

# DRIVE SYSTEMS FOR PORT LOGISTICS

CASE STUDY: WUHAN IRON AND STEEL



**Bulk Material Handling**  
In the Zhejiang Province, China



**Travel and Conveyor Drives**  
For stacker reclaimers & gantry cranes



**Moving Massive Loads**  
Loading & unloading container ships



**Low Maintenance**  
Extremely durable operation



**NORD Helical-Bevel Gearmotors**  
Powerful right-angle units



## PROJECT CHALLENGE



**Port Logistics**  
Loading &  
conveying facilities



**Geared Motors**  
Helical-bevel  
gear units

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

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

depth of 27 m, where huge ships carrying up to 300,000 dwt are able to arrive, and several other berths that load 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 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 – provided that 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 distance away. All of the drive solutions for the loading and unloading facilities at the Wugang port had to be designed in order 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 of the largest companies in its industry worldwide. Based in Wuhan, a city of 4 million on the banks of the Yangtze, the Group also produces more than 30 million tons 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 many 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 include a total of 72 three-stage helical-bevel gear units. Two of the 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 and position them as needed to access the various areas of the operation. Another 72 three-stage helical-bevel gear units are installed in three bucket-wheel stacker-reclaimers (500 t/h) used for the ore stockyards within the port.

**Rugged in every way** – All gear units in the Wugang facilities feature heavy-duty housings that acclimate 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 protective coatings are applied to provide protection against the salty atmosphere. Since all gear units feature a single-cast housing, they are both 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, such as 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 units and help ensure they achieve an extended lifespan.

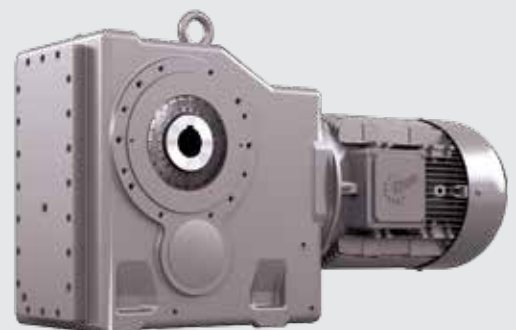


**Record Holders –** Wugang port owns the largest civil loading systems currently in use throughout China.

## 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.
- A total of 72 three-stage helical bevel geared motors.





## MORE REFERENCES AND CASE STUDIES MAY BE FOUND AT :

- [www.nord.com/references](http://www.nord.com/references)



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