

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
- 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, 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
- New lifting technology for foundry
Southern Germany

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STAHL CraneSystems _ Crane technology made to measure >>>



Chain hoists with 110 m height of lift for wind power stations REpower, Husum

Hoists ST1002-25/6.3 1/1 chain hoists _ **Effective load** 250 kg _ **Height of lift** 110 m _ **Hoisting speed** 25/6.3 m/min (dual speed) _ **Hoist motor** high performance with high duty cycle (DC) _ **Limit switch** electric cut-off in top and bottom hook position _ **Chain box** special design with separate suspension belts and pocket for control pendant

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Lifting technology | Drive technology | Control technology

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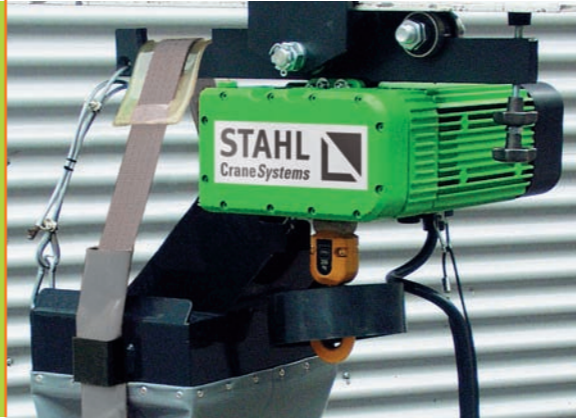




> Elastic suspension for chain box and pocket for control pendant



> The wind power hoist by STAHL CraneSystems is based on an ST10 chain hoist. It provides an S.W.L. of 250 kg and a height of lift of 110 m. Limit switches monitor top and bottom hook position.



< The hoisting speed of 25 m/min is ideal for transporting original parts up to the plants that are over 100 m high.



Germany is Europe's forerunner as regards wind energy – at the end of 2002, 12,800 wind turbines with a total output of 10,650 MW were turning between the North Sea coast and the fringe of the Alps. According to the BWE (Federal Wind Energy Association), this output is to rise to 22,500 MW by 2010.

Development However wind power stations only make profits if they are operated as continuously as possible. Maintenance and service thus play a major role. Chain hoists are used in particular for lifting spare parts into the nacelle. STAHL CraneSystems GmbH has designed an off-standard chain hoist for plant maintenance and has signed a cooperation agreement with the Husum manufacturer REpower. The first major batch was produced and delivered in April 2003.

Hoist technology The basis of the "wind power hoists" is the newly developed STAHL ST10 electric chain hoist with single-fall load chain. The ST10 can be used for lifting loads up to 500 kg in single fall. However for the wind power stations, the ST10 was designed with an S.W.L. of 250 kg. The hoisting speed was increased in correlation with the load reduction: STAHL CraneSystems' team of engineers calculated the high speed of 25 m/min. The advantages for the operator are obvious. The design of the high performance motor ensures reduced waiting time when lifting and lowering. There is a time saving of 50 % compared with the usual speeds (approx. 12 m/min) – together with a corresponding reduction in the temperature rise in the motor. Slipping clutch and hoist limit switch are two of the safety features. The chain box and the push trolley that can be locked in any position on the runway were developed especially for use in wind power stations. Further design details ensure perfect adaptation to the conditions prevalent here. Among other features, impact protection ensures that the load hook cannot damage the cladding of the tower during lifting and lowering. In test runs, the newly developed STAHL electric chain hoists displayed unbeatable performance characteristics. This was the decisive factor which

prompted STAHL CraneSystems to market the ST10 as the second generation of wind power hoists.

Service Ideally, the maintenance of the whole wind power station, including the STAHL chain hoist, should be performed by a single company. At the plant manufacturer's request, STAHL CraneSystems designed a training programme especially for the plant's fitters. Thus the accustomed high quality of Service could be guaranteed by STAHL CraneSystems – while at the same time utilising synergy effects.

Future The Federal Wind Energy Association assumes that large offshore wind energy parks will be constructed on the open sea from 2007 onwards. STAHL CraneSystems GmbH can then bring its competence as manufacturer of hoists for offshore applications into full play. For chain and wire rope hoists with special paint systems and in off-standard materials, and the various measures necessary to adapt them to the harsh operating conditions in saline air, are no problem at all for STAHL CraneSystems' experts.