

CFD analysis on Flow over cylinder and impact of no. of sides and orientation of cylinder on the drag in a Laminar flow

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Synopsis:

Fluid flow over a surface have always fascinated the research community because they are ubiquitous in nature, nature always presents the finest examples for any engineering problem, in this case we have seen fish swimming in water, the shape of fish is classic example of streamlined body and nature have always made fish with that shape so as to reduce its drag and travel effectively. Flow over cylinder is a class of problem which has immense applications in nature, with the development of CFD it possible to model the flow dynamics of these class of problems with quite ease.

This report will drive through the effects of no. of sides on important parameter (drag, lift) for 2 different cases namely steady flow ($Re < 40$) and Unsteady flow ($Re > 40$), also the essence of streamlining is briefed. The report ends with certain conclusion drawn from the study and mentioning the future scope of the same.

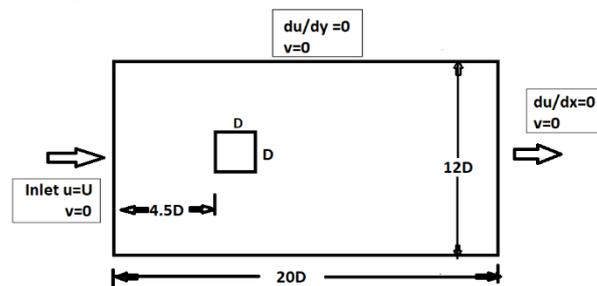


Figure 1: Computational Domain used for the analysis [1]

References:

[1] Franke, R., W. Rodi, and B. Schönung. "Numerical calculation of laminar vortex-shedding flow past cylinders." *Journal of Wind Engineering and Industrial Aerodynamics* 35 (1990): 237-257.