

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
- 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
- New lifting technology for foundry  
Southern Germany

#### Subsidiaries

Austria  
Steyregg  
Tel +43 732 641111-0  
Fax +43 732 641111-33  
office@stahlcranes.at

China  
Shanghai  
Tel +86 21 62572211  
Fax +86 21 62541907  
victor.low@stahlcranes.cn

France  
Paris  
Tel +33 1 39985060  
Fax +33 1 34111818  
info@stahlcranes.fr

Great Britain  
Birmingham  
Tel +44 121 7676414  
Fax +44 121 7676490  
info@stahlcranes.co.uk

India  
Chennai  
Tel +91 44 43523955  
Fax +91 44 43523957  
anand@stahlcranes.in

Italy  
S. Colombano  
Tel +39 0185 358391  
Fax +39 0185 358219  
info@stahlcranes.it

Netherlands  
Haarlem  
Tel +31 23 5125-220  
Fax +31 23 5125-223  
info@stahlcranes.nl

Portugal  
Lisbon  
Tel +351 21 44471-61  
Fax +351 21 44471-69  
ferrometal@ferrometal.pt

Singapore  
Singapore  
Tel +65 6271-2220  
Fax +65 6377-1555  
sales@stahlcranes.sg

Spain  
Madrid  
Tel +34 91 4840865  
Fax +34 91 4905143  
info@stahlcranes.es

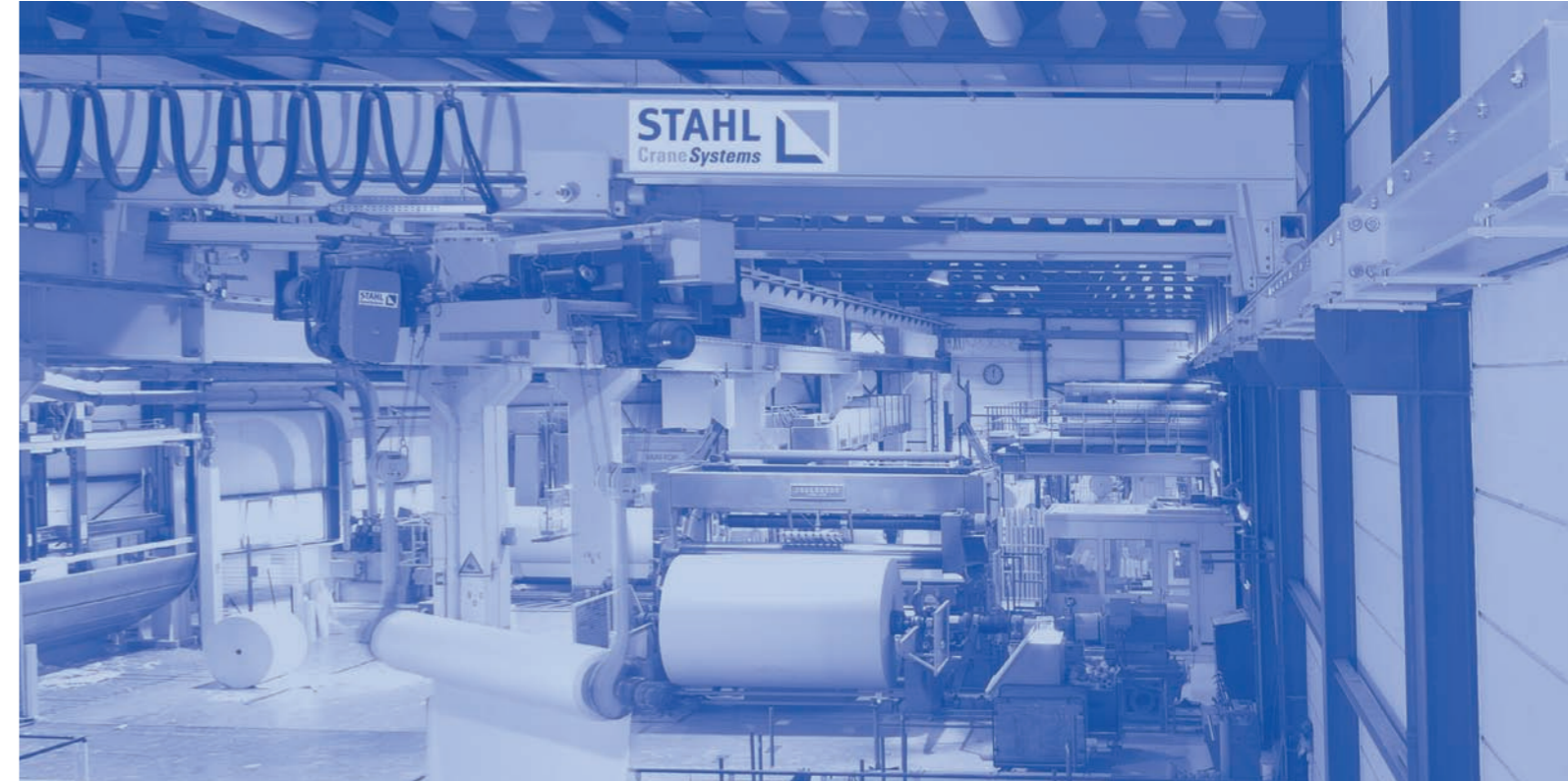
Switzerland  
Däniken  
Tel +41 62 82513-80  
Fax +41 62 82513-81  
info@stahlcranes.ch

United Arab Emirates  
Dubai  
Tel +971 4 8053700  
Fax +971 4 8053701  
info@stahlcranes.ae

USA  
Charleston, SC  
Tel +1 843 767-1951  
Fax +1 843 767-4366  
sales@stahlcranes.us

F-RB-010-EN-03.08-vis visuell.de

STAHL CraneSystems \_ Crane technology made to measure >>>



### Handling paper reels in five dimensions

Stora Enso, Wolfscheck/Germany

**Crane type** Double girder overhead travelling crane for handling paper reels \_ **S.W.L.** 2x9,000 kg \_ **Span** 11.0 m

**Hoisting speed** 8/1.3 m/min \_ **Equipment** Radio remote control, rope drive with two independently moving load hooks, protective circuits for avoiding obstacles and neighbouring cranes, condition monitoring package with load spectrum memory, equipment for higher ambient temperature, cast metal rope guides insensitive to high temperatures

→ [www.stahlcranes.com](http://www.stahlcranes.com)

STAHL CraneSystems GmbH, Daimlerstr. 6, 74653 Künzelsau, Germany  
Tel +49 7940 128-0, Fax +49 7940 55665, marketing@stahlcranes.com

**STAHL**  
CraneSystems

Lifting technology | Drive technology | Control technology

**STAHL**  
CraneSystems

The crane operator controls the crane system by radio remote control and rotates the paper reels to set them in the mount of the paper machine.



The load hooks of the two wire rope hoists are of a special elongated design to enable the paper reels to be handled without using an off-standard beam.



The crane bridge was raised on its endcarriages to maximise the effective hook height. Light barriers were fitted to prevent collisions with the neighbouring crane.



At the end of the runway, the crane moves into the region of the runway of the neighbouring crane working below it. STAHL CraneSystems, in collaboration with the operator and the Employers' Liability Insurance Association, developed a safety concept to ensure that work can proceed safely.



**Handling reels of paper weighing several tonnes is one of the most demanding applications in crane technology. In paper factories, extremely heavy loads must be transported with millimetre precision. The cranes' capacity must be available right around the clock since production downtimes entail high costs. Only competent crane manufacturers with well-founded engineering know-how, reliable logistics and comprehensive service can meet these requirements.**

**Starting situation** Stora Enso ranks among the world's leading groups in the forestry industry. The main products are newsprint and special papers, cardboard for packaging and wood products. The company has around 43,000 employees in more than 40 countries and achieves annual sales of 13.5 thousand million Euro. The Wolfschek plant, founded in 1905, is situated in the northern region of the Black Forest. The two paper machines in Wolfschek produce up to 155,000 tonnes of uncoated magazine paper and, as a speciality, wallpaper base. A crane with two load hooks was previously used for transporting the reels of varying widths. Increasing wear led the customer to decide on replacing the old crane over paper machine 4 with one corresponding to the state of the art.

**Requirements** The building in which the crane was to be installed is only 11 m wide – all other details tended towards the unusual. For handling further paper reels and taking up other parts, two load hooks with 9,000 S.W.L. each were required. During the handling procedures the paper reels must be rotated horizontally. In addition to the usual three directions of motion (lifting, cross travel and long travel) a fourth dimension was added in the form of rotation. Apart from this, the hooks must approach the end of the crane runway extremely closely as they have to take the paper reels up from a neighbouring crane runway – a task not to be performed with standard cranes. Due to the difficulties of integrating the crane into the existing building – with obstacles underneath the crane and restricted space beneath the ceiling – the Employers' Liability Insurance Association was consulted. A detailed safety concept was required for the crane to be operated and serviced safely.

**Realisation** The concept suggested by STAHL CraneSystems' engineers consisted of a double girder overhead travelling crane with two load hooks of 9 t S.W.L. each. In order to meet the rigorous operating conditions, the project planning engineers calculated a classification of H3, B4 in accordance with DIN 15018. The hoists decided on were two original SH60 wire rope hoists furnished with independent load hooks which were

mounted on a rail and equipped with electric drives, and could thus be set to the desired hook spacing. The wire rope hoists were equipped with double-grooved rope drums to ensure true vertical lift. To enable rotation, the travel rail of the hoists was mounted in a rotating frame which can move along the crane bridge and thus forms the crane's crab. A total of 5 dimensions are available for the hooks' movements: lifting, cross travel, long travel, rotation, adjusting hook spacing. This design principle, using cost-effective standard components, ensured the minimum overall headroom for the crane. A high-quality polyurethane-based paint protects the crane in the warm, damp atmosphere. The tried-and-tested direct drives were planned with two speeds and provide the required 60% duty cycle even in this ambience with temperatures reaching 55 °C.

**Safety** The safety concept, developed in collaboration with the Employers' Liability Insurance Association and the operator, includes electrically monitored approach gates to the crane catwalk. Due to the restricted free space beneath the ceiling, protective circuits were included: when the catwalk approach gates have been opened the crane can no longer be operated. This functional disabling can only be cancelled by activating a key-operated switch. The crane girders were raised to ensure the necessary 0.5 m safety clearance underneath the

crane; in addition, an electrical obstacle avoidance circuit was installed to prevent collisions with a reel cutting machine. Safety at work is of decisive importance when working with cranes. The crane is therefore operated from a safe distance by radio transmitter. The integrated SMC1 load measurement system registers the loads on the hooks by means of sensors in the rope anchorages. It records the operating conditions from the number of motor switching operations up to overload situations. In addition it monitors the temperature of the hoist motor. With the aid of this condition monitoring device the arithmetical remaining service life in accordance with FEM can be calculated – an important feature for subsequent inspections and maintenance.

**Result** The whole project, from concept to commissioning, was carried out by the Southwest Branch of the STAHL CraneSystems Group. The crane was designed and built in the crane factory nearby Ettlingen. The whole time required for completing the project was a mere three months and included the on-schedule coordination of dismantling the old crane and installing and commissioning the new system. The crane has been in operation since September 2005 and has served reliably right around the clock.