombia - Costa Rica - Croatia - Czech Republic - Denmark
Ecuador - Egypt - Estonia - Finland - France - Germany - Greece - Hungary - India - Indonesia - Iran
Iraq - Ireland - Israel - Italy - Jordan - Kenya - Korea - Kuwait - Latvia - Lebanon - Liberia - Lithuania
Malaysia - Mexico - Morocco - Netherlands - Nigeria - Norway - Oman - Pakistan - Panama - Peru
Philippines - Poland - Portugal - Qatar - Romania - Russia - Saudi Arabia - Senegal - Singapore
Slovakia - Slovenia - South Africa - Spain - Sweden - Switzerland - Syria - Thailand - Togo - Tunisia
Turkey - UAE - Uganda - UK - Ukraine - USA - Venezuela - Vietnam - Zambia

Global presence



Corona, California, USA



Charlotte, North Carolina, USA



Guarulhos São Paulo, Brazil



Brampton near Toronto, Canada



Vieux Thann, France



Hillegom near Amsterdam, Netherlands



Zandhoven, Belgium



Abingdon, Great Britain



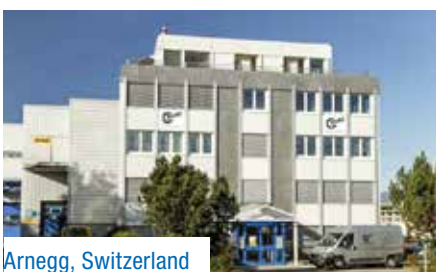
Oïã Aveiro, Portugal



Sabadell, Spain



Linz, Austria



Arnegg, Switzerland



Upplands Väsby near Stockholm, Sweden

Global presence



Tampere, Finland



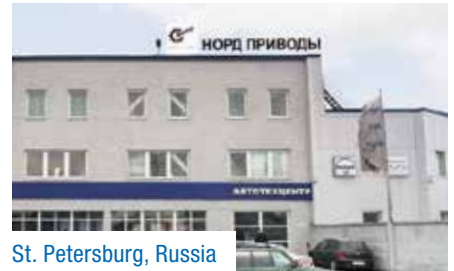
Aabenraa, Denmark



Prague, Czech Republic



Bratislava, Slovakia



St. Petersburg, Russia



Tuzla near Istanbul, Turkey



Tianjin, China



Seoul, South Korea



Pune, India



Singapore, Singapore



Desa Pakulan near Jakarta, Indonesia



Melbourne, Australia

Agencies also in:



Croatia



Morocco



Norway



Romania



Slovenia



Ukraine



Vietnam

Our production features:

- Great depth of production
- All quality-relevant components from our own production
- State-of-the-art production engineering
- NORDPro (production and quality systems)

For our customers this means:

- Fast delivery
- High operational reliability
- Low maintenance

We have always placed the highest priority in quality, efficiency and economy in the development and production of gear unit components, motors and drive electronics. We use the latest production and quality systems, consisting of KAIZEN, 5S, Visual Management, Shopfloor Management and Quality Circles. On the basis of Lean Production, we are well on the way to Industry 4.0.

We have a great depth of production: all quality-relevant components of our drive solutions are produced in our own factories using advanced machinery and highly qualified employees. Our products therefore provide great operational reliability, low maintenance and an especially long service life.



Industry 4.0 in use – partially autonomous processes in housing production



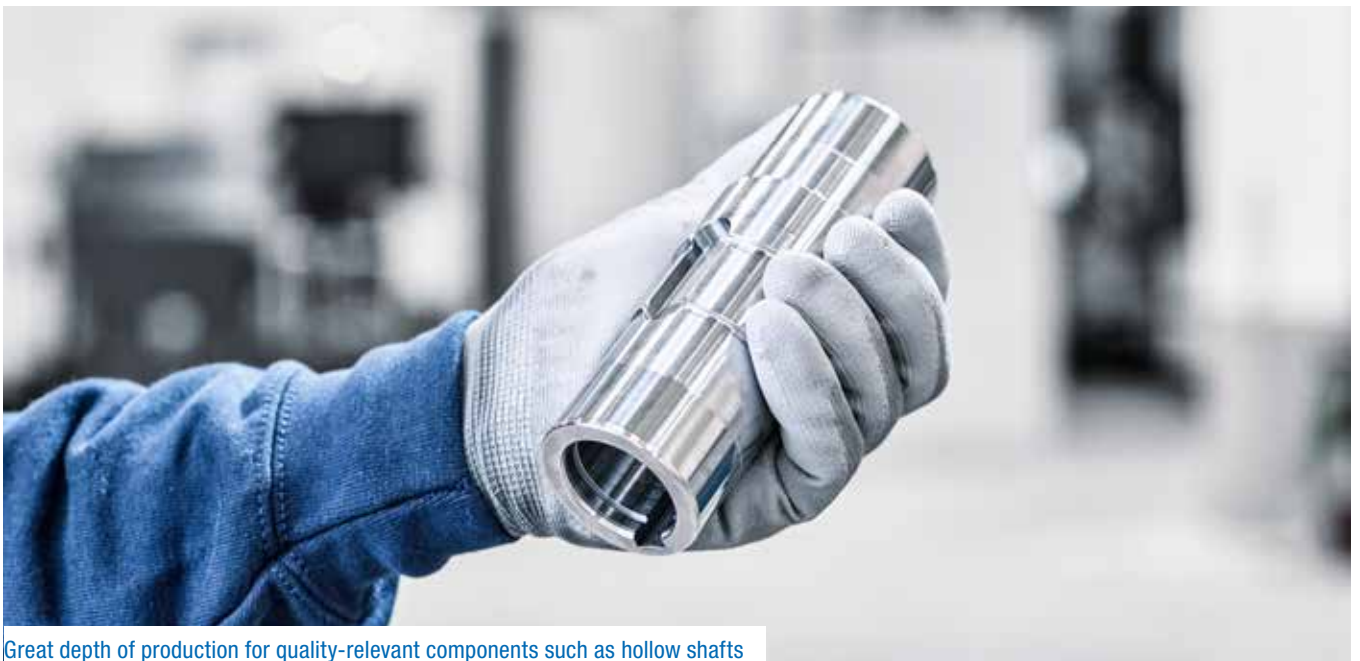
High flexibility through our own motor production



Drive electronics from our own production since 1984



Vacuum hardening plant for top quality gear production



Great depth of production for quality-relevant components such as hollow shafts

Our quality is based on:

- The latest production methods in all production facilities
- Qualified employees
- Global quality management
- DIN ISO 9001, DIN 3990, NIEMANN, AGMA, ATEX

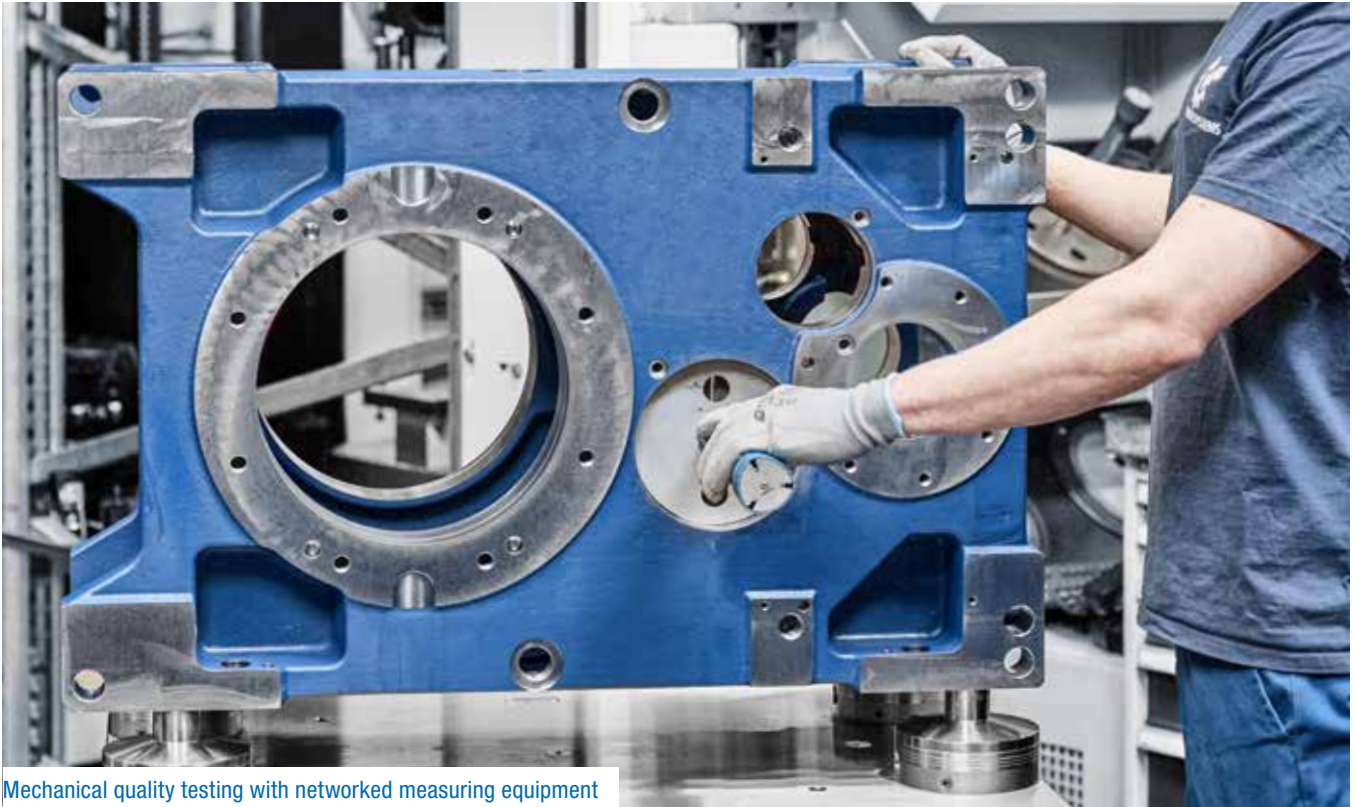
For our customers this means:

- Dependability
- Safety
- Long service life for our products

With all of our products, our customers can depend on the very highest quality. Future-oriented production methods, qualified employees and consistent quality management sustainably ensure the performance and durability of

our innovative drive solutions. We have the procedures, products and especially hold customer benefits in full view, in every phase of development and production.

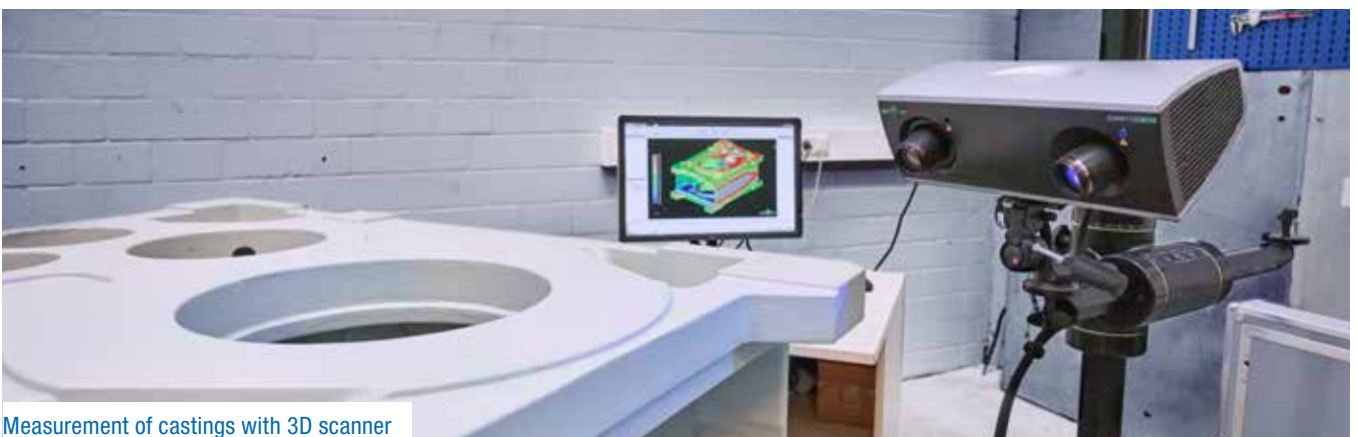
Quality



Mechanical quality testing with networked measuring equipment



Automatic visual quality assurance of populated circuit boards - individual assessment by employees



Measurement of castings with 3D scanner



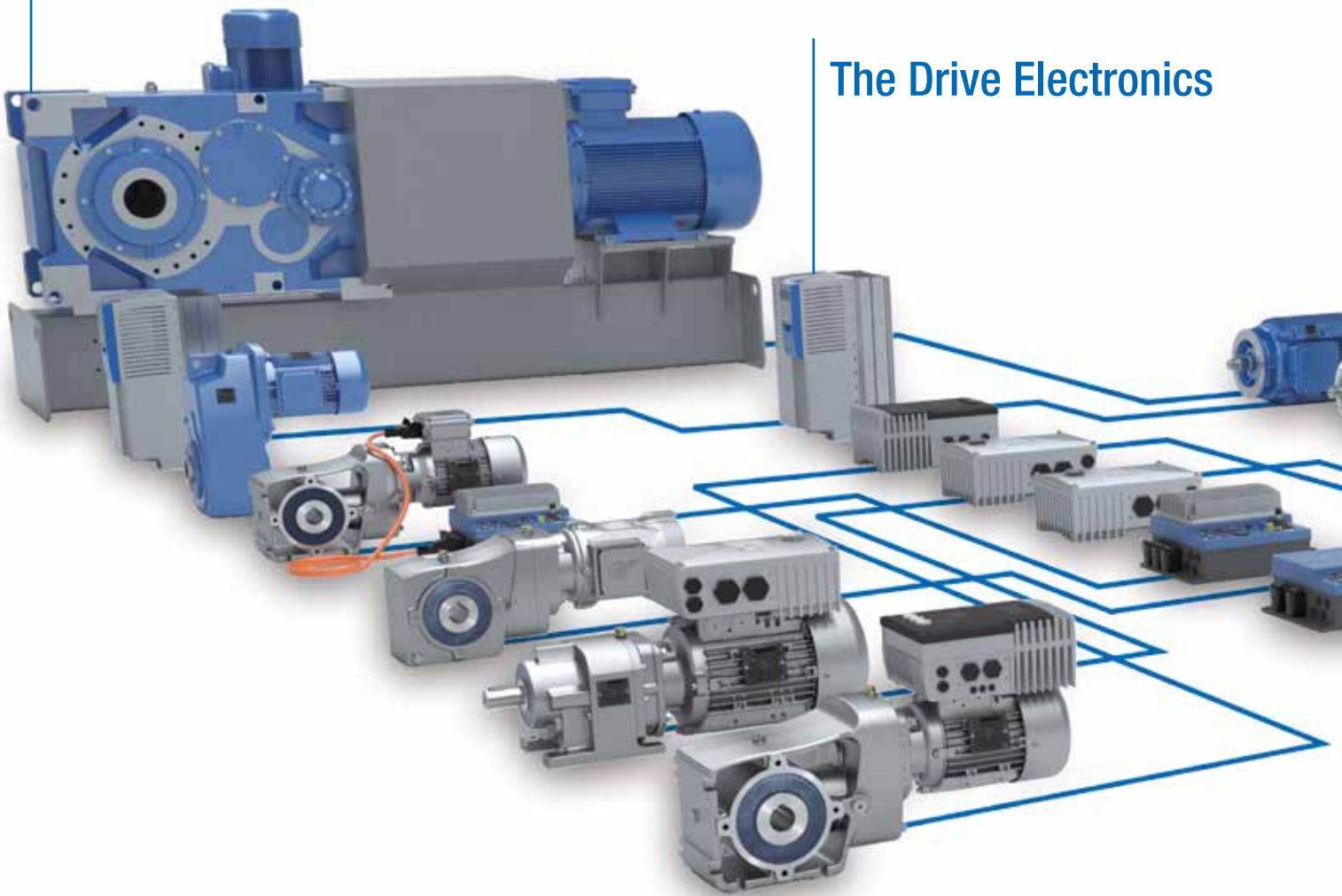
Acoustic chamber for noise emission testing



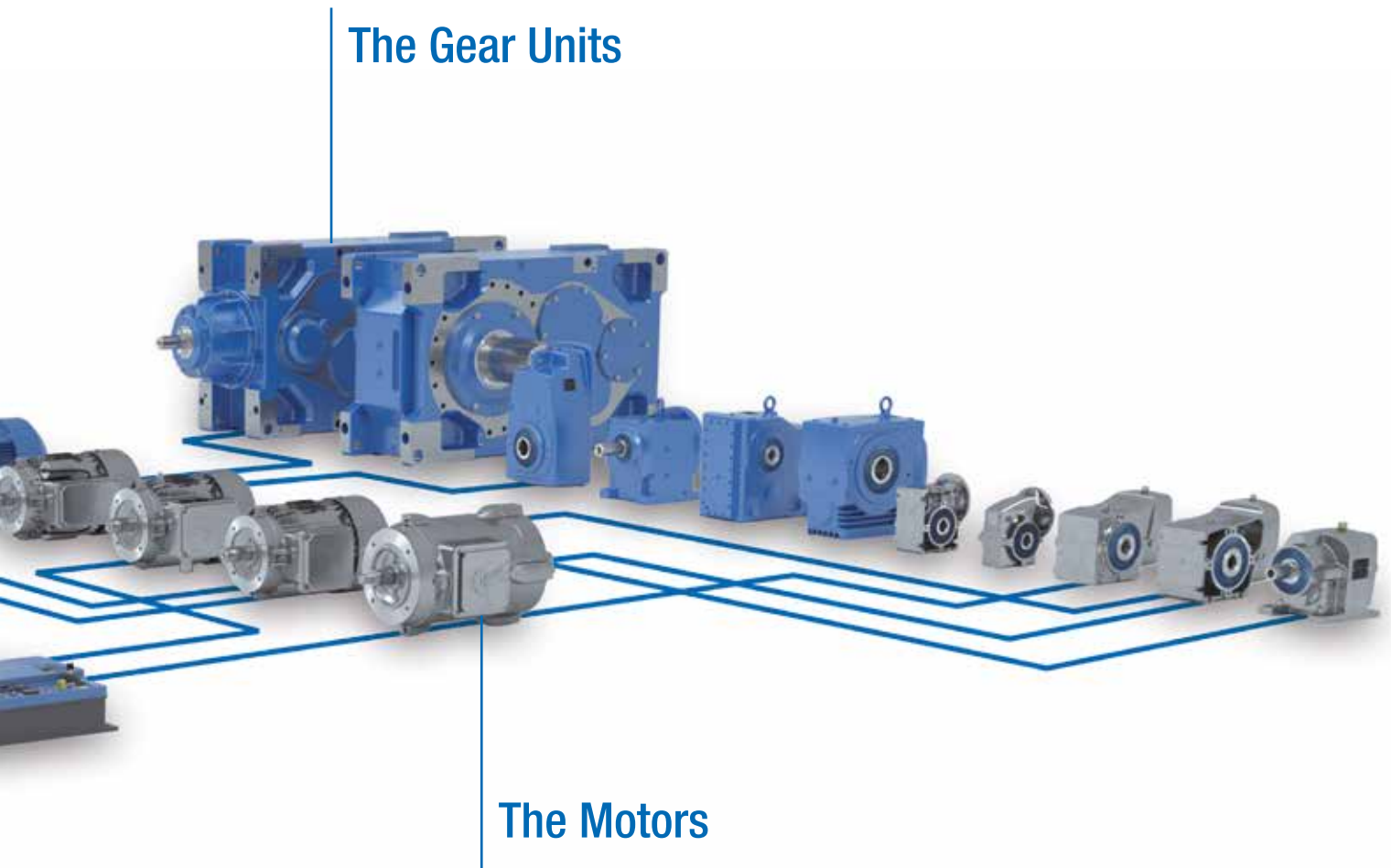
Application test area for testing of NORD drive solutions

The Drive Solutions

The Drive Electronics



The Gear Units



The Motors



Our products are available in ATEX certified versions.

From the three components - gearbox, motor and drive electronics - the NORD product package provides an optimal and individual drive solution. The modular products are perfectly matched and can be combined in many variants. In addition, we offer planning, project management, installation, and service from a single source. If desired, industry

solutions can be configured as a complete logistics package, programmed and ready for use. Each of the modular NORD products combines: highest product quality, short planning and assembly times, high delivery availability, and a good price/performance ratio. Our products are also available in ATEX certified versions.

Geared motors



UNICASE helical gear units

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

Sizes	11
kW	0.12 – 160
Nm	10 – 26,000
i	1.35:1 – 14,340.31:1



NORDBLOC.1® helical gear units

- Foot or flange mounted
- Die-cast aluminium housing
- UNICASE housing
- Industry standard dimensions

Sizes	13
kW	0.12 – 37
Nm	30 – 3,300
i	1.07:1 – 456.77:1



UNICASE parallel geared units

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

Sizes	15
kW	0.12 – 200
Nm	110 – 100,000
i	4.03:1 – 6,616.79:1



NORDBLOC.1® bevel gear units

- Up to 97 % efficiency
- Foot mounted, flange mounted or hollow shaft mounted
- Hollow or solid shaft
- UNICASE housing

Sizes	6
kW	0.12 – 9.2
Nm	50 – 660
i	3.03:1 – 70:1



UNICASE helical worm gear units

- Foot mounted, flange mounted or hollow shaft mounted
- Hollow or solid shaft
- UNICASE housing

Sizes	6
kW	0.12 – 15
Nm	94 – 3,058
i	4.40:1 – 7,095.12:1



UNIVERSAL SI worm gear units

- Modular
- Universal mounting
- Life-long lubrication

Sizes	5
kW	0.12 – 4.0
Nm	21 – 427
i	5.00:1 – 3,000.00:1



UNICASE bevel gear units

- Up to 97 % efficiency
- Foot mounted, flange mounted or hollow shaft mounted
- Hollow or solid shaft
- UNICASE housing

Sizes	11
kW	0.12 – 200
Nm	180 – 50,000
i	8.04:1 – 13,432.68:1



UNIVERSAL SMI worm gear units

- Smooth surfaces
- Life-long lubrication

Sizes	5
kW	0.12 – 4.0
Nm	21 – 427
i	5.00:1 – 3,000.00:1

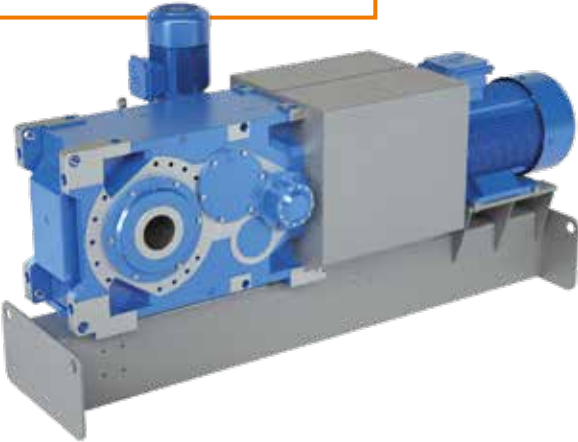


Industrial gear units MAXXDRIVE™

- All bearing contact and sealing surfaces are machined in one operation
- No separating joints in the housing, therefore no sealing surfaces subject to torque
- High-precision axis alignment, quiet running
- Long life, low maintenance
- Gear ratio range 5.54 to 400:1 with the same foot dimensions
- Parallel axis and right-angled gear units

Sizes	11
kW	1,5 – 4.000
kNm	15/20/25/30/40/50/75/110/150/190/250
i	5,60:1 – 30.000:1

NORD is the only manufacturer which produces modular industrial gear units with an output torque of up to 250,000 Nm in a one-piece UNICASE housing.



ATEX

NORD gear motors and industrial gear units are also available in ATEX certified versions.

Drive electronics

Functions

- High precision regulation with current vector control
- Compatible with all common bus systems
- 4-quadrant operation
- PLC functionality for tasks close to the drive unit
- Energy-saving function for partial load operation
- Control and parameterization tools and simple parameter structure
- Integrated line filter for compliance with EMC regulations

Advantages

- Scalable functionality – flexible configuration and function
- High torque capability for every drive application
- Simple commissioning and operation

- Operation of asynchronous and synchronous motors
- Control and closed loop regulation
- POSICON – Integrated positioning mode and synchronization
- STO and SS1 – Integrated functional safety
- Integrated brake rectifier for motor brake control

ATEX

NORD drive electronics is available in ATEX certified versions.

All combinations of NORD products feature the highest system efficiency level IES2.

Drive electronics



Motor

Motors



Energy-saving motors



Switchable pole motors



Single phase motors



Smooth motors



Explosion protected motors
Gas atmospheres



Explosion protected motors
Dust atmospheres



Special features

- Motors developed and produced by NORD
- We produce energy-efficient products for all parts of the world
- Products available at all international sites



NORDAC PRO:
Control cabinet inverter SK 500E

The frequency inverter for all drive applications: wide power range and capability of extension of functionality with plug-in option modules. Heat removal is optimized thanks to the variable cooling concept.

Nominal ratings:

- Power range up to 160 kW
- Control cabinet installation
- IP20



NORDAC FLEX: SK 200E
decentralized frequency inverter

Decentralized drive unit with versatile installation possibilities. Simple commissioning and maintenance through extensive plug-in capability and simple parameter transfer via EEPROM.

Nominal ratings:

- Power range up to 22 kW
- Wall or motor installation
- IP55, IP66



NORDAC BASE: Decentralized
frequency inverter SK 180E

Economical decentralized version for simple drive applications. Low installation costs as well as robust design for simple installation outside the control cabinet.

Nominal ratings:

- Power range up to 2.2 kW
- Wall or motor installation
- IP55, IP66, IP69K



NORDAC START:
Motor starter SK 135E

The decentralized starter for all types of soft starting. With integrated motor protection and reversing function for flexible integration into the system.

Nominal ratings:

- Power range up to 7.5 kW
- Wall or motor installation
- IP55, IP66, IP69K



NORDAC LINK:
Frequency inverter SK 250E

The field distribution system for flexible, decentralized installation. Flexible configuration and function - freely configurable according to requirements and application. Available as inverter and starter. Fast commissioning through high level of plug-in capability. Simple servicing of the system through integrated maintenance switch and local manual control facility.

Nominal ratings inverters:

- Power range up to 7.5 kW
- Field installation
- IP55, IP65



NORDAC LINK:
Motor starter SK 150E

Nominal ratings starter:

- Power range up to 3 kW
- Field installation
- IP65

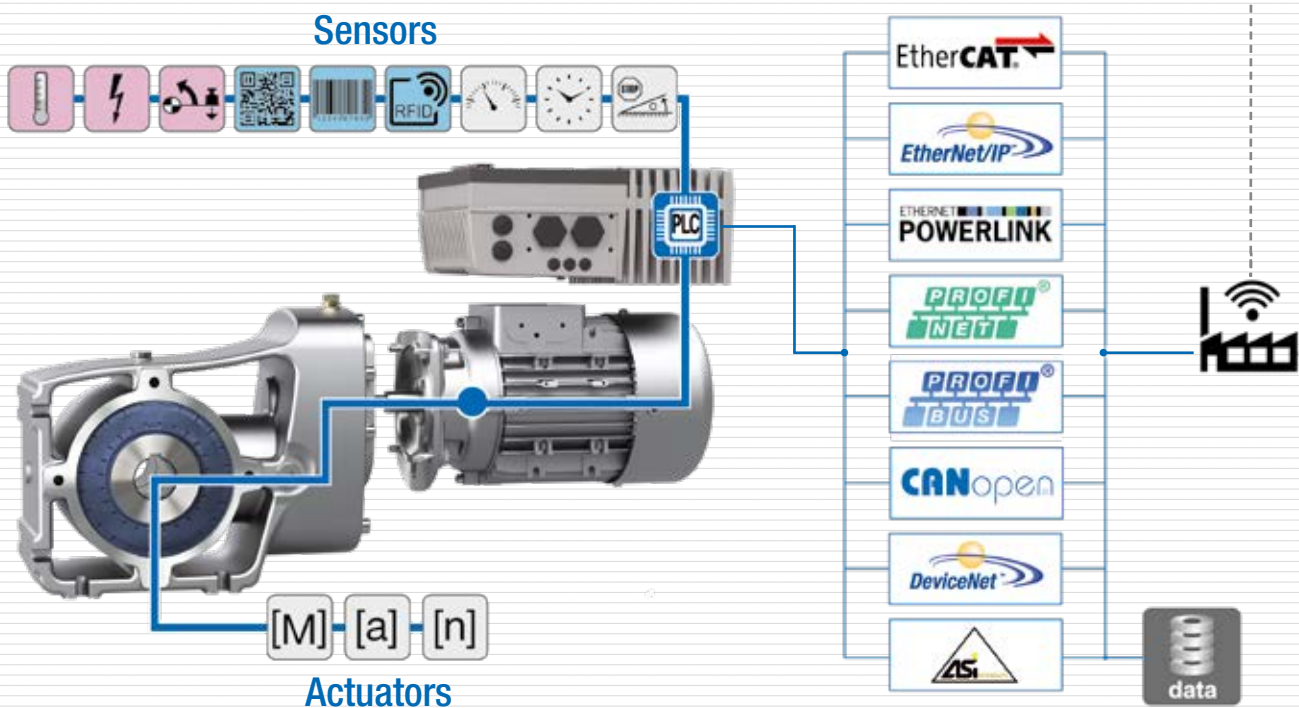
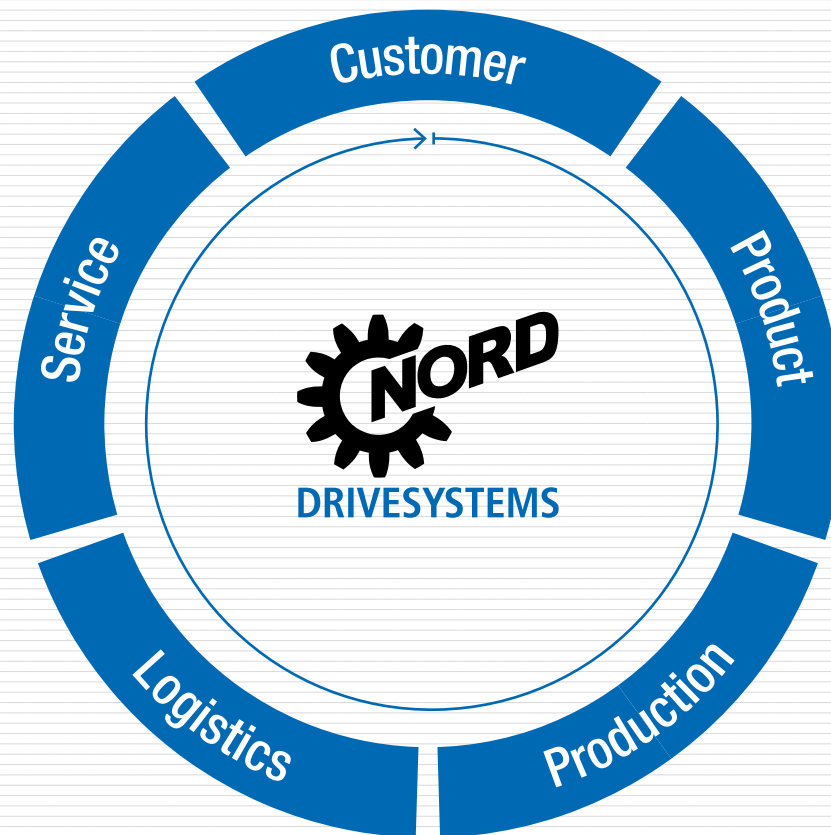
- Lean Production: NORDPro production system at all locations
- Global network via ERP system
- Fully integrated and automated production control
- 100% transparent assembly
- RFID-controlled painting system
- Reliable delivery: orders are fully tracked
- Continuous development

For our customers this means:

- Future-proof products

We took the essential steps on the road to Industry 4.0 at a very early stage. For example: the networking of all our motor testers worldwide, the use of articulated arm robots since 1988 and the implementation of Lean Production in 2008. Our NORDPro production and quality system now controls processes worldwide. All factories are linked via SAP, each order

starts an automatic system from the configuration of the product up to dispatch. Our objective is to make our processes even more efficient and also transparent for our customers. In cooperation with universities and institutes we develop new technologies for the further digitalization of production and logistics.



**For our customers, we
are represented on all
five continents.**

We are your reliable partner,
24 hours a day, 7 days a week.



Operation and Maintenance



Development and Planning



Installation, commissioning and training



Planning and conception

From planning through production and assembly to service – we offer everything from a single source. We are experienced and complete suppliers of mechanical and electronic drive solutions and a dependable partner for our customers throughout the world in every phase of the project. We utilise our know-how and experience and from the first stages of develop-

ment and conception. We orient ourselves to the individual requirements of our customers in their particular industries. During assembly and commissioning, we are only satisfied when everything runs smoothly – even if things are needed fast. Afterwards our service is available to our customers around the clock.

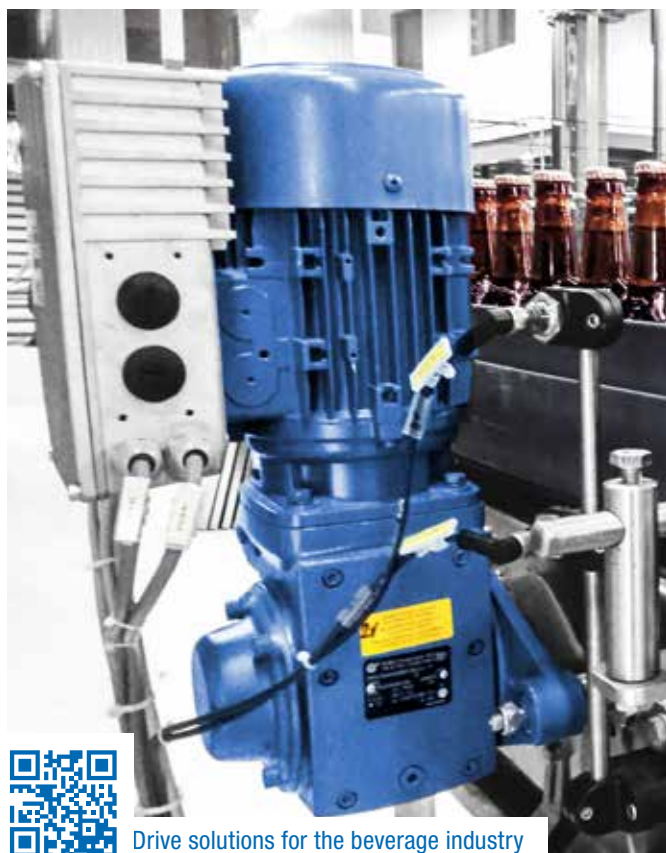
- Solutions for more than 100 industries
- Satisfied customers around the world
- Security from planning to commissioning
- Flexibility due to the world's largest modular system

Our drive technology keeps things moving all over the world, safely and with flexibility: we offer a wide range of mechanical, electrical and electronic drive solutions for more than 100 industries. From the steel industry to logistics, from the food industry to handling of bulk materials – we have the necessary

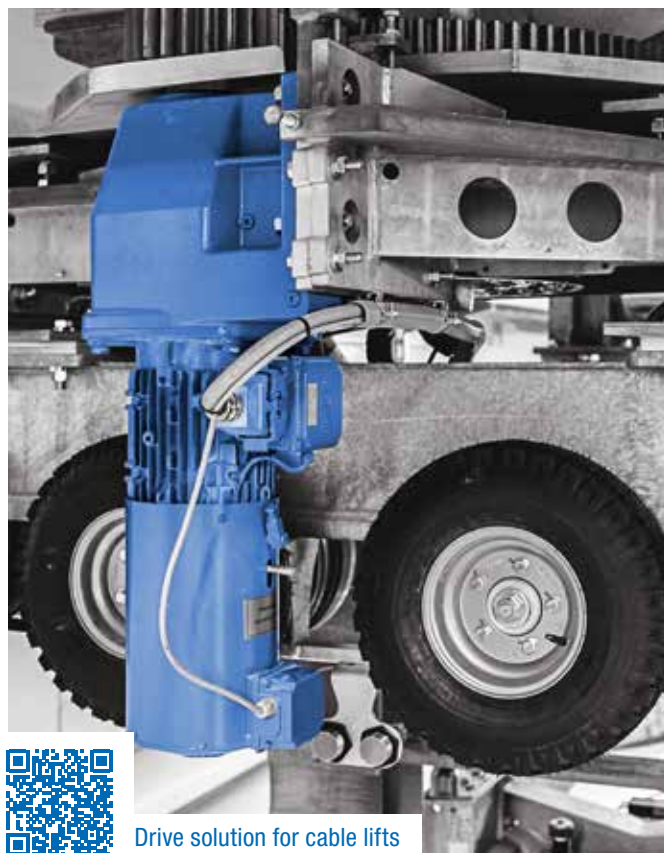
knowledge and offer both standardised and individually configured solutions for all areas. Our expertise is our knowledge gained over decades of experience in producing, processing and transporting industries. Customers around the world appreciate the efficiency, safety and reliability of our products.







Drive solutions for the beverage industry



Drive solution for cable lifts



Drive solutions for breweries



Conveyor technology with networked drive technology for parcels in postal distribution centre

Satisfied employees are the key to our worldwide success.

We provide first-class working conditions at each of our sites:

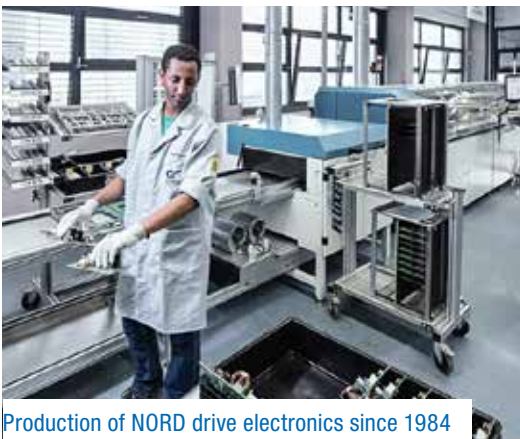
- We focus on comprehensive occupational safety, individual training and advanced training options for our employees.
- Year on year we pave the way for many young people to enter the working world.

Qualified, motivated, and committed: we are proud of our employees whose performance is the basis for our success. Each of our roughly 3,600 employees worldwide is important to us; we set a high value on top working conditions and occupational safety. Through individual training and further training

opportunities, our employees continue to qualify and enrich development, production and sales through their professional and personal skills. The high level of commitment and efficiency of our employees is an indispensable factor for our global success.



Gear unit assembly in Production



Production of NORD drive electronics since 1984



Future with NORD - our trainees and students



Global service by qualified employees

The myNORD portal provides quick and practical support for your day-to-day work.

- Simple, intuitive configuration of drive units
- All standard products with 3D models, dimension sheets and outline drawings
- Rapid order tracking in real time
- Immediate issue of proposals and offers

For our customers this means:

- Future-proof products

Via our myNORD customer portal we are available to our customers and business partners at all times. Information, configuration, ordering and checking: everything is possible around the clock. With our

online service, customers can select their drive solutions, generate CAD models, view offers, check their order status as well as obtain information from electronic catalogues, manuals and brochures.

The myNORD customer portal



myNORD-portal: practical and fast support for everyday work

Create offers with cost prices



Directly download CAD data



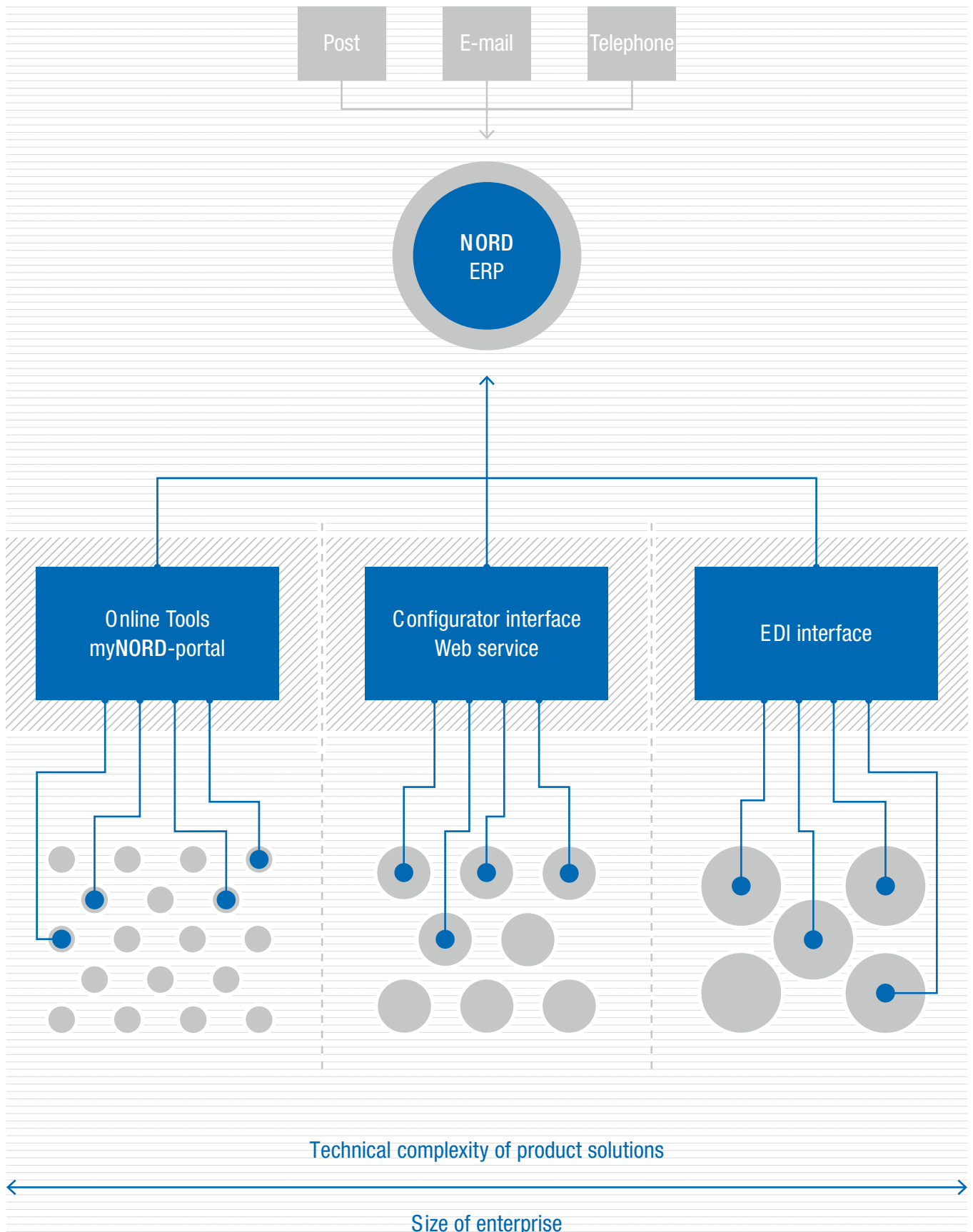
Configure NORD products



Track order status



Register now at:
my.nord.com



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