

عنوان مقاله:

Investigating the distance of the injection jets to the target plate and their number and the use of twisted tape in the rotating jet at various angles and its effect on the average Nusselt number and heat transfer

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خلاصه مقاله:

There are various industries, each of which is somehow involved in the issue of heat transfer, and in many cases, the goal is to increase the rate of heat transfer. In this study, one, two or four injection jets were used together for cooling and the results were compared in terms of the average Nusselt number. Then, by placing the twisted tape at different angles of  $18^\circ$ ,  $36^\circ$  and  $72^\circ$  in the injection jet, the average Nusselt number and the minimum and maximum temperature were checked. The results showed that the diameter of the fluid outflow from the nozzle increases by moving away from the jet opening and approaching the hot plate due to the pressure distribution, and when two jets are used in close proximity, the exit from each vortex is created in this place. When using four jets, the outflow from the jet hits the hot plate and creates vortices. With the increase in the number of jets, the Nusselt number and the maximum temperature on the hot surface also increase. The results showed that the average Nusselt number with the angle of the twisted tape, which is placed inside the rotating jet tube, increases at an angle of  $18^\circ$  degrees and decreases at angles of  $72^\circ$  and  $36^\circ$  degrees. In all cases, using twisted strips, the maximum temperature as well as the minimum temperature of the hot surface are higher than when the non-rotating jet is injected on the hot plate. As the distance of the jet from the plane increases, the Nusselt number decreases

کلمات کلیدی:

Heat transfer, Nusselt number, injection jet, rotating jet

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