

**The Effect of Using Water Cooling Systems and Fresnel Lenses on the  
Output Power of Solar Panels**

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***ABSTRACT***

*Solar energy is renewable energy that can be converted into electrical energy using solar panels. Solar panels have several advantages and disadvantages, including the size of the light intensity and temperature changes in the solar panel that affect power. In this study, a fresnel lens and a water cooling system were combined to increase the output power of the solar panels. The data collection process was taken from 07.00 WIB to 15.00 WIB for 3 days. The use of a water cooling system and fresnel lens on the solar panel causes an increase in current of 0.11 A, voltage of 1 V and power of 2.03 watt, and an increase in solar panel efficiency by 3.92% compared to solar panels without special treatment.*

***Keywords:*** solar panels, fresnel lens, water cooling system, output power