

STEEL INDUSTRY



Application: STEEL

The application requirements for modern drive systems in the steel industry are much more demanding than in most other engineering sectors. Given the high investment cost of the production equipment, and the requirement to run with high efficiency with no down time, only the most reliable drive systems, produced to the highest quality standards, can be used. The process to select these drives, specifically for the adverse ambient conditions in steel mills, requires a high degree of engineering expertise and knowledge.

Continuous casting plants:

As the name suggests, manufacturing steel in these plants is a continuous process. The semi-finished material being produced (e.g., slabs, billets) goes through a complex manufacturing process. From the mold to the run out table, the drive systems have to withstand extreme ambient conditions. As the material is processed through the plant, from the feeder and straightening units, through the withdrawal rolls to the cross cutters, the drive units routinely experience very high temperatures and high loading in an extremely dirty environment. The material running through these plants cannot stop anywhere along the process. The drive systems moving the steel along must be specifically engineered, designed, and sized for the highest reliability.

Rolling mills:

The slabs or billets are transported by roller conveyors and then go through a pair of work rolls in the reversing mill over several passes to reduce thickness. After the continuous casting process, the slabs are up to 450 mm thick. They are heated in pusher or walking beam furnaces to around 1250°C and then rolled in reversing mills to approx. 80 mm in order to improve their metallurgical and mechanical properties.

Roller conveyor drives:

The drives for roller conveyors must be rugged enough to withstand the high impact loads occurring during reversing operations. Extreme external thermal loads combined with high operating cycles, shock loads, and high acceleration torques makes it clear that high reliability and low maintenance costs can only be achieved if the highest quality drive technology is used.

In addition to the extreme applications mentioned above, WATT drive systems can be used in all areas of the steel mill. WATT application engineers have many years of experience in project planning and can support customers in selecting the right drive to achieve optimum performance satisfying all project goals.



The solution: MAS modular drive system

To meet the demands of these industrial applications, WATT has developed advanced drive systems in close cooperation with the plant engineers, designers, and operators. Watt Drive supplies gear units and geared motors that prove very reliable and have longer than normal service life, even at the extreme high temperatures and environmental conditions occurring in steel mills.

Water-cooled gear-motors:

WATT gear units with integrated water-cooling systems are ideal for applications in continuous casting plants. Permanent cooling of the internal components and oil sump substantially increases the service life of the drives, even without "over-sizing". The water jacket is cast directly into the housing and is not a heat exchanger located within the oil sump. It cannot leak and fill the gearbox with water causing failure.

These special drives are offered in the helical bevel, angle parallel shaft gear unit, and the newly developed, parallel shaft geared motor series. New models and sizes are constantly under development to meet customer requirements and to increase the torque/power range for each product series.

Geared motors made of ductile iron:

In addition to water-cooled units, WATT gearbox housings can also be cast in ductile iron. The increased robustness and shock resistance of the ductile iron also plays a significant role in ensuring the reliability of WATT drive systems. Like the water-cooled drives, the shaft mounted gear units with integrated torque arms are also available in the helical bevel, angle parallel shaft gear unit, and parallel shaft geared motor series. Various different accessories such as special high temp seals and high temperature-resistant lubricants round out the product offering.

Special motors:

Ring rib roller conveyor motors made of ductile iron or non-ventilated grey cast iron motors can be mounted to all WATT gear units using motor adapters (Nema or IEC) or they can be directly mounted, which increases efficiency and reduces the installed cost.

The MAS modular drive system motors can also be supplied with various mechanical and electrical options to meet specific customer requirements.

Torque/power range:

WATT steel mill gear units are available in various different design configurations and sizes covering a torque range of 1,250 - 14,000 Nm. Output speeds and ratios for the given torque requirements can be selected from the MAS modular drive system catalog. WATT application engineers will work with you to design, engineer and make the proper drive selection based on the thermal conditions, loads, and environment in which the unit must perform.

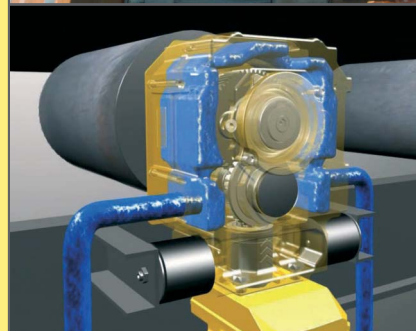
Watt Drive

Using Watt Drive products increases the overall efficiency and reliability of the production systems, cutting service and maintenance costs to reduce or eliminate downtime. We are constantly expanding the WATT MAS modular geared motors product offering so that we can continue to meet the challenges of the steel-processing industry in the future.

Further information on the WATT product range can be found on our website at www.wattdrive.com.



Roller conveyor drive with water-cooled angle parallel shaft geared motors



3D animation of water cooling

Watt Drives the World.

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