

Industrial Automation Integrity

Gearmotor Trends and Topics 2024

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Truth be told, there are few components as versatile as the gearmotor. We find them in AGVs, AMRs, and robotics. They can also be found in automation equipment, industrial drive solutions and material handling applications. Four key trends involving gearmotors today include the simplification in design and installation, quiet and energy efficient performance, predictive maintenance and condition monitoring—and lastly—the ability to perform at the highest levels in hazardous and demanding applications.

Streamlined Operations

Bonfiglioli's AxiaVert is a series of frequency inverters offering integrated functional safety, precision and control for any industry and process. Highly dynamic and extremely performing, AxiaVert ensures complete flexibility and supports a wide range of Ethernet fieldbuses. At SPS Italy 2024, AxiaVert was featured in two hybrid systems. In the first one it was combined with a BMD servomotor, in the second one with a BMS servo gearmotor, both characterized by the innovative single-cable technology

and both managed in PTP or Master/Slave operating mode. The high resolution of the encoders used on BMD/BMS motors allows to achieve an infinitesimal precision positioning and therefore, it represents the best choice for challenging applications, above all in motion, labelling and filling fields. The most important innovation is represented by the shielded single cable applied to the servomotors, which represents a huge advantage in terms of simplification during installation and space saving: one single cable means one single connector, i.e. one single attachment point upstream with the drive and downstream with the servomotor.

In the field of mobile robotics applications, Bonfiglioli displayed BlueRoll: the high-performance, wheel-mounted gearmotor platform for AGVs and AMRs, featuring an ultra-compact and energy-efficient design for a long operating cycle. The modular drive system is available in three configurations, basic, advanced and compact, with a customizable single gearbox load ranging from 360 to 1,020 kg and a maximum speed of 2 m/s. A

compact servo gearmotor of the BMS Series, together with a combined solution composed of a TQ high precision planetary inline gearbox of the Performance Line and a BMD permanent magnet AC low voltage synchronous motor, were also showcased at the booth.

The BMS Series' main advantages are excellent compactness, high torsional stiffness and low moment of inertia, making it the ideal solution for applications that require highly precise positioning, accuracy and efficiency. Thanks to its space-saving machine design, along with a wide range of options, the BMS Series enhances performance through the synergy between permanent magnets, synchronous motors and precision planetary gearbox technologies. According to the application requirements, in terms of speed torque and operation cycle, it is also possible to select the suitable gearmotor choosing between the base, medium or high overspeed variants.

bonfiglioli.com

Quiet Performance

BLDC (electronically commutated) hypoid gearmotors from Bodine Electric Company are designed to be high-performance, maintenance-free alternatives to gearmotors with standard worm gearing. The gearmotors are available with gear ratios from 5:1 to 240:1, provide up to 2,370 lb-in (268 Nm) of continuous torque, and speeds of up to 400 rpm. The unique hypoid gearheads are permanently lubricated and feature hardened steel gears for long-life and quiet operation. They can be face-mounted in any orientation via four tapped holes or through-bolts.

Bonfiglioli displayed its latest gear technology during SPS Italy 2024.



Driven by a maintenance-free, totally enclosed non-ventilated (TENV), 1/2 hp (368 Watts), brushless DC (130 VDC) motor, the type 42B-25H2 and 42B-30H3 gearmotors are ideal for applications that require continuous operation and minimal downtime. These new brushless DC motors feature a built-in 256 PPR, magnetic encoder with commutation track, and are rated IP-66 for protection from dust and water.

bodine-electric.com

Preventive Measures

Servo gearmotors benefit from regular check-ups according to Sumitomo Drive Technologies. Scheduled maintenance ensures early detection of potential issues.

Ensuring that your servo gearmotors are in peak condition will undeniably translate into tangible benefits for your manufacturing processes, product quality, and bottom line. Maintenance checks prevent minor issues from escalating into major problems, reducing costly downtime. MRO personnel suggest scheduling periodic inspections, document findings, and promptly addressing identified issues.

Lubrication reduces friction and wear between moving parts, ensuring smoother operations.

Consistent lubrication reduces the risk of premature wear, overheating, and associated damage. It's important to use manufacturer-recommended lubricants, check lubrication levels frequently, and re-lubricate as necessary.

Another guideline is to keep staff up to date on training and communication. Well-informed employees contribute to machinery longevity and operational efficiency. Offer regular training sessions, circulate informational material, and encourage open communication about observed abnormalities.

Lastly, installation is the foundation of a gearmotor's operational lifespan. Proper alignment and installation prevent undue stresses and imbalances in the system. Follow manufacturer guidelines, seek assistance if unsure, and verify installation with diagnostic tools.



Gearmotors are tasked with operating in hazardous environments and providing functional safety solutions.

By proactively maintaining and monitoring your equipment, not only do you safeguard your investment, but you also ensure seamless production, minimizing costly downtimes and disruptions.

us.sumitomodrive.com

Heavy Industrial Expertise

Nord Drivesystems gear units are used for a variety of heavy-duty applications such as bucket elevators, mixers, agitators, cranes, conveyor belt drives, bulk material handling, steel production, manufacturing, and more. These units provide high output torques, long service life with minimal maintenance, and offer extensive input, output, and mounting designs to ensure versatility over a wide range of applications. When combined with high efficiency motors and dynamic variable frequency drives, high performance and smooth operation is achieved.

In the grain industry, it is important that drive systems increase productivity, improve reliability, and reduce downtimes. Drive solutions in this sector often include functional safety and hazardous environment protection due to dust and fibers that are generated during processing. For high-capacity applications like bucket elevators that are used for vertical transport of bulk materials, Nord offers MaxxDrive XC parallel industrial gear units and MaxxDrive XC right-angle industrial gear units. These industrial gear units deliver immense output torques up to 2,495,900 lb-in and feature a wide

range of additional options ideal for bucket elevator applications. These include a backstop to prevent material flow back, an auxiliary drive with an overrunning clutch, a base frame for reinforced alignment between components and easy installation, taconite seals to prevent shaft damage from the dusty atmosphere, and axial fans for high cooling power.

In order for cranes and hoists to pick up loads and set them down gently at precise locations, they require special drives with integrated brakes and variable frequency drive technology for soft starts and braking via defined adjustable ramps. MaxxDrive XD industrial gear units are engineered with hoist applications in mind and feature an extended housing center distance to accommodate a U-shaped drive design, allowing the cable drum and the motor to be arranged on the same side of the gear unit. The Unicase housing is also FEA-optimized for overhung load, especially downwards forces, and offers additional options such as brake attachment via input flange or brake console and various output shaft designs. Together with intelligent Nord VFDs like the decentralized Nordac Flex and cabinet mounted Nordac Pro SK 500P, high positioning accuracy, efficient automation, and smooth operation are achieved. These variable frequency drives can also be synchronized for gear units to work in tandem to hoist and move loads for trolley or travel drive applications.

nord.com
PTE