

STH/CFD Codes Applications to Compact Crossflow HXs

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This paper aims to investigate the compact crossflow heat exchangers (HXs) and their implementation in the lead fast reactors (LFRs). Two different analyses have been performed, following the same geometrical parameters in terms of tube diameter and pitch-to-diameter ratios, as reported in the research work conducted by Ciurluini et al. [1], which addresses the same reactor concept proposed by Newcleo.

The first regards a 2D numerical domain, focused on characterising the Nusselt number in such compact configurations, comparing the CFD standalone results with the different values obtained by the correlations available in literature.

The second case, which is explicated in this extended abstract, is a lead flow field extracted by the cylindrical layout SG, constituted by 72 banks of Archimedean spiral tubes, and is analysed employing STH/CFD code coupling approaches, to take advantage of both codes' best features.

Technical Track

Nuclear Thermal-Hydraulics

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