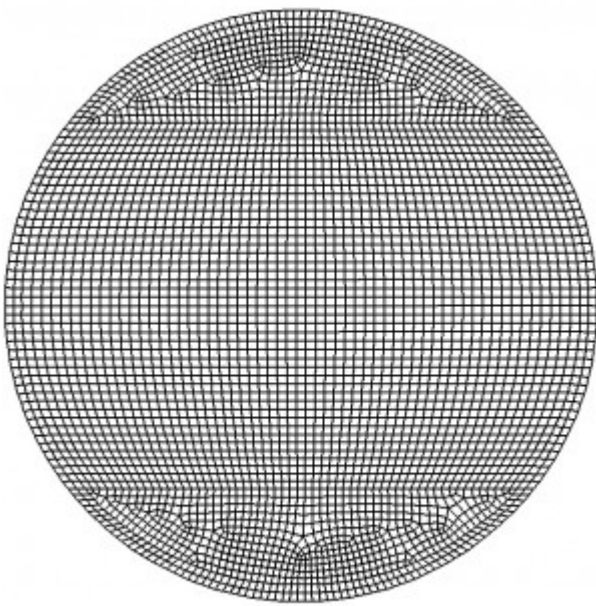
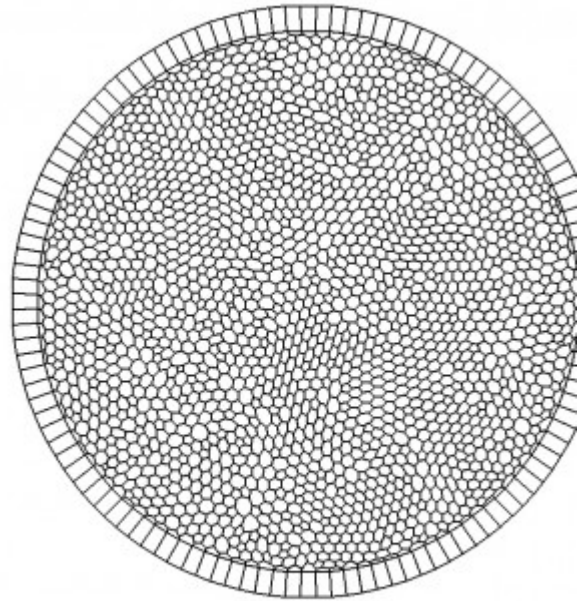


Large Eddy Simulation for thermal fatigue prediction in a T-Junction :Wall function or Wall-resolve based LES



Case 1



Case 2

Date:

Monday, November 1, 2010

Abstract:

Large Eddy Simulations are performed in a T-junction to analyze the feasibility of wall-functions in accurately predicting the thermal fluctuations acting on the pipe walls. The WALE sub-grid-scale model employed in the LES solver is validated by performing OECD/NEA T-Junction benchmark test-case. In order to reduce the computational costs, Reynolds number scaling is performed while preserving the essential flow features. While the wall-function based simulation showed good agreement with the wall-resolved approach for the bulk velocity and temperature field, the corresponding RMS components were consistently underestimated close to the wall boundaries. The same was true for the RMS fluctuations of the wall heat-flux. As a consequence, it is concluded that any similarity in the bulk profiles does not guarantee any kind of similarity in the wall heat flux behavior.

 [2010-CFD4NRS3_Ja.pdf](#)^[1]

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