

# DRIVE SYSTEMS FOR PORT LOGISTICS

CASE STUDY: WUHAN IRON AND STEEL



**Bulk material handling  
in Wugang port.**



**Travel and conveyor drives  
for stacker-reclaimers and  
gantry cranes.**



**Move massive loads.**



**Low-maintenance  
and highly durable.**

**NORD  
helical bevel geared motors.**



## PORT LOGISTICS

Loading and conveying facilities



## GEARED MOTORS

Helical bevel geared motors

## PROJECT CHALLENGE

Wuhan Iron and Steel Group Corporation (WISCO) is based in the heart of China. Given their inland location, WISCO's production plants can only be supplied with large quantities of raw materials via the Yangtze waterway. However, ore imports for the industrial group arrive in the East China Sea in very large ocean-going vessels. Hence, their cargo must be offloaded and transferred onto smaller ships that can make their way onwards to Wuhan.

**Great transshipment port.** – WISCO decided to partner up with co-financiers to establish a dedicated new supply hub in the Zhoushan Archipelago. Loading and unloading facilities at Wugang went into operation in 2012. Boasting handling capacities for up to 15 million tons of incoming ore per year, this port now serves as WISCO's main transshipment terminal. Wugang has an unloading berth with a water depth of

27 m, where huge ships carrying up to 300,000 dwt can arrive, and several other berths for loading cargo onto smaller ships.

**Colossal loading facilities.** – The ship loaders, unloaders, and bucket-wheel stackers installed along the berths and yards in Wugang Port are all the biggest equipment of their kind for civil use in China. They are designed to move up to 5,000 tons of ore per hour – as long as all overhead cranes, conveying systems and the like remain fully operational. If any serious malfunctions were to occur, service technicians would be a long and arduous way off. All drive solutions for the loading and unloading facilities therefore had to be designed to provide high load tolerances, a long service life, and minimal maintenance requirements.

## FOCUS ON THE CUSTOMER

Turning out some 40 million tons of crude steel per year, Chinese Wuhan Iron and Steel Group Corporation (WISCO) is one the largest companies in its industry worldwide. Based in Wuhan, a city of 4 million on the middle reaches of the Yangtze, the Group also produces more than 30 million tons each of pig iron and steel finished products annually. Though it operates a number of its own mines in China, WISCO must source much of its iron from abroad.



*Chinese steel giant WISCO has been operating a large new transshipment port in the East China Sea since 2012. NORD geared motors drive the loading and unloading systems that ensure a steady supply of ore to WISCO's inland production plants.*



## APPLICATION SOLUTION

The bulk handling machinery in Wugang was supplied and installed by several different OEMs, but all of these systems were fitted with NORD drive solutions. Three very large clamshell unloaders serve the 300,000 dwt berth. These machines incorporate a total of 72 three-stage bevel gear units. Two massive mobile ship loaders are equipped with 16 three-stage bevel geared motors as well as a two-stage helical bevel gear unit each. These NORD drives are capable of moving these large systems along the berth on tracks to position them as needed to access various areas of operation. Another 72 three-stage bevel gear units are installed in three bucket-wheel stacker-reclaimers (500 t/h) for the ore stockyards at the port.

**Rugged in every way.** – All geared motors in the Wugang facilities feature heavy-duty housings that make them suitable for outdoor use and severe weather. Well

sealed against moisture ingress and fitted with corrosion- and moisture-resistant components, they provide a high degree of protection against the typical challenges of maritime environments. Special paint coats are applied against the salty atmosphere. Since all gear units feature a single-cast housing, they are extremely durable and wear-resistant, even though the loading and unloading systems carry massive loads most of the time. Most drive units come equipped with application-specific optional parts, including e.g. dust- and corrosion-protected brakes, micro-switches for continuous brake monitoring, or double canopies serving as drip covers at the motor fans. Such features further enhance the reliability of these geared motors and help ensure they achieve an extra-long lifespan.

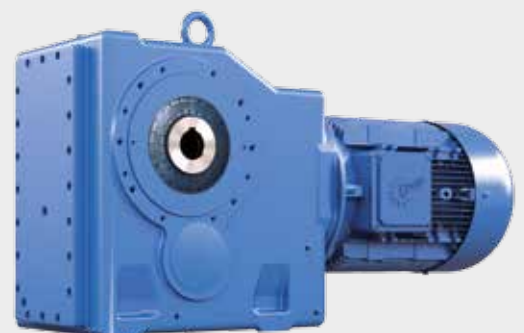


**Record holders.** – Wugang port has the largest loading systems in civil use throughout China.

## FOCUS ON THE PROJECT

In Wugang port, some 150 miles south of Shanghai and the Yangtze estuary, about 15 million tons of import ore are landed every year to be loaded onto smaller vessels and supplied to WISCO steel plants in Wuhan. More than 170 heavy duty geared motors made by NORD ensure that loading machinery and bucket-wheel stackers operate reliably, including

- three large clamshell unloaders for 300,000 dwt ships driven by
- a total of 72 three-stage helical bevel geared motors.





## OTHER NORD APPLICATIONS YOU MAY FIND INTERESTING INCLUDE:

- Hoist drives
- Belt conveyors
- Tunnel conveyors
- More: [www.nord.com/references](http://www.nord.com/references)

### Headquarters:

**Getriebebau NORD GmbH & Co. KG**

Getriebebau-Nord-Straße 1  
22941 Bargteheide, Germany  
Fon +49 (0) 4532 / 289 - 0  
Fax +49 (0) 4532 / 289 - 22 53  
[info@nord.com](mailto:info@nord.com), [www.nord.com](http://www.nord.com)

**Member of the NORD DRIVESYSTEMS Group**



**NORD**  
**DRIVESYSTEMS**