

عنوان مقاله:

(Experimental study of heat transfer in a solar chimney using Phase Change Materials (PCM

محل انتشار:

شانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1397)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

The thermal performance of a solar chimney without and with phase change material (PCM) has been discussed in this study. All experiments were carried out within a laboratory condition with two different heat fluxes of 800 W and 1200 W. The results indicated that in the case of the solar chimney with PCM, the maximum outlet air temperature, the melting and freezing time of the whole PCM (charging and discharging period, respectively) would increase. For example, for the case of 1200 W, the maximum outlet air temperature, charging and discharging time for open mode and in the presence of PCM, were 1.07, 4.9 and 9.45 times higher than those for the case of the solar chimney without PCM. For open charging mode and heat flux of 1200 W, the whole melting process last for almost 4 h 20 min, which was nearly 44% longer than that for the closed mode. Moreover, the outlet air temperature for close charging mode and heat flux of 1200 W, was approximately 71°C, which was 1.5 times higher than that for open charging mode.

کلمات کلیدی:

Solar Chimny, PCM, Heat Transfer, Thermal Performance

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