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[Home](#) > Film Thickness Prediction in an Annular Two-Phase Flow Through Bends

Film Thickness Prediction in an Annular Two-Phase Flow Through Bends

A finite volume method-based CFD model has been developed in the commercial code STAR-CD to simulate the annular gas-liquid flow through the 30°, 60° and 90° bends. The liquid film is solved explicitly by means of a modified Volume of Fluid (VOF) method. The droplets are traced using a Lagrangian technique. The film to droplets (entrainment) and droplets to film (stick, bounce, spread and splash) interactions are taken into account using sub-models to complement the VOF model. A good agreement is found between the computed film thickness value and those cited in the literature.

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