

We would be pleased to send you information on other reference projects on request:

- Europe's largest storage and retrieval machine
Lütkenhaus, Dülmen
- Coil handling crane in the paper industry
SAPPI Alfeld AG, Alfeld
- Chain hoists with 110 m height of lift for wind power stations
REpower, Husum
- Three 51 m cranes in the railway construction
Stadler Rail AG, Switzerland
- Modernisation of three suspension cranes in a hangar
SR Technics Switzerland
- Off-standard hoist for power station
Elsam Kraft A/S, Esbjerg/Denmark
- Overhead monorail for tractor radiator assembly
John Deere, Mannheim
- Five heavy duty cranes in engine production
BMW, Landshut
- Automatic crane for organic substances heating and power station
Pfaffenhofen
- Handling paper reels in five dimensions
Stora Enso, Wolfsheck
- Automatic crane for waste reloading
Waste reloading station, Wörth
- Three suspension cranes with off-standard suspension
African airline
- Modification of listed cranes
Georg Friedrich Barracks, Fritzlär
- Modernisation of blasting cabin
Georg Funk Iron Foundry, Aalen/Germany
- Extra Short Headroom Trolley for Plastics Moulding Shop
Kärcher, Bühlertann

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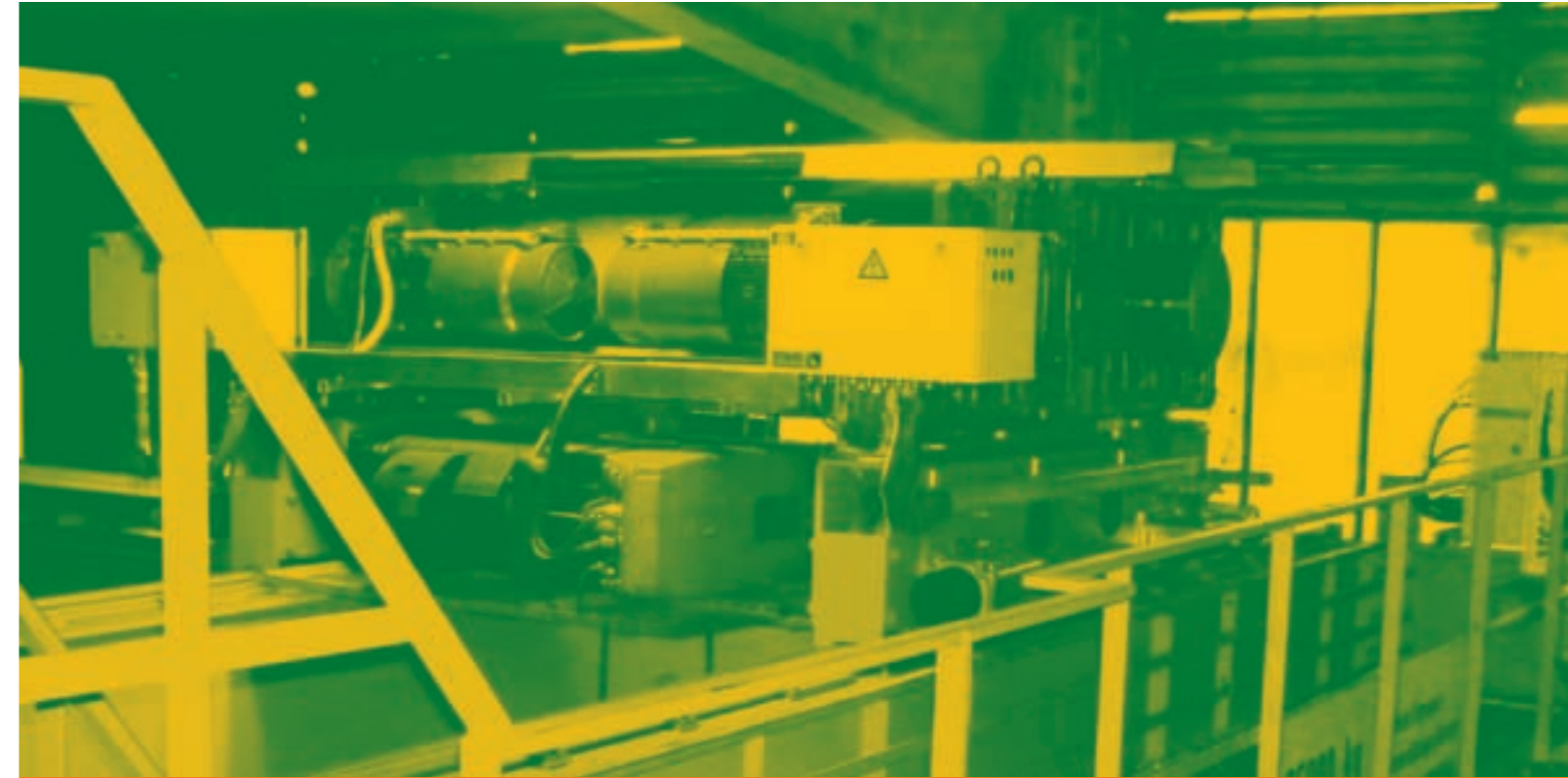
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STAHL CraneSystems _ Crane technology made to measure >>>



35 t Twin Drive Crane for Smelting Plant

Norddeutsche Affinerie AG, Hamburg

Crane type Double girder bridge crane for transporting molten metals _ **S.W.L.** Main hoist 35 t, auxiliary hoist 10 t
Hoisting speed Main hoist 0.5...10m/min, frequency controlled, auxiliary hoist 8/1.3m/min _ **Equipment** Winch designed on twin drive concept (TDC), safety-relevant electronics in category 3, power supply via energy chain, obstacle avoidance control, design for adverse ambient conditions and increased temperatures

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Lifting technology | Drive technology | Control technology

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Maximum requirements for the design of the double girder bridge crane.



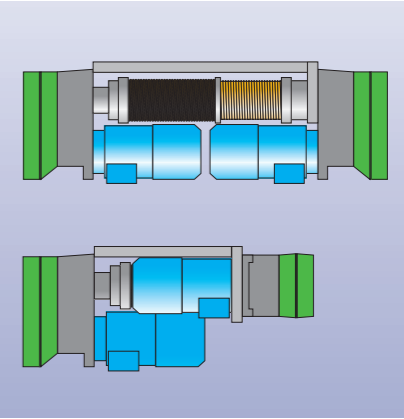
The double girder bridge crane transporting molten metals.



The 35t winch type SHWF with a wire rope hoist type SH as auxiliary hoist in the foreground.



Arrangement of motor-gear assembly for different drum lengths.



The NA Group is the largest copper producer in Europe and an international leader as regards copper recycling. It produces approx. 1 million t copper cathodes and over 1.2 million t copper products per year. The NA Group employs approx. 4,700 persons at 12 plants in 7 European countries. The Group ranks among the world leaders in this sector of industry. The NA Group is orientated towards sustainable growth and value appreciation: the main elements of this strategy are strengthening enterprise, utilising opportunities and interacting responsibly with human beings, resources and the environment.

Starting situation Smelting plants with multiple shift operation require technology ensuring maximum safety and extremely high availability.

A new crane was to be purchased in the context of a new project to increase efficiency. The new crane was to be designed for a considerably higher lifting capacity than the previous one: 35t S.W.L. was required instead of 15t. However when planning the project it quickly became clear that, in order to be able to reach all necessary inspection points, considerably shorter approach dimensions were needed than would be possible with conventional standard hoists. Higher lifting capacity and shorter dimensions

– this sounds like a clear contradiction, however the Sales Office in Kaltenkirchen together with the project planning engineers in the Ettlingen crane factory were able to work out a solution. A further requirement for the crane was that it should be able to transport molten metals. STAHL CraneSystems thus had to design the hoist to meet EN 14492-2 Appendix B. This specifies that hoists must be designed so that if a component in the power flux should fail the load is prevented from dropping.

Realisation The crane designed especially to meet NA's requirements is equipped with various safety features. The new twin drive wire rope hoist is used in conjunction with the necessary condition monitoring systems type SMC 22, SCC 32 and SRC 22. The twin drive concept developed by STAHL CraneSystems meets all requirements for hoists stipulated by DIN EN 14492-2 Appendix B and sets new safety standards over and above this. The robust system is fully enclosed and thus not susceptible to dust and damp. The design of motor and gear is completely redundant, double gear and brake safety is always available. The use of standard components ensures good availability, simple erection and fast service. If a fault should occur (e.g. gear breakage) the load can be lowered using the two manual release brakes. "Retrieving the load" is thus no longer necessary.

The crane, type ZL-A 350/100-9.020 E, is equipped with a 35t winch type SHWF 8200-20 4/2-1 L2 as main hoist and an SH6050-16 2/1 L2 wire rope hoist as auxiliary hoist. The latter is needed to be able to reach components just under the crane runway. The complete electrics are mounted on a gallery next to the furnaces, which noticeably reduces the dimensions of the crane and protects the control from radiant heat. An energy chain is used for the crane and crab power supply. As required by the customer's equipment specifications, frequency inverters are used on all motion axes so that the loads can be moved extremely precisely. Thanks to the radio remote controls, the crane operator can control the system from all positions in the casting plant as required. Set points can be freely programmed for the field-proven 4-step joysticks. STAHL CraneSystems was able to devise a suitable solution for NA's every requirement, including the short approach dimensions, e.g. the cross travel approach dimension of 570 mm, and of course the most important requirement for the safety-critical electronics, safety category 3. The order was placed in October 2007 and included further requirements to ensure safety at work such as access restriction, obstacle avoidance control, additional protective barriers and hinged railings with electric interlock.

Result A 400 t mobile crane was required for erecting the crane system and the roof of the building had to be opened up. In the course of the modernisation work the building supports were reinforced and the whole crane runway replaced. As the modification entailed shutting down this section of the plant, only 6 days were available for completing erection. Teams from the Kaltenkirchen and Berlin branch offices worked 2 shifts and were able to meet the deadline. Afterwards Mr Droste, Manager of the Central Workshops and the Crane Department, complimented the teams on how smoothly the project had been accomplished. The crane system has been operating reliably since commissioning. STAHL CraneSystems had already supplied various wire rope and chain hoists and cranes to NA for the smelting plant production shop in recent years and welcomes the positive business relationship between the two companies.