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EFFICIENCY IMPROVEMENT OF CONCENTRATION PHOTOVOLTAIC MODULE

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ABSTRACT

The Photovoltaic systems are characterized by low efficiencies, to improve it, we need to use concentrating photovoltaic systems (CPV), which allowed to increase the power received by the cell. This high powercan rise the electrons' potential causing the heating of the cell, which reduce the global module's efficiency. So, to adopt a cooling system will be necessary.
This work consist to determine the concentration effect on the module in order to define the optimum working temperature cell. We have established a theoretical model based on energy and mass balances. UsingMATLAB, we were able to simulate the module's operations. The obtained results according to different parameters of studies, allow us to determine the optimal operating conditions. Those results indicated the improvement of CPV systems' efficiency compared to simple PV.

Keywords: Concentrating photovoltaic, Temperature, Cooling system, Modeling, Simulation.

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