

Numerical Simulation of the Flow Channel in the Curved Plane Oil Skimmer

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Abstract : Oil spills at sea can cause severe marine environmental damage, including bringing huge hazards to living resources and human beings. In situ burning or chemical dispersant methods can be used to handle the oil spills sometimes, but these approaches will bring secondary pollution and fail in some situations. Oil recovery techniques have also been developed to recover oil using oil skimmer equipment installed on ships, while the hydrodynamic process of the oil flowing through the oil skimmer is very complicated and important for evaluating the recovery efficiency. Based on this, a two-dimensional numerical simulation platform for simulating the hydrodynamic process of the oil flowing through the oil skimmer is established based on the Navier-Stokes equations for viscous, incompressible fluid. Finally, the influence of the design of the flow channel in the curved plane oil skimmer on the hydrodynamic process of the oil flowing through the oil skimmer is investigated based on the established simulation platform.

Keywords : curved plane oil skimmer, flow channel, CFD, VOF

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