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Elsam Kraft A/S, Esbjerg/Denmark
- Overhead monorail for tractor radiator assembly  
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- Five heavy duty cranes in engine production  
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Pfaffenhofen
- Handling paper reels in five dimensions  
Stora Enso, Wolfsheck
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#### 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

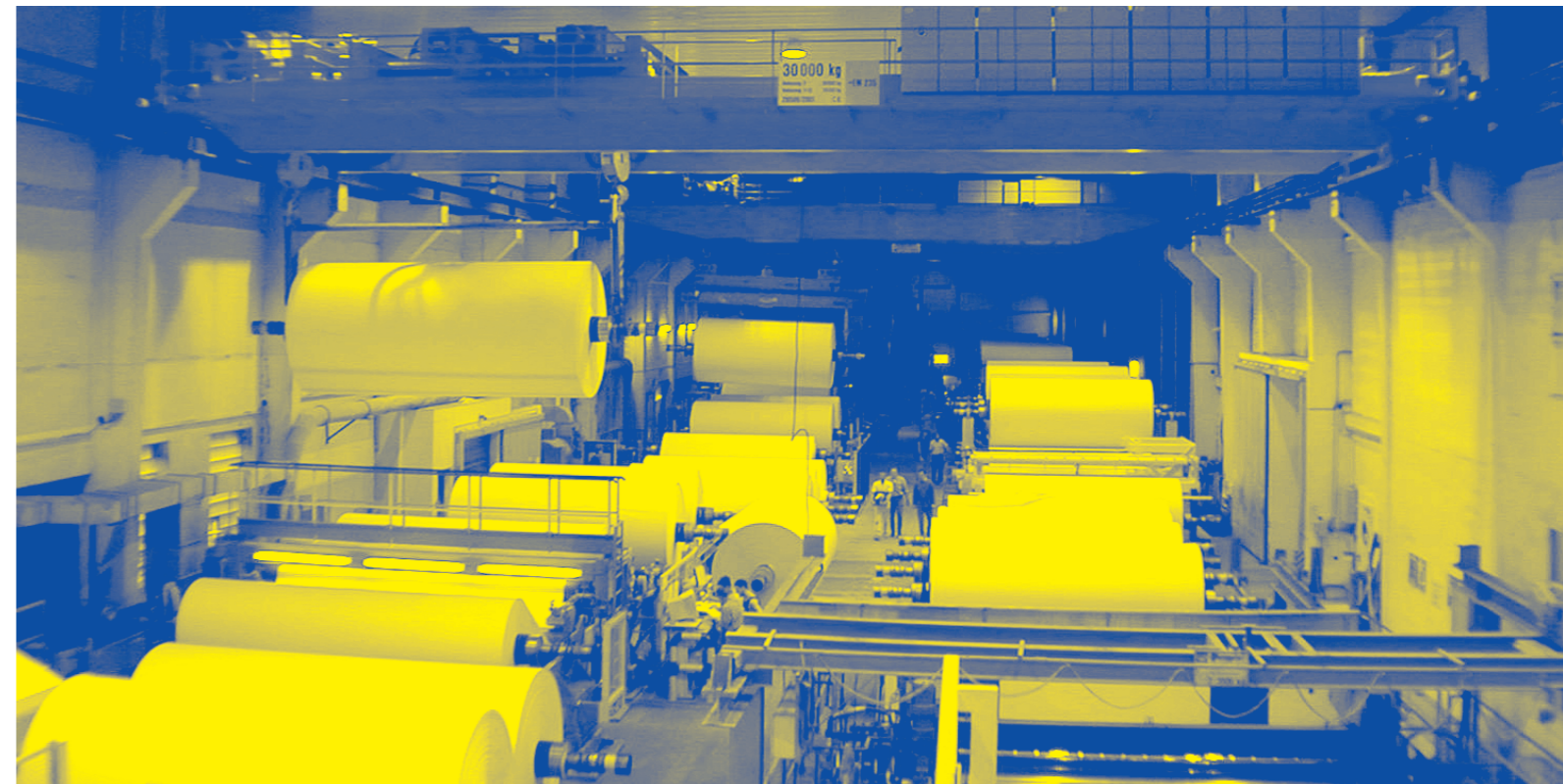
Switzerland  
Däniken  
Tel +41 62 82513-80  
Fax +41 62 82513-81  
info@stahlcranes.ch

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

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



Coil handling crane in the paper industry

SAPPI Alfeld AG, Alfeld

**Crane type** Double girder overhead travelling crane by STAHL CraneSystems \_ **S.W.L. x span** 30 t x 18.6 m \_ **Long travel speed** 40/10 m/min \_ **Cross travel speed** 20/5 m/min \_ **Hoists** 3 STAHL AS 7080 wire rope hoists \_ **S.W.L. of hoists** 16.5 t (2x) and 30 t (1x) \_ **Hoisting speed** 5/0.8 m/min \_ **Hoist motor** 15.5/2.5 kW and 30/4.6 kW

→ [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

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Lifting technology | Drive technology | Control technology

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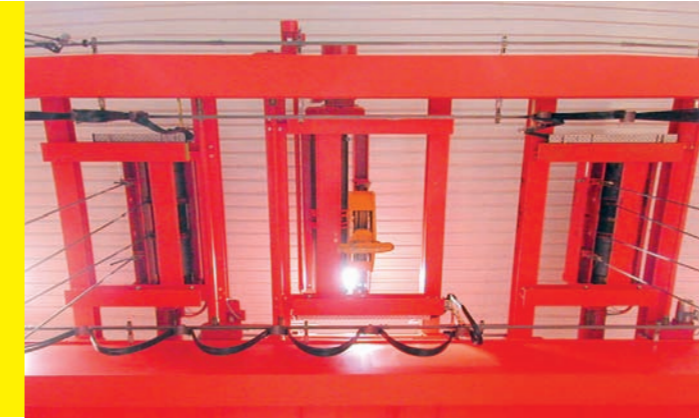
Lifting the load without lateral hook displacement. Stable and low-oscillation handling, assisted by the design of the bottom hook block.



The new double girder overhead travelling crane by STAHL CraneSystems in SAPPI's Alfeld plant lifts a 22 t paper reel from the paper making machine every 30 minutes with two interconnected hoists.



In the centre the 30 t hoist, the two wire rope hoists for handling the reels are arranged outside it.



**A sheet of paper weighs around 2 grammes – the huge paper reels that the new double girder overhead travelling crane by STAHL CraneSystems, belonging to SAPPI Alfeld AG, has to lift at least every 30 minutes are 10 million times heavier.**

**Starting situation** The South African SAPPI Group (South African Pulp and Paper Industries) runs paper making factories all over Europe. Around 1000 employees produce graphic papers and special papers in the Alfeld plant. At the end of 2001, a paper making machine was converted and involved handling heavier reels of paper.

**Requirements** The main task for the new crane was clear: 22 t paper reels were to be loaded and unloaded every 30 minutes. In addition, the crane was to be used for maintenance work. The total load for this auxiliary task is 30 t. The operating conditions also included an ambient temperature of 60 °C and restricted space: only 1,465 mm headroom was available for installing the crane.

**Implementation** Transporting the 5.5 m long paper reels, 2.4 m in diameter, entailed the use of two load hooks at a suitable spacing. Two electric wire rope hoists were planned that can travel independently on the crane bridge and transport the paper reels in coupled operation. Due to the high number of lifting operations, the hoists were oversized by 50%: they are able to lift 33 t, even if the reels weigh only 22 t. Now the auxiliary task of the crane had to be mastered, namely rotating the paper reels by 90°, and maintaining the system. STAHL CraneSystems' concept planned a third hoist with 30 t S.W.L. between the other two hoists. How can a 30 t production crane with over 18 m span be fitted into a building if only 1,465 mm total headroom is available and the building statics also cause difficulties? No problem for the specialists of STAHL CraneSystems: specially dimensioned crane bridges and the AS 70 electric wire rope hoists with their favourable rope geometry favour a low-headroom construction. Although the crane runway is not calculated for 30 t loads the engineering team of STAHL CraneSystems found a solution to permit the crane to be operated safely: the loads are distributed onto eight wheels instead of the usual four.

**Crane technology** When the project was being planned, SAPPI laid particular emphasis on transporting the load smoothly and economically. The specialist consultants of STAHL CraneSystems implemented these requirements rigorously: the maximum deflection of the crane bridge is 15 mm. The requirements of DIN 15018 for classification in group H3/B4 were taken into consideration. Low-oscillation travel is guaranteed by the two-step drives with smooth starting characteristic. Lateral guide rollers are fitted to the endcarriages to ensure optimum linear travel. Optical sensors and limit switches prevent any collisions with existing cranes operated on the same runway. The crane operator can select various programmes: thus the centre hoist can be operated on its own, or the two outer hoists work together with a fixed distance between the hooks.

**Hoist technology** All three hoists are designed to avoid lateral hook displacement which would be a disadvantage during lifting and lowering. Steady transport of the load is assisted by the design of the bottom hook blocks. Accurate, safe hoisting operations are easy to achieve with hoist motors. Two speeds at a ratio of 6:1 and 80 % DC (duty cycle) are available. The electronic motor management system SLE monitors the temperature of the hoist motor and ensures low noise and low wear during starting

and braking. As the S.W.L. of the three hoists exceeds the capacity of the crane bridge, they are equipped with an electronic load cumulation facility. This ensures that a maximum of 30 t is lifted. The apparatus belonging to the condition monitoring system of STAHL CraneSystems also monitors the load spectrum, important for calculating the service life of the wire rope hoist.

**Maintenance concept** Components by STAHL CraneSystems are low-maintenance. In particular the modern hoists and drives require little effort for inspection and maintenance. In spite of this, however, brake wear for example must be checked in order to ensure optimum availability of the system. The STAHL CraneSystems crane in the SAPPI plant is therefore logically equipped with a maintenance platform. The drives are equipped with maintenance-friendly plug connections. Fault-free operation of the crane system is ensured by the service team from STAHL CraneSystems' Hannover branch who have been performing maintenance and inspection at regular intervals since the system was commissioned. STAHL CraneSystems is a member of the GKS – Crane Service Quality Association – committed to the advancement of high-quality crane service.