

Industrial Transformation at Hannover Messe

Trade show examines resource-efficient, climate neutral production technologies in 2023.

Matthew Jaster, Senior Editor

Hannover Messe 2023 provides the latest technologies in robotics, automation, motion control, IIoT, fluid power, e-mobility, material handling and more. PTE's sweet spot, so to speak, are the vendors in the drive, fluid power, and motion control segments.

"Drive and fluid technology components are the central building blocks of machines, for power and motion, but also as a source of data for digital value-added services and crucial to the performance of customer products – this is what we will be showing at Hannover Messe," said Hartmut Rauhen, deputy executive director of VDMA.

The following round-up examines some of the motor, gear and drive technology featured in Hannover this April.

Cantoni Motor (Hall 6, Stand C22)



High Efficiency low voltage NEMA motors SIE series (in the range from 1 up to 250 hp) are designed to withstand the most extreme, severe-duty applications (in compliance with the NEMA Premium requirements).



The NEMA Premium efficiency electric motors program refers to single-speed, polyphase, 1-250 hp, 2, 4, and 6 poles, NEMA Design A or B, continuous rated, squirrel cage induction motors.

These motors are designed for long life and reliable operation in most extreme industrial applications.

NEMA motors can operate in severe duty applications thanks to heavy-duty cast-iron construction. Special shaft sealing systems have been applied to increase the level of protection against contaminants.

They also offer NEMA brake motors. Apart from standard executions, they offer special JM/JP motors designated for driving of pumps.

The entire range of NEMA motors is certified according to CSA and UL standards.

Three-phase induction motors with output range from 0.06 kW to 2,500 kW with foreign ventilation (forced ventilation). Foreign ventilation is supplied independently of the main motor

and built in the fan cover. Motors are adapted for speed control by frequency converter.

Cantoni Motor manufactures a wide range of traction motors (output power from 50 to 1,500 kW), and traction generators. Motors for various traction vehicles: trams (including low-deck trams), trolleybuses, subway, and locomotives.

Electromagnetic brakes are designed for braking rotating parts of machines and their task in areas such as emergency stopping, immobilizing machine actuators, acting as a positioning device, and minimizing run-times of drives.

These brakes can be used in many application areas including industrial cranes, wind power plants, platforms, escalators, warehousing, cranes and more.

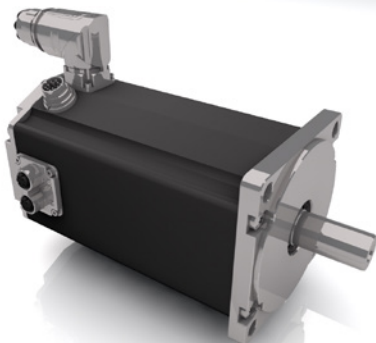
The Cantoni Group supports young and passionate engineers from Czestochowa University of Technology (Politechnika Czestochowska) in the implementation of innovative projects

and appreciates their contribution to the development of advanced technology of the future.

For years the group has succeeded and has been awarded in many domestic and international competitions for their advanced projects including the Mars Rover.

cantonigroup.com

Dunkermotoren (Hall 6, Stand B08)



Following the BG 66, BGE5510 and BG 95, the BG 75 brushless DC motor is now also available as a dPro version. With a continuous output power of up to 590 W, peak power of up to 1,700 W, and a peak torque of almost 5.8 Nm, the BG 75 dPro is more powerful than all other versions of the BG 75 series – with a supply voltage of just 24 or 48 VDC. This means more power in the same space, allowing machines to be built even more compact in the future. These characteristics makes the BG 75 dPro the perfect partner in the application fields of logistics, robotics, as well as machine and plant engineering. It can, for example, be used equally in the food, semiconductor, and electronics industries, or can operate as a drive for AGVs (Automated Guided Vehicles). Connection and programming is as easy as for all motors of the dPro family and is done either via CANopen or one of the Industrial Ethernet interfaces Profinet, EtherCAT or Ethernet/IP. The hybrid connector used for this reduces the cabling effort to a minimum. The motor can then be programmed, controlled, and monitored via the "Drive Assistant 5" commissioning and configuration tool and/or MotionCode.

dunkermotoren.com/en

Faulhaber (Hall 6, Stand B22)



With its DM66200H series, Faulhaber is upgrading performance for motors with an internal opening (aperture). As a direct drive, the new hollow shaft motor operates backlash-free and can be integrated into different applications with very limited effort. It achieves performance values in terms of both speed and torque. Its exceptionally wide aperture has a diameter as large as 40 mm. The drive is characterized by low weight and an extremely slim design. Thanks to minimal wear (bearing only), it is ideal for maintenance-free continuous operation.

The DM66200H hollow shaft motor offers a completely new drive solution for applications that require a very large aperture. The rotor runs around the opening and drives the mechanics surrounding this opening directly without the need for a transmission. Due to the design, it is extremely energy-efficient and requires neither a brake nor an encoder.

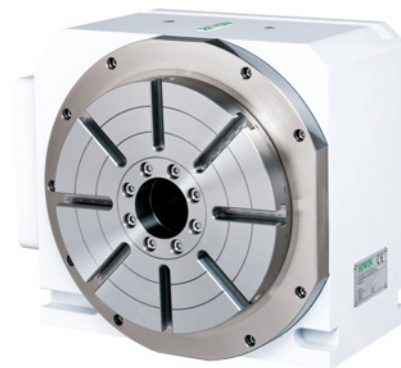
Despite the large aperture, the moving mass of the rotor remains small, making speeds of up to 2,000 rpm possible. The motor reaches a dynamic torque of up to 180 mNm and can move correspondingly large loads. With a high resolution of 1.8° in full-step mode, it can execute positioning tasks precisely in open loop operation.

Originally developed for precision optics applications, the DM66200H hollow shaft motor is suitable for many different application areas. It can be used wherever cables need to be guided through the aperture or in cases where gases, fluids or light signals are to pass through the opening. Apart from the field of optics - e.g., for microscope stages, apertures, zoom lenses, laser beam controls, etc. - it can be used

for impellers and prostheses, in robotics as well as for many different control and positioning tasks. Other potential applications are turntables, antennas as well as air and gas extractors.

faulhaber.com

Hiwin Corporation (Hall 7, Stand D32)



Hiwin Corporation linear motors are direct drive, plug and play solutions. Linear motors are capable of fast accelerations and high speeds, while providing precision and accuracy. Hiwin offers standardized linear motor designs but customizable options are available. Aside from single-axis linear motors, these stages can be combined to form cross tables or even gantry systems.

Hiwin rotary tables are ready-to-install rotary axes consisting of a torque motor, bearing, motor housing, and positioning measuring system. Hiwin rotary tables are zero-backlash, extremely rigid, optimized for high torques, have robust dynamics and are especially well suited for tasks in a wide range of automation processes. Their lack of gear needed results in high efficiency and a quiet operation. Various sizes in diameter and height are available with the option to add a servo drive for a complete plug and play solution.

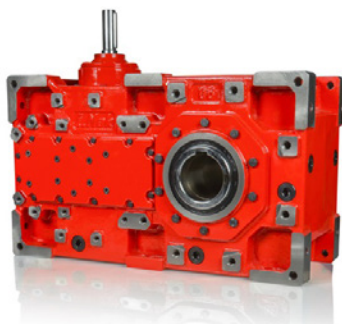


Linear axes and multi-axis systems for positioning tasks in automation. Linear guideways provide linear motion by re-circulating rolling elements between a profiled rail and a bearing block. The coefficient of friction on a linear guideway is only 1/50 compared to a traditional slide and they can take loads in all directions. With these features, a linear guideway can achieve high precision and greatly enhanced moving accuracy. Hiwin Corporation offers multiple linear guideway series, each featuring different options for sizes, loading capabilities, accuracies, and more.

The company's strain wave gearing system has three basic components: a wave generator, a flex spline, and a circular spline. The elliptical shape of the wave generator, rotating against the thin, tooth lined flex spline, drives or is driven by the rigid circular spline which has more teeth than the flex spline. The result is a gear system that will reduce speed and increase torque. The unique properties of the strain wave gearing system allows it to achieve much higher gear ratios than other gear reduction solutions in a more compact space.

hiwin.us

I-MAK Reductor Varyator (Hall 6, Stand A39)



Available in one or two stage of gears, the IR Series gearboxes provide optimal solutions for a large range of applications. The unicast housing of the gearbox and the gears offers a perfect balance between power and space optimization.

Designed to last, the helical bevel gear units IRK series are perfectly adapted for applications in need of high efficiency gearboxes. The gear

design also offers quiet operation. These advantages guarantee a noise free and low maintenance gearbox.

The worm gear units, IRS series, remains one the best solutions for simple applications in need of high ratios. This gearbox unit also offers assistance where backstops need to be strong and resistant.

The parallel helical shaft gear units YP series remain the optimal solution for complex and space limited applications. The fully reversible design of the gearbox offers a large range of mounting positions. The gears combinations allow high loads and the options for low output speed makes it the ideal solution for a large range of applications.

Imakreduktor.com

Lafert (Hall 6, Stand B25/2)



Smartris is the new complete package solution including gear, servo-motor and drive for AGV systems, and combines the extensive technological competences of two companies. Lafert customized solutions for electric motors and drives meets Sumitomo expertise in gears and gearboxes. Both brands have strong reputation respectively in the motor and gear market and in the AGV sector, and with this new integrated package they are offering very competitive advantages and benefits.

HP Combi is two-in-one, an innovative marriage between a permanent magnet synchronous motor and a variable frequency drive (VFD). The Combi package combines the IE5 Ultra-Premium Efficiency of Lafert's permanent magnet synchronous motors with the VFD, achieving

the highest energy efficiency standards. The range of motors utilizes the technology behind brushless servomotors and asynchronous motors to generate the high torque density that allows up to a 50 percent reduction in size and weight.

High Performance Motors (HP) is an innovative range of PM (Permanent Magnet) Synchronous Motors, achieving IE4 and even IE5 Super Premium Efficiency level, that offers improved efficiency and reduced operating costs.

This uniquely engineered product combines the electrical design of brushless servomotors with the mechanical design of AC Induction Motors. The result is a compact motor range primarily targeted toward HVAC applications in pumps, fans, compressors, and blowers, where there is an emphasis on reducing the operating cost or weight and size of the motors.

The complete range is supplied as stand-alone motors (HPS range) to be controlled by a separate drive or as motor/drive integrated units (HPI range), specifically designed for their energy saving potential.

Lafert places great emphasis on materials research. This has resulted in reduced dependency on rare earth magnets, allowing for the use of more readily available permanent magnets, which ensure price and supply stability into the future. Following this development work Lafert has introduced a second generation of PM Synchronous Motors, named HPE, achieving IE4 Super Premium Efficiency level, with more stable and reduced production costs without applying rare earth magnets.

lafert.com

NKE Austria (Hall 5, Stand B05)

NKE manufactures bearings with ceramic rolling elements. Technologies are advancing rapidly and bearings must meet more sophisticated and varied requirements under increasingly demanding operating conditions.

In response to these special needs, NKE Austria and FERSA have committed to the development

and manufacturing of hybrid bearings. Hybrid bearings can be used in new applications where conventional steel bearings have not been beneficial. For example, bearings with ceramic rolling elements are especially designed for applications where high-grade electrical insulation is necessary and/or high speeds occur.

Furthermore, NKE premium hybrid bearings possess excellent performance characteristics, like extended service life and reduced friction.

NKE spherical roller bearings are used to support high radial loads and compensate for misalignment of the bearing positions and/or increased shaft bending. This type of bearing is suited for applications with high loads and difficult operating conditions. NKE spherical roller bearings were designed to withstand such conditions in demanding operational environments. In order to achieve maximum strength and longevity high quality bearing steel is used. An optimized inner design with an increased number of rollers allows for higher load capacities of our products. The inner design is optimized for challenging operating conditions, reduces wear and heat and therefore the usage of lubricants. This results in less downtime and reduced effort and finally to a reduction of costs.

NKE provides bearings with oxide ceramic insulating layers on the bearing ring. Applied with plasma technology, the insulation has a guaranteed breakdown resistance of at least 1,000 V AC or DC.

nke.at/en/

Rollon by Timken (Hall 6, Stand B39)

Rollon offers the TH Series where the linear axis is fitted with a preloaded ball screw drive and ball guides with a ball chain. Due to its design features, it is especially well suited for applications requiring high performance and precision. The applications for the TH Series include laser applications, dosing robots and various handling tasks. This linear axis is characterized by high intrinsic rigidity and

load bearing and offers additional flexibility with one or two carriages.



Compact Rail is the product family of roller sliders with guide rails made of cold-drawn roller bearing carbon steel. The raceways are located on the inside of a C-profile, thus protecting them from soiling. Fixed bearing rail, compensating bearing rail and compensation rail enable combinations for all applications in which deviations in parallelism must be compensated in one or two planes. Easyslide is the product family of compact linear ball bearings for high load ratings with long service life. They are equipped with one or several sliders per rail. If several sliders are used, they can each run, independently of one another, in their own ball cage or synchronized in a common ball cage. Different slider lengths and strokes can be selected. All Easyslide guides are particularly easy to mount. Easyslide linear ball bearings are used in sliding doors on vehicles or machines and the like. The system made up of rail, slider and ball cage is particularly easy to mount, and is economical and reliable.

rollon.com/usa/en

R+W Antriebselemente (Hall 5, Stand A48)



The low-wear, flexible gear couplings from R+W are used in a wide variety of industries. Particularly in heavy-duty operation – such as on the high torque shafts of mixers, rolling mills,

crushers, test stands and conveyors – gear couplings transmit torques from 1,900 to 2,080,000 Nm with high torsional rigidity and low backlash. To ensure optimal performance, R+W manufactures both the coupling hubs and the flange sleeves with precise crowned gearing, made from high-strength steel.

Durable, reliable, and flexible: these characteristics make industrial couplings ideal for all applications that require maximum safety and performance in the face of constant and extreme loads. Engineers and operators across a wide range of industrial sectors are aware that machine component failures and downtime drive up cost and, in the worst cases, can lead to accidents – making proper industrial coupling selection critical.

The main advantages of elastomer couplings include vibration damping, easy installation, zero backlash transmission, and electrical isolation. Whether for machine tools, packaging machines, automation systems, printing machines or general mechanical engineering – the uses for elastomer couplings are as diverse as their requirements.



Elastomer couplings are part of a wider group, known as jaw couplings, the key component of which is an elastomer segment inserted between two hub halves. This elastomer insert is the heart of the elastomer coupling. It transmits torques from 0.5 to 25,000 Nm without backlash, and compensates for axial, lateral and angular shaft misalignment. When properly selected for size and hardness, the elastomer insert optimizes the entire drive train and exhibits important characteristics, such as vibration

damping, torsional stiffness, and thermal stability.

rw-couplings.com

Neugart (Hall 6, Stand B48/1)



The Neugart WPLHE combines all the advantages of the successful PLHE, as a right-angle variant.

Specifically, the WPLHE features both the gearing of a proven economy gearbox and a high-performance output bearing with preloaded tapered roller bearings, which are otherwise commonly used in precision gearboxes (such as the PLN and the PSN). This means that the new right-angle gearbox tolerates high radial and axial forces of up to 8,000 N at the output. For example, pulley drives with high radial loads can also be implemented in right-angle designs.

Compared to the coaxial PLHE the motor is rotated by 90° in this case, the WPLHE offers the ideal solution in confined spaces, for example in packaging and other special machines. It is an economy right-angle gearbox offered with a pre-mounted pinion as an option. This makes it particularly suitable for space and cost-sensitive rack-and-pinion drives. There are 13 different pinions from which to choose: with choice of straight-cut or helical-cut teeth, from module 2 to 3, with numbers of teeth from 15 to 27.

Thanks to the output geometry with square output flange and long centering flange that has become established on the market, the WPLHE is easy to implement. Several different output shaft variants - smooth, keyed, splined or with pre-mounted pinion - mean that the right-angle gearbox can be used in a wide range of applications.

It also offers IP65 protection, making it suitable for harsh, dusty, and dirty environments. Food-grade and low-temperature lubricants are also available for the lifetime lubrication commonly provided by Neugart.

Additionally, the company will feature its economic planetary gearbox line for a wide variety of drive solutions.

neugart.com

Wittenstein (Hall 6, Stand D23)

Highlights from Wittenstein at Hannover include the following:

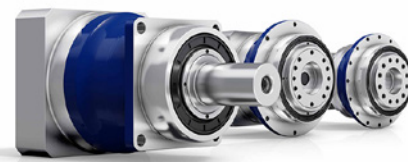
With cymex 5 sizing software, the entire drivetrain (application + transformation + gearhead + motor) can now be sized and designed quicker and more reliably. Its calculations are considerably simplified by predefined standard applications. Optimally sized and more efficient motors are achieved by abstracting all important influencing factors.

The ultra-compact and dynamic IDS3010 is a contactless measuring sensor for the engineering industry. With a data acquisition bandwidth of 10 MHz, the IDS3010 simultaneously tracks up to three axes at velocities of 2 m/s. The sensor provides a position resolution of one picometer and reaches working distances of up to five meters.

The alpha Value Line is universally suitable: it represents the most economical solution whatever the requirements for driving any axis in virtually any industry. Each input or output interface for the alpha Value Line was developed as a compatible add-on for Wittenstein alpha's existing high-end portfolio.

With the servo actuator TPM+, precision planetary gearheads and synchronous servomotors are integrated without a clutch for a unit that is flexible in its application. In combination with short overall lengths, high power-density, and smooth running: this marks a whole new level of performance - along with practical, graduated performance settings that ensure greater operating efficiency in all your production applications.

Experience extraordinary dynamics thanks to modern motor technology



with high power density, a low moment of inertia and optimal torsional rigidity. Benefit from a reduced installation length: The coupling-free connection between motor and gearbox and the space-saving attachment of motor instruments make the TPM+ DYNAMIC 50 percent more compact than conventional gearbox motors. Helical-toothed precision planetary gearboxes ensure low-vibration and silent operation.

wittenstein-us.com

Sumitomo (Hall 6, Stand B25/1)



Sumitomo's booth will include actuators, ball bearings, gearmotors and more. TUAKA offers a fully integrated actuator including a powerful driver. As an option the product can be configured with a torque sensor as well as with a second encoder on the output. Additional safety features are also available with a safety-level up to SIL3 PL-e.

Angular contact ball bearings can integrate directly into a gearbox housing. The improved design provides very accurate motion quality with increased torque density and bearing capacity. They are ideal for robotic and machine tool applications. The fully sealed modular design is available with motor adapter and clamping ring.

The right-angle hollow shaft gearmotor with IE5 ultra-premium efficiency motor is compact and highly efficient drive-package consisting of motor, gear and VFD. High input speeds up to 3,600 rpm.

FEATURE

The new E CYCLO series features high rigidity due to its internal roller bearings. This is significantly higher when compared to the competition. Therefore, the E CYCLO can achieve higher performance in a smaller design envelope and thus lower costs.

sumitomodrive.com

Timken (Hall 6, Stand B39)



Timken Quick-Flex elastomeric couplings can withstand harsh conditions, yet need minimal maintenance. They're easy-to-install and require no lubrication. With a lifespan that can match that of your equipment, you can keep your overall cost of ownership competitively low. Timken Quick-Flex couplings can directly replace most coupling configurations, thanks to the design's versatility. Plus, you won't need large inventories of spare parts for couplings. There's no metal-to-metal contact with Timken Quick-Flex couplings, so customers can save money by not replacing hubs or other metal components. For harsh environments, including washdowns for food processing, Timken offers a stainless-steel version of each coupling.

timken.com
PTE

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