

**International Energy Journal, Volume 10, Issue 3, September
2009**

[HOME](#) | [ABOUT](#) | [LOG IN](#) | [REGISTER](#) | [SEARCH](#) | [CURRENT](#) | [ARCHIVES](#)

[Home](#) > [Volume 10, Issue 3, September 2009](#) > [Barahate](#)

Experimental Thermal Analysis of a Solar Cavity Receiver

Sanjay D. Barahate, M. Prakash, Shireesh B. Kedare

Abstract

In this communication, an experimental thermal analysis of a solar cavity receiver is reported. The cavity receiver is made up of helically coiled copper tube. The experiments are conducted in a dry test mode wherein the coiled tube of the receiver is heated electrically and no fluid is circulated through the receiver coil. A special heating set-up is designed so as to replicate the actual heating of the tubes by solar insolation. The temperature variations in the cavity receiver are studied at receiver orientations of 45° and 90° (downward facing cavity) for power input values of 0.33, 0.5, 0.667 and 1kW. The results suggest that the air and tube temperatures are higher at 90° inclination when compared to 45° inclination. The temperatures are higher near the back wall of the receiver and are lower at the receiver aperture. The difference in temperatures at the inner most regions of the receiver and at the aperture are low for the 90° receiver inclination when compared to the 45° inclination. This indicates the presence of a large stagnation zone for the 90° receiver inclination when compared with that of 45° inclination.

Full Text: Subscribers Only