of the European Atomic Energy Community (Euratom)
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Collaborative Project

MAXSIMA

Project title:	**Methodology, Analysis and eXperiments for the "Safety In MYRRHA Assessment"**
Project number:	**323312**
Project coordinator:	**Studiecentrum voor Kernenergie SCK-CEN, Brussel, Belgium**
Project homepage:	http://maxsima.sckcen.be
HZDR participant:	**Institute of Radiation Physics**
Starting date:	**01.11.2012**
Duration (months):	**72**

Summary

The Strategic Research Agenda of the EU Sustainable Nuclear Energy Technical platform requires new large infrastructures for its successful deployment. MYRRHA has been identified as a long term supporting research facility for all ESNII systems and as such put in the high-priority list of ESFRI. The goal of MAXSIMA is to contribute to the "safety in MYRRHA" assessment.

MAXSIMA has five technical work-packages. The first contains safety analyses to support licensing of MYRRHA. Design-based, design extended and severe accident events will be studied with a focus on transients potentially leading to fuel pin failures. Fuel assembly blockage and control system failure are the least unlikely events leading to core damage.

For code validation a thermal-hydraulic study of different blockage scenarios of the fuel bundle and tests of the hydrodynamic behaviour of a new buoyancy driven control/safety system are planned. Both are supported by numerical simulations.

Safety of the Steam Generator is treated by looking at consequences and damage propagation of a SG Tube Rupture event (SGTR) and by characterising leak rates and bubble sizes from typical cracks in a SGTR. Additionally a leak detection system and the drag on bubbles travelling through liquid LBE are studied.

MOX fuel segment qualification with transient irradiations is a big step in licensing. MAXSIMA include validation experiments for safety computer codes involving core damage scenarios with high temperature MOX-LBE interactions. Fuel-coolant-clad chemistry is studied up to 1700°C and a core melt experiment in a reactor is prepared to assess the interaction of LBE with molten fuel.

Following the Fukushima accident, effort is put on development of enhanced passive safety systems for decay heat removal and on confinement analyses for HLM systems. A separate work package is dedicated to education and training. Beside workshops, lecture series and training sessions, virtual-safety simulator software will be developed.