The two latest additions to Siempelkamp Nukleartechnik have taken their first steps for a successful cooperation in the dismantling project of the nuclear power plant Stade. A team of experts from NIS Ingenieuregesellschaft mbH has been involved with the dismantling, disassembling and packaging of the reactor pressure vessel including peripheral equipment at the nuclear power plant Stade since February 2008. In March 2009 NIS commissioned Siempelkamp Krantechnik with the production, delivery and assembly of a gantry crane for the scheduled dismantling assignment in the control area of the nuclear power plant Stade. Once again Siempelkamp proves that the approach to deliver products and services from one source is the right and successful way!
Dismantling project Stade: the status quo

After more than 30 years the nuclear power plant Stade went off line on November 14, 2003. After the disposal of the fuel elements, the plant has been running in site-mode operation since September 2005. Currently, the operations within the scope of the approved dismantling phases I and II are ongoing. NIS Ingenieurgesellschaft mbH has been commissioned with the dismantling, disassembling, packaging and disposal tasks of the reactor pressure vessel which are part of phase III. During this phase the reactor pressure vessel has to be lifted out of the reactor cavity and is disassembled in the fuel element pool after the boron treated water was removed.

For the disassembling of the reactor pressure vessel, NIS has planned and commissioned the production of differently complex equipment. This includes a gantry crane which transports the dismantled reactor...
A crane for all needs

Siempelkamp Krantechnik GmbH (formerly E&W Anlagenbau GmbH) won the bid for this 5-ton gantry crane after a Germany-wide bid invitation. Among all bidders, the crane specialist, based in Moormerland (Germany), presented the most convincing concept of a gantry crane that will have to perform a variety of different tasks.

The bridge crane carriage and the lifting device had to be designed with redundant backups so in case the electrical drives become faulty, the radioactive load can be put down in a safe place. Furthermore, an electrically rotating hook block was required in order to move the load remotely to a precisely defined location and position inside the Konrad container. Another advantage: The SPS-supported position measuring system with a repeat accuracy of 3 mm will result in tremendous time savings during the camera-controlled move of the loads to their positions. Another feature designed by Siempelkamp Krantechnik GmbH is a fold-out attachment on the trolley. The crane is equipped with a gripper tool that can open and close the sliding roof of the ventilated housing. This presents a special design that should not be underestimated. The sliding roof is part of a complete housing made of the trapezoidal cross section of the former fuel element pool in which now all disassembly processes take place.

When planning the crane, flexibility was a necessity. NIS, as the customer, had to redefine the project repeatedly and even had to request changes to some parts. The good and smooth cooperation between the responsible project managers Reinhard Hoffmann from NIS and Ute de Vries at Krantechnik is noteworthy. Changes to the project were quickly checked for feasibility.
Retractable pillars result in time savings

Siempelkamp Krantechnik GmbH also proved its competence for detail during the assembly. The crane could only be brought into the reactor building through a material lock. The opening hours and opening duration of the material lock were limited. Precise coordination with the nuclear power plant in that matter was very important in order to quickly and smoothly pass the crane through the lock. The transport dimensions of the crane had to agree with the dimensions of the lock.

The disassembly of the crane pillars was not necessary for the transport through the lock. Inside the containment, the existing polar crane lifted the gantry crane package and the four pillars were simply folded out. Afterwards, the crane was put directly onto the rails. This mechanical assembly procedure took only four hours. Once again the crane specialist from East Friesland had delivered a technically savvy and special crane design. In December 2009, NIS has started using this crane in assembly processes of other facilities.

Currently, the start-up and complex testing of all dismantling systems is upcoming. Directly following this testing phase will be the dismantling of the reactor pressure vessel. We will report on this procedure at a later time.

and costs and then quickly implemented within the calculated budget.

This type of flexibility as well as the well-thought-out concept with many highlights resulted in a pleasing milestone. During the acceptance test at Siempelkamp Krantechnik in Moormerland, the crane was completely demonstrated to us. It was approved by the German Technical Inspection Agency and the customer. The chosen technology for the crane assembly convinced the people in charge at the nuclear power plant Stade. Except for the control box and the panel, the gantry crane was delivered fully assembled along with retractable pillars.

The nuclear power plant Stade during the dismantling procedure