Numerical Investigation of Flow Behaviour Across a Trapezoidal Bluff Body at Low Reynolds Number

Authors : Zaaraoui Abdelkader, Kerfah Rabeh, Noura Belkheir, Matene Elhacene

Abstract : The trapezoidal bluff body is a typical configuration of vortex shedding bodies. The aim of this work is to study flow behaviour over a trapezoidal cylinder at low Reynolds number. The geometry was constructed from a prototype device for measuring the volumetric flow-rate by counting vortices. Simulations were run for this geometry under steady and unsteady flow conditions using finite volume discretization. Laminar flow was investigated in this model with rigid walls and homogeneous incompressible Newtonian fluid. Calculations were performed for Reynolds number range $5 \leq Re \leq 180$ and several flow parameters were documented. The present computations are in good agreement with the experimental observations and the numerical calculations by several investigators.