

ABSTRACT

Parabolic trough concentrator (PTC) is one of the solar panel applications. PTC can reflect sunlight to a focal point. Systems on PTC can produce great efficiency either on small and large scale. Model PTC consists of a reflector which is made from stainless steel plate, pipe receiver is made from stainless steel. The purpose of this study is analyzing the effect of working fluid flow rate variations and colors of the receiver to thermal efficiency of the collector. Design thermal collectors made with a width of 0.9 m, length 1.83 m, angle of 90° rim with focal distance of 0.225 m and is equipped tracking system. The test using the receiver pipe material with emissivity of 0.54 and 0.80 and the fluid flow rate varied from 1 liter/min to 3 liters/min. The results obtained during 2 hours and 50 minutes of testing on the pipe material emissivity of 0.80 and a flow rate of 3 liters/min produces efficiency thermal 62%. From all the test showed that the difference of temperature input and output on the receiver pipe, pipe material emissivity and the flow rate of fluid can affect the thermal efficiency of PTC.

Keyword : *Parabolic trough concentrator, flow rate variation, thermal efficiency.*