

We would be pleased to send you information on other reference projects in German or English 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
- 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, Fritzlar
- Neue Hebetchnik für Gießerei
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Tochtergesellschaften

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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Reequipment of three suspension cranes in a hangar SR Technics Switzerland

S.W.L. per crane 10,000 kg _ **Height of lift** 26 m _ **Replacement** complete electrics and all moving parts _ **Resupply** hoists and all drives _ **Retrofit** radio remote control, frequency control _ **Equipment** design with true vertical lift, overload cut-off in gear, temperature control of motors, robust cast metal rope guides, lifetime calculation and status diagnosis, electronic motor management

→ www.stahlcranes.com

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



Lifting technology | Drive technology | Control technology



The cranes' maximum availability and reliability is of crucial importance for on-schedule aircraft maintenance.



Reequipment took place in a narrow window of time as work had to continue in the hangar without disruptions.



Radio remote controls were retrofitted for safe and convenient operation of the cranes.



All electrics and moving parts were replaced, including the 40 kg end carriage wheels.



Global air traffic is one of the growth industries of the 21st century. A high capacity utilisation of the expensive aircraft is decisive for airlines to be able to compete in this fiercely competitive industrie. A factor in the optimum utilisation of aircraft are of course brief and reliably plannable downtimes at the home airport when routine maintenance or major servicing are scheduled.

Starting situation SR Technics Switzerland, based at Zürich airport, offers servicing for passenger and freight aircraft. Aircraft up to a total height of 26 m can taxi into the huge 130x130 m hangar. Up to four A330/340 or B747 aircraft can be serviced simultaneously. Three off-standard cranes from **STAHL CraneSystems** have been in use since 1972 for maintenance work on the heavy aircraft components. The huge cranes with 10,000 kg S.W.L. each and spans between 12.8 and 51.2 m have performed reliably in the three decades since their commissioning. An expertise from a crane expert was ordered in November 2002 after one of the cranes failed. It rapidly transpired that modernisation was essential.

Requirements The antiquated winch construction referred to in the expertise was sufficient grounds to consider reequipping the cranes, as the safety technology of the hoists was not state of the art for the 21st century. A full general overhaul of the hoist gearboxes and expensive retrofitting of safety equipment would have been necessary. On the expert's recommendation, maintenance-intensive moving parts and the electrical equipment needed to be renewed.

Realisation SR Technics Switzerland invited bids, stipulating that the performance characteristics of the existing technology must be met. Instead of supplying new cranes, the engineers from **STAHL CraneSystems** in Switzerland developed an economic concept planning reequipping all movable parts and the crane electrics directly on site. The challenge should not be underestimated of manufacturing over 400 mechanical components individually and fitting them on site on schedule. The dimensional tolerances for temperature fluctuations due to the weather also had to be taken into account. By means of this detailed concept, **STAHL CraneSystems** was able to present the most convincing package among the competitors. The crucial factors for the customer's decision were quality and

reliable scheduling of the order as the cranes had to remain available continuously. In this respect confidence in the technology and competent handling of orders of the original manufacturer was decisive.

A modification time of a maximum of three weeks was scheduled for each crane installation. During this time the electrics were renewed, the hoists and drive motors replaced and the complete wheelsets of the crane endcarriages substituted. Modern frequency inverters were planned for the long and cross travel motions so that up-to-date stepless speeds are now at the customer's disposal.

The power supply systems along the 130 m crane runways were replaced by new compact conductor lines type KSL. Operating the cranes was modified to radio remote controls replacing the old control pendants suspended on cables. Radio remote controls type FST 514 were used, the transmitters being explosion-protected as in an aircraft hangar the atmosphere may be expected to contain kerosene.

An unusual feature are the hoists. Series hoists type AS70 by **STAHL CraneSystems** have now been fitted in place of the old winches. The desired fast hoisting speed of 12.5 m/min was achieved as was the requirement of true vertical lift: two ropes lead off the drum, their speed not being reduced by reeving.

The safety of the crane systems is of crucial importance for SR Technics Switzerland. The integrated LAS load measurement system registers the load torque directly in the hoist gear. If an overload should be detected, the hoisting motion is disconnected by the SMC1 Multicontroller. This system provides a decisive extra safety feature as the electronic device records all operating conditions from the number of motor switching operations up to overload situations. In addition, it monitors the hoist motor temperature. On the basis of the electronic records, the arithmetical residual lifetime of the hoist can be calculated precisely – an important element for the maintenance concept of the modified cranes.

Result The complete modernisation project, from the initial concept to supply to installation and commissioning was carried out by **STAHL CraneSystems**. The Swiss subsidiary of **STAHL CraneSystems GmbH** reequipped the cranes and fitted all new components at the end of 2004.