

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

- 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, Wolfscheck
- 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, Fritzlar
- 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

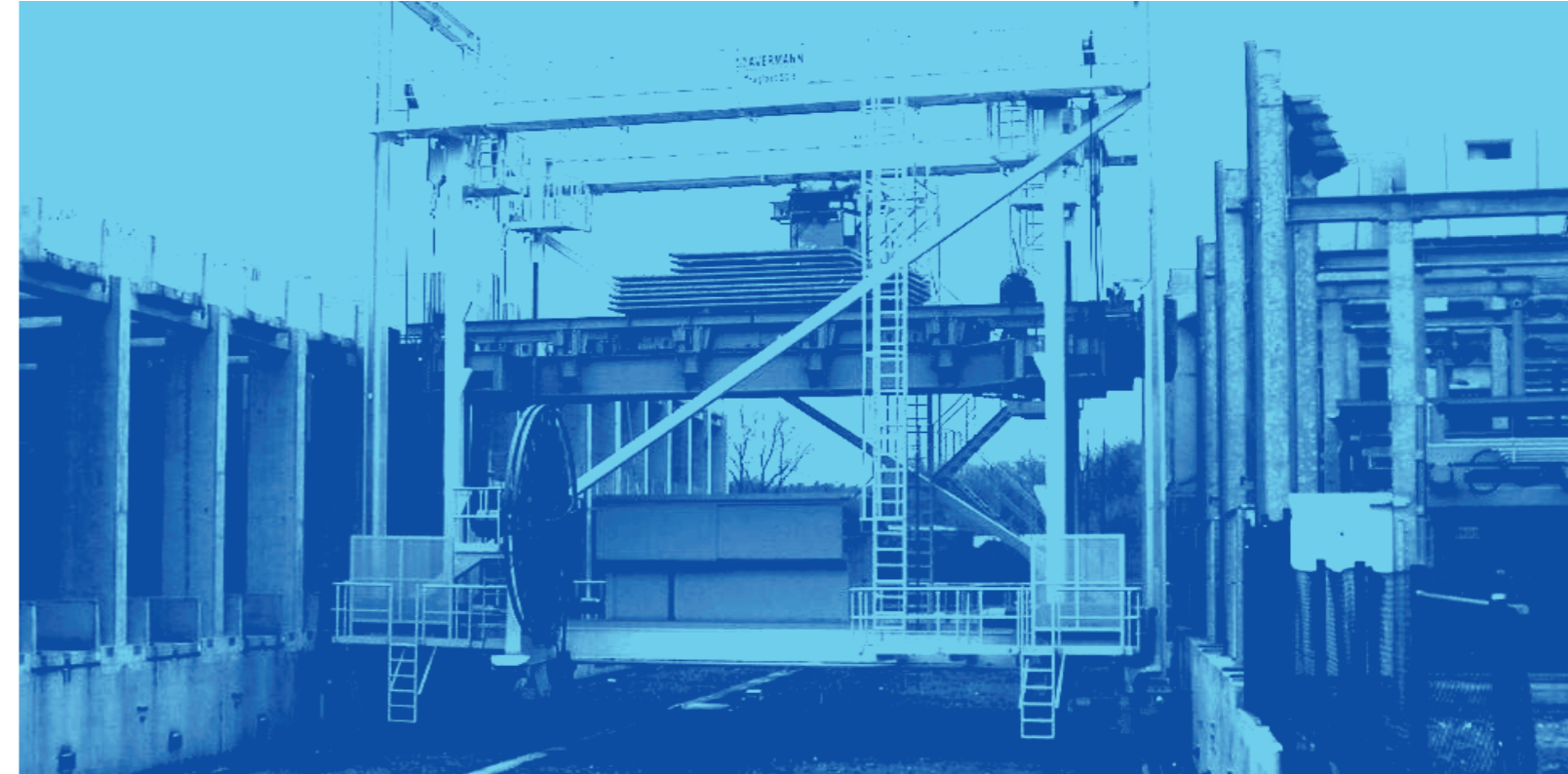
Switzerland  
Däniken  
Tel +41 62 82513-80  
Fax +41 62 82513-81  
info@stahlcranes.ch

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-001-EN-03.08-vis visuell.de

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



Europe's largest storage and retrieval machine

Lütkenhaus, Dülmen

**Order processed** October to December 2001 \_ **Hoists** 4 electric wire rope hoists, type AS 7050-38, each 21.5 t S.W.L.

**Mechanism group** 3 m to FEM \_ **Effective load** 50 t \_ **Hoist motor** 36 kW at 80 % DC – frequency-controlled \_ **Load rope** 4-fall,  $\varnothing$  25 mm \_ **Hoisting speed** max. 15 m/min (load-dependent) \_ **Travelling speed** max. 90 m/min

→ [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



Overall view of the presumably unique high-bay storage area for precast concrete parts. To the right of the picture the three handover positions.



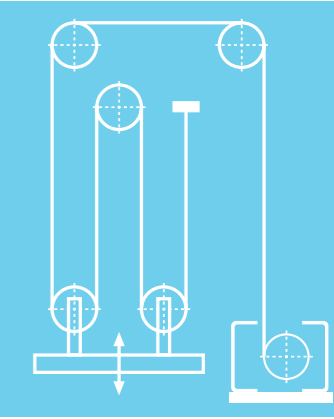
Detail of the easily accessible hoist. The rope lead-off was equipped with a cover to protect it from the weather.



The storage and retrieval machine in the Lütkenhaus concrete factory in Dülmen is the largest in Europe – it stores and withdraws stacks of precast concrete sections up to 50 t in weight.



The electric wire rope hoists type AS 7050-38 by STAHL CraneSystems, lifting up to 21.5 t each, are mounted at the base of the four vertical pillars. The frequency-controlled hoists raise the lifting beam synchronously, the maximum hoisting speed is 15 m/min.



**Precast concrete parts are high technology. They have to bear heavy loads, span wide areas and last for decades. In addition, they must translate into reality the frequently complicated concepts of architects while remaining economical. However, their manufacture too demands extreme precision and the most up-to-date technology.**

**Starting situation** Lütkenhaus in Dülmen, 40 km south of Münster, is a supplier of precast concrete parts with a tradition extending from 1907. As extending the company's 1.5 ha storage area was not possible, while at the same time demand for ceiling elements continues to grow, the company's management decided in 2002 on an unusual step: to build the largest and at present most up-to-date high-bay store for precast concrete parts.

**Specifications** When implementing this complicated installation which must meet the operator's extremely high demands on availability, it was important for the hoist technology by STAHL CraneSystems to be able to be integrated into the overall concept of the installation without any problems. The new storage area, consisting of high-bay racks, a storage and retrieval machine and various storage points, is controlled by an SPC control.

**Implementation** The concrete factory furnisher Avermann in Osnabrück was entrusted with planning and supplying the whole system. The original concept by a local crane manufacturer assumed the traditional design of the hoisting equipment as open winches. However, supplier Avermann was dissatisfied with this variant. Open winches are produced in costly individual manufacture and thus cost advantages from the series production of compact hoists cannot be utilised. Avermann therefore contacted STAHL CraneSystems GmbH, specialists for high-performance hoists for crane and system manufacture. The engineering team of STAHL CraneSystems recommended the use of four synchronised compact hoists, each lifting 21.5 t, for the storage and withdrawal of the concrete stacks weighing up to 50 t. The concept planned of STAHL CraneSystems on positioning the electric wire rope hoists at the base of the four vertical pillars of the storage and retrieval machine – a concept with considerable advantages as regards accessibility and maintenance.

**Hoisting technology** The electric wire rope hoists in use, type ASF 7050-38 4/1L2, have proven themselves widely in heavy-duty applications and are classified in mechanism group 3 m to FEM. With their 25 mm diameter wire ropes and four falls, they lift the telescopic platform at a speed of up to 15 m/min.

Special ultra-flexible wire ropes with 10:1 rope safety factor are fitted as load bearing elements. The wire rope hoists are driven by 36 kW frequency-controlled high-performance motors. The frequency control technology offers a number of advantages in comparison with conventional drives. It permits stepless, accurate speed control (standard motors provide only two steps). The maximum speed is optimised dependent upon the load attached. In addition, the starting currents of the motors are reduced so that the dimensions of the power supply can be optimised. And finally the smooth starting motors prevent impact stress: thus sparing supporting structure, wire ropes and rope sheaves.

The high frequency of loading and unloading in the stores was taken into consideration when designing the motors. Forced ventilation permits a duty cycle of 80 % DC and ensures that the motors do not overheat even in continuous operation. A matter of course with STAHL CraneSystems is the safety package consisting of rope guide, gear limit switch and overload device. An SPC control designed by control manufacturer SAA was installed in an air-conditioned switchgear cabinet. This controls the synchronous running of the hoists and prevents maloperation or accidents.

As already mentioned, the mounting position of the four wire rope hoists on the ground makes them easily accessible for maintenance and any repairs which may be necessary. Hoists by STAHL CraneSystems are of course designed so that the motor is outside the drum. Thus the brake is easy to reach and downtimes necessitated by maintenance are few.

**Result** The storage and retrieval machine, 110 t in weight and with an S.W.L. of 50 t, has a track gauge of 14.1 m and with a height of 15 m and a length of 13.5 m is a giant in comparison with the usual designs in high-bay warehouse systems. Under load, it travels at up to 90 m/min. The storage and retrieval machine has a capacity of up to six storage and withdrawal operations per hour. The concrete sections removed from the store are marshalled in handover positions and then loaded onto lorries. When moving parts in and out of the stores, the lifting beam of the storage and retrieval machine is raised and when the desired rack level has been reached a rail-bound trolley moves into the storage rack. It can then take up stored precast concrete packages or set them down. The storage and retrieval machine has been in successful operation since May 2002 and functions for the most part in two-shift operation.