Numerical simulation of flow around two circular cylinders in various arrangements

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Abstract

The results of flow feature around two circular cylinders in various arrangements are carried out using two-dimensional simulation at Reynolds number of 200. In this work, time-averaged fluid force acting on the upstream and downstream cylinders were calculated for staggered angle $a = 0 \sim 90^{o}$ in the range of $L/D = 1.1 \sim 5$, where a is the angle between the free-stream flow and the line connecting the centers of the cylinders, L is centre-to-centre distance and D is cylinder diameter. The dependence of magnitudes and trends of fluid force coefficient on the spacing ratio L/D and a are discussed. In all arrangements of two cylinders, tandem arrangement ($a = 0^{o}$) is the case produced a minimum drag coefficient for downstream cylinder. Moreover, the locations of separation and stagnation points or pressure coefficient on surface of the cylinder were examined. *Acknowledgement: "This research was a part of the project titled 'Development of integrated estuarine management system', funded by the Ministry of Oceans and Fisheries, Korea."*

Key words: Cylinders, drag force, lift force.

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