

Review of Article

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August 29, 2018

As we all know that the Solar Energy is the most abundant source of energy, in another word the all the energy that we have in earth is somehow come from the Sun and the solar cell is the best way to Grab these energies. Solar cells convert the photon energy into the electric potential energy and that is very efficient to transport and very convenient to use.

This journal is written by Marika Edoff. He explained the thin film solar cell in the perspective of industrial use. The journal talks about, which is the better solar cell, which has cost-effective manufacturing and reliability of the use of the solar cell. He explained the limitations of thin film solar cell Technology.

One of the topics that are covered in this journal is the cost efficiency. It means that which solar panel is better a solar panel with low-cost production and has Limited life or the Solar Panel which has high production cost but has a long life, but in the perspective of the author, he wrote that they both have the same cost efficiency.

Thin film solar cell easy to produce, easy to implement, that's why it is capable to give us high-Cost efficiency. That's why it is a good type of solar cell to implement on a large scale or building a Solar Plant. Cu(In, Ga)S_2 Is high efficiency which has now extended the 20% level.

The solar cell efficiency is increasing regularly due to the increase in the quality of silicon. It can reach the 30% of the theoretical value by using a single junction solar cell. Cu(Ga)S_2 based cell has a band gap of 1.7 electron volt on top of Cu(In)S_2 based solar cell with a 1.0 electron volt of Bandgap. Two materials that can give a low-cost photovoltaic material for thin film solar cell it can be the future of large-scale implementation as the generator for electricity.

In the middle of the journal, he explained the working of the solar cell. In the solar cell the two types of semiconductors that are P-type and n-type are in up down there in between them there is a Junction. when the photon strikes the electron in the junction there is the creation of a free electron and a hole. this happens again and again then buy this the potential difference is created between two terminals.

Use the energy that is produced in the solar cell we have to plug some load between the terminals of the solar cell. It is also important that the Load has an appropriate resistance that can lead the solar cell to produce optimum Power. this can be done by some intelligent IC. That Integrated circuit will adjust their resistance by which the work is maximum.

When we implement any solar panel at a given location the efficiency is not the same at all places because it does not only depend on the Solar Panel but it also depends on the weather, climate of the location of the implementation. In a region, there is a very large amount of Sunlight but at some places, the intensity of the sunlight is very low throughout the day. some tropical region also has less intensity of sun due to its weather, dark clouds.

One of the greatest problems with solar panel is that they are not ensured to give the equal amount of energy all the day throughout the year. its production is variable it is the biggest hurdle we have. the periodic variation can be handled by the storage, means batteries that store the energy at daytime and use the energy at night time but the unexpected variations lick whole day there is a dark cloud, any problem in weather may give the problem and that is hard to handle.

If we produce a product that is more efficient then the product available on the market its not only sufficient to

replace the existing one. we have to come with a better idea that has their own Insurance of working. The pupil has believed in this thing.

Two big issues with CIGS-based solar panels:

Doping: 100% effective doping of semiconductor is not possible. Although we are trying to do the optimum effective doping, it still there are a lot of impurities emerge out. These clusters are neutral and do not contribute to the doping, but can take a deficiency of copper with respect to indium or gallium is the crystal structure. while the formation of Crystal it always appears some type of deficiency.

The buffer layer and interfaces: we are not allowed to merge the p-type and n-type semiconductor directly over to each other we have to place some buffer layer between them they may be ZnO and CdS deposit to carry current self-diesel layer consist Cd it will absorb the ultra-violet region of the solar spectrum that harms the solar cell.

It also has one beautiful feature is that bandgap adjustment: we can adjust the band gap of the CIGS-based solar panels by which we can make the solar panel more efficient like the having container of the same size of the item. it will reduce the heat of the solar panel and also increase the lifespan of it.

in a nutshell, this article introduces us two type of solar cell and explain their future the applications to the large size solar plants. the Solar Panel can be the future of the mankind on which we depend entirely.