

Bosch Rexroth Frequency Converters

OFFER SCALABILITY AND FUNCTIONALITY

All over the world, industrial end-users are demanding energy-efficient machines and equipment to significantly reduce operating costs and reduce their carbon footprint (CO₂ emissions). By using demand oriented electromechanical energy, users are able to take vital steps in the right direction achieving those goals. Speed-controlled induction motors in variable speed pump drives, for example, can reduce electricity consumption by up to 80 percent in comparison to fixed-displacement drive applications. The EFC 3610 and EFC 5610 frequency converters from Rexroth address these potentials simply and economically. Scalable in performance and functionality features, the drives can be integrated into a wide range of automation environments with simple commissioning and open interfaces.

The intelligent frequency converters control speed as demanded, thus significantly reducing the energy consumption of pumps, compressors and fans. The frequency converters commonly known as variable frequency drives (VFD), AC drives or variable speed drives (VSD) can be integrated into many types of applications and machines as compact units for speed and torque control. Together with permanent magnet motors, the frequency converters increase energy efficiency and the adaptive pulse adjustment of the PWM frequency, minimizes motor noise at the same time. Integrated energy counters measure actual consumption and capture valuable information for the energy usage optimization of machines and systems.

Commissioning without a PC

With the integrated control panel, commissioning can be done easily without external programming devices or a PC. From there, the user can start auto-tuning and enter, change or backup parameters. With switchover options between parameter sets and integrated PID control to increase flexibility as well as extensive connectivity options like Multi-Ethernet interface option (Sercos, EtherNet/IP, PROFINET, EtherCAT and Modbus/TCP),



designated fieldbus options (Profibus DP and CANopen) and additional I/O options, the devices are suitable for most machine applications.

The removable LED operator display panel shows all operating variables and has an integrated copy function. This accelerates the commissioning of several frequency converters with the same or similar parameter set and reduces the work required when exchanging equipment or in series production.

PC-based commissioning and diagnoses

The integrated mini-USB programming interface in conjunction with the free downloadable *Rexroth IndraWorks Ds* software tool, is used for easy commissioning via start-up wizard, monitoring and diagnoses or simple back-up, archive and restore parameters with any PC.

The drives have analog inputs and

outputs, which can be configured as voltage or current interfaces. Digital inputs/outputs make simple direct coupling with a PLC possible. The assembly work required is significantly reduced by the integrated brake chopper and mains filter as well as time-saving installation technology using plug-in terminals and an attachment option on standard DIN rail.

Open interfaces for universal application

The EFC 3610 / 5610 frequency converters from Rexroth can be easily integrated into an automation network via Sercos, available through the optional Multi-Ethernet interface or other resident protocols like EtherNet/IP, PROFINET, EtherCAT, and Modbus/TCP. Modbus RTU interface is included as standard on the devices. Other fieldbus options available are Profibus DP and CANopen. With the integrated sequence control with 16 levels, inde-

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pendent sequences can be parameterized. The protection function for pump operation and motor temperature monitoring protects the system during critical process conditions.

The new EFC3610 frequency converter series cover the power range from 0.4 to 22 kW or 0.5 to 30 hp, while the EFC5610 provides an expanded range up to 90 kW or 125 hp and safe torque off (STO). In addition to the freely definable V/f (V/Hz) operation, the EFC 5610 also offers vector

control for an optimal torque curve. In heavy duty mode, the overload capacity can be maintained at up to 150 percent for 60 seconds. The high-torque EFC 5610 frequency converter also offers an optimal start torque of 200 percent at 0.5 Hz.

For more information:

Bosch Rexroth
Phone: (800) 739-7684
www.boschrexroth.com

Nord Drivesystems

POWER SURFACE COATING FACILITY

At the Nord Drivesystems headquarters in Bargteheide, Germany, the power, functionality and intelligence of Nord products are used to the company's own advantage across the factory floor, with geared motors and drive electronics handling various applications. Notably, this includes a recently established surface coating facility, where Nord systems drive overhead conveyors, fans and hoists.

The new surface coating facility at the Nord headquarters has twice the size of the previous paint shop. New paint booths, an automated high-bay warehouse for paint cure, and packing stations together occupy 1,400 m². An intelligent control system has, on average, halved the lead times for paint jobs. Any drive can be painted and shipped within two hours after assembly.

Paint line with a fast lane

Nord configures each drive system to order, drawing almost exclusively on components manufactured in-house. Application-specific coatings are part of this process. Fast processing of urgent orders has now become much easier. Previously, geared motors were routinely returned to the end of the queue once the first coat had been applied. The new conveyor system enables completely flexible routing: after curing, high-priority products can jump the queue and immediately get their next paint coat. Intelligent sorting algorithms also ensure that paint jobs with equal priority are optimally grouped by coating systems and shades. This has reduced wastage and setup times. In addition, state-of-the-art filter systems in the paint booths limit pollution to a minimum. The packing stations also draw on the smart sorting capabilities of the conveying systems: each packing station can be designated to handle a particular mode of shipment.

The Full Spectrum

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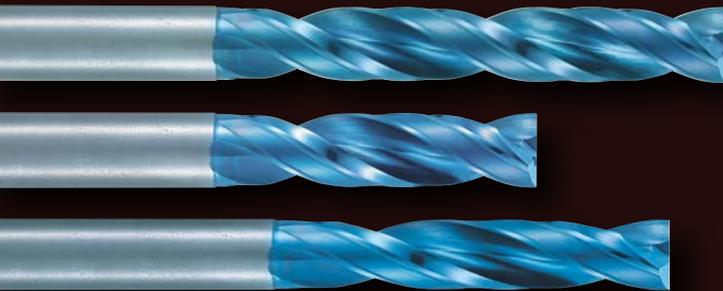
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IMTS2016

The right drive for each and every task

More than 100 drives take over various tasks in the new facility – Nord drive technology powers conveyors, hoists, exhaust ventilation and cooling fan systems. Drawing on its own modular drive program, Nord has configured optimal solutions for each of the various requirements. Both highly efficient helical bevel gear units and worm gearboxes with very high gear ratios are used. Depending on the per-

formance and function requirements, the motors are controlled by different frequency inverter models.

Ventilation systems

Four fans with a 22,000 m³/h circulation capacity ensure proper air exchange in the paint booths. The fan drives are equipped with 22 kW distributed drives from the SK 200E frequency inverter series. The control solution enables standby mode and ensures adequate compensation of filter pollution by reg-



ulating the motor speed based on the measured air flow rate. Like all Nord inverters, these drives provide smart energy saving functionality. They automatically detect partial load and reduce the energy consumption of the motor accordingly. Since the inverters are installed on the roof along with the ventilation units, they are designed for IP66 ingress protection.

Overhead conveyor

The Nord motors and gear units passing through this facility often weigh several hundred kilograms. Robust hardware is therefore required. The overhead conveyor is operated at a maximum speed of 10 m/min. It is equipped with over 100 smooth-running worm geared motors. Some parts of the facility are classified hazardous areas (Ex zone 2). The 14 drives installed within them are controlled by SK500E series cabinet-installed inverters. All other drives feature a motor-mounted SK180E type inverter. Designed to achieve a great price/performance ratio while offering a full complement of efficiency functions, the SK180E supports motor outputs from 0.25 to 2.2kW to address all simple handling tasks in horizontal applications. A technology box installed with the inverter adds a Profibus in-

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coder. They then autonomously adjust the position according to the set value specified by the automated storage and retrieval unit's PLC and report back the reached position to the PLC. The drive electronics control speed and gentle acceleration and braking (S ramps). In this application, Profinet interfaces were integrated for communication with the PLC.

For more information:

Nord Drivesystems
 Phone: (608) 849-7300
www.nord.com

terface as well as various sensor and pneumatic interfaces for transmission of position data and controlling switches. The integrated drive configuration capability as well as the consistent use of plug connectors was instrumental in minimizing the drive installation effort in the extensive facility. The AC vector drives have a separate 24 V control voltage supply and can therefore be accessed via Profibus even when the 400 V power supply is switched off.

Hoist technology

The facility includes a high-bay storage as a drying room. An automated storage and retrieval unit enables flexible access to all drive components. Each drive unit can be retrieved via its individual designation and automatically transported to a paint booth with the overhead conveyor. The automated storage and retrieval unit is equipped with powerful helical bevel geared motors for hoisting and driving. The telescopic jib that picks up the payload is extended by means of a light-weight, compact aluminum helical inline geared motor. Nord has implemented position control loops for the hoisting and driving axes. That is, type SK 545E frequency inverters simultaneously process absolute position data and the signal of an incremental motor en-

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NKE

INTRODUCES SINGLE ROW CYLINDRICAL ROLLER BEARINGS

Bearing manufacturer NKE Austria GmbH presents its series of single row cylindrical roller bearings – a bearing type on which many customers in different industries rely. The salient feature of this series is the wide range of variants it comprises: more than 3,000 types are made to order in NKE’s assembly plant in Steyr, Austria. In addition to being exceptionally flexible, the modular production facility enables very short lead times on all products. The applications of this type of bearing are as numerous as its variants: they are used in pumps and compressors, mechanical presses, electric motors, gearboxes, traction motors and axle bearings for railway vehicles,



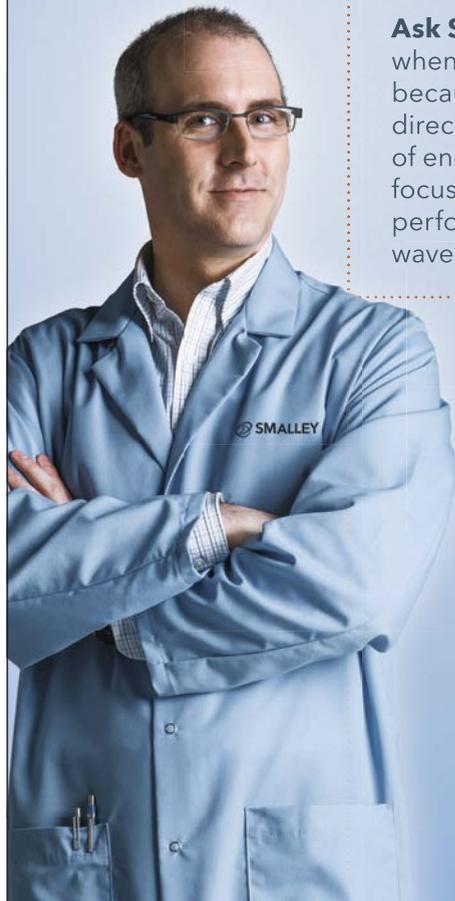
in steelworks and in many other industrial applications.

The bearings are available in 164 sizes in design variants NU, NJ and NUP. The bearing cages are available in roller-guided and outer ring-guided versions and are made from brass and polyamide, with pressed steel versions available, too. In addition to radial clearance group CN (C0) as standard, group C3 models are also available. Special versions, for example traction motor bearings (SQ1) and electrically insulated bearings (SQ77) are available at short lead times.

To maximize their lifespan cylindrical roller bearings are made from clean bearing steel. The superior surface finish of the raceways further helps reduce friction as well as lowering the operating temperature. The optimized geometries of raceways and rolling elements increase the loading capacity, while a modified cage design improves the formation of lubricant film. Thanks to the improved design of bearing guiding flanges of the NJ and NUP variants, the bearings can take up higher axial loads. Misalignments can be compensated through a modified contact geometry and crowned inner raceways. Tighter tolerances for the roller sorting ensure a uniform load distribution.

In addition to these numerous technical benefits, cylindrical roller bearings feature optimum operational reliability and maximum cost effectiveness. All NKE bearings are subject to stringent quality procedures and are tested using state-of-the-art procedures and equipment. The Steyr site is certified to ISO 9001:2000 (design, development, production and distri-

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Lenze

INTRODUCES THREE-PHASE AC MOTOR FOR EFFICIENCY GAINS

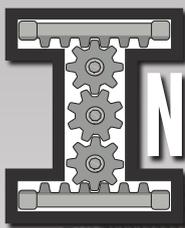
Lenze Americas recently introduced the m550-P three-phase AC motor designed to achieve IE3 efficiency class in accordance with IEC60034-30 during Modex 2016. Compared with IE2 class motors, the new Lenze motor range reduces energy lost and cost by up to 20 percent.

"International energy directives have turned their focus to universal three-phase AC motors, with a number of countries even mandating minimum efficiency levels," said Joel Thomas, intralogistics industry manager, Lenze. "Bigger is not always better when it comes to efficiency. The m550-P motor delivers premium IE3 efficiency with minimal jumps in size when compared with IE2 efficiency motors."



Designed for demanding variable motion duty, the Lenze m550-P three-phase AC motor provides a power range of 1 to 60 hp (0.75 kW to 45 kW) with a variety of voltages for simple mains operation with fixed speeds. Optimized for use with frequency inverters, the m550-P motors pair seamlessly with high efficiency Lenze g500 gearboxes.

Lenze's m550-P four-pole motors feature an IP55-rated enclosure with an integrated fan and temperature



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monitoring. The new motor ranges are equipped with precisely coordinated electrical interfaces. Options for the m550-P motor include terminal box, HAN plug and ICN plug connections, in addition to brakes, encoders and blowers. Featuring the same axis height measurements as IE2 motors, both new motor ranges simplify the transition to IE3 efficiency and, in most cases, eliminate the need for construction changes. Available with certification from UL, CSA and CCC,

and IE3 efficiency class, Lenze m550-P motors can be deployed virtually anywhere in the world.

"Customer investments in Lenze's economical drive technology show immediate returns in efficiency and energy savings—and can entirely pay for themselves within the first two years," said Thomas.

For more information:

Lenze Americas
Phone: (508) 278-9100
www.lenze.com

Zero-Max Shaft Locking Bushings

PROVIDE SOLUTIONS FOR STATIC LOCKING APPLICATIONS

Every setup operator's goal when preparing a tool setup is to load, locate, lock and operate the setup in seconds without problems. The challenges are basically the same whether setting up a machining center or power transmission system. A static application can have the same demands as dynamic. The setup steps for both must be simple – the fewer components, the better. And the locating and locking process must be very precise and equally repeatable so the system startup is flawless from the get-go.

Enter ETP Express Bushings, the clever setup and shaft locking device that is an ideal solution for both dynamic and static applications. It's no secret that a jig that facilitates tool and fixture changes saves time and money.

The challenge is to find the right way to do it. The extremely simple, yet versatile ETP is adept at handling both dynamic and static applications while saving time, trouble and money in the process. In today's ever-changing manufacturing industries where more is demanded of less, reducing setup time at the front-end of a production job is the best place to start. ETP provides that front-end improvement.

The ETP is essentially a precision bushing that will accurately expand both the ID and OD at the same time when the single actuation screw is

tightened. Since the expansion is caused by the self-contained hydraulic pressure, the resulting force is even along all surfaces. The bushing aligns precisely without axial movement as it is tightened. It positions very accurately in seconds.

Another key ETP feature is that it can be actuated thousands of times with repeatable accuracy and without any axial movement. An Allen wrench is all that is required to mount and lock these bushings into place. They have sealed, clean lines that resist debris collection and clean easily without any special maintenance.



ETP is available in several models to fit the application. The ETP Express and Techno models both feature a single actuation screw. The Express handles a torque range from 40 to 6400 ft. lbs. while the Techno handles a torque range from 28,000 to 32,000 ft. lbs. Sizes available handle 15 mm through 100 mm shafts with both operating well in temperature ranges from -22° to +180°F.

For more information:

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Extensive experience in the field of damping technology is just one of the reasons Ringfeder Power Transmission can offer solutions when it comes to securing critical infrastructure projects. Friction springs made by Ringfeder are designed to absorb seismic shockwaves. Depending on the desired damping stroke and the forces likely to occur, the outer and inner precision rings made by the German manufacturer can be adjusted to one another. The springs are a maintenance-free solution, proved and tested in an earth-

quake, measuring at 6.5 on the Moment Magnitude Scale (MMS), thus making them suitable for use in power infrastructure facilities, ranging from high voltage switchgear to capacitor platforms.

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