# Computer simulation of homogenization of boric acid in a pressurizer of an advanced nuclear reactor

M. L. Moreira[1], J. E. P. Rosa[1], P. A. B. de Sampaio[1]
e-mail: malu@ien.gov.br

[1] *Division of Nuclear Engineering - IEN*

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## Abstract

The reactivity of a water cooled reactor is controlled using control rods or boron dilution in water of the primary circuit. This study simulates a test section, which represents a quarter of a modular nuclear reactor pressurizer [1].

By using the CFX code, a computer program allows thermo-hydraulic analysis of different types of flow; and three examples were simulated using different operating conditions.

The results presented by CFX have great consistency with the theoretical results, since the analytical solution is simplified and does not take into account the geometric data of the problem. Also the numerical results present consistency in terms of qualitative results when compared with experimental results [2].

With the results, it was analyzed the parameters that could influence this homogenization. Case studies such as variation of the dimensions of the water inlet and outlet tubes, flow variation and change in positioning of entrances and exits were made with the goal of finding parameters that could help the optimization of the homogenization of boron [3]. The results confirm that the issues analyzed can be changed in the project in order to obtain the best operating condition.

## References

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