

## Effect of Elevation and Wind Direction on Silicon Solar Panel Efficiency

**Authors :** Abdulrahman M. Homadi

**Abstract :** As a great source of renewable energy, solar energy is considered to be one of the most important in the world, since it will be one of solutions cover the energy shortage in the future. Photovoltaic (PV) is the most popular and widely used among solar energy technologies. However, PV efficiency is fairly low and remains somewhat expensive. High temperature has a negative effect on PV efficiency and cooling system for these panels is vital, especially in warm weather conditions. This paper presents the results of a simulation study carried out on silicon solar cells to assess the effects of elevation on enhancing the efficiency of solar panels. The study included four different terrains. The study also took into account the direction of the wind hitting the solar panels. To ensure the simulation mimics reality, six silicon solar panels are designed in two columns and three rows, facing to the south at an angle of  $30^{\circ}$ . The elevations are assumed to change from 10 meters to 200 meters. The results show that maximum increase in efficiency occurs when the wind comes from the north, hitting the back of the panels.

**Keywords :** solar panels, elevation, wind direction, efficiency

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