

CANopen in the food and beverage industry

Nord Drivesystems provides corrosion-protected solutions for the food and beverage industry without stainless steel. In those systems CANopen frequency inverters are used.



(Source: Adobe Stock)

In the food industry, plant and machinery as well as the drive technology that is used must be protected against dirt, moisture, spray water, and aggressive media. However, painted systems are prone to even minor damage and do not offer permanent protection. Drive units made from stainless steel are relatively expensive. The NSD Tuph corrosion protection treatment from Nord is an alternative for aluminum drive housings that considerably prolongs the service life of the installed components in harsh environments. The surface protection can be combined with flexible modular drive products. The drive solutions are available in several sizes as worm gear, parallel gear, parallel shaft-gear or bevel gear units, completely available with a smooth motor and respective drive electronics.

As the drives' surfaces are exposed to scratches and impacts in industrial environments, even high-quality anti-corrosion coatings do not provide effective protection. Once the surface has been damaged, it is often infiltrated by corrosion and also repairs do not permanently help. According to Nord, with their treatment, the surface is more

robust than a paint coating, and slight impairment remains limited to the damaged area. The NSD Tuph drives are not only suitable for hygienically sensitive applications in the food sector but also for various applications in process and pharmaceutical industries. They are typically used on conveyor belts, pumps, mixers or agitators, but also in water and sewage plants, and car wash facilities.

Food and beverage industry

Reliable drive solutions are an essential requirement for the entire value creation chain throughout the food and beverage industry. From storing, conveying, and processing of raw materials to process engineering and filling right up to packaging and logistics – drive systems tailored to the specific application are required. They need to balance hygiene requirements, technological requirements, and energy efficiency with product protection and demanding environmental conditions such as heat, cold, or moisture in an economical way. Nord Drivesystems, designs complete ▶

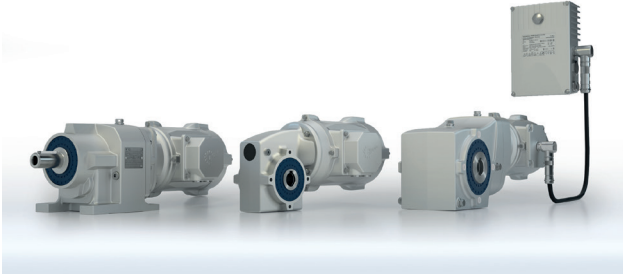
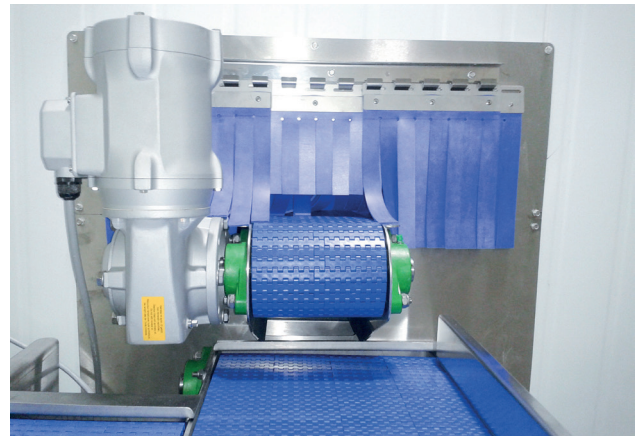


Figure 1 + 2: The NSD Tugh surface treatment provides corrosion protection for drive components in wash-down-optimized cast aluminum housings for the food and beverage industry (Source: Nord Drivesystems)



systems consisting of geared motors, frequency inverters, and software. A range of these frequency inverters use CANopen as communication protocol.

CANopen control cabinet inverters

The control cabinet inverters have a power range of up to 160 kW and can be adapted to customer applications. One of the latest frequency inverters of the company is the Nordac Pro SK 500P. It covers rated motor powers from 0,25 kW to 5,5 kW. Various device versions can be allocated to various application requirements. The inverter features Bluetooth and an SD memory card as a storage medium for parameters and operating data, as well as an USB interface, which enables parameterization of the inverter

when the power is switched off. As mentioned, it also provides a CANopen interface, supporting CiA 402 device profile for drives and motion control. The product can perform up to four gearmotor axis sequentially with positioning functions by reading the encoders of all four axis. Other features are an integrated PLC (programmable logic controller) for motor-related motion and logic control, a 200-% overload reserve for torque and speed performance, as well as sensorless current vector control for asynchronous and synchronous motors (open loop and closed loop). The integrated brake chopper for four-quadrant operation is a part of the basic equipment for the entire series, so is the motor brake management, which is important, e.g. for lifting gear applications. Nord supplies the inverters with integrated STO and SS1. The integrated PLC processes the ▶

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Figure 3: The control cabinet inverters Nordac Pro SK 500P come with CANopen as communication interface (Source: Nord Drivesystems)

data from sensors and actuators and can autonomously initiate control sequences, as well as communicating drive and application data to a control center, networked components, or to cloud storage. This allows continuous condition monitoring and therefore forms the basis for predictive maintenance concepts as well as optimum plant dimensioning. This series is compatible with the SK 500E series.

The Nordac PRO SK 500E is customizable to drive applications. Its functionality can be extended with numerous plug-in option modules. For this inverter, various cooling concepts can be used to remove heat from the control cabinet and can be adapted to the requirements of the application with various option modules. Besides others, it provides CANopen (CiA 301 and CiA 402) as communication interface. CiA 301 is the CANopen application layer and communication profile.

CANopen and Devicenet decentralized inverters

The company's decentralized inverters can be freely configured and adapted to applications. All of the following-mentioned products come with CANopen and Devicenet as communication interfaces. The Nordac Link SK 250E is a drive solution for field installations near gearmotor. Depending on the application and the requirements, it can be freely customized, which results in a large number of different potential applications for this product. Plug and play capability is provided. Commissioning and servicing of the system is performed with the integrated maintenance switch and the local manual control. The product can be integrated into common control systems via fieldbus or Industrial Ethernet.

The company explained, that the Nordac Flex SK 200E is their most flexible inverter that can be tailored to any customer application by means of mountable functions. Installing and servicing the inverter can be carried out because of its plug-in capability and the parameter transfer via EEPROM memory.

The Nordac Base SK 180E is the Nord's economical drive solution for the decentralized frequency inverter technology sector. The drive with a rugged design was specially developed for simple, cost effective solutions mounted outside the control cabinet.

Pump drives

Additionally, the company supplies pump drives with special functions tailored to the pumping medium such as

high-starting torques or soft start. Wall or motor-mounted frequency inverters facilitate decentralized automation concepts and mobile pumps with control concepts. For this purpose, again the above-mentioned CANopen and Devicenet decentralized inverters are used.

In combination with the NSD Tugh surface treatment, surface motors, and two-stage bevel gear unit based drives are created that combine light weight and efficiency in various variants with corrosion protection and hygienic surfaces that are easy to clean, explained the company. Even without a fan, they are achieving a considerably better heat dissipation than stainless steel drives while still featuring a similar corrosion protection, the company added. These properties are also required for drives in machines and systems for cutting and dosing as well as in CIP (cleaning-in-place) and SIP (sterilization-in-place) areas. The drive solutions can be designed for extreme application conditions in cooking and baking lines or deep-freeze systems.

Baking industry

For processing steps such as agitating, mixing, or kneading, Nord is also building gear motors in all sizes with resilient output shaft bearings for high loads. For this application area, the Maxxdrive industrial gear units with output torques from 15 kNm to 282 kNm are suitable. The company provides application-specific equipment options designed for pumps, agitators, and mixers with high process-related radial and axial bearing loads.

Conveying, filling, and packaging

Synchronous motors with frequency inverter and encoder feedback via absolute or incremental encoders enable positioning applications and movement of small and large packaging units. Nord implements solutions for horizontal, vertical, and inclined conveyors as well as palletizing systems, as well as customized drives for filling systems. With the frequency inverters, soft start, braking ramp, braking, and STO functions can be implemented. Multi-encoder operation, during which a frequency inverter can control up to four motors with encoders, is also possible. For intralogistic systems, the company also offers the Logidrive concept: a modular system for individual, economical drive concepts that achieve a balance between energy efficiency and reduction of variants. The Nordac Link frequency inverter with CANopen and Devicenet is also used in the Logidrive concept. ◀

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CAN Newsletter Online

In the CAN Newsletter Online CiA reports about CANopen-capable drive and motion controlling systems as soon as they are introduced. Nord Drivesystems and further manufacturers provide frequency inverters with similar functionality:



0,25 kW to 160 kW

Frequency inverters with CANopen interface

The CANopen-connectible Nordac frequency inverters family from Nord Drivesystems includes control cabinet inverters and decentralized frequency inverters.

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Inter Airport Europe

Optimum performance in the control cabinet

From 08 to 11 October 2019, Nord Drivesystems exhibits at Inter Airport Europe in Munich, Germany. They show their CANopen-based frequency inverters.

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Control cabinet inverter

Frequency inverter with CANopen interface

With the Nordac PRO SK 500P, Nord Drivesystems has launched a control cabinet inverter with the latest component technology and levels of functionality, connectivity, and modularity.

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CANopen inverter

Powering water pumps with photovoltaic

Gefran (Italy) offers its ADV200 inverter with optional CANopen connectivity for water pumps. This is supported by a special application software.

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Frequency inverter

Rotation speed control for asynchronous motors

The CANopen-capable FDD 3000 series complements Sigmatek's AC drive portfolio for the low-voltage range.

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Frequency inverter

IP54-rated enclosure

Sieb & Meyer presented at SPS IPC Drives 2018 its SD2S inverters, which provide an optional CANopen interface.

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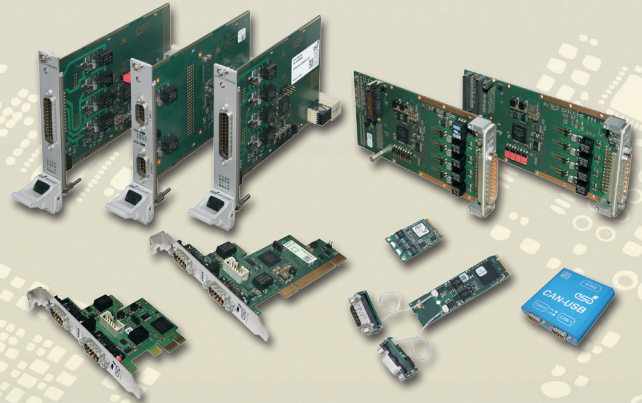
Hannover Messe 2018

Expanding CANopen inverter series

At the Hannover Messe 2018, SEW-Eurodrive introduced two new sizes for the Movitrac LTE-B+ frequency inverter series and in doing so is increasing the maximum output power to 37 kW. It provides a CANopen interface.

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