

***Design and Build Solar Cell Based Transistor  
Using Fresnel Lens Concentrator***  
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**ABSTRACT**

*Solar energy is an environmentally friendly and abundant source of electrical energy. However, in the utilization of solar energy there are obstacles faced, namely solar cell technology still has an expensive cost. This research utilizes transistors as solar cells to generate electricity. This study aims to design a transistor-based solar cell with the addition of a Fresnel lens, determine the power generated by the solar cell, and determine the efficiency of a transistor-based solar cell. The results of the study show that the current and voltage values are influenced by the intensity of sunlight so that the power and efficiency values produced can be known. The no-load power produced by a transistor-based solar cell using a fresnel lens is  $4.1 \times 10^{-4}$  Wp, while the power with a load generated by a transistor-based solar cell using a fresnel lens is  $8.4 \times 10^{-7}$  Wp and an efficiency of  $7.5 \times 10^{-4}\%$ . The results showed that the efficiency of the solar cell was still low despite the addition of a Fresnel lens. This is influenced by the fixed position of the solar cell (static) so that it creates shadows and weather conditions when data collection*

**Key words:** *Solar Cell, Transistor, Fresnel Lens*