

عنوان مقاله:

Numerical investigation of nozzle-to-target spacing effect on oscillatory behavior in twin self-excited impinging jets

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خلاصه مقاله:

In the present study, the oscillation frequency and flow pattern in an isothermal twin self-excited oscillating jet are investigated at different dimensionless nozzle-to-target spacings ($L/e=40$ and 60), various inlet velocities ($U_0=4$ and 8 m/s), and a constant nozzle spacing ($S/e=4$). The numerical simulations were carried out by using OpenFOAM solver, and the turbulence characteristics were evaluated by the shear stress transport model (SST). The examination showed that the jet flows are joined to each other and oscillate regularly in the cavity similar to single self-excited oscillating jets. In addition, in the twin self-excited impinging jets, the all flow parameters oscillate with specific frequency due to the Coanda effect and pressure distribution in the cavity. During the oscillatory flow, two main vortices with counterclockwise and clockwise directions are formed in the cavity. The movement of the vortices in the cavity manages the oscillatory flow and oscillation frequency. Moreover, the oscillation frequency increases by growing the inlet velocity and the nozzle-to-target spacing.

کلمات کلیدی:

Twin jet, Self-excited oscillating jet, nozzle-to-target spacing

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