



Published on *CD-adapco* (<http://www.cd-adapco.com>)

[Home](#) > Computational Fluid Dynamics Modeling of Two-Phase Flow Topologies in a Boiling Water Reactor Fuel Assembly

Computational Fluid Dynamics Modeling of Two-Phase Flow Topologies in a Boiling Water Reactor Fuel Assembly

This paper presents recent advances in the development and validation of the two-phase flow topology models implemented in CFD-BWR, an advanced Computational Fluid Dynamics (CFD) computer code that allows the detailed analysis of the two-phase flow and heat transfer phenomena in Boiling Water Reactor (BWR) fuel assemblies under various operating conditions. The local inter-phase surface topology plays a central role in determining the mass, momentum, and energy exchanges between the liquid and vapor phases and between the two-phase coolant and the fuel pin cladding. The paper describes the topology map used to determine the local inter-phase surface topology and the role of the local topology in determining the inter-phase mass, momentum, and energy transfer. It discusses the relationship between the local inter-phase surface topology and the traditional channel flow regimes and presents results of experiment analyses in which computed local topologies are aggregated into flow regimes and compared with experimental observations.

Author Name:

Adrian Tentner
Simon Lo
Andrew Splawski
Andrey Ioilev
Vladimir Melnikov
Maskhud Samigulin
Vasily Ustinenko

Industries:

[Energy](#) ^[1]

Products:

[STAR-CCM+®](#) ^[2]

Conference Location:

Orlando, Florida, USA

Rights:

2008 ASME and UChicago Argonne, LLC, Operator of Argonne National Laboratory

Pages:

pp. 431-441

Conference Date:

Sunday, May 11, 2008

Paper Reference:

ICONE16-48442

Volume:

3

ISBN:

0-7918-4816-7

DOI:

<http://dx.doi.org/10.1115/ICONE16-48442>

Conference Name:

16th International Conference on Nuclear Engineering

CD-adapco is the world's largest independent CFD focused provider of engineering simulation software, support and services. We have over 30 years of experience in delivering industrial strength engineering simulation.

Source URL: http://www.cd-adapco.com/conference_proceeding/computational-fluid-dynamics-modeling-two-phase-flow-topologies-boiling-water

Links:

[1] <http://www.cd-adapco.com/industries/energy>

[2] <http://www.cd-adapco.com/products/star-ccm%C2%AE>