عنوان مقاله:

A CFD analysis of the effects of injection and suction through a perforated square cylinder on some thermo-fluid parameters

محل انتشار:

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خلاصه مقاله:

The effects of uniform injection and suction through the surfaces of a perforated square cylinder on the vortex shedding, heat transfer and some aerodynamic parameters have been investigated numerically. The finite-volume method has been used for solving the Navier-Stokes equations for incompressible and turbulent near-wake flow ( ) with the k-ε turbulence model equations. To find the optimum conditions, the effects of injection and suction through the front surface (case), the rear surface (case), top-bottom surfaces (case) and all surfaces (case) with various injection/suction coefficient G are studied. The results reveal that parameters such as pressure and drag coefficients and Nusselt number are influenced drastically in some cases as well as flow field parameters. For instance, the maximum reduction of the drag coefficient occurs at case while the maximum increase and reduction of Nu number occur at for all cases about ۴۶% and ۳۲%, ۶۱% and ۶۳%, ۹۲% and ۶۰% and ۱۸۰% and ۱۱۵% for cases , , and .respectively

کلمات کلیدی:

Injection and suction, Perforated square cylinder, heat transfer, Turbulent Flow

لینک ثابت مقاله در پایگاه سیویلیکا: