SCHAEFFLER

Press Release

CES 2026

Schaeffler presents innovative planetary gear actuator for humanoid robots

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- Schaeffler's planetary gear actuator ensures precise movements in robot joints and enables continuous-duty operation
- Innovative actuator system combines a two-stage planetary gearbox, electric motor, encoder, and controller in a compact unit
- Decades of Schaeffler actuator expertise make humanoid robots even more capable and powerful

World premiere at the Consumer Electronics Show 2026 (CES) in Las Vegas: For the first time, Schaeffler is presenting a planetary gear actuator developed specifically for humanoid robots at a leading global trade fair. Actuators transmit torque with high precision and minimal compliance and are essential for enabling humanoid robots to move accurately and efficiently. On average, 25 to 30 actuators are required in total for joints such as the shoulders, knees, and hips. While conventional actuators often offer limited or no back-drive-ability – that is, the ability to move the drive in reverse – Schaeffler's planetary gear actuator enables smooth back-driving and high precision thanks to its innovative design. In addition, Schaeffler manufactures all components entirely in-house, ensuring the highest levels of quality and reliability. Humanoid robots will play a key role in the industry of tomorrow, as they can be seamlessly integrated into existing work environments, relieve employees of repetitive and ergonomically demanding tasks, and significantly increase productivity as a result.

Andreas Schick, Chief Operating Officer of Schaeffler AG and responsible on the Executive Board for humanoid activities, says: "Schaeffler aims to secure a key position in the rapidly growing humanoid robotics market. Thanks to our decades of manufacturing expertise, we are able to deliver the highest quality in large volumes and within the shortest possible production times. The innovative planetary gear actuator is a production-ready key product within our portfolio and will make humanoid robots even more capable and powerful."

Planetary gear actuator: A tailor-made drive solution for humanoid robots

Schaeffler deploys humanoid robots across its entire value chain and therefore understands market requirements and customer needs firsthand. This enables

Schaeffler to successfully transfer scalable solutions from the automotive and industrial sectors to humanoid robotics and to develop tailor-made products that address the challenges of the future. With a comprehensive portfolio spanning eight product families, Schaeffler covers the full spectrum of requirements for humanoid robots. Integrated linear and rotary actuators – one of Schaeffler's core competencies – account for around half of all components in a humanoid robot. This highlights the company's strong vertical integration and its concentrated expertise as a Motion Technology Company.

One of the product highlights of this year's CES trade show is the planetary gear actuator, a highly efficient drive system designed and manufactured entirely by Schaeffler. The compact yet powerful system combines a two-stage planetary gearbox, an electric motor, as well as an encoder and controller in a space-optimized unit. Thanks to its high thermal stability, a torque range of 60 to 250 Nm, and particularly low back-drive-ability, the planetary gear actuator withstands external forces and prevents unintended reverse rotation of the drive component. The result is precise, energy-efficient motion sequences with high torque transparency – ideal for continuous-duty operation in humanoid robots.

Schaeffler at the Consumer Electronics Show

Innovative key components for humanoid robots, along with other future technologies from Schaeffler, will be on display from January 6 to 9, 2026, in the West Hall of the Las Vegas Convention Center at Booth 7301.

Learn more about Schaeffler's appearance at the Consumer Electronics Show:
CES 2026 | Dates & Events | Schaeffler Group USA Inc.

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Schaeffler Group – We pioneer motion: The Schaeffler Group has been driving forward groundbreaking inventions and developments in the field of motion technology for 80 years. With innovative technologies, products, and services for electric mobility, CO_2-efficient drives, chassis solutions and renewable energies, the company is a reliable partner for making motion more efficient, intelligent, and sustainable – over the entire life cycle. Schaeffler describes its comprehensive range of products and services by means of eight product families: From bearing solutions and all types of linear guidance systems through to repair and monitoring services. Schaeffler is with around 110,000 employees and more than 250 locations in 55 countries, one of the world's largest family-owned companies and one of Germany's most innovative companies.

Schaeffler's planetary gear actuator is a highly efficient drive system that enables precise and energy-efficient motion sequences. - Image: Schaeffler

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