

solar cell edited

by Josephat Kamuyu

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Solar Cells

Introduction

Despite having several sources of power, solar cells still stands out for many years. This comes from the fact that solar cells produce clean energy that takes into consideration and addresses the concern of climate change and global warming. Therefore, over the years scientists have indulged in serious research to make the technology work for the better of the environment at the same time disguising the other sources of energy which cause pollution. In order to thoroughly understand solar cells as a green technology, literature will intensively discuss the history, advantages, disadvantages and the costs involved concerning the same.

History of Solar Cells

Although solar cell is well known for the past 60 years, its discovery traces back 200 years ago. As a result, many discoveries have been made from the same and thus have made solar power to be of much importance today. The first discovery of solar cell was made in 1839 where the photovoltaic effect was discovered (Jeon et al., 476). This discovery was made by Edmond Becquerel a French scientist and put it clear that when light is absorbed by a certain particular, the end result is the creation of electrical voltage. Later after some time in between 1873 and 1876 Willoghby Smith, an electrical engineer discovered the photoconductivity of selenium after absorbing light. After 3 years of research, more invention on the same proved that selenium could produce electricity without having moving parts or presence of heat. This was a great invention as it now became clear that solar power could be harvested easily and the cost of maintenance would be lower as compared with other sources. Since scientists had some interest in producing clean energy, in 1883 after some intensive research they were able to come up with the first solar cell which a conversion rate of 1 to 2 percent. Later in 1887, the first photoelectric

effect was observed showing light being used to drive free electrons from a material. Consequently, in between 1953 and 1956 solar cells were produced commercially as many people had appreciated the existence of solar power. According to Nie et al. (523), the most remembered year of solar energy in its history remains in 1958 when solar energy was used the first time ever in space. More and more research on solar cell continued where during the 1970s more funding was directed on the same since oil been a source of energy was becoming so expensive. With such happenings over time, in 1982 the first solar parks were created by Arco Solar. Later more invention on solar cells followed wherein 1995, there was the creation of retractable RV solar panels, during 1994 and 1999 photovoltaic conversion reached new levels and in 2005 the DIY solar panels become popular. Due to the efficiency of solar cells, in 2015 the flexible printed solar panels made a hit in the market leading to a discovery of the sunless solar power in 2016.

Advantages of Solar Cells

One of the several advantages of solar cells is that it is a renewable energy. In this case, it is recovered from the sun which means it cannot be exhausted. Secondly, solar cells are economy-friendly energy. This makes a lot of people save on electricity bills as they do not pay for the energy they generate. Thirdly, solar cells are environmentally friendly since there is no pollution (Zhou et al., 544). The other advantage falls under innovativeness. This has made the solar cells popular as it addresses the concern of climate change. Consequently, solar cells are a source of infinite energy which means that the energy extracted from the sun will never be exhausted. Last but not least, solar cells are long-term energy since they have a good durability and long life and also a selling energy as it makes properties, for instance, homes to be sold at a higher price.

Disadvantages of Solar Cells

Although solar cells have undeniable advantages, on the other hand, they still have some disadvantages. One of the disadvantages is that solar cells do not meet all the interior needs. For example, it is evident that in some homes solar cells do not meet the power requirements. Secondly, solar cells require high investment. According to Zhou et al. (545), getting a photovoltaic system fixed is relatively high. However, it is good to keep in mind that despite the

cost of installation, the energy production cost is free. Thirdly, solar cells only produce energy in seasons as there are times when the sun is limited and thus people have to rely on other sources of energy. Finally, installing and fixing solar cells in some households becomes a bit tricky as some flat roofs may cause snow to drift over the racks making the roof to be heavier.

Cost of Solar Cells

Solar cells cost has reduced significantly over the past 30 years. This is as a result of the improved design and quality thus making the solar cells affordable. On average, it is estimated that the installation of solar cells should range from \$15,000 to \$29,000 which have to go along with the size systems of between 4kW and 8kW² (Nie et al., 524). However, it is worth to note that the cost of the system depends on the size and thus the more the larger the system the higher the cost as it will require several panels. Taking into consideration the installation costs makes the labor costs to rise up the cost-per-watt of the system. Another interesting thing to note about the cost of solar cells is that it also depends on the other components such as the solar monitor, inverter, racking and wiring and not only the price of solar cells alone. For that reason, it is advisable to take into consideration the aforementioned components before calling the provider to install the same in homestead or even place of work.

Conclusion

Having intensively discussed history, advantages, disadvantages and the costs involved in solar cells, it is evident that up to date it still remains to be the most pollutant free source of energy among other green technologies. The interesting part is that the advantages of solar cells seem to overlap the disadvantages thus making many people adopt the same in their homesteads and also ta workplaces. Although there are some drawbacks associated with the same, there is still more research ongoing in order to make solar cells even more reliable in the future. Many people still have some hope on the improvement of solar cells having known the history of where it has come from up to date.

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