

Abstract Submitted
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Flow-induced Forces on Two Nearby Circular Cylinders¹ DONG-HYEOG YOON, KYUNG-SOO YANG, KYONGJUN LEE, Inha University — Flow-induced forces on two identical nearby circular cylinders immersed in the cross flows below $Re=160$ were numerically studied using an immersed boundary method. We consider all possible arrangements of the two circular cylinders in terms of the distance between the two cylinders and, the angle inclined with respect to the main flow direction. It turns out that significant changes in the characteristics of vortex shedding are noticed depending on how the two cylinders are positioned, resulting in quantitative changes of force coefficients on both cylinders. Collecting all the numerical results obtained, we propose contour diagrams for the force coefficients on the distance vs. angle plane for each of the two cylinders. The geometrical symmetry implied in the flow configuration allows one to use those diagrams to estimate flow-induced forces on two identical circular cylinders arbitrarily positioned in physical space with respect to the main flow direction.

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