

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

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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
- 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  
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F-RB-004-EN-03.08-vis visuell.de

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



Three 51 m cranes in the railway construction

Stadler Rail AG, Switzerland

**Crane type** 3 single girder hybrid cranes by STAHL CraneSystems \_ **S.W.L. x span** 15 t x 51m for each hybrid crane  
**Long travel speed** 40/10 m/min \_ **Cross travel speed** 20/5 m/min \_ **Hoists** 6 SH5020-25 4/1 L2 wire rope hoists  
**S.W.L. of hoists** 2 hoists per crane, each 7,5 t \_ **Hoisting speed** 6,3/1,0 m/min \_ **Equipment** Radio remote control with linking function for up to 6 load hooks

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

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**STAHL**  
CraneSystems



Lifting technology | Drive technology | Control technology

**STAHL**  
CraneSystems



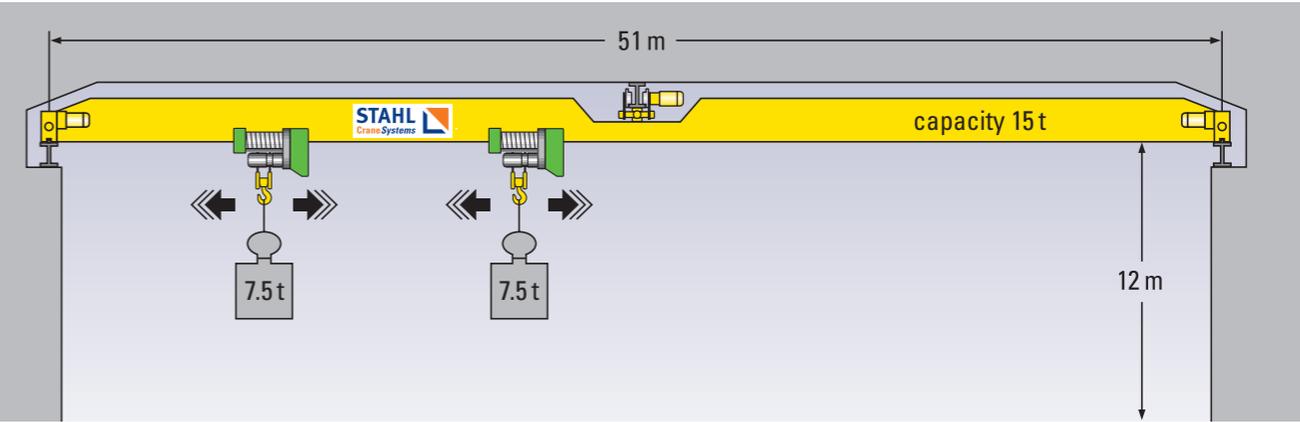
The three special cranes have room to move in the huge production building, 52 m x 85 m, and can be operated synchronously from a single radio remote control if required.



All three single girder hybrid cranes can combine in synchronous operation to transport loads up to 45 t.



The offset crane girder design of STAHL CraneSystems enabled the maximum effective hook path to be achieved in spite of the very low ceiling. The additional suspended trolley in the centre made the span of 51 m possible.



**Mobility is one of the 21<sup>st</sup> century's crucial challenges. Society demands ever greater freedom of movement but this can no longer be ensured by private transport alone. Thus in public transport there is increasing demand for new, faster trains. FLIRT, the innovative regional train, is setting new trends in this field.**

**Starting situation** Stadler Rail AG is a leading manufacturer of railway technology with two plants in Switzerland and in Berlin. The Swiss STAHL CraneSystems AG had already supplied 17 customised crane installations in 2001 and has serviced them since. In 2003, Stadler Rail AG was planning the production of its new regional train, FLIRT, at the Bussnang plant in Switzerland. The project comprised delivery, erection and commissioning of 17 crane installations for the new production line to a value of some 700,000 CHF (approximately 455,000 Euro), including three large special cranes with particularly demanding specifications.

**Requirements** Stadler Rail AG's huge production buildings – nothing unusual in themselves, large-area buildings are common in railway construction – were an essential feature of the customer's specification. However the crane specialists of STAHL CraneSystems and Heinrich Frei, the architect of the building, were confronted with a serious engineering problem: how to support safely both the weight of snow outdoors and the loads to be transported indoors. After all, carriage sections of up to 45 tonnes in weight were to be lifted by the crane technology of STAHL CraneSystems. The loads were to be transported not only over the building's width of 52 metres, but also over the overall length of 85 metres. Spans up to about 30 m can be achieved with commercial »off the peg« cranes. If the spans are wider, heavy, high crane bridges are necessary which greatly restrict the available hook height and, due to their high deadweight, make it necessary to reinforce the supporting structure of the building. With a building width of 52 metres, it is thus normally necessary to divide the building up into two aisles – a restriction that was not acceptable to the customer and, thanks to the technical design offered by STAHL CraneSystems, not necessary.

**Implementation** The project planning team of STAHL CraneSystems, in consultation with the Frei team of architects, designed three »hybrid cranes«, comprising some suspension crane and some overhead travelling crane components: the cranes were designed as overhead travelling cranes, but due to the wide span of 51 metres equipped with an additional suspension carriage in the centre. The three-point suspension permitted a crucial reduction of the weight and headroom of the crane bridges. One of Stadler AG's specifications was to obtain the maximum effective hook path in spite of the low ceiling height – this was achieved by means of the offset crane girder design suggested by STAHL CraneSystems. The solution was implemented using existing components from the comprehensive series range of STAHL CraneSystems. The perfectly smooth and steady running characteristics of the drives and decades of reliable original spare parts supply are ensured with series components.

**Hoist technology** Each of these special cranes is equipped with two SH 50 electric wire rope hoists so that the three cranes have a total of six load hooks. The load hooks are controlled separately or in combination by means of an ingenious radio remote control. A single operator can select two load hooks

of one crane, or four hooks of two cranes, or even the six load hooks of all three cranes together in synchronous operation for hoisting and travelling functions, whatever is required. An electronic synchro control was installed for the hoist motors to ensure synchronous hoisting and lowering movements. The customer's specifications for the two-step operating speeds of the cranes were almost simple in comparison: hoisting 6,3/1,0 m/min, cross travel 20/5 and long travel 40/10 m/min. Cast iron rope guides, motors with maintenance-free brakes, gears with lifetime lubrication and standard electronic monitoring of the load suspended on the hooks are part of the equipment, as is perfected electronic brake management. A great advantage of the drives of STAHL CraneSystems is their high duty cycle (60 %) contributing decisively to the long life and reliability of the drive technology.

**Service** Constant safety and cost effectiveness of the crane installations during their whole service life is important to STAHL CraneSystems. The Swiss subsidiary will thus ensure on the spot service for Stadler Rail AG within the Europe-wide service network of STAHL CraneSystems. In this way a partnership is continued that had its successful beginnings in the first project in 2001.