

UNDER CONSTRUCTION



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HFR repairwork started Concrete test rigs IAEA satisfied with repair plan



Birdsview of the HFR

HFR repairwork started

Repairwork on the High Flux Reactor started on 19 February. Over the next six months repairwork on the reducers, part of the reactor's primary cooling water system, will be carried out. The restart is scheduled for the second half of August 2010.

A routine inspection in August 2008 revealed bubble jets in the primary cooling water system. It was already known that electroplating corrosion (galvanic corrosion) had caused deformations in the pipework in a number of places. The bubble jet consists of miniscule gas bubbles that occur where there is corrosion. Although the pipe walls were not leaking, NRG decided to develop a repair plan. It was decided to carry out local repairwork because the precise locations of the affected parts are known.

A support structure will be fitted after clearing the subpile room, the space below the reactor vessel. Densimet radiation shielding will be fitted in the reactor basin. The basin will be drained after fitting a concrete covering slab. The pipes concerned will then be released from the concrete so that the reducers can be repaired or replaced. The pipes will be given a corrosion-resistant coating afterwards. A thorough inspection and test programme will be carried out before enclosing the pipe in cast concrete again. The competent authorities will be present at the evaluation of these tests. During the repairwork the safety and health of all the employees involved will be the first consideration.

NRG has made every effort in recent months to minimise the consequences of putting the HFR out of operation. NRG is consulting closely with the authorities, fellow isotope producers and customers to ensure continued availability of medical isotopes for the healthcare sector and nuclear research for the energy supply as much as possible.



The Bottom Plug Liner in 1960

Concrete test rigs

Repairwork on the cooling water pipework has been practised extensively in recent months. At the Strukton site in Maarssen, test rigs were erected of the Bottom Plug Liner, the bottom section of the reactor where the repairwork will be carried out. Adopting this approach made it possible to confirm that reaching and repairing the damaged parts would be feasible.

It was important to make the test rigs of the same concrete that was used at the end of the nineteen-fifties, when the plant was built. With the aid of records from the archives and information provided by former employees, it finally proved possible to locate the original mine from which the feedstock for the concrete was extracted. The material for the concrete used in the test rigs was obtained from that exact same mine. Practice runs and tests were carried out for the removal and repair of the concrete. Hollow drills will be used to make various holes in the core, after which it will be possible to remove the remaining material. Once the reducers have been repaired the concrete will be filled in from below. This repair technique has been used on several occasions and tests have shown that the 'old' and 'new' concrete join seamlessly.



Drilling in the mock up



Checking the concrete of the mock up

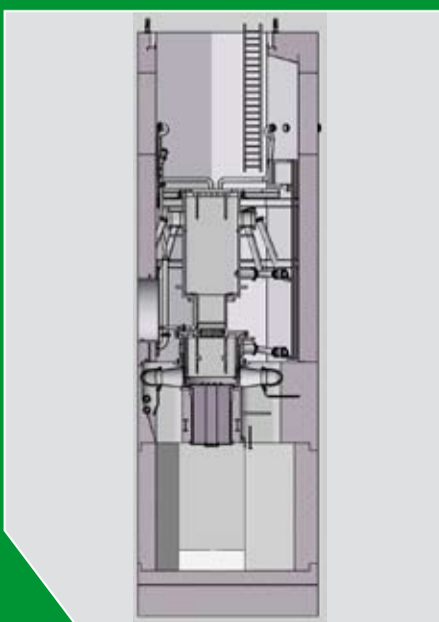


Top view of the mockup



IAEA satisfied with repair plan

The plan for repairwork on the High Flux Reactor meets the safety requirements of the International Atomic Energy Agency (IAEA). This was the conclusion reached by the IAEA Safety Review Mission, which took place in January. The subjects of the review by five international experts included the proposed repair method, the technical details of the adopted approach, the results of the tests that were conducted, the protection of employees and the planning for the work. IAEA made a number of recommendations, which NRG incorporated in the final version of the project plan.



Schematic representation of the Bottom Plug Liner