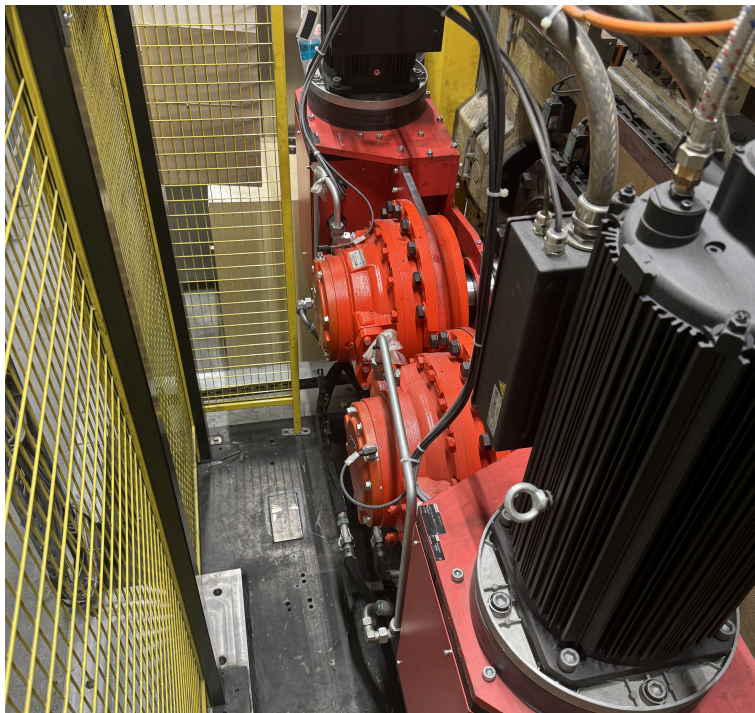


PRESS INFORMATION

Full speed ahead

Manuela Kessler | 01.07.2024 | Lohr am Main / Germany | PI 020/24

Häggglunds hydraulic motor from Bosch Rexroth improves performance and safety in roll mills at Freudenberg Sealing Technologies



The two roller drives at Freudenberg Sealing Technologies each power 55 kW and use a Häggglunds CA100 hydraulic motor with a rated torque of 25,000 Nm and a nominal speed of up to 23 min⁻¹. (Image source: Freudenberg Sealing Technologies)

The mixing and processing of raw materials for natural and synthetic rubber requires powerful drives. But energy efficiency and safety are also decisive criteria for the drive technology used in roll mills. At its Berlin location, Freudenberg Sealing Technologies has retrofitted a roll mill's electromechanical drive with a speed-controlled direct drive from Bosch Rexroth with Häggglunds hydraulic motors. In a comparative analysis of both drive solutions, Häggglunds hydraulic motor impresses on all three aspects.

In the mixing mills at Freudenberg Sealing Technologies, the rubber bales prepared in internal mixers are mixed by repeated retraction, slowly cooled, and drawn off as a blank for subsequent vulcanization. According to Marek Semrau, Senior Global Process Engineer at Freudenberg Sealing Technologies, the required performance characteristics are actually a strong argument for hydrostatic direct drives. However, due to the increased requirements for energy efficiency, roll mills have also been equipped with electromechanical drives in recent years. Freudenberg compared both solutions in practice as part of the conversion of such a drive solution, which has been in operation for five years, to a Häggglunds hydraulic motor by system integrator MaTech – Maschinen und Technik GmbH. The hydrostatic concept was convincing: The company will equip five more roll mills with Häggglunds compact drives from Bosch Rexroth.

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The new, speed-controlled compact drive with a continuously variable hydrostatic transmission system is available in six output classes from 15 to 120 kW. Depending on the application, a robust Hägglunds radial piston motor from the Compact CA or Quantum QMX series is used. The hydraulic motor is operated in a closed loop by a variable-speed drive comprising a water-cooled servo motor and axial piston pump. "Such hydrostatic transmissions systems with a variable gear ratio are powerful, quick to control, and low maintenance," says Jörg Schlegel, Managing Director at MaTech. "At the same time, however, we will also achieve greater energy efficiency." Comparative measurements at Freudenberg Sealing Technologies show that the solution with hydraulic motor performs at least equally as well as, sometimes even somewhat better than the electromechanical drive, depending on the type of roll mill.

The measurements at Freudenberg also show that the direct drive solution achieves a braking angle of 3.5°, which is significantly shorter than the electromechanical drive's. This makes retraction into the rollers rotating in opposite directions technically impossible. Bosch Rexroth implemented this using a redundant quick-stop through the electrical resistance in the frequency converter and a mechanical brake in the servo motor.

Another advantage is the hydrostatic solution's small footprint: It needs about 40 percent less installation space than the electromechanical version. The total weight of the hydrostatic solution is just 13 percent of the electromechanical version, 780 instead of over 6,000 kg per drive. In addition, a mechanical transmission system has to be replaced at least once during the normal service life of 20 to 30 years for roll mills. This is not the case with the hydromechanical drive solution. To increase availability even more, Freudenberg Sealing Technologies monitors important parameters such as oil temperature and filter condition via the drive control or uses the Hägglunds CMP data-based analysis service for predictive maintenance.

Bosch Rexroth at the German Rubber Conference: Hall 9, booth 133

Basic Information Bosch Rexroth

As one of the world's leading suppliers of drive and control technologies, Bosch Rexroth ensures efficient, powerful and safe movement in machines and systems of any size. The company bundles global application experience in the market segments of Mobile and Industrial Applications as well as Factory Automation. With its intelligent components, customized system solutions, engineering and services, Bosch Rexroth is creating the necessary environment for fully connected applications. Bosch Rexroth offers its customers hydraulics, electric drive and control technology, gear technology and linear motion and assembly technology, including software and interfaces to the Internet of Things. With locations in over 80 countries, around 33,800 associates generated sales revenue of 7.6 billion euros in 2023.

Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 429,000 associates worldwide (as of December 31, 2023). The company generated sales of 91.6 billion euros in 2023. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, electrification, digitalization, connectivity, and an orientation to sustainability. In this context, Bosch's broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in sensor technology, software, and services to offer customers cross-domain solutions from a single source. It also applies its expertise

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in connectivity and artificial intelligence in order to develop and manufacture user-friendly, sustainable products. With technology that is “Invented for life,” Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 470 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch’s global manufacturing, engineering, and sales network covers nearly every country in the world. Bosch’s innovative strength is key to the company’s further development. At 136 locations across the globe, Bosch employs some 90,000 associates in research and development, of which nearly 48,000 are software engineers.

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