

Press Release

From zero to one hundred: The IE5/IE6 Motor Drive System with i650 motec sets new standards in terms of performance and efficiency

Nuremberg/Hamel, 25 November 2025 - Lenze is setting new standards in decentralized drive technology with the IE5/IE6 Motor Drive System. The focus is on the i650 motec inverter drive, which, in combination with the m550/m650 synchronous motor, offers a powerful and energy-efficient solution for demanding applications. Lenze will be presenting the motor drive system from November 25 to 27, 2025 at the SPS trade fair in Nuremberg, Hall 7, Stand 391, where it will be showcasing live innovative motion control solutions for machine and plant engineering.

The i650 motec impresses with its integrated Logic PLC and a positioning function that enables independent motion control without a higher-level controller. This makes the system suitable for various applications such as conveyor drives, winding drives and pump applications.

Impressive performance: 300 percent starting torque (overload torque)

High performance is also important to customers: "We promise up to 300% overload torque from standstill and we deliver. Starting from standstill to full load is possible without any problems and without motor feedback," emphasizes Klaus Dierkes, Product Manager Electromechanics. This means that the system can be designed more precisely for continuous operation, as it is not oversized, and then immediately delivers the required power.

Lenze offers the new m550 synchronous motor in power ratings of 0.25 - 11 kW and the m650 for dynamic applications in 0.75 - 22 kW. Both can be seamlessly combined with gearboxes from the Lenze modular system.

There is a choice of helical, angular or bevel gearboxes for a wide range of requirements.

The first test customers worked with Lenze's new EASY System Designer for the design. The result: a precisely dimensioned drive solution through to an energy-efficient machine design. The web-based engineering assistant shows the energy consumption of the respective application and drive components.

Encoderless and safe

— Thanks to precise control of the m550/m650 synchronous motor, encoderless positioning is possible with the i650 motec. The integrated safety functions such as Safe Torque Off (STO) or Safe Torque Off over CIP (Common Industrial Protocol) ensure machine and personal protection. In the future, the system will be expanded to include additional encoderless safety functions such as SLS and the PROFISAFE & FSoE protocols.

Energy efficiency and transparency included

— The Motor Drive System is also impressive when it comes to sustainability: the combination of motor, gearbox and drive reduces motor losses by up to 60%. The integrated energy recovery unit in the motec automatically feeds excess energy back into the mains - without any additional hardware. Machine operators also receive high-quality information from the machine sensors via the IO-Link interface and benefit from increased system transparency.

The new Motor Drive System is extremely resource-efficient. The sensorless feedback means a budget-friendly chain reaction on the hardware side: no expensive feedback system, more compact drive, no expensive cables. Another effect: mounting and installation are quick and safe.

If the highly efficient motor is controlled with the decentralized i550 or i650 motec drive, there is no need for even more hardware, as brake resistors are not required.

The i500 cabinet inverters can also exchange excess energy via the DC network and make it available to other axes.

Lenze has a new solution for the positioning of goods, which is often necessary in conveyor technology: "We use the SLSM algorithm (Sensorless Synchronous Motor Control) in the drive. This enables us to achieve the performance of a closed control loop without a motor feedback system and cabling. This allows us to achieve sensorless and precise positioning," concludes Klaus Dierkes.

About Lenze

Lenze is a leading drive specialist for machine and plant engineering. For more than 75 years, the company has been a pacemaker and strong partner at its customers' side. With the help of the triad of electromechanics, electronics and software, Lenze accompanies its customers and helps them to optimize production and logistics processes, cut costs and reduce their energy consumption.

The Lenze Group, based in Aerzen, employs more than 3,600 people worldwide and is represented in 45 countries. Group-wide, the company generated a turnover of 828 million euros in the 2023/2024 financial year.

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