

Abstract Submitted  
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**Flow past an Inclined Square Cylinder**<sup>1</sup> DONG-HYEOG YOON, KYUNG-SOO YANG, CHOON-BUM CHOI, Inha University — Crossflow past an inclined square cylinder is numerically studied in the laminar range of Reynolds number (Re). We consider both the internal flow (Case A) where the cylinder is located inside a channel and the external flow (Case B) where the cylinder is positioned in an open domain. Flow characteristics change depending on Re and the inclination angle (IA) with respect to the main flow direction. For Case A, we show how the vortex shedding from the inclined square cylinder can enhance heat transfer from the channel walls, and present the optimum inclination angle for each Re to obtain the most effective heat transfer. For Case B, we present the contour diagrams for force coefficients on the cylinder as well as for Strouhal number of the vortex shedding on an Re-IA plane. The diagrams are useful in estimating flow-induced forces and the frequency of vortex shedding not only for a fixed inclined square cylinder but also for a slowly-rotating square cylinder.

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