

SERVICE
MACHINE TOOL SERVICE
LIGHT LIFTING
INDUSTRIAL CRANES
PROCESS CRANES
PORT CRANES
LIFT TRUCKS
YARD IT

KONECRANES®
Lifting Businesses™

Intelligent Lifting for Competitive Steel

STEEL INDUSTRY SOLUTIONS



KONECRANES REDEFINES LIFTING FOR THE GLOBAL STEEL INDUSTRY

Konecranes is more than the world leader in process duty cranes. We are a company of specialists with the ability to solve virtually any material handling problem in any industry. We have supplied over 1,000 process duty cranes to the steel industry worldwide, and maintain contract service agreements with over 100 customers with maintenance contract. For both new construction and retrofit, we operate as your material handling partner, working alongside your team to ensure that both your immediate and long-term goals are met. We understand the harsh environment of the steel making process, so we engineer our lifting and control equipment to meet the challenges of flame heat and high temperatures. Konecranes total crane systems stand up to the toughest operating conditions in the worst environments—hot, dusty, wet, corrosive, or explosive. If it's been done, chances are, it's been done by Konecranes.

Designing the right lifting equipment for your mill is only part of the story. Our service and engineering team operate on the front lines of productivity all over the world, meeting tough end-user demands for increased uptime, enhanced safety, better reliability, and the lowest possible cost over the lifetime of your equipment. Our service network is the world's largest, operating from more than 370 locations worldwide. We lead the lifting industry in developing preventive and predictive maintenance strategies that maximize the productivity of uptime and minimize the cost of downtime in your operation. You could say that we do more than just lift steel—we help lift the steel business to new levels of productivity.

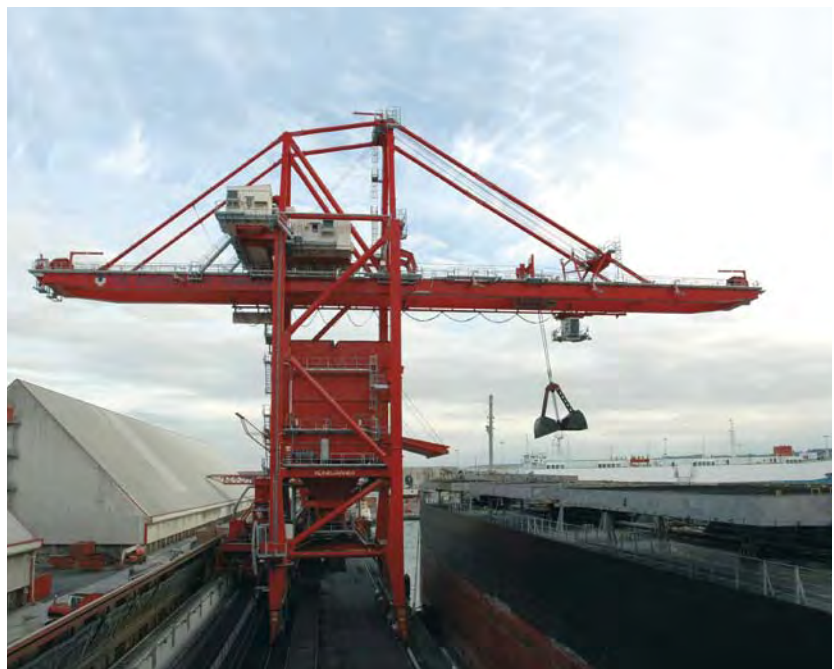
Building Benchmark Cranes for the Steel Business

As the world once again focuses on the economics of manufacturing steel, Konecranes innovative steel mill cranes have helped pioneer and shape developments in steelmaking today. Facilities have become more cost-effective to build and operate by utilizing the Konecranes single-crane solutions for charge, ladle, billet, and maintenance cranes. Redundant features allow a single crane to do the job of two, making backup cranes obsolete. This approach can significantly reduce the length of the runway and the overall footprint of the facility, in some cases as much as 30 percent.

Konecranes operates crane manufacturing plants all over the world, sharing global sourcing and engineering from a massive database of proven solutions. The Konecranes worldwide organization of plants and service outlets allows us to build cranes close to our customers. Your local service group can be involved from planning and installation throughout the entire life cycle of the equipment.

There's a lot to know about Konecranes steel mill crane technology. At Konecranes, we help your company maintain the competitive edge.





PROVEN SOLUTIONS FOR EVERY STAGE OF THE STEEL- MAKING PROCESS

Ladle Crane

As this is usually the only crane in a steel mill that can perform ladle handling, the ladle crane's reliability is of paramount importance. Safety is also a key issue as the ladle crane is used to transport molten metal. Konecranes takes these safety and reliability issues very seriously. We design features into ladle cranes centered around redundancy of systems, ease of maintenance, and precise control. Konecranes patented load control systems ensure smooth and safe handling of the ladle. Semi automation helps guide the operator in precise placement and safe transport of the ladle along its load path. Konecranes goal is zero unplanned downtime of these critical cranes, and we partner with our customers to develop maintenance-friendly features.

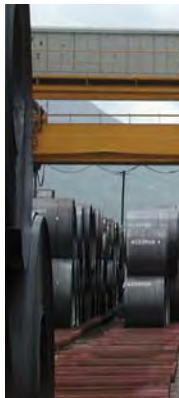
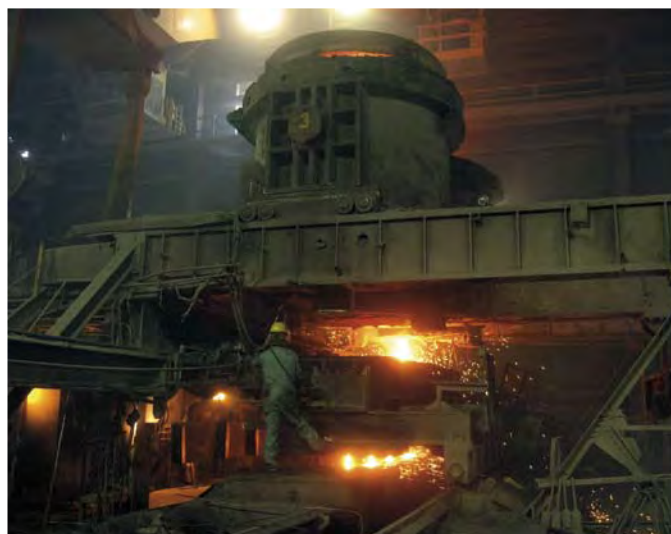
Charge Crane

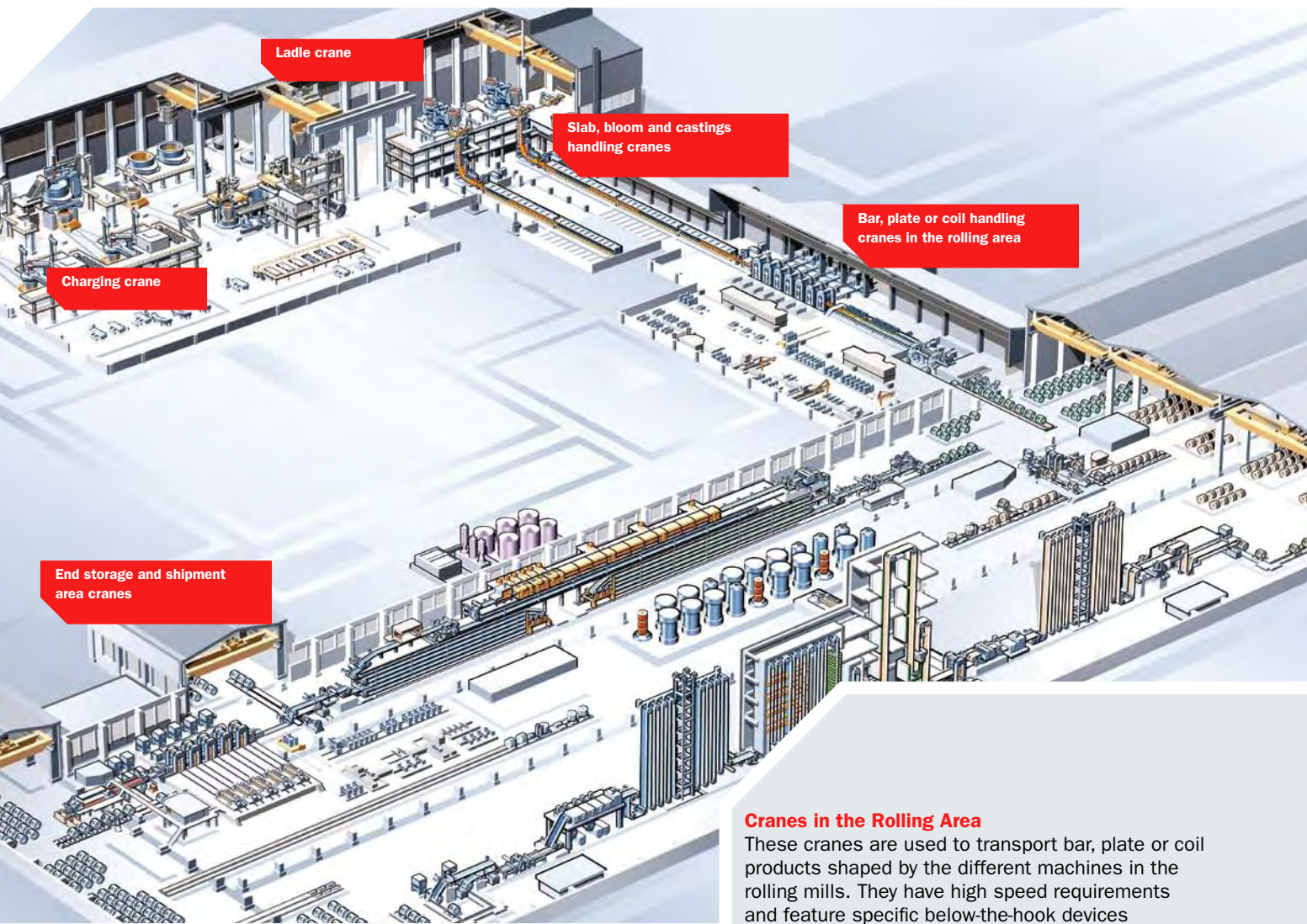
Again, this is a critical crane in the steel mill. The charging crane operates not only in a dusty environment but a very hot one. Temperatures often exceed +70°C due to the heat emitted from the furnace. Charge cranes are shielded from the flames, and are designed to operate in high ambient heat as well as the brief, intense heat of the charge itself. Konecranes also includes features to minimize buildup of dust and debris on the crane.

Charge cranes can be designed to include a higher lifting capacity for infrequent maintenance tasks such as lifting the furnace shell. Since the charge crane is sometimes used as a backup for the ladle crane, Konecranes approach duplicates as many components as possible for a high commonality of spares.

Shipping Area Cranes

These high-production, heavy-duty cranes handle 100 percent of the product being shipped to customers, so speed, performance, and reliability are a high priority. Konecranes independent traveling cabs are an important innovation for improving throughput. They help mills manage inventory by giving the operator a superior view of the storage area and the positioning flexibility to easily transfer steel products to trucks or rail cars. These tasks can also be semi or fully automated with operator-assist technologies such as AutoPilot or DynAPilot.





Cranes in the Rolling Area

These cranes are used to transport bar, plate or coil products shaped by the different machines in the rolling mills. They have high speed requirements and feature specific below-the-hook devices designed for the products handled. These cranes may also be used to maintain the rolling mill equipment. Konecranes can offer specific design and control solutions for versatile dual purpose cranes: high capacity, lower speed for rolling mill maintenance, and lower capacity, higher speed for production.

Slab and Billet Handling Cranes

These heavy-duty cranes feed the rolling mill and are therefore critical to its operation. Sometimes they incorporate a rotating trolley in order to position the product correctly in relationship to the conveyor. Slab and billet handling cranes must be able to handle radiant heat from the product. These are high production cranes with high speed requirements. Konecranes DynAPilot load control is used for smooth, accurate positioning of the load and assists the operator to maximize throughput.

Bar, Plate, or Coil Handling Cranes in the Rolling Area

The cranes are used to perform material transport between different machines in the rolling mills, as well as turning of the pieces. High speeds and specific load handling devices are required. The load handling devices must be able to withstand the heat emission of the load.



THE ONLY LIFTING PARTNER YOU WILL EVER NEED

Each lifting application in a steel mill presents its own challenges and unique environment.

Beginning with bulk unloading, scrap yard cranes, and charging cranes, the stakes increase with high-capacity ladle cranes transporting molten metal. Billet, plate, or coil handling cranes in the rolling area must also be able to handle high heat and new automated processes for accelerated water-cooling. Just-in-time delivery requires shipping-area cranes that perform at high speeds with excellent reliability. At Konecranes, we take a total design approach, with the goal of eliminating traditional steel mill crane maintenance problems—dirt, heat, machinery access, and limited time for maintenance.

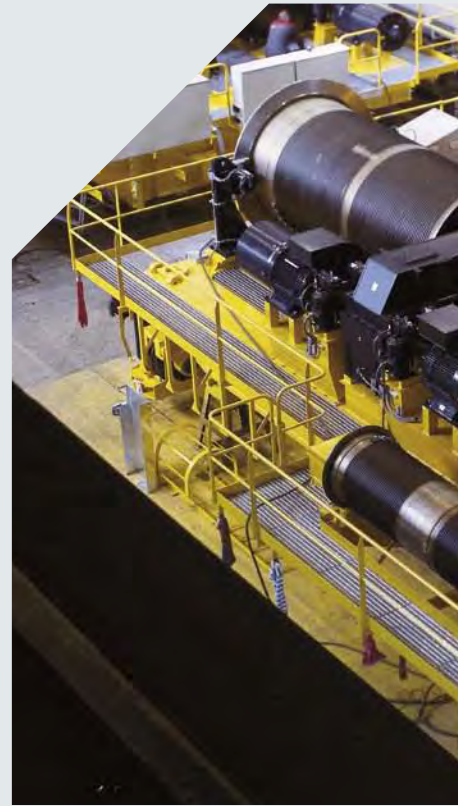
AC Power and Cutting-Edge Software

Konecranes was the first to pioneer high capacity, hot metal cranes featuring AC variable frequency controls which offer substantial maintenance savings and reduction in downtime. A key design feature is an air-conditioned control house. This area protects sophisticated control systems and provides a safe, heat-shielded, and filtered-air environment to perform maintenance work. The AC control environment with PLC interface allows use of the Konecranes proprietary Load-Handling Technologies: DynATrak, for smooth and accurate bridge travel; and DynAPilot, which controls load sway. DynAReg, our regenerative network braking system, captures electrical power created by

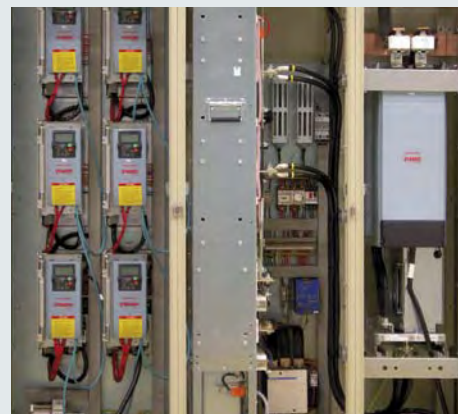
braking forces and returns it to the electrical grid. DynAReg eliminates the need for external braking resistors, a major maintenance item on ladle and charge cranes which operate in a dust-intensive environment. Together, these technologies improve performance and mill economics while reducing maintenance expense and downtime.

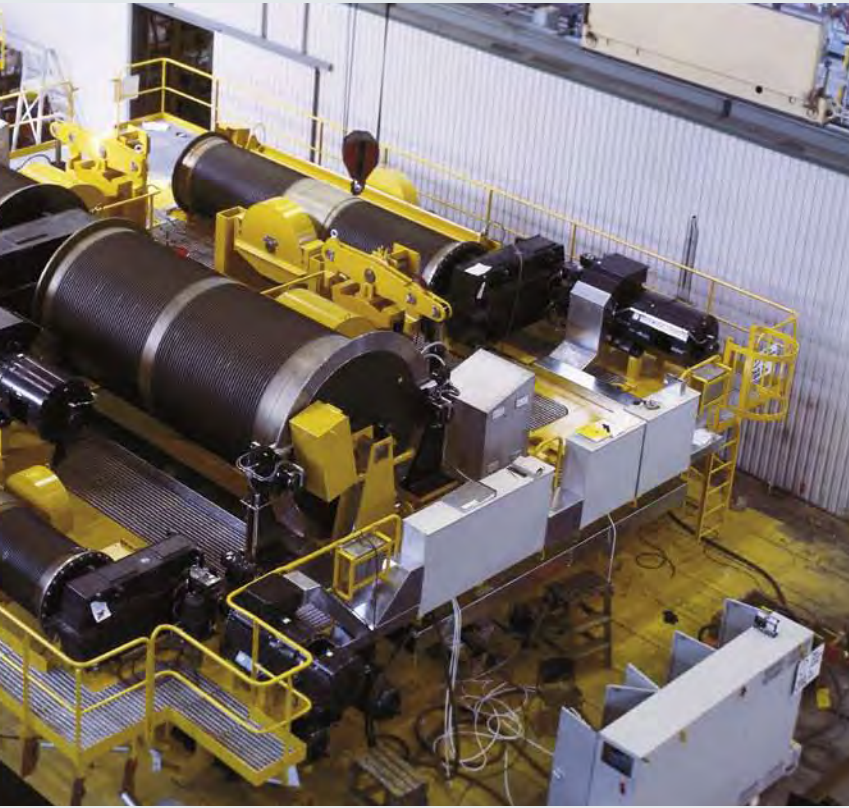
Advanced Diagnostics and Crane Monitoring

The protected control house also houses optional systems that fine-tune crane performance for greater throughput. With Konecranes optional Crane Monitoring System, up to four years of operating history can be stored and analyzed. This system also houses all of the crane drawings, schematics and maintenance documents. RemoteExpert, Konecranes advanced diagnostic system, allows our engineers to trouble-shoot your equipment from across the street, or across the world. The control house is also where you will find wired-in spare inverters that can be activated at the flip of a switch. The spare inverters are part of Konecranes redundant approach to crane design that enables a single crane for each function to operate with no unplanned downtime.



Process Data		
Hoist B1		
PD1 Motor Speed	-4200	10000=Motor synch. sp
PD2 Motor Current	3285	10000=Motor nominal
PD3 Torque 2	-140	10000=Motor nominal
PD4 Unit Temp.	24	1=1°C
PD5 Encoder Pos. m	27	1=1m
PD6 Encoder Pos. mm	876	1=1mm
PD7 D/A Board Channel 3	0	
PD8 Act Fault Code 1+2	0	Fault1, Fault2





Automation to Improve Lifting Economics

Today, many of Konecranes steel mill cranes are being built with semi- or full-automation capability. The AutoPilot option can improve throughput by removing the operator from tasks that require repetitive motions. Benefits include more precise handling, reduced component wear, and greater availability.

Konecranes Quality Standards Prevent Downtime

Konecranes steel making cranes are always designed at the high-end of the duty rating scale. The minimum design criteria used by Konecranes is classified as FEMX under FEM standards, ISO and British Standards as M8 and Class "F" Severe Duty by CMAA. Built in an ISO 9001-certified factory environment, the Konecranes crane components are the highest quality available for steel mill applications. Our gears and wheels are hardened and ground to DIN 6/AGMA Class 11 standards to offer unsurpassed wear life—extended warranties are available on these items in some markets. Cranes are engineered for a high commonality of spare parts, which lowers the overall number of spares customers need to keep on-hand. A carefully chosen spares package can protect your operation from the high cost of downtime—which is often far more significant than the cost of the spares.

Lowest Ownership Cost

Let us show you how the synergies of using the Konecranes integrated family of products and services over the life of your crane can greatly enhance lifetime reliability and lower your cost of ownership.



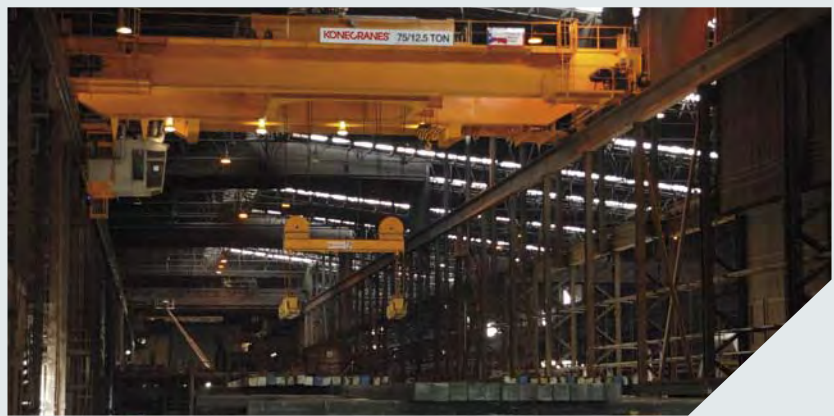
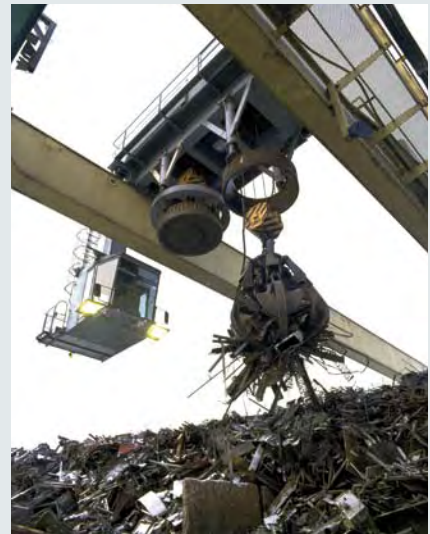
VERSATILE APPLICATIONS, GLOBAL REFERENCES

Konecranes is proud to serve the steel industry around the world. Below are a few of our valued customers.

- > APM, Monterrey
- > Arcelor
- > AvestaPolarit Stainless
- > Bao Steel
- > Bluescope Steel
- > Bhushan Steel
- > California Steel
- > Celsa
- > CMC Steel
- > Corus UK Ltd.
- > Essar Steel
- > Hylsa
- > Imatra Steel
- > Ipsco Steel
- > KRUPP Stainless Steel
- > Magnitogorsk Iron and Steel Works
- > Megasteel
- > Mittal
- > Mobarakeh Steel
- > Nucor Steel
- > Outokumpu Stainless
- > Qassco
- > Rautaruukki Steel
- > Salzgitter Flachstahl
- > SDN BHD
- > SeverCorr
- > Siam Yamato Steel
- > Sonasid Steel
- > SSAB
- > Ternium
- > Thyssen Krupp Steel
- > Vallourec & Mannesmann



Below: Slab storage crane. Right: Coil handling crane.



Middle left: Plate handling crane. Middle right: Scrap crane. Below: Billet handling crane.

UNIQUE LIFTING SOLUTIONS FOR THE HEAVY INDUSTRY

Konecranes Liftrucks serve manufacturing and process industries, shipyards, and harbours with productivity-enhancing lifting solutions and services. We are familiar with the high demands that the industry places on strength, durability, and reliability. As a consequence, we have minimized the time that is needed for essential maintenance and servicing. At Konecranes Liftrucks we also build our liftrucks to cope with long and arduous shifts in demanding environments. These are some of the factors that make Konecranes Liftrucks a leading manufacturer in terms of quality, productivity, and life cycle cost. We offer two complete lines of trucks.

Fork Lift Trucks carry one of the market's most extensive range: between 10 and 60 tons. In addition, few competitors can match our selection of the biggest machines.

Strong lift masts in various configurations, adapted fork carriages and heavy duty forks to make your tough work as safe and productive as possible. We deliver the required solution, that can be multi-function with forks, magnets and grab units for the same truck.

Reach Stackers are designed for handling of containers, trailers and heavy steel products, the stackers can be multi-functional or dedicated, depending local requirements. The reach stackers have lift capacity 30-50 tons in first row, boom reach stroke 5-7 meters, rotation 300 degrees and sideshift \pm 500 mm or more.

Special attachments: Our trucks can be equipped with various dedicated lift attachments.

- > Slab grabs (25-50 tons)
- > Plate jaw grabs (25-50 tons)
- > Coil C-hooks (25-50 tons)
- > Coil jaw grabs (25-50 tons)
- > Extra wide fork carriages (4-10 m wide)
- > Magnet slab/plate lifters (25-50 tons)
- > Hydraulic "integral" generator or Diesel "on-board" generator

Steel wire truck (20 T).



Middle: Plate stacker (45 T).
Below: Slab truck (52 T).

Middle: Coil stacker (40 T).
Below: Bloom grab truck (20 T).

DEPENDABLE CRANE SERVICE FOR THE STEEL INDUSTRY

Below: Slab stacker (45 T).
Middle: Hot slab truck (60 T).



Middle: Steel magnet truck (52 T).
Below: Double coil truck (32 T).



Konecranes maintains more cranes worldwide than any other company. As a global leader in overhead lifting equipment, Konecranes offers world-class service on all makes and models of overhead cranes. From installations and repairs, to inspections and modernization programs, Konecranes has the knowledge, industry expertise, and solutions required to keep your equipment running effectively and efficiently.

Konecranes is focused on lowering costs through preventive maintenance and improving performance through better technology. By applying our unparalleled knowledge, advanced technology, and responsive service, we develop solutions that you can trust. Our 3,100 trained technicians are on-call around the clock. Each technician is certified by our Crane Technician Apprenticeship Program™.

The Konecranes service commitment includes a comprehensive offering for all makes and models of heavy-lifting equipment, including:

- > Inspections
- > Maintenance programs
- > Predictive maintenance agreements
- > Preventative repairs and on-calls
- > Modernizations
- > Repairs and on-calls
- > Installations
- > Spare parts
- > Consulting and training services
- > Operator training
- > 24-hour response
- > Alignments
- > Crane Reliability Surveys™
- > Cumulative fatigue inspections
- > MAINMAN™ Program
- > MYCRANE.COM™ Maintenance Reporting



SERVICE



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LIFT
TRUCKS




YARD IT



®

Konecranes is a world-leading group of Lifting Businesses™, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity-enhancing lifting solutions as well as services for lifting equipment and machine tools of all makes. In 2008, Group sales totaled EUR 2,103 million. The Group has 9,900 employees, in 485 locations in 43 countries. Konecranes is listed on the NASDAQ OMX Helsinki Ltd (symbol: KCR1V).

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