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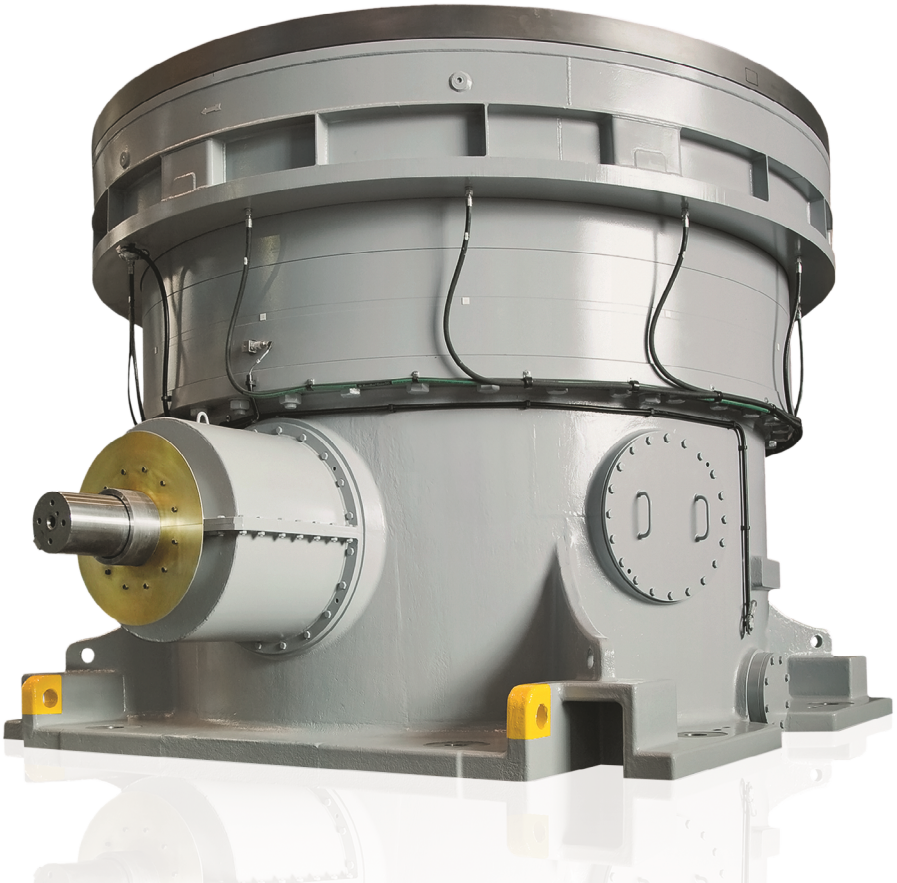
MAAG® WPU Gear unit

Dependable planetary gear unit for consistent drive power

Gear unit for all kind of vertical roller mills

Our compact MAAG® WPU bevel and planetary gearbox is your ticket to reliable power transmission in your vertical roller mill. With two series to suit your requirement, our two-stage gear unit is suitable for a wide-range of mills and applications.



Key benefits

- 01 Tailor-made for your vertical roller mill
- 02 Optimal longevity, reliability and performance
- 03 Reduced energy losses and lower cost
- 04 Streamlined servicing

Introduction

The two series of our MAAG® WPU gear unit ensure that your vertical roller mill has the dependable drive system you need, whatever your required power range. The large series accommodates power ranges from approximately 1'300 kW to 5'500 kW, while the small is perfect for coal mills with a power range up to 1,500 kW.

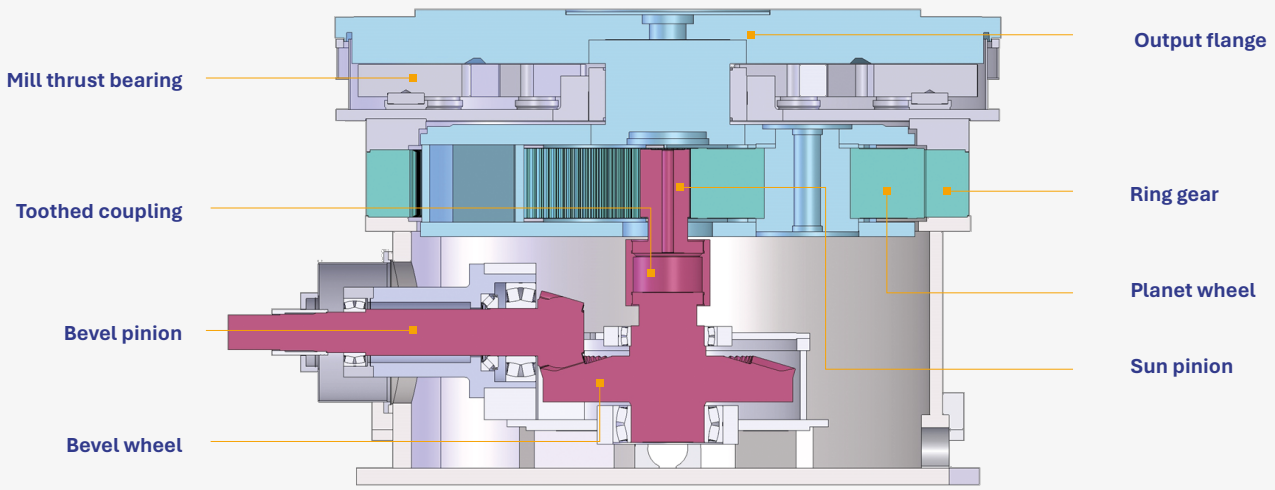
Both gear series meet the general requirement of vertical roller mill drives. With one bevel and one planetary gear stage our WPU Gear Unit reduces the speed of the electrical motor to the desired grinding table speed and changes the horizontal input axis into the vertical output axis. Finally, the grinding table is supported by the thrust bearing in the gear casing.

Torque transmission that fits your mill

Both bevel and planetary stage gears are made from high-alloy steel, precisely cut on top class machines and heat treated in fully controlled equipment. The toothed flanks of the sun pinions have profile and longitudinal modifications to fully compensate for deformations of the sun pinion and planet wheels occurring under load. This method guarantees optimum tooth flank contact, load distribution and very long life-cycle. We achieve the wide power range of our large WPU gear unit series with a unique design. We use the fixed ring gear of the planetary stage directly as part of the casing (see figure below). This design ensures optimum ratio split between bevel and planetary stage and results in the highest possible drive power for conventional two stage gear units. The hydrodynamic sleeve bearings in the planet shafts provide infinite lifetime and round up the unique and maintenance friendly design.

The small WPU series, specially designed for coal grinding in cement and thermal power plants, use the common planetary arrangement. The ring gear is mounted into the gear casing so that reliable torque transmission is guaranteed. The entire gear unit is equipped with anti-friction bearings. Spherical roller bearings mounted on the planet shafts ensure best possible position of planet wheels during operation in each load condition.

The unique requirements of coal mills demand that the grinding system considers the heat sources used to dry raw coal, as well as the fire and explosion hazards of coal dust. Our MAAG® WPU Gear Unit combines proven technology with the necessary adjustments to deliver high functionality for coal mills and plant arrangements. We can also ensure that all electrical equipment installed on the WPU Gear Unit complies with your anti-explosive requirements.



Components deliver endurance and ease

Our MAAG® WPU Gear Unit is based on well-proven standardized design, whatever your required power range. With specification to ensure safe and reliable operation, our two-stage gearbox has you covered.

Unique design for optimal performance

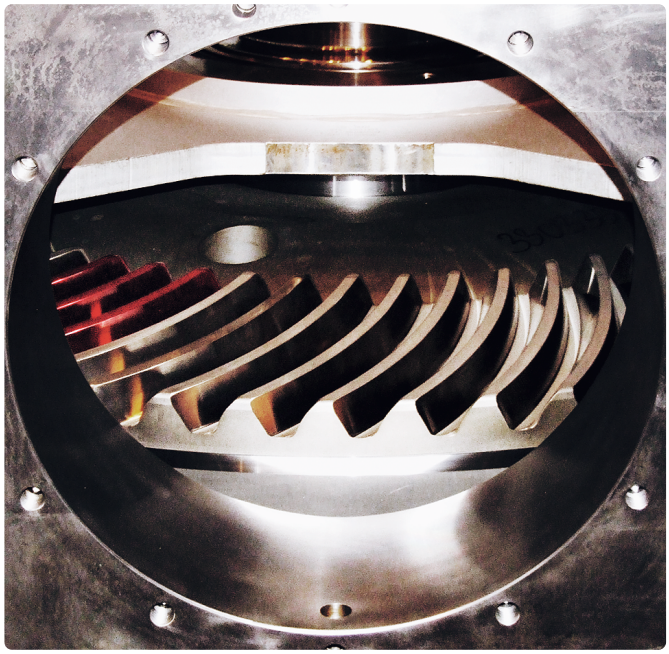
Our special planetary gear arrangement of the large WPU series provide the highest possible torque transmission from conventional two-stage gearboxes. With this we lower not only your energy losses compared to three-stage gear units, but also your investment.

The output flange bearing arrangement of all our WPU Gear Units assists the reliable operation. As generally known, the thrust bearing – equipped with tilting pads – support the mill table and guide the grinding forces into the foundation. In addition, we use a large radial slide bearing with high damping to support the mill table in horizontal direction. It is located directly under the output flange and reduce the leverage effect. Our large WPU series contains in addition an emergency shoulder in the planet carrier - making excessive misalignment in the planetary stage impossible.

High quality and simplified maintenance

Our highly-trained engineers and machine operators manufacture best-quality parts in our state-of-the-art workshop. Generally, our gear units are characterized by tooth quality of ISO Q4 or better. It not only reduces friction losses but also improve the longevity of the geared parts.

With the unique planetary gear stage and the optimal grinding table support our MAAG® WPU provides you dependable output and limited downtime. The internal emergency shoulders within the gear unit limit the tilting of the mill table and guarantee a longer service life for gearing and bearings. With the internal toothed coupling we make sure that reaction forces from the grinding process don't affect the bevel gear alignment. And finally - large manholes in the lower casing part provide direct access to the bevel gear.



Get the most from this effective gear unit with auxiliary systems

A broad collection of auxiliary systems completes our MAAG® WPU Gear Units. Lubrication unit and coupling are must-have. But we also provide auxiliary or maintenance drives according your plant arrangement, while our monitoring system and service packages round out the scope of delivery.

Oil supply unit keeps your gear running

The oil supply units for our vertical roller mill gear units and drive systems includes low-pressure pumps to feed bearings and gearing with filtered and cooled lubrication oil. If needed high-pressure pumps supply the oil for the thrust bearing from a separated compartment of the tank filled with filtered oil from the low-pressure part. Using only clean oil on the high-pressure side allows us to improve the lifespan of the pumps.

Beyond a basic condition monitoring system with MAAG® CMS

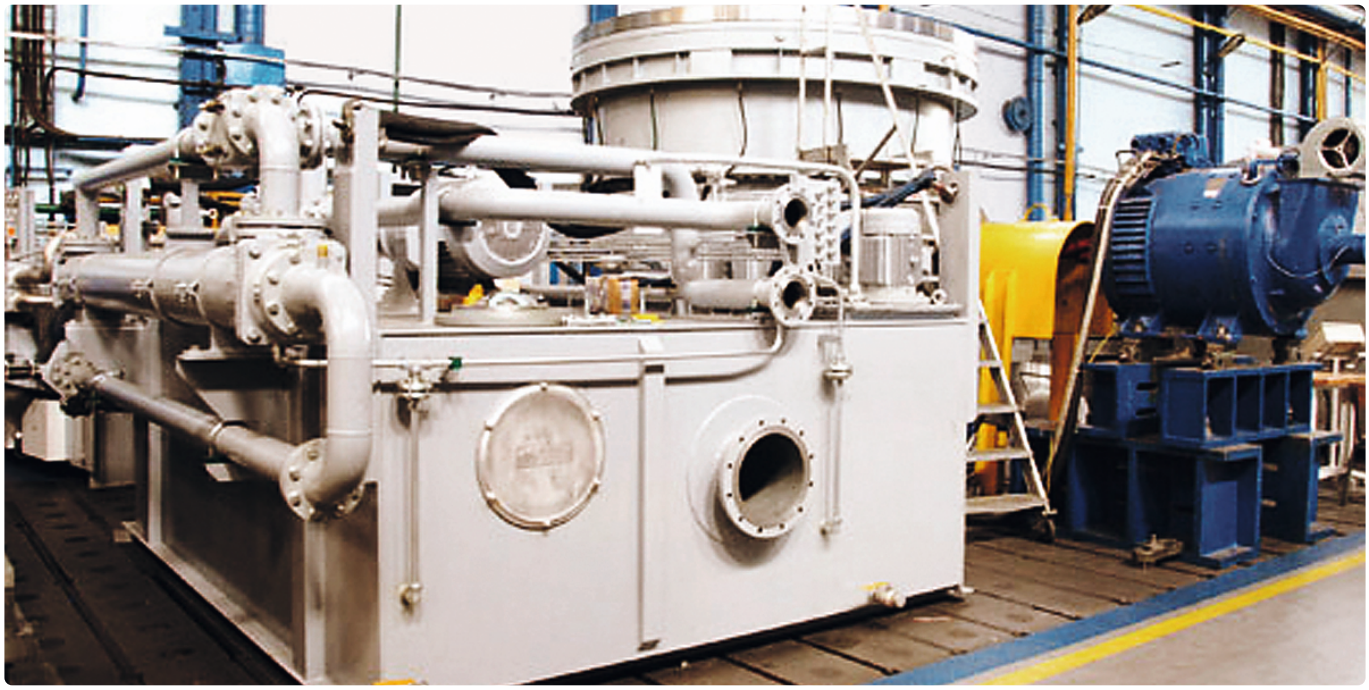
Future equipment failure can be prevented through regular gearbox inspections – e.g. visual inspections (examination of abrasive wear patterns and gear tooth pitting) supported by vibration measurements. With MAAG Gear online monitoring, data about the condition of the installation can be accessed by MAAG specialists remotely.
This allows early intervention in case of an incident.
Download the Brochure for more information.

Auxiliary drive for maintenance purpose

A maintenance or auxiliary drive that is tailored to your requirements rounds out the scope of supply for your MAAG WPU gear unit. The maintenance drive is placed between the motor and gear unit 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.

The auxiliary drive is mostly used to start the mill when the breakaway torque is too substantial to start the motor directly. The fluid coupling of the auxiliary unit guarantees smooth acceleration and the overrunning clutch automatically disengages the auxiliary drive after the main motor starts.

Click here to download **CMS brochure**



Home of Precision Engineering

For more than 100 years, the MAAG® Gear brand has successfully lived up to its founding vision and values.

Evolving demands in heavy-duty industries are driving the need for more efficient, reliable, and sustainable gear technologies. At MAAG, we are dedicated to providing high-precision solutions that respond to this need and enhance the productivity, sustainability and reliability of our clients' operations in cement, mining, and beyond. With a rich history of innovation and a robust product portfolio, we stand as trusted partners, committed to our mission of driving progress through precision. Discover how MAAG can help you elevate your business.

MAAGGEAR.COM

MAAG Gear AG
Thurgauerstrasse 32
8050 Zürich,
Switzerland

MAAG Gear Sp. z o.o.
ul. Stoczniowa 2
82-300 Elbląg,
Poland

MAAG Gear S.p.A.
Via Rubattino 94/A
20134 Milano,
Italy

MAAG Gear US Limited
2362 Serviceberry Drive
PO Box 97
Garden City, UT 84028
United States of America

MAAG Gear India Private Limited
A204 Supreme Business Park,
Hiranandani Garden, Powai
Mumbai – 400076, Maharashtra,
India

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