DRIVE SOLUTIONS FOR STEELMAKING

CASE STUDY: Plant and machinery constructor SMS group

Reversing rolling line
Steelworks complex in Bahrain

Gear units in UNICASE housings
High load capacity and long life

Roller table drives
Shock-resistant

Wide range of drives
Standard drives for the steel industry

Large industrial gear units
Powerful and flexible
Operating conditions in a rolling mill in Bahrain are very demanding: The drive units must operate reliably in spite of heavy loads, severe shocks and extreme temperatures. NORD supplied robust and flexible solutions to the SMS group - the metals industry plant and machinery constructor.

PROJECT REQUIREMENTS

Over the past years, an extensive integrated steel complex has developed at the industrial location of Hidd in the Kingdom of Bahrain. With a production of 600,000 tons of steel per year, it will cover one sixth of the previous girder and profile imports in the entire Middle East. For this the SMS group, the metals industry plant and machinery constructor, installed a heavy profile rolling mill with the very latest equipment.

Harsh conditions – Many of the geared motors which are required in the plant have to cope with the typical operating loads which occur in a rolling mill, i.e. interrupted operation (S5) as well as continuous operation with non-periodic load and speed changes, with frequent overloads. 16 ton girders are passed through the reversing rolling mill via rolling lines. The continual acceleration and deceleration of the transported material puts great strain on the drive technology due to severe shocks. Conditions are made even more difficult by the extremely high temperatures on this island in the Persian Gulf.

Standard drives preferred –
For other plant, the SMS group also required powerful drive solutions with high load capacities - for example a double bearing straightening machine with a hydraulic ram. It was also important to the plant constructor that special drive solutions were avoided and, as far as possible, that selection from an extensive range of standard gear units was preferred. For some of the drive systems, the SMS group required exceptional flexibility of use.

CUSTOMER PROFILE

The SMS group consists of several internationally operating companies in the plant and machinery engineering sector for steel and non-ferrous metal processing. From pig iron production to smelting, from rolling mills to conveyor belt systems, and from pipe mills to heat engineering – the SMS group covers everything and also provides electrical equipment, automation and related services.
APPLICATION SOLUTION

NORD supplies extremely robust drive systems: The gear unit’s UNICASE housing enables high radial and axial load capacities. Furthermore, the milled and precision-machined helical teeth ensure extreme stability under load. Even greater load capacity and durability is provided by the optionally reinforced shaft material (e.g. 42CrMo4) as well as stronger bearings. Part of the mechanical impulses can also be buffered by the vibration-absorbing housing material. Special synthetic lubricants and special coatings are available for the very high operating and ambient temperatures.

Variable use – The SMS group installed more than 600 roller gear units in the roller table. In addition, there were other systems such as standard parallel shaft gear units for chain conveyors on the cooling line, which replaced the special gear units normally used in this type of plant. Four NORD high-torque industrial gear units which align the heavy ingots prior to rolling were equipped with input and output shafts on both sides - allowing use for both shaft positions. The SMS group installed encoders on special shafts with corresponding holes.

Wide experience in the industry – NORD has worked with the SMS group for more than a decade. NORD supplies the steel and metalworking industry with optimised drive solutions for applications ranging from rolling mills to cooling beds, from shearing lines to pouring ladle handling and many other process stages.

THE PROJECT AT A GLANCE

For the reversing rolling line in Bahrain, NORD supplied 622 roller drives as well as a whole series of other drive solutions, including industrial gear units for aligning the rolling material. The systems meet the challenging conditions and functional requirements thanks to

- Robust UNICASE design for a long service life
- High precision gear meshing from our own production
- Optional flexible design with shafts on both sides

“NORD has an exceedingly wide and differentiated range of gear units for flexible solutions. We always have very good direct contact with the NORD steel industry experts.”

Guido Sonnenschein, drive specialist for the SMS group

APPLICATION VIDEO

Rugged – UNICASE housings ensure a long service life even under heavy loads.
FURTHER REFERENCES AND APPLICATION CASES

www.nord.com/references

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