PPU Gear Unit
Proven planetary gear unit, built for wide applications
Flexibility from our PPU Gear Unit

Originally designed for roller presses, our MAAG® PPU Gear Unit merges the best of established design with the most recent technological advances. A firm foothold in the cement and minerals market is now also an excellent fit for small ball mills in a wide range of industries.

Key benefits

- Heavy-duty performance in a smaller and lighter design
- Modular flexibility adapts to your unique circumstances and needs
- Manufactured for a long operating life
- Easy maintenance with standardised parts
Improving a proven technology
First developed in 1987 for roller presses in the cement and mining industries, we redesigned our PPU Gear Unit in 2013. Through the redesign and the flexible input stage, we made this gearbox more cost effective and expanded its use for heavy-duty applications in a variety of industries – far beyond the original scope of cement production.

With an eye to enhancing the proven technology of the original redesign resulted in a compact and modular gear unit – with even better functionality. The tooth geometry follows the well-proven MAAG® standard and was recalculated according the latest ISO and AGMA standards. This guarantees optimum load distribution across the teeth, generating maximum power transmission.

The ring gear of both planetary stages also directly form the casing. This design feature allows to increase the transmission ratio of each planetary stage, while still maintaining the same outer diameter for the casing. The result is a lighter and smaller gearbox.

The basic concept
The PPU Gear Unit consists of two standardized planetary stage and an input stage. This first gear stage provides the highest flexibility. Not only that we can easily customize the gear ratio to your needs, but also the configuration of the input stage is adaptable from spur to bevel gear according the available space and setup of your machinery.

Customization to your needs – with endurance
Our MAAG PPU Gear Unit uses the optimal design for planetary stages in combination with a flexible pre-stage – delivering good operating results, either in pairs to drive roller presses or as single drive for other industrial machinery. The main characteristics are as follows:

- Rated torque up to 4600kNm
- Gear ratio from 45 to 330 in standard configuration
- Input speed from 980 to 1800rpm
- Bearing life time designed to L10hm > 100’000hrs

Widely-used in many heavy-duty applications like roller presses, ball mills and sugar cane processing, the flexible input stage of our MAAG PPU Gear Unit allows this three-stage gearbox to fit your unique setup.

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**Diagram:**

- **Ring gear 1st stage**
- **Planet wheel 1st stage**
- **Sun pinion 1st stage**
- **Input shaft**
- **Input stage**
- **Ring gear 2nd stage**
- **Planet wheel 2nd stage**
- **Sun pinion 2nd stage**
- **Output shaft**
From cement grinding to sugar cane mills

Flexibility guaranteed
The exchangeable input stage of our PPU Gear Unit allows us to use a spur gear, a bevel gear or even a multi stage gearbox as input stage and so adjust the ratio to process needs. Thanks to the highly standardised and modular concept, ratio adjustments have no impact on delivery time.

But the ratio is not the only adjustable feature on this gear unit. With the customised setup we support the flexible configuration you need to cover your specific application. These include simple gear foot for ball mill drive or hollow shaft and torque arm arrangement for roller presses. Together with high and low speed couplings, lubrication units and auxiliary drives we round up the scope of supply for this multi-use gear unit.

Couplings support flexible setup
Toothed low speed couplings of type MAAG ZCF or rope couplings from leading suppliers are available. Apart from a high power-density, which for example toothed couplings provide, the couplings must be able to provide enough alignment capacity to compensate movement between the mill and the gearbox including the thermal growth of the drive train.

For the connection between motor and gearbox we recommend using elastic couplings. Torsional flexible couplings are beneficial to dampen possible resonance conditions and transient dynamic overloads. In some cases, cardan shafts with increased alignment capacity can also be used to drive the gearbox.

Other option
Many other options are predefined to simplify the customising of the entire drive train. We can provide shrink discs or torque limiting safety couplings from different suppliers to round up our scope and meets your needs.
Get the most from this effective gear unit

A broad collection of auxiliary systems completes our MAAG® PPU Gear Units. From auxiliary drive to monitoring system and service packages, our scope of supply represents your needs.

**Oil supply unit keeps your gear running**
Gearing and bearings are lubricated by combined force and splash lubrication, where the casing serves as oil circulation tank. The oil supply unit is equipped with an electrical low-pressure pump, switchable double oil filter, water cooler and the necessary measuring instruments in order to monitor the correct operation of our PPU Gear Unit lubrication. Top priority is given to the operational reliability.

**Beyond a basic condition monitoring system with MAAG® Predicta**
Our condition monitoring system Predicta does much more than triggering inadmissible operating conditions. It 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.

**Auxiliary drive for maintenance purpose**
The auxiliary drive is intended to slowly turn the mill for maintenance works or for the even cooling down of the mill. Placed at the rear end of the motor the auxiliary drive is equipped with a planetary gearbox and a fluid coupling to limit starting torque and to provide smooth acceleration. The overrunning clutch between the auxiliary drive and the main motor automatically disengage the auxiliary drive when the motor is started. A brake can be supplied as option on request. It allows to lock your ball mill in position during maintenance.
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
Quality is the foundation of our company and it is fully embedded in our way of working. Our integrated management system is certified according to the latest ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007 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.

Customer satisfaction and loyalty is the main objective in our quality management system. By setting up strong relationships with our suppliers and other stakeholders as well as satisfied and engaged employees we deliver innovative technology, products and services to enhance your productivity. Each employee is aware of the vision and strategy we pursue and works in a culture of opportunity. Our processes are continually monitored and improve to deliver our best products and services to your plant, worldwide.

In addition to this clear customer focus, respect for the environment is also an important concern for us. Our processes and workflows are designed to minimize risks to both employees and the environment as well as to reduce any other negative impacts.
A pioneer of modern gear technology

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

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.