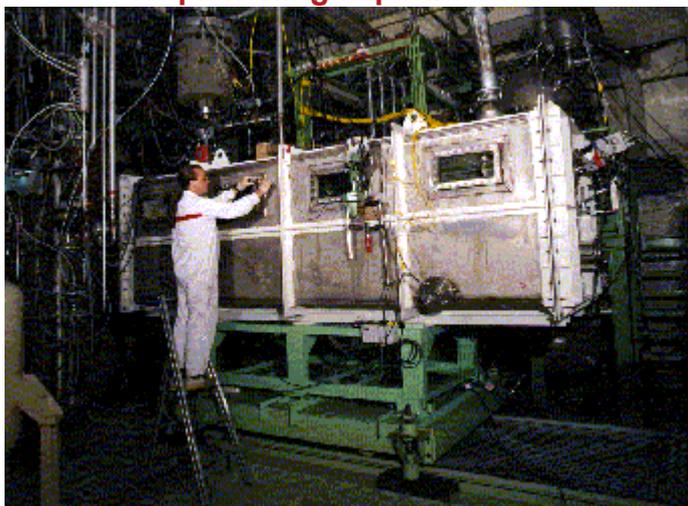




FARO Facility: the FAT test vessel for melt quenching experiments



FARO Facility: the SARCOFAGO test vessel for melt spreading experiments

FARO (Fuel Melt and Release Oven)

The JRC-Ispra FARO plant is a large multi-purpose test facility in which reactor severe accidents could be simulated by out-of-pile experiments. A quantity in the order of up to 200 kg of oxide fuel type melts (up to 3000 °C) could be produced in the FARO furnace, possibly mixed with metallic components, and delivered to a test section containing a water pool at an initial pressure up to 5.0 MPa. The reference scenario of the current test series is relevant to a postulated in-vessel core melt down accident when jets of molten corium penetrate into the lower plenum water pool, fragment and settle on the lower head.

Objectives

- investigation of basic phenomenologies relevant to the progression of severe accidents in water cooled reactors with particular emphasis on the interaction of molten fuel with coolant and/or structures under both in-vessel and ex-vessel postulated severe accident conditions. .
- Provision of an Experimental Data Base for the Development and Improvement of Analytical Models and the Independent Assessment of Large System Codes used in LWR Safety Analysis.

Experimental Programme

Quenching Spreading

Investigation of basic phenomenologies relevant to the fragmentation and quenching of molten material into the water coolant at different initial pressure and water subcooling. 12 Tests have been performed: 5 at 50 bar initial pressure, 1 at 20 bar and 6 tests at pressure lower than 5 bar. In the last test an external trigger was applied to the molten mixture.

These tests are designed to investigate the impact on the core catcher of corium ejected after reactor pressure vessel failure during a core meltdown accident. The way melt spreads on the core catcher surface is important because of its effect on the long-term coolability of the melt. Two tests have been performed, one with a dry surface and one with 1 cm of water layer.

