

AREVA Thermo Hydraulic Testing Capabilities and Related OpenFOAM Analysis

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Many processes related to the energy applications involve multi-phase phenomena such as droplet/wall/film interaction, stratification, boiling and condensation. To investigate the internals of e.g. steam generators a validation of tools for the prediction of the droplet and film behavior is necessary. The AREVA Technical Center owns and operates large scale test facilities and laboratories where researchers work closely together on both experimental modelling.

For the development of a high pressure resistant film sensor, the experimental data was measured in a suitable experimental test rig and simulations were carried out with the help of the OpenFOAM thin film model and Lagrange particle tracking.

A further validation of the available droplet break up models in OpenFOAM was implemented with a Liquid Jet in Cross Flow (LJCF) experiment. The Pilch-Erdmann break up model showed an overall good agreement with the experimental data.

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