

14. November 2012

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Special requirements – special solutions

Conversion of the former research reactor in Braunschweig, Germany

Today only the recess in the ceiling indicates that the Federal Physico-Technical Institute's (PTB) research and source reactor was installed in this room up to 1995. Using highly enriched uranium as nuclear fuel it served as a source of neutrons for basic research in neutron and solid-state physics.

However measuring instruments also were calibrated on the reactor and new measuring processes for dosimetry developed. After the reactor had been laboriously deconstructed and the building released from nuclear legislation supervision, in 2010 conversion into the central workshop for the PTB's scientific apparatus-building department began. Two new cranes were to be installed in the course of this conversion - individually adapted to the prevailing conditions in the existing building. Crane builder SMI tech from Hannover and STAHL CraneSystems from Künzelsau accepted the challenge.

The 1,500 m² shop in the Luise Meitner Building resembles the production shop of a common-or-garden mechanical engineering company: workbenches, lathes, CNC milling machines. Perhaps it is a bit tidier here, perhaps work is rather more concentrated.

At the PTB in Braunschweig, 700 scientists and engineers work on new measuring procedures, they design test machines, define standards. Scientific apparatus-building is an in-house service department and is tasked with supporting researchers with prototypes and test apparatus. Theory becomes practice in this workshop.

A 26 m long suspension crane for transporting tools and workpieces spans the whole width of the shop. No ordinary crane: the extremely low headroom of the crane bridge, suspended from four crane runways and with a safe working load of 5,000 kg, was made possible in spite of the wide span of 26 m. Two joints in the crane bridge ensure good running characteristics and prevent jamming when the crane travels. Jens Panzner, STAHL CraneSystems' sales engineer, explains: "The design is a totally customised solution, due

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to the low bearing capacity of the ceiling our partner SMI tech had to spread the load over several crane runways. The result is a smaller, lighter bridge which gives the operator additional headroom. A further advantage of the suspension crane is that no supports disrupt the production area." Each of the four suspension crane endcarriages is equipped with a travel drive, ensuring that the crane will travel smoothly independent of the position of the load.

The crane is controlled conveniently by radio. The control signals to hoist and crane are transmitted without festoon cables or energy chains. Instead, up to date radio signal transmission with two receivers is used. A conductor line supplies power along the crane bridge.

The floor above is given over to intensive research. Where 15 years ago the reactor emitted radioactivity, nowadays scientists research laser measuring technology: the room is used as a test laboratory for laser trackers – modern measuring instruments which measure large components extremely precisely with the aid of laser beams and can thus digitalise them in three dimensions. In this laboratory too a suspension crane from SMI tech is in use – another customised solution, as STAHL CraneSystems had to adapt the travel units to be able to utilise the existing crane runway. Skill and expertise were required during erection too: as it is an enclosed space, the crane had to be brought in dismantled, assembled on site and then raised by auxiliary hoists. Now the suspension crane with its SH 50 wire rope hoist assists researchers in moving test set-ups. SMI tech supplied and installed a fixed maintenance platform for annual inspections and an off-standard ladder with fall arrester for safe access as off-standard equipment.

STAHL CraneSystems supports crane builders on demanding projects such as these suspension cranes with its wide range of products and sophisticated design solutions. Particularly qualified crane builders such as SMI tech are certified by STAHL CraneSystems as official crane building partners and receive especially intensive support. The modular construction of STAHL CraneSystems' hoists and crane components enables crane systems to be adapted specifically to requirements, so that high-quality, technically mature crane technology is always utilised even for demanding projects.

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Bildmaterial:



Thanks to the four-section suspension it was possible to manufacture the 26 m long crane bridge from sectional beams and ensure lower headroom.



Crane technology for demanding crane builders: STAHL CraneSystems supplied suspension crane endcarriages, travel drives and of course the wire rope hoist for this customised crane.

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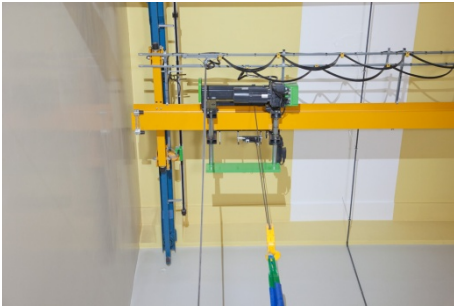


The suspension crane is used in the PTB's scientific apparatus-building department for transporting heavy tools and machinery parts.



The unusual shape of the room is owed to its previous use as a reactor. Nowadays laser trackers are tested and calibrated here. A suspension crane from SMI tech travels on the old crane runways.

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This SH 50 wire rope hoist from STAHL CraneSystems has a safe working load of 5,000 kg.