



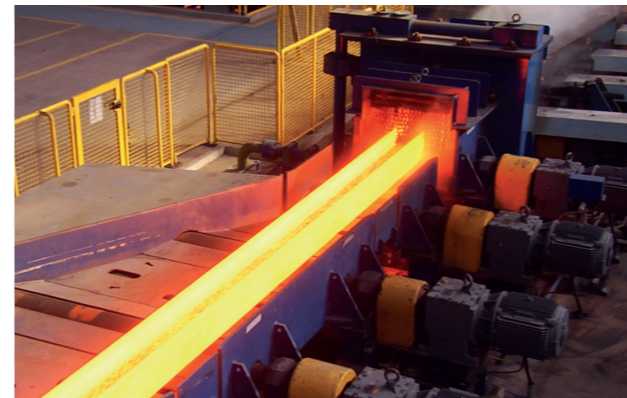
Further references and application cases:
www.nord.com/references



Reversing Rolling Mill
Steelworks complex in Bahrain



UNICASE Housings
Durable under heavy load



Roller Table Drives
Resilient against shocks

Drive solutions for the steel process

Case study: Plant and machinery builder
SMS group GmbH



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Heavy loads, frequent severe shocks, extreme temperatures – reliable drive operation is challenging in a rolling mill in Bahrain. NORD DRIVESYSTEMS provided robust and flexible solutions for steel operations engineered by SMS group.



“NORD DRIVESYSTEMS provides a vast and differentiated range of gears for flexible drive solutions in our industry. And we can always get directly in touch with the companies steel applications experts.”

Guido Sonnenschein,
SMS group Drive Specialist



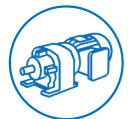
Steel Industry

Roller tables
Chain conveyors
Straightening machines



Large Industrial Gear Units

SK 7207
SK 13307



Helical In-Line Gear Units

SK 72

Project challenge

In recent years, a large steelworks complex was erected in the Hidd industrial zone in the Kingdom of Bahrain. Its approximate annual production of 600,000 tons of steel covers one sixth of all previous beams and section imports of the entire Middle East. As part of the Hidd complex, steel industry specialists SMS group have designed and installed a heavy section rolling mill with state-of-the-art equipment.

Rough Conditions. The plant required scores of gear drives designed to handle the typical load cycles in rolling mills, most notably S5 intermittent duty, as well as S9 duty with non-periodical load, speed variations, and frequent overloads. 16-ton beams pass on roller tables through the reversing mill. The many drives installed along these tables must cope with the shock impact of alternating acceleration and deceleration of the blanks. Moreover, the roller table drives in Hidd are faced with excessively high

ambient temperatures due to the climate of the Gulf state.

Standard systems preferred. SMS group also needed other resilient and powerful drive solutions for additional machinery. These include a straightener with double-supported rollers that rely on hydraulic adjustments. The engineering company was determined to keep the need for special drive solutions to a minimum, and therefore required a comprehensive portfolio of units they could use in as many cases possible. Finally, SMS group used the high flexibility of many of readily available drive systems from NORD DRIVESYSTEMS.

Application solution

NORD DRIVESYSTEMS supplied drive systems featuring an extremely robust design: encased in single piece housings, gears with helical teeth machined and finished to exacting standards provide superior stability even under high radial and axial loads. Even greater resilience and durability can optionally be achieved by using reinforced shaft material (e.g. 42CrMo4) and stronger bearings. In addition, shock-absorbing housing materials help reduce the impact of abrupt rough movements. Special synthetic lubricants (ISO VG220) and special coatings are available to adapt to extreme ambient and operating temperatures.

Versatile to use. In addition to over 600 roller table drives, SMS group also uses other NORD systems. These include standard parallel shaft gears for chain conveyors at the cooling bed, where they replaced special drives that were previously needed for this application. Four high-torque large industrial gear

drives used for straightening the heavy blanks in front of the rollers were fitted with input and output shafts on both sides, therefore may be operated in either direction. These industrial gears required special output shafts with suitable borings and were equipped with encoders supplied by SMS group.

Extensive industry expertise. NORD DRIVESYSTEMS has been collaborating with SMS group for more than a decade on numerous projects. NORD DRIVESYSTEMS provides versatile steel and metal industry drive solutions for applications ranging from roller tables to cooling beds, from shear lines to casting ladles, and for many other applications involved in the metal industry production processes.



Durable

Even in heavy-duty applications, singlepiece UNICASE gear cases ensure superior longevity.



SMS group

Focus on the customer

SMS group is a world leader in heavy machinery and plant engineering for the steel and metals industry. SMS group companies provide solutions in areas such as continuous casting technology, long products plants, tube and pipe plants, forging plants, nonferrous metals plants, and heat treatment technology in steel plants. The minimill in Hidd has been built by SMS group and SMS Concast.

Focus on the project

The reversing rolling mill in Bahrain uses 622 roller table drives and a number of other NORD drive solutions, including large industrial gears in a straightening machine for the rolling stock. These systems fulfill demanding functional requirements in tough conditions due to their:

- ▶ resilient single-piece housings that ensure a long lifespan,
- ▶ superior quality gear teeth precisely machined,
- ▶ design flexibility, such as optional shafts on both sides.



APPLICATION VIDEO

