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Numerical investigation on fluid flow past transversely oscillating vertical rectangular cylinder[1] JEEVANANTHAN KANNAN[2], ARUL PRAKASH K[3], Indian Institute of Technology Madras — In the present study, the rectangular cylinder was forced to vibrate for various flow configurations such as the AR (Aspect Ratio) ranging from 0.2 to 1 and Reynolds number based on (depth of the cylinder) as 100, 150, 200. The frequency ratio (excitation frequency, fe / natural shedding frequency, fns) chosen for the study was 0.5, 0.75, 1.0, 1.5 and 2.0. The vibrating amplitude 0.1, 0.2 and 0.3 of cylinder depth were also considered. For the slender aspect ratios (AR<1), the flow phenomena becomes more complex, due to the short vortex formation length. The separated shear layers were incessantly swiveling behind the cylinder dispense the vortices in the downstream of the wake as inline shedding packets. Three dimensional Studies are also established for the selected cases. The influence of the cylinder vibration on the wake patterns, phase plane, lift, drag force etc. are presented and discussed.

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