

PERFORMANCE ASSESSMENT OF A SOLAR HOT WATER GENERATING SYSTEM WITH HEAT PIPE EVACUATED TUBE SOLAR COLLECTORS

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ABSTRACT

The aim of this paper was to assess the performance of a solar hot water generating system with heat pipe evacuated tube collector (HP-ETC) during the months of October, November, December-2014 and January, February and March-2015. The experimental heat pipe evacuated tube collectors having 147 m² areas were used for the collection of solar radiation. The statistical analysis revealed that there is significant effect of month of operation and operating time on intensity of solar radiation of HP-ETC. The highest value of intensity of solar radiation of HP-ETC obtained during experimental months was 961 W/m² in the month of March, 2015. The interaction effect of month and time was also found significant. The maximum recorded HP-ETC outlet fluid temperature was 99.05 °C. The highest efficiency value of HP-ETC obtained during experimental months was 80.25 in the month of March, 2015. The interaction effect of month and time for efficiency of HP-ETC was found significant. It was found that efficiency of HP-ETC varies throughout the day depending on the intensity of solar radiation.

KEYWORDS: Solar Hot Water Generating System, Heat Pipe Evacuated Tube Collector, Intensity of Solar Radiation, Efficiency of HP-ETC

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