

Design of Thermosyphon Solar Water Heater System by Using Engine Oil as Working Fluid

Maqrub Abidin

Renewable Energy Engineering Study Program
Department of Engineering

Abstrack

Performance of flat plate solar water heater hasn't been maximal with 9% smaller then efficiency of evacuated tube type (Sabiha et al., 2015). Performance of flat plate collector can be increased by combining thermosyphon flow and heat transfer fluid. This research was aimed to design thermosyphon solar water heater system by using engine oil as working fluid and observe the performance of solar water heater by using SAE 5W-30 and SAE 10W-30 oil. The result of collector design obtained is 0,6 m² by using two glass cover and heat exchanger shell and tube. SAE 5W-30 oil has better performance then SAE 10 W-30 oil with maximum temperature output 80,71°C with the thermal characteristic F_{Rta} and F_{RUL} value 0,23 and 11,45 W/m².°C with 19,5 % heating efficiency.

Keyword : Solar Water Heater, Thermosyphon, Flat Plate Collector