



Contribution ID: 802

Type: **not specified**

P2.231 Experimental activities for in-box LOCA of WCLL BB in LIFUS5/Mod3 facility

Tuesday, 18 September 2018 11:00 (2 hours)

The new experimental facility LIFUS5/Mod3 has been designed, manufactured and installed to investigate the phenomena connected with the thermodynamic and chemical interaction between lithium-lead and water in case of in-box LOCA (Loss of Coolant Accident) of the WCLL breeding blanket concept and to validate the chemical model implemented in SIMMER code for fusion application. In order to fulfill these objectives, the necessary step is to obtain data, suitable to code validation, by means of an experimental campaign in LIFUS5/Mod3 facility, executed with controlled initial and boundary conditions. Specific instrumentation and dedicated data acquisition system are installed to provide meaningful and reliable data.

The experimental campaign is carried out in WCLL blanket module relevant conditions. A pre-defined amount of water is injected into the reaction tank at a pressure of 155 bar and different temperatures, accordingly with a selected test matrix. The initial liquid metal temperature is fixed at 330 °C. The experimental data and results of the executed tests (i.e. pressures, temperatures, amount of injected water, and hydrogen production quantification) are reported and discussed.

The final aim of the LIFUS5/Mod3 campaign is the SIMMER code validation, applying the standard methodology to post-test analyses. Besides, the expected outcomes of the tests are the improvement of the knowledge of physical behavior and of understanding of the phenomena, the investigation of the dynamic effects of energy release towards the structures, and of the chemical reaction with the consequent hydrogen production, the enlargement of the database for code validation.

Presenter: EBOLI, Marica (Dipartimento di Ingegneria Civile e Industriale (DICI) University of Pisa)

Session Classification: P2