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- Coil handling crane in the paper industry
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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
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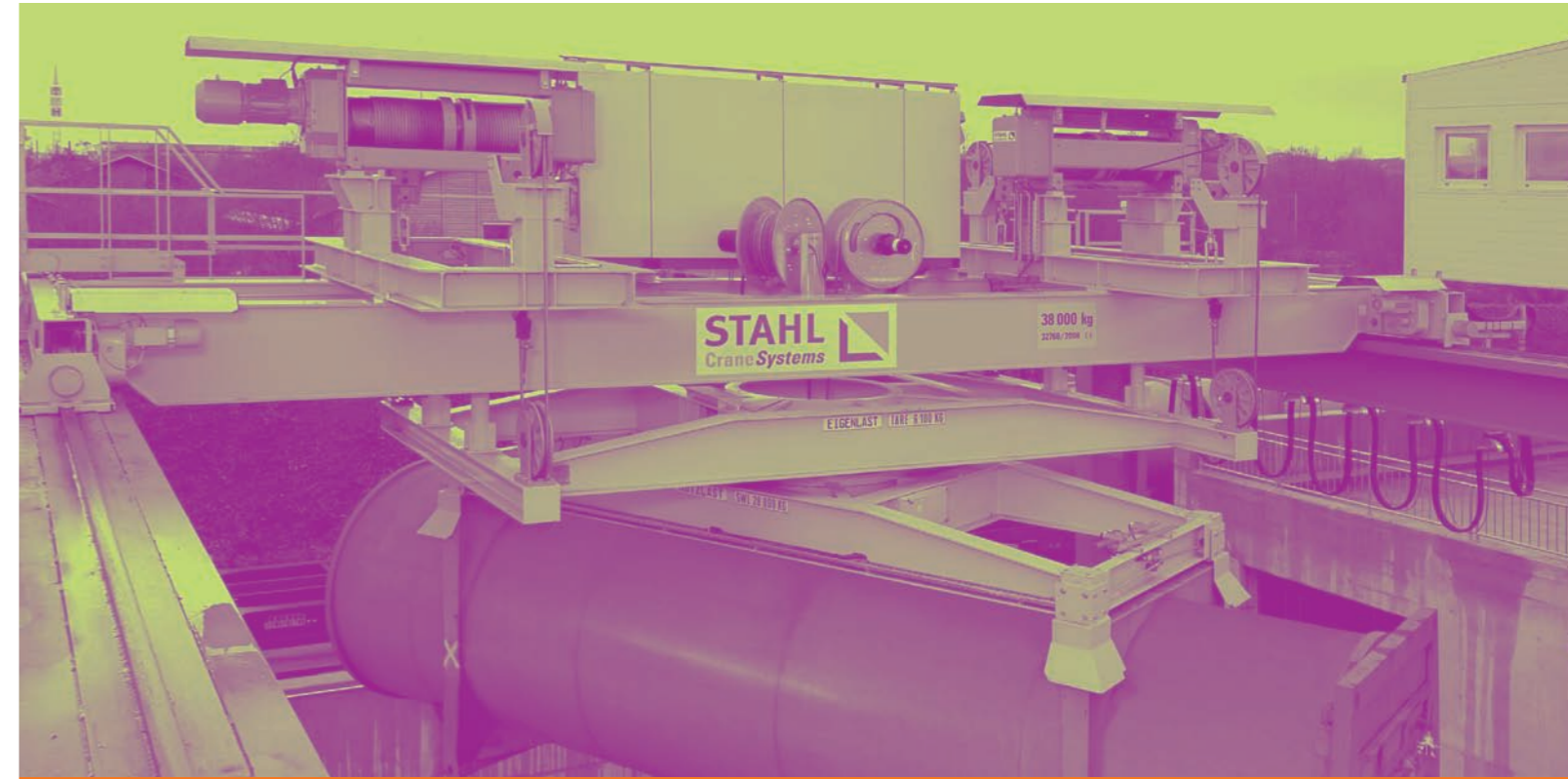
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STAHL CraneSystems _ Crane technology made to measure >>>



Automatic crane for waste reloading

Waste reloading station, Wörth

Type of crane Double girder overhead travelling crane with spreader beam _ **S.W.L.** 38,000 kg (4 x 9,500 kg) _ **Span** 10,900 mm _ **Hoisting speed** 5/0.8 m/min _ **Runway length** 42 m _ **Control** Radio remote control, automatic or manual operation _ **Scope of supply** Double girder overhead travelling crane with four load take-up points, crane runway on supports, automatic control via radio, weather protection package, condition monitoring package

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Lifting technology | Drive technology | Control technology

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The double girder overhead travelling crane was planned, supplied and erected by STAHL CraneSystems complete with spreader beam and crane runway.



A field-proven position encoding system was used for positioning the spreader beam over the containers with millimetre accuracy.



The wire rope hoists of the AS7 series were provided with off-standard features to make them suitable for outdoor use. The standard cast metal rope guides are temperature-resistant.



A total of four load take-up points permits practically swing-free and thus safe transportation.



After being loaded onto the goods wagons standing ready, the containers start their journey to the Schwandorf waste-fired power station.



Road – crane runway – rail: waste transportation in Eastern Bavaria follows this pattern. The ZMS Schwandorf – a special purpose association for residual waste utilisation and responsible for supraregional waste disposal in this area – applies this environmentally friendly and resource conserving concept.

Starting situation Residual waste from neighbouring towns in the Landshut region is delivered by lorry to the reloading station and tipped into a funnel. A hydraulic press compresses the waste to a quarter of its original volume and then presses it into special containers at a pressure of 250 bar. The crane takes up the containers with a spreader beam and transfers them to goods wagons. They are then transported on to the Schwandorf waste-fired power station where the waste is heat treated.

Requirements The waste reloading station is in operation every working day so that high availability and minimum downtimes are essential for cost-effective operation. In Würth, approximately five goods wagons and ten special containers are constantly on the move to ensure that waste disposal is reliable and trouble-free. A crane system with the appropriate characteristics was thus required for loading the containers which may weigh up to 25 tonnes. The demanding requirements specified positioning the crane automatically. The crane was to lift the

containers, transport them to the neighbouring railway siding and lower them onto the goods wagons. Practically swing-free transportation of the huge containers was an important requirement. The crane runway was to be free-standing. Appropriate design features for outdoor use were to be included. In addition, catwalks along crane runway and crane bridge were to be provided to facilitate maintenance work on the system. STAHL CraneSystems' project planning engineers developed a concept for the crane system which the operator found convincing from both a technical and an economic point of view.

Realisation The crane system was designed as a double girder overhead travelling crane with 10,900 mm span. The S.W.L. of 38,000 kg takes into account, in addition to the live load of 25 tonnes, the deadweight of the off-standard spreader beam for lifting the containers. The spreader beam was equipped with a powered slewing drive so that the containers can be rotated horizontally if necessary. The 42 m long crane runway was planned together with the necessary steel supports. It includes a maintenance catwalk over its whole length and an access ladder with a protective cage. Access from the catwalk to the maintenance platform on the crane bridge is via an electrically monitored door which disconnects the crane when it is open and thus permits safe access.

The four-point load take-up required was realised with two electric wire rope hoists from the field-proven AS7 series. Each wire rope hoist is equipped with two load ropes which are suspended from return pulleys on the spreader beam and thus enable the load to be transported without swinging and in a stable position. The integrated SSC load cumulation guarantees maximum safety in operation, calculating and monitoring the suspended load on all four ropes. The rope suspensions are height-adjustable so that the perfectly horizontal position of the spreader beam is always ensured. The SMC Multicontroller offers even greater safety in operation, electronically monitoring the temperature of the motors and braking operations and motor starts, and calculating the remaining service life of the hoists on the basis of loads and operating times.

The hoist motors permit speeds of 5 and 0.8 m/min. With a duty cycle of a total of 60 % DC, the drives are classified in 4 m in compliance with FEM and provide additional power reserves. Crane travel up to 40 m/min between the container storage area and the railway siding is smooth and stepless with frequency inverters of the SFD series controlling the four travel drives of 2.2 kW each. The track guiding system with lateral guide rollers guarantees optimum running qualities.

The cranes are operated centrally from a control room in the building by means of radio remote control, with a choice of manual or

automatic operation. A contact-free electronic position encoding system positions the crane with millimetre accuracy above the stopping points. Thus lifting and setting down the containers is guaranteed to be effortless and time-saving. All the crane system's equipment was fitted out with weatherproof features: from galvanised weather protection plates to high-quality surface treatment, to special light-resistant cables, the crane is perfectly adapted for rugged outdoor operation. Rail cleaners in front of the wheels ensure ice- and snowfree travel on the crane rail. Temperature-resistant rope guides in cast metal are standard features of hoists by STAHL CraneSystems, they ensure perfect lateral guiding of the ropes when lifting and lowering.

Result After the order had been placed, the system was planned by STAHL CraneSystems designers and built in the Ettlingen factory. The crane was delivered in May 2006 and erected on the ready installed runway at the site in Lower Bavaria. Since then, the system has been in operation without downtimes. Preventive maintenance by trained personnel from STAHL CraneSystems branch office in Munich ensures optimum safety in operation.