

## **ABSTRACT**

The sun is the biggest energy that gives heat to the earth throughout the year which is very appropriate to be used by every living creature. One of the uses of solar energy as an energy source is to use flat plate type solar thermal collector as solar water heater. In this study, solar thermal collectors without TEG were used and TEG was used to obtain efficiency values. Tests carried out in various variations of intensity and conditions of TEG use and without using TEG. In addition, this research was conducted in various intensity variations, namely  $107 \text{ W/m}^2$ ,  $147 \text{ W/m}^2$ ,  $409 \text{ W/m}^2$ ,  $456 \text{ W/m}^2$ ,  $665 \text{ W/m}^2$ ,  $817 \text{ W/m}^2$ . From this study it was obtained by using TEG that efficiency value was smaller compared to those without TEG because the heat given by the lamp was divided into solar thermal collectors and TEG. The highest thermal efficiency value is in the tanpan treatment using TEG, for that is equal to 81.98% with the final water temperature value produced  $36^\circ\text{C}$ , while the copper pipe collector efficiency value is around 80.28% with the final temperature value generated  $34^\circ\text{C}$

**Keywords:** Solar Thermal Collector, solar water heater, TEG, efficiency