

Solar energy research paper example

[History](#), [Middle East](#)



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1. Introduction

The Earth holds lots of energy, which can be converted to many forms. The world's current need is to generate power from the available source; out of that the most used source for power generation is oil and coal [Solar power (Anon., 2009)]. The most of the scientists in the world are recommending not using coal or oil for generating power as it was changing the earth's current temperature we call it as global warming. Most of the countries are now aware on the effect on using oil and coal for power generation, so they are changing in to green energy called renewable energy resource [Solar power (Anon., 2009)]. The Saudi Arabia is the oil rich nation and mostly they are using oil for generating their county power, but the as the cost of solar panel has been down the nation Saudi is changing the whole nation in to solar. The Saudi Arabia has planned to reduce the oil usage for generating power and to increase the oil in export to have good revenue. The government of Saudi Arabia is now implementing lot of policies in the area of generating solar power. This paper deals with the objective, installation technique and policy of Saudi Arabia in Solar power generation.

2. Solar Energy Generation

The solar energy converts specific frequency for power generation; solar cell won't take ultraviolet and infrared rays for power generation. The design was based on the concept that the unwanted frequency are divided in to the required frequency and it will incident on the solar panel, this technique will help to increase the efficiency of the solar panel. The current efficiency of the solar panel is 21. 5% [Solar power (Anon., 2009)]. The lot of design

considerations has been improved to improve the efficiency. The solar energy is used for both heating and the power generation [Solar power (Anon., 2009)]. The rigid thin film model uses the glass substrate. The flexible thin film model was made by depositing photovoltaic layer. Totally 15.9GW of power has been generated all over the world.

3. Solar Panel in Saudi Arabia

The Saudi has the abundant amount of oil. The country's primary income is completely dependent on the oil. The oil prices have been rising without end, this brings some economic instability in the Saudi. The Saudi Arabia has decided to reduce the oil usage in the power generation. Over 50% of the oil in the country is used for power generation. Reducing oil usage in power generation while increasing oil export will bring some good revenue to the Saudi Arabia [Solar power (Anon., 2009)]. The center of excellence for renewable energy is planning to install 41 gigawatts of solar power within the year of 2032. The Saudi's first solar panel was installed in Oct 2012. The 500Kw. The 100 megawatt of Photovoltaic and 800 megawatt power generation has been completed within 2013. The abundant heat and light energy in Saudi will improve the solar power generation [Solar power (Anon., 2009)].

4. Saudi Arabia Objective on Solar Power Generation

4.1 Key Objective

The key objective is as follows

- The research capacity may be composed of high qualified research scientist, research assistant, staff etc.
- Education opportunities in the renewable energy field

- Promoting renewable energy technology and application in the test.

4. 2 Research Objective

The oil rich nation is following certain objective to have effective generation on solar power

The solar cell research thrust concentrating in the research of amorphous silicon and the solar cell. The following objectives are

- The state of art aims to install the solar research labor arty with the all the necessary tools[Center of Research Excellence in Renewable Energy (Anon., 2009)]
- Making collaboration with the leading research institute and the local industries

The ongoing research program includes the engineering stress on the silicon thin film and investigating their use on the film property. The ongoing research includes the study photon and electron beam re crystallation of amorphous thin film and the study of silicon and the heterostructure based devices [Center of Research Excellence in Renewable Energy (Anon., 2009)].

4. 3 Objective on Solar thermal

- Conduct research and development activities to contribute solar thermal energy, which includes solar water heating, solar cooler, solar drying.
- Build the infrastructure needed to perform testing and certifying solar thermal application like solar water heater and solar collector. Prototype development of potential application from local materials.

5. 0 Benefits of Using Solar power

The Saudi has planned to install the solar panel in the big way. The country is burning nearly 1 million barrels of oil a day for power generation, it may

even reach 8 million barrels a day by 2014. In order to avoid this situation and to increase the export in oil the Saudi has made a goal which aims to reach by 2020. The big initiative on renewable power generation will be made in the solar [Saudi panel opportunities (Anon., 2009)]. The above graphs show that the Saudi has added 3.5 MW of solar panel in generating power by 2012. The countries CO₂ emission is increasing day by day which leads to the global warming. The solar power generation will help to increase the country's economy by exporting large amount of oil and the natural gas and also it is possible to save the environmental condition using the solar power generation. The solar heater saves the power by heating applications, as Saudi is the hottest country. The Saudi will gain lot of advantage on using the solar power generation and the country will soon become the green nation by 2032 [Saudi panel opportunities (Anon., 2009)]. The lot of efforts has been taken by the Saudi government to reduce oil and natural gas in power generation.

6.0 Solar Cooling and the Electricity Generation

The solar thermal energy is obtained by converting solar in to the thermal application. The solar energy will replace the fossil fuel in future. The heating application ranging from the solar cooler to solar water heater system can be placed in the houses. The utilization of solar in the domestic application is the key source of using energy. The solar cooling has the abundant solar thermal energy to power a solar driven cooling process and displace electricity consumption, which displaces fossil fuel. The solar cooling is likely to be of zero emission components, replaces air conditioner. The solar cooling building and playing the vital role in reducing peak demand.

The electricity cost rises and green house effect will come to concern, solar powered cooling heating system shall compensate the refrigeration and air conditioning system.

7. Solar Modules used in Saudi Arabia

The thin film module is one of the types of module used in the solar panel. The thickness of the thin film module varies from the few nano meters to micro meter [Solar power (Anon., 2009)]. The flexible thin film module is one the module is made by depositing the photo active layer. There is another effective module called the smart solar module for maximum power point tracking (MPPT). This ate the type of module in generating solar power.

8. Saudi Arabia Climate and Solar panel installation

The solar panel installation needs large amount of solar power intensity. The lot of factors has to be taken in to account before going to the solar panel installation. One among the main factor is the climatic condition of the particular place. The Saudi nation remains extreme hot during day time and temperature as usual falls during night time. The average temperature in Saudi Arabia is 45°C, in winter the temperature remains below 0°C [Saudi Arabia Climate (Anon., 2009)]. In spring and autumn season the temperature remains around 29°C. The good amount of power generation needs large solar ray intensity, Saudi has good amount of IR radiation which can be used for heating application. The power generation needs large photon rays. There is lot of factors needed to be considered before installing solar power installation. Currently Saudi has only 0. 003 giga watts of solar power generation capacity and the country renewable energy department is developing the policy called “ Ka Care”, and the nation power generation is

expected to grow between 40GW to 120GW during the year 2014 to 2028. The average temperature on Saudi 45°C can be used for solar heating applications, the installing solar panel on the roof provides bad results since the solar cell receives large amount of IR radiation which reduces the solar cell efficiency [Saudi Arabia Climate (Anon., 2009)]. The ground installation of solar cell facing south direction provides the good results.

9. Saudi Arabia Primary Energy Growth

The Saudi Arabia is the largest producer and the net exporter of oil nearly million barrels/day. Oil demand is expected to increase by 8% to 10% during the year of 2014 in the area of power generation [Saudi panel opportunities (Anon., 2009)]. The oil demand in power generation will bring some economic instability, so Saudi has planned to reduce the usage of oil in power generation using solar power generation. The primary energy consumption in Saudi has increased the release of co₂ and increases the green house effect. The increase of green house gas effect, the environmental and economic conditions gets affected by using oil in power generation [Saudi panel opportunities (Anon., 2009)]. The current co₂ emission is 200/Mt which creates the bad climatic condition in the Saudi Arabia.

10. Saudi Arabia Policy

The solar energy policy in Saudi Arabia is been discussed in the summit, the country is very keen on exploring, developing and the implementing solar energy in the kingdom. The local and the international authority have planned to install 41GW of solar power by 2032 [Saudi panel opportunities (Anon., 2009)]. Addullah Al Shehri governor of the electricity and the co

generation authority has said Saudi's primary aim is to reduce energy consumption and to increase the energy efficiency.

11. Conclusion

The non-renewable energy resources are depleting in nature not only in Saudi Arabia, but also all over the world. The non-renewable energy will only exist for a few years after which the nation has to completely depend on a renewable energy source. Saudi Arabia has taken the initial steps to install solar and to make the nation a green nation. All the government should come forward to make the world with full of green energy.

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