Redesign Solar Panel

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It is required to develop an innovative technique for the installation and packaging of solar cells to make solar energy extremely affordable. It is also required to enhance the power output of solar cells as the current solar cells output power is low. The task of the solar panel is to absorb the sunlight and produce electricity. The sun gives enough amount of energy which can easily fulfill the energy requirements of the whole world. But the limitation in extracting solar power is related to our ability to transform it into electricity cost-effectively and efficiently. As solar energy does not produce greenhouse gasses in the atmosphere when the solar panel is used to generate electricity. So, the solar energy source is considered as the most efficient source for generating clean energy. It is the power source that is free from carbon dioxide, as well as its environmental impacts, which are also lesser as compared to the other power sources. Solar panels' environmental impacts are mostly based on the supply of metals and materials which are needed in the production of the solar panels the water as well as the location used in solar panel cleansing also harm the environment. So, it is required to find some of the alternative procedures for cleaning solar panels1.

Our goal is to develop a solar panel that can produce more power for which everything is going to be enhanced in the new model from its cells' packaging, junction boxes as well as various other electronics. As they are the major factors in solar power increased cost i.e. about 60%. The cost of the solar system is almost 3.40$/watt power and the systems which are present on the houses roof cost twice. As previously, 26 cents/watt cost used in materials such as protective coating and glass, this cost is now reduced through cutting the cost of the inverter which is now reduced to 22 cents/watt. The new model power generation capacity is observed theoretically but most of the installation techniques of solar panels are stuck with the older techniques. This new design will change the installation perspective. As the previous solar cells gather sunlight from the whole surface but they convert it with almost 15 to 19% efficiency which means almost 85% energy loss in the entire process. There are also some of the efficient cells in the market but they are mostly expensive and few of them utilize exotic materials in their production. There are some cells on various satellites that are efficient but are not cheap2. But this model is based on the highly efficient cells which are placed at grid it has a lense array similar to honeycomb which extracts light and then this sunlight is distorted into the narrow beams then it is concentrated only at tiny cells. When the sun moved the layer of cells also moved slightly and continuously targeting the beams. These cells are 37% efficient while testing and 30% in the customer-oriented designs. Which means extracting twice the power from the similar area as compared to the previous panels. This resulted in solar panels which are not much different from the previous panels in shape and size as well as do not need special hardware which includes special platforms and concentrators. These new panels are continuously monitored and they also keep on working without the hitch of heatwaves, winter weather, and storms. The hybrid approach of this model is also effective specifically when the weather is cloudy as well as the sunlight is least concentrated. As the most efficient ability of this new model is that it keeps on generating power even in the diffuse rays of light.

There are some of the benefits which are common in current and older solar panels as they both are the sources of renewable energy, they also reduce electricity bills and its maintenance cost is also low. But the advantages of the current solar panel are more and diverse as compared to previous ones as the current solar panels' marginal cost is zero3. The current solar panel advantage is that people only required to invest in the installation then the rest of the energy is free as in previous solar panels the main issue was related to the cost of residential solar panels as it is greatly reduced now. Solar panels are the environmental friendly source of energy they are also widely available. The solar radiation level when reaches at earth varies concerning various geographical locations. The locations which are closer to earth equator receive more solar energy as compared to the other areas but solar power is viable in almost every location. In the solar system, there is no need for equipment shifting so, it does not produce noise as well as its maintenance cost is also low. Though most of the current and previous solar panels drawbacks are also similar such as high installation cost, energy storage is expensive, most of the solar cells used exotic materials and it also requires more space.

The cost of the solar panels is mostly based on the installed number of panels but solar power is continuously becoming more and more affordable with each passing year. The importance of solar panels can only be increased when they become inexpensive economically as well as more efficient. The current model price significantly drops down and it is efficient as compared with old solar panels. The average solar panel costs are almost $2.99/watt. The cost of installation of the solar panel is dropped significantly in the previous years as the older solar panel installation cost was more than 50,000 dollars, however, the new model of solar panel cost of installation ranges between 16,200 to 21,400 dollars that are reduced by 62% on average.

Reference List/Endnotes

1. Solar energy - facts and advantages about solar power | Fortum. https://www.fortum.com/about-us/our-company/our-energy-production/solar-power-unlimited-source-energy. Accessed November 18, 2019.

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3. Pros and Cons of Solar Energy in 2019 (updated). https://www.solarreviews.com/blog/pros-and-cons-of-solar-energy. Accessed November 18, 2019.