ABSTRACT

One of the source of renewable energy that mostly used is photovoltaic or commonly known as solar cell. There are various factors that affect solar cell power output, for example light intensity, temperature, material, etc. Because of that various factors, nowadays solar cell efficiency only ranged from 10% to 46%. Because of that, needed a way to increase solar cell power output.

In this study, light convergence method will be done. Light convergence method is a method to focuses light around solar cell to increase the amount of light intensity that absorbed by solar cells, and hopes it will increase solar cell power output.

The experiment will be done using 2 solar panels with same specification with sun light as source of light and 20AH capacity lead acid battery as a load. On one of the solar panel will be installed with series of fresnel lens to convergence light right on every solar cells.

From the experiment results, power output on solar panel that installed with series of fresnel lens are lower 17.0141% to 31.81% than on solar panel that are not installed with series of fresnel lens. That happen because the size of fresnel lens is smaller than the size of solar cells so it creates shadow on the solar cells that creates partial shading. From the experiment using solar cell, fresnel lens succesful increases the power output of solar cell by 9.75% because there are no partial shading on the cell.

Keywords: *photovoltaic, solar cell, efficiency, power, convergence, light intensity, fresnel lens, partial shading.*