MAX Drive
Peak performance for your vertical mill
Drive system beyond power limits

With twin drives delivering maximum power, our MAAG® MAX Drive system builds on our proven track record and rises to the need for increased capacity in your vertical roller mills.

Key benefits

- Uncomplicated maximum power
- Profit from the compact size
- Smooth function and operational reliability
- Simplified upkeep
- Equal load distribution for high efficiency
True strength from our modular drive system

The robust reliability is built on proven technology. The three-stage drive system is enhanced by a torque split, self-aligning pinions and highly flexible couplings.

**Introduction**
Our MAAG® MAX Drive system uses two equal drive units to deliver power from 5,000 to 15,000kW for your vertical roller mill. We have taken the expertise in gear technologies and manufacturing we’ve built up over the last 100 years and applied them to this modular drive concept specifically for vertical mill. The matched drive units, torque split, reliable components and our proven track record makes our MAAG MAX Drive an ideal fit for cement and slag grinding.

The modular concept with only one vertical motor directly connected to the gear casing allows for a compact arrangement without unnecessarily increasing the complexity of the monitoring system and the connection to the power grid. You can also operate just one drive, allowing you to continue production at reduced output while performing maintenance on the other drive unit or on half of the rollers.

**Technology**
The power behind our MAAG MAX Drive comes from two equal gear units that operate the girth gear around the central part on two flanks. These twin gear units transmit power from the electric motors to the grinding table and reduce the motor’s speed to precisely what you require for the grinding process.

In addition to enabling its compact size, the torque split of our three-stage MAAG MAX Drive ensures that the total torque to the mill is always equally distributed between the two pinions. The highly flexible couplings used in the MAAG MAX Drive automatically equalise any torque imbalances between the two pinions — ensuring equal load distribution between the two gear trains in each drive unit. The coupling also allows you to adjust the correct timing between the output pinions and the central girth gear and guarantees smooth operations through its damping of torque peaks and adaptable stiffness.
One system, one source

Manufacturing the complete drive system ensures the ideal adjustment between the main motors and all geared parts – and lets us efficiently customise the MAAG® MAX Drive system to meet your specific requirements.

Product feature
The complete MAAG MAX Drive system contains:

- Two equal drive units,
- The girth gear unit,
- The oil unit,
- The maintenance drive, and
- A condition monitoring system.

Specialised power
The compact gearbox of our MAAG MAX Drive system is powered by a vertical electric motor, adapted from a standard design to specifically fit this application. It is a squirrel cage asynchronous motor mounted directly on top of the gear casing, removing the need for any complicated onsite alignment.

Gearing with stamina
Made up of two or four segments, the girth gear of the MAAG MAX Drive is a fabricated design and is manufactured to be more fatigue- and wear-resistant. The ring with the toothing is a high-quality alloy steel that is rolled and bent, while the rib is made out of ordinary carbon steel and welded to the ring.

In order to protect the girth gear from dust, we developed a new sealing concept that decouples the drives from the central part. A labyrinth seal, brush and dust protection shield are installed between the mill table and girth gear guard, along with rubber sealing to protect the central part and gear unit. These safeguards allow the MAAG MAX Drive system to run smoothly and decrease servicing.
Lubrication system

The gearbox is lubricated by a closed-circuit oil system. The oil tank serves as a platform on which all the assemblies and components such as motor pumps (high and low pressure), switchable double oil filter, oil cooler and instrument panel are installed. The design of the lubrication system is standardised thus it is applicable for several gear types. This ensures easy handling, optimal insertion and low costs. Also, the components of the lubrication system like instrumentation, filter and cooling/heating system are consistent. The lubrication system is monitored with digital indication on site. Top priority is given to operational reliability.

Simple handling with the maintenance drive

The maintenance drive is integrated in one of the gear trains and allows you to rotate the mill table very slowly. This simplifies maintenance work at your vertical roller mill, including replacing lining plates or rebuilding surfaces through welding.

Beyond a basic condition monitoring system

Our condition monitoring system lets you set up condition-based preventive maintenance that uses continuous monitoring and data analysis to detect wear and tear at an early stage. With this enhanced information, we help you plan maintenance and servicing in advance – reducing downtime and keeping your plant running smoothly.
Precision is a question of quality

Our products are known for their high reliability. Manufactured in state-of-the-art production plants, enriched with many years of experience, supported by a wide range of services.

Quality policy
Our certification according to the latest ISO 9001:2008 standards and our commitment to create strong relationships with our customers, suppliers and employees has the clear target to establish us as a trustworthy, reliable and professional partner. This commitment includes providing the markets with high quality and high value solutions, products and services to support productivity and sustainability of our customer.

With our process management system, we endeavor to meet and exceed quality standards and provide adequate resources to support the quality system.

Our quality policy centers on the importance of meeting our customers’ requirements. To reach that our management continuously reviews and establishes the quality objectives and our employees are committed to the company’s Management System, as well to the continual improvement of the system and the entire organization. Each employee is aware of the vision and strategy we pursue and works in a culture of opportunity.

With our suppliers and external partners, we cultivate an open communication and collaborate on performance-oriented results.
As part of the global FLSmidth Group, the business continues to be the preferred full-service provider for the heavy-duty industry. As leading technical developer of drive solutions for the cement and minerals industries we remain focused on our customers productivity.

Engineering and production
Since introducing with great success in 1966 the technology of mill gear units to the cement industry we have sold over 6000 MAAG® gear units and 1000 girth gears. In today’s setup, Engineering and Production take place in 4 modern plants located in Italy, Switzerland, Poland and India.

Our strength
We support our customer’s expectations with highly efficient products. The key of success lies in the combination of modularized solutions and compact design. Careful material selection and unique production accuracy enables our gear units to increase customers sustainability. The continuous incorporation of experience, new technical solutions and latest manufacturing techniques into the production process combined with intensive development and training of our engineers assure best understanding of how to design and operate a gear unit to lengthen its life cycle. A constant willingness to innovate and close collaborations with our customers have led to ensure that MAAG gear units operate reliably throughout the world under toughest conditions.

Product range
Today’s product range includes various drive solutions and maintenance systems for all types of applications needed in various industries. We also manufacture single components such as bevel sets, girth gears and various replacement parts.

All MAAG gear units are available as standard solutions or customized to its specific application.