

## *ABSTRACT*

### *EFFICIENCY THERMAL ANALYSIS OF HELIOSTAT CONCENTRATED SOLAR THERMAL COLLECTOR*

Indonesia is a country that has a tropical climate and is located on the equator so that it has a high potential for utilizing solar energy. One of the uses is that the solar heat collector is concentrated in the heliostat type. In this study, the calculation of the value of thermal efficiency on the type of collector will be done by applying several variations, namely using and not using a mirror as a light reflector, using black and silver tubes as heat receivers to test heat absorption capabilities, five variations in intensity of 61 W/m<sup>2</sup>, 77 W/m<sup>2</sup>, 96 W/m<sup>2</sup>, 116 W/m<sup>2</sup>, and 136 W/m<sup>2</sup>, and two variations of water mass, namely 0.5 kg and 1 kg. Tests were carried out in the laboratory room by utilizing the sun simulator as a radiation source and carried out for 30 minutes for each variation. In this test data on water temperature, water mass lost, and light intensity were taken. After getting the data, then the calculation of heat radiation, heat absorbency, and thermal efficiency. For each experiment on the same variation in light intensity it has the same radiation calorific value. The largest absorptive heat is 8358 Joules which occurs in collectors using mirrors, black receiver tubes, the highest light intensity is 136 W/m<sup>2</sup>, and the mass of water is 0.5 kg. While the largest thermal efficiency value is 60.04 %, it occurs in collectors who use mirrors, black receiver tubes, the lowest light intensity is 61 W/m<sup>2</sup>, and the mass of water is 0.5 kg.

Keywords : Solar Heat Collector, Thermal Efficiency