

INDUSTRIAL CRANES
NUCLEAR CRANES
PORT CRANES
HEAVY-DUTY LIFT TRUCKS
SERVICE
MACHINE TOOL SERVICE

KONECRANES®
Lifting Businesses™

Nuclear Material Handling **OVER A HALF-CENTURY OF NUCLEAR EXPERIENCE**



WE NEVER LET THE CUSTOMER DOWN

We know nuclear
The nuclear power industry depends on equipment that is designed to operate safely, reliably, and in compliance with stringent quality and regulatory requirements. Konecranes can expertly provide all nuclear material handling equipment, services, and equipment modernizations needed in nuclear facilities. We have over 100 engineers dedicated exclusively to nuclear applications. Our half-century of nuclear experience includes supplying a complete range of heavy capacity and long span nuclear polar cranes, over 150 nuclear fuel transfer machines, and many other types of nuclear lifting equipment.

Take no chances
Konecranes maintains an active nuclear quality control program that has been audited and approved in compliance with almost every relevant worldwide regulatory standard. We meet stringent nuclear regulatory requirements and are members of key regulatory and advisory groups, such as the ASME NOG-1 committee, which set standards for the design of lifting equipment operating at nuclear facilities. Our nuclear quality control program implements stringent quality, testing, and documentation requirements and can be customized to meet local standards. It is specifically designed to safeguard each phase of your project’s engineering, manufacturing, and site activities.

Track record of success
Konecranes has provided equipment and services to numerous nuclear power generation facilities worldwide. In fact, in partnership with our worldwide network of lifting businesses, we originally developed many key nuclear material handling designs and concepts. For example, Konecranes was heavily involved in the original development of single failure proof cranes for the nuclear industry, which are used to lift loads for critical applications.

In every phase of your process
We are one of the few suppliers in the material handling business that has the capability to complete engineering analyses in-house with our own engineering personnel. Our staff includes engineers in every discipline applicable to nuclear material handling, including specialized areas such as seismic analysis, safety analysis, and regulatory compliance.

NOT JUST LIFTING THINGS, BUT ENTIRE BUSINESSES

Konecranes is an industry-leading group of lifting businesses that offers a complete range of advanced lifting solutions to many different industries worldwide. We are committed to providing you with specialized lifting equipment and services that increase the value and effectiveness of your business.

When you choose Konecranes, you acquire a unique source of global experience and knowledge combined with local know-how to empower your lifting requirements.

SAFETY-RELATED EQUIPMENT

- 1 Polar Crane**
Unique multipurpose design with a longer life cycle and enhanced performance.
- 2 Cask transporter**
Redundant travel motors, foam filled aircraft quality tires and user-friendly controls.
- 3 Fuel handling equipment**
SUPERSAFE™ patented single failure proof technology makes accidental drops almost impossible.
- 4 Turbine crane**
Advanced safety features include overload protection and fail-safe operator controls.
- 5 Cask crane**
3rd generation design based on over 50 years of operating history.

STANDARDIZED EQUIPMENT

- 6 SMARTON® crane**
Innovative and intelligent crane capable of lifting loads from 30 tons to over 500 tons.
- 7 Jib crane**
Weight-efficient design, easy to install.
- 8 CXT trolley**
Designed to meet a wide range of duty cycles, adaptable to many applications.

SERVICE

- 9 Service and outage support**
We service all makes and models of material handling equipment. Our outage support includes containment work.

WE ALSO PROVIDE EQUIPMENT NOT SEEN IN THIS PICTURE

- Maintenance cranes
- Hoists

CONFIDENCE FROM EXPERIENCE

There are **436** nuclear plants globally and Konecranes products are in more than **60%** of those facilities.

This publication is for general informational purposes only. Konecranes reserves the right at any time, without notice, to alter or discontinue the products and/or specifications referenced herein. This publication creates no warranty on the part of Konecranes, express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose.

OUR KNOWLEDGE SETS US APART

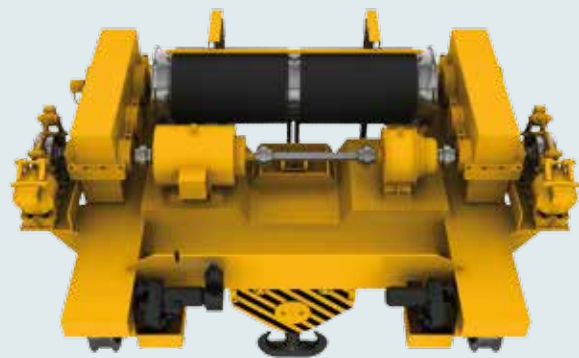
At Konecranes, we provide proven, well-engineered technologies. Our customers benefit from our half-century of experience in the nuclear industry, dating back to the construction of the first generation of nuclear power plants.

Single failure proof technology

Konecranes SUPERSAFE™ single failure proof cranes provide an unprecedented level of safety for the most critical nuclear operations, such as nuclear fuel handling. These highly specialized cranes are designed to prevent load drop during the occurrence of any single failure of the lifting system.

Our latest 3rd generation single failure proof design is founded on solid experience gained over decades of machine design, field installations and service support. It meets the most stringent nuclear regulatory standards, such as ASME NOG-1 and NUREG-0554. No other crane company can point to the depth of experience in critical Single Failure Proof design that exists at Konecranes.

To provide our customers the best possible single failure proof design we take extraordinary measures to understand how our equipment will perform over long periods of time. As an example, our single failure proof design has been tested under severe and rigorous industrial operating conditions simulating more than 40 years of normal nuclear operation.



Time-proven technology provides safety where it really matters.

Konecranes Nuclear Engineering Team has obtained more than 20 patents and industry-leading designs.



ANIMATED ASSEMBLY

RINGHALS, GOTHENBURG, SWEDEN

Konecranes evaluated the feasibility to modernize twelve nuclear cranes in Ringhals power plant in Gothenburg, Sweden. The cranes had been delivered by Konecranes about 30 years earlier when the nuclear plant was built.

Modernization for twelve

The contract covered the modernization of reactor cranes, turbine hall cranes, polar cranes, and the fuel building crane, including replacement of the existing trolleys and electrical control systems.

Ringhals' contract with Konecranes included a turnkey delivery. Konecranes' work scope included design and engineering, manufacturing of components, documentation, factory testing, assembling and Site Acceptance Tests. Because of the nature and size of the project, very close co-operation was required between Konecranes, the customer and the certification body.

Assembly in eight days

Thorough tests were carried out before the delivery of each trolley and new motor controls. Konecranes built a comprehensive test facility, which included a 150-ton test rack with adjustable test loads.

Due to Ringhals' tight schedules, Konecranes had only eight days for the most demanding assembly of the reactor building polar cranes.

Complete installation in three consecutive shifts

The extremely tight schedule was evaluated by using a 3D animation model to preview the entire installation sequence. The installation was completed around the clock in three shifts in compliance with stringent regulatory requirements.



“Konecranes came up with a new solution based on our current situation. It was an innovative idea, and they presented the model that showed the outcome.”

Mark Fitzsimmons,
Manager of plant operations, Principle engineer

A HEAVY CRANE IN A NEAR-IMPOSSIBLE PLACE

CONSTELLATION ENERGY, NEW YORK, USA

Constellation's plant needed to upgrade its ability to handle spent nuclear fuel that was kept in dry storage casks. A 125-ton single failure proof crane was to be delivered on turnkey basis to accommodate their needs, but the building was not originally designed to support the loads of the new crane system.

Assessing the challenges

The Konecranes technical team assigned to this project worked closely with the customer and regulatory personnel to assess various potential designs and to address the high-level technical challenges. The team also provided detailed reports to verify and validate that all project requirements could be achieved.

Easing the stress

As a result of this detailed analysis, Konecranes developed a specialized design for the new crane that did not impose any additional load on the existing building. The specialized crane system designed by Konecranes used a unique rolling bridge telescoping boom system that transferred the crane load's stress to a location outside of the building.

No expensive modifications, just innovation

The innovative boom system allowed the crane to make the critical 125-ton lifts that were required inside the building, without the need for extensive – and expensive – structural analysis and building modifications.

The 125-ton crane provided by Konecranes is possibly the most technologically innovative single failure proof crane ever built for the nuclear industry. This unique crane system is now utilized by our client to handle nuclear dry storage casks safely, efficiently and reliably.



INDUSTRIAL
CRANES



NUCLEAR
CRANES



PORT
CRANES



HEAVY-DUTY
LIFT TRUCKS




SERVICE



MACHINE
TOOL
SERVICE



Konecranes is a world-leading group of Lifting Businesses™ offering lifting equipment and services that improve productivity in a wide variety of industries. The company is listed on NASDAQ OMX Helsinki Ltd (symbol: KCR1V). With over 12,000 employees at more than 600 locations in almost 50 countries we have the resources, technology and determination to deliver on the promise of Lifting Businesses™.

© 2013 Konecranes. All rights reserved. 'Konecranes', 'Lifting Businesses' and  are registered trademarks of Konecranes.

