

Hydro, Karmøy plant, Norway

RELIABLE INFORMATION ABOUT CRANE PERFORMANCE AND RELIABILITY

Hydro Group is Europe's largest producer of aluminum extrusions and one of the world's largest producers of aluminum metal. Hydro employs 22,000 people in more than 40 countries. In Norway, Hydro has many important production sites as well as the company's global headquarters in Oslo. The Karmøy plant produces primary aluminum, rolled aluminum strip and extruded aluminum. The products are electrolysis (production volume nearly 200K in 2011), extrusion ingot, wire, rolled and extruded products.



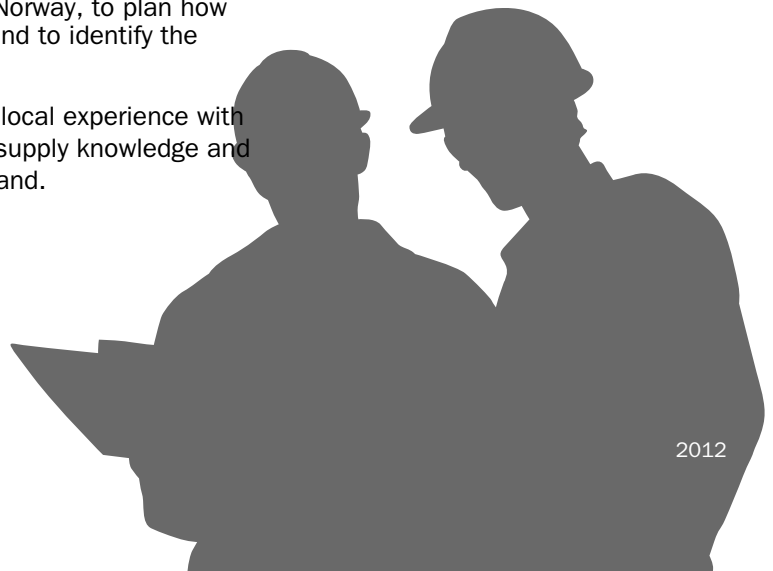
MAINTENANCE PLAN FOR THE FUTURE

Hydro Karmøy plant has 10 Electric Overhead Travelling (EOT) cranes which are important in the production of aluminum metal. The first generation cranes, five in total, were built in 1981 and are now approaching the end of their design life. A 20-ton double girder EOT crane works 24 hours per day and 350 days per year.

If one crane fails, it blocks the other cranes. This would have a huge impact on production.

Hydro takes preventive maintenance very seriously. They contacted **Kjetil West**, Konecranes local branch manager in Norway, to plan how their cranes' current condition could be surveyed and to identify the possible needs for crane modernization.

Hydro appreciated the well presented survey plan, local experience with the customer's people and processes, as well as supply knowledge and support provided by Konecranes specialists in Finland.





CUSTOMIZED CRANE RELIABILITY SURVEY (CRS)

The Crane Reliability Survey was conducted according to the customer needs. The CRS included the following modules: Extensive Crane Inspection, Crane Info, Service Life, Gear Analysis modules and structure analysis.



The inspection for the crane steel structure included the following:

- Video endoscope inspection of all gearboxes
- Visual inspection of rope drum and electrical components
- Endoscope inspection of the coupling of the motors
- Measurement of the brake wheels

The purpose of the analysis was to define the current lifetime status of the cranes, and to forecast the remaining lifetime taking into account safety issues and operational reliability.

After the first survey was done in 2011, Hydro visited Konecranes' Hyvinkää factory in Finland for a presentation of the first reports. They also met crane survey specialists and the global Modernization team. Hydro valued the smooth and fast survey process – the CRS was completed within one week. The inspection was done during daylight hours and reporting was done in the local branch office in the afternoon.

IMPROVED CRANE PERFORMANCE AND RELIABILITY

The CRS report provides a trustworthy roadmap for improving crane performance and reliability.

Based on the report it was detected, for example, that the remaining lifetime of the hoisting gears was only 10 percent. Continued use of cranes with some gearbox failures might have resulted in catastrophic equipment failure. It was recommended by Konecranes CRS team to replace 8 hoisting gearboxes with new ones in 7 of the 10 cranes.

What did the customer say?

"Our maintenance action plan includes the CRS report. We have 3 cranes built in 1986 and 2 cranes built in 1997. The plan is to inspect these cranes too. We have good cooperation with Kjetil West and his local team in Norway. Every job we have done has been a good experience", says **Rune Ullensvang**, Maintenance Manager at Hydro Karmøy.



INDUSTRIAL CRANES: Konecranes is the industry benchmark for safety, reliability, cost saving and productivity-enhancing innovation. Standard and heavy-duty cranes include electric overhead cranes up to 1,000+ tons and explosion-proof cranes and components. Workstation lifting systems feature enhanced material flow with ceiling-mounted monorails and free standing cranes systems, jib cranes and manual lifting products and electric chain hoist up to 7500 kg. Konecranes provides any lifting application in any industry.



NUCLEAR CRANES: With nearly a half century of nuclear crane experience Konecranes is the most seasoned supplier in the industry. Our wide range of products are designed specifically for operation in nuclear applications and our quality control program ensures that each nuclear crane and component is designed, manufactured and installed to the demanding standards of the nuclear industry.



PORT AND PORTAL CRANES & SERVICE: Konecranes designs, manufactures, and delivers large cranes for ports, container terminals, intermodal terminals, shipyards and bulk material handling. We also provide expert maintenance and after-sale support as well as complete crane service worldwide for all types and makes of harbor and shipyard cranes.



HEAVY-DUTY LIFT TRUCKS: Konecranes is a world-leading manufacturer of lift trucks with lifting capacities of 10 to 80 tons. For over 50 years Konecranes has designed and customized trucks for the most demanding applications and continues to offer a wide range of trucks for customers in many different industries. Products include forklifts, reach stackers, empty container handlers, gantry trucks/toploaders.



CRANE SERVICE: Konecranes provides an extensive range of services and unique capabilities dedicated to improving safety and helping your business decrease the cost of downtime and increase the productivity of uptime. We can service any make of crane and hoist. With a global network of maintenance professionals operating from more than 570 service depots around the world, we repair, inspect, modernize and maintain more cranes worldwide than any other company.



MACHINE TOOL SERVICE: As a global leader in machine tool maintenance service, Konecranes offers world-class service on all makes and models of machine tool equipment. From maintenance programs to rebuild, remanufacture and retrofit, we have the knowledge and expertise required to keep your equipment running effectively and efficiently.



PARTS: Konecranes is the OEM for many of the best known brands of hoists and cranes as well as the largest single source supplier for parts of all makes. We have the most extensive inventory in the industry, as well as dedicated in-house parts manufacturing and extensive reverse engineering services to assist you with obsolete and/or not readily available parts. Our expert technicians are always available to help with field installation and support.