Solar and Wind Integrated Electric System

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Egypt faces a lot of challenges concerning energy. The aspects we worked on are limiting electricity problems and pollution's ones as there are a lot of places in Egypt that don't have access to electricity which results in huge problems, and disruption of life's routines. Most of those challenges result from depending mainly on fossil fuels in generating electricity. We found that the most efficient, applicable and available of alternative energy sources are wind and solar energy. The hypothesis is that those sources can be used to generate electricity in a more efficient way if some modifications were applied to the solar panels and the wind generators to increase their efficiency. Concerning the wind aspect, a wind generator is connected to an ultrasonic sensor that tracks and captures the wind in high and low ranges. As for the solar aspect, Nano particles of Titanium dioxide and Tungsten serve in increasing the electricity generated by converting the entire light spectrum into electricity. This increased the produced amount of electricity 5 times. Another modification was coating the solar panel with Cesium which captures the heat coming from the sun and turns it into electricity, and that increased the produced amount of electricity two times. To protect the solar panel from external factors and to make it easier to maintain, a graphite glass protector was used. A solar tracker was added to the system in order for the rays to be always perpendicular on the solar panel for increased efficiency which succeeded in reaching 85% instead of 45%. This system would provide sufficient electricity for a house usage in an environment friendly way, so it can be used in the remote and poor areas that have no access to electricity.

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