International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.6, pp 209-214, 2017

Numerical Investigation on Control of Vortex Shedding Behind a Circular Cylinder Using Passive Techniques

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Abstract : Present numerical study aims at control and suppression of vortex shedding formed over a circular cylinder using V splitter. The present work is done with commercially avialble software ANSYS-Fluent^{TM} with the flow condition of unsteady, two–dimensional laminar conditions at a Reynolds number (Re) of 150. Numerical simulations with different passive controlling methods have been carried out to reduce the vortex shedding frequency or to suppress it completely by using the V splitter. It is found that V splitter with (0.5D) is suppress the shedding immediately. V splitter with 1D control the shedding initially and then supress, where 0.5D splitter is directly control the shedding. The results of vorticity and streamline contours, C_l, C_d and Strouhal number for better understanding the flow and shedding characteristics.

Keywords : V splitter, Vortex shedding, Strouhal Number, Shedding Frequency, vorticity

G. Boopathy *et al* /International Journal of ChemTech Research**,** 2017,10(6): 209-214.

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