Design, developing and testing of a solar air collector experimental and review the system with longitudinal fins

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Authors: F. Chabane, N. Moummi, S. Benramache.

Abstract

The aim of this study to increase the thermal efficiency and heat transfer has to be transferred efficiently from the absorber plate to the flowing air. A configuration of the absorber plate has been designed to improve the heat transfer to air flow in the channel. We can be minimized heat losses from the front cover of the solar collector and to maximize the heat extraction from the absorber plate, the review of resultants has been done in May with tilt angle equal 45°. The thermal performance of a single pass solar air heater with 5 fins attached was investigated experimentally. Longitudinal fins were used inferior the absorber plate for an increase the heat exchange and render the flow fluid in the channel uniform. The thermal performance of the heater was investigated by experimental study under Algeria prevailing weather conditions during the months of May 15/05/2012, with clear sky condition. Biskra is a city of Algeria located on 34°50'43.28"N latitude 5°44'49.11"E longitude.

Keywords : heat transfer, solar irradiation, solar air collector, fins.

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