The Effect of The Number of Absorbers On The Performance of *Parabolic Trough Collector* (PTC)

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ABSTRACT

Based on its geographical location, Indonesia is right on the equator which has a tropical climate. The intensity of solar radiation in the area is 4.8 kWh/m^2. Certainly, this is the great potential source for Indonesia in developing thermal energy sources from the sun (KESDM, 2016). *Concentrated solar power* (CSP) is a heat collector device using a reflector mirror as a focus of sunlight on the *receiver* in the form of an absorber pipe which functions to transmit radiation from heat energy (sun) to the fluid. This research was conducted to determine the heat rate (Q_{net}), *losses* heat (Qlosses), and the efficiency value (η) produced by the *Parabolic Trough Collector* with variations in the number of absorber pipes of 8, 9, and 10. This test is carried out using an experimental method using a data logger to collect the data of the experiment. The results of the study show that the highest heat rate (Q_{net}) that enters the collector is obtained from the number of pipes 8 at 69,38 W, the number of pipes 9 at 73,43 W, and the number of pipes 10 at 74,08 W. The highest heat loss that occurred in the solar *parabolic trough collector* on the 1st day at 14.00 pm at the number of pipes 8 at 19,75 W , the number of pipes 9 at 21,58 W, the number of pipes 10 at 18,61 W, then on the 2nd day at 14.00 pm can reach the highest heat loss at the number of pipes 8 at 14,72 W , the number of pipes 9 at 16,56 W, the number of pipes 10 at 18,61 W. While, at the 3rd day at 14.00 pm can reach the highest heat loss at the number of pipes 8 at 17,96 W , the number of pipes 9 at 20,20 W, the number of pipes 10 at 22,71 W, and the highest thermal efficiency that can be reach from heat collector was 69,99%.

***Keywords** : concentrated solar power* (CSP) , *Parabolic Trough Collector, Heat Rate* (Q_{net}), *Heatloss* (Q_{losses})