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Effect of forced vibration on vortex evolution behind side-by-side cylinders YINGCHEN YANG, University of Texas at Brownsville, ALIS EKMEKCI, University of Toronto — Vortex patterns in the wake of two side-by-side circular cylinders in stationary state and under forced cross-flow vibration were compared through experimental study. The hydrogen bubble visualization technique was employed for flow visualization. The Reynolds number was fixed at Re = 250 for all the experiments. Two center-to-center pitch ratios were examined: P/D = 3 and 6. For the two cylinders under forced vibration, the vibration frequency was chosen to match with the vortex shedding frequency in stationary state, and the vibration amplitude (A) was fixed at A/D = 0.25. Under forced in-phase vibration, very strong in-phase vortex shedding behind the two cylinders was observed for both P/D = 3 and 6. But the vortices evolve differently in the wake at different P/D. Under forced anti-phase vibration, both in-phase and anti-phase vortex shedding were observed for the two values of P/D. The effect of in-phase and anti-phase vibration on vortex evolution was characterized through comparison with the stationary case.

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