



Importance of Solar Power and their Methods in Present Era: A Review

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ABSTRACT: Energy is the major source of economic development of the country. Energy has proved to be an extremely valuable asset for human life. The only energy is the need for energy and related services to satisfy human social and economic development, welfare and health. In the case of a developing country like India, the lack of electricity acts as a barrier to development. In recent years, India's energy consumption has been growing relatively rapidly due to population growth and economic growth. The rapid growth of the Indian economy places a huge demand for electric power. Thus, there is a need to reduce greenhouse gas emissions as well as enhance energy security. This is the One of the most environmental friendly sources of renewable energy. Tapping renewable capacity effectively is becoming the need of the era in the current energy landscape, which can reduce the negative environmental impact caused by fossil fuels, along with sustainable power supplies.

KEYWORDS: Solar power system (SPS), solar panel, Indian power market micro grid, solar system

I. INTRODUCTION

The trend of energy consumption in the world is growing very fast, in view of future prospects, many experiments are being done for renewable energy use, many scientists to prevent the environmental damage caused by burning of fuels for future generations. An accepted fact for human social relations working on the research and development of such energy is that the need for energy for mankind is increasing rapidly. Renewable energy sources provide about 13.3% of the world. Pollution caused by the use of fossil fuels found by researchers is the primary cause of global warming [1]. Renewable concrete projects based on changes in energy sources (RES) are still often facing local opposition. From a global perspective, energy production is the reason for public support for increased production. Climate targets are being set based on changes in renewable energy sources (RES). [2]. Global energy has been considered as the best choice for the world as a sustainable source; Energy is the only source of energy in the world. Its abundance is a growing trend in all countries and growing production ecology and capacity is a living example of global energy demand for the world. The rate of increase is the single best option and modern renewal has been reported to be around 176 trillion kWh of energy consumption. [3]., To be seen, the natural resource base and stable climate for life is of fundamental importance. Energy consumption should be largely reduced from all over the world. [4]. in today's era, renewable energy is a state of the art. The instrument is an important alternative to fossil fuels. When talking about climate change, it is an important option for renewable energy. On the basis of the calculation of radiation energy, the power output is calculated by the photovoltaic plant itself. [5]., The units have led to integration on a wide scale of environmental and economic benefits. There will be an urgent need to maintain control of the overall power generation connected to the grid based on traditional synchronous and inverter.

II. METHODS

Some methods are available here which descriptions are as under:-

1. Photovoltaic Systems (PV systems): - This system is the size of a panel made of organized materials, using heat and light to weaken the electrons exposed to sunlight, by this process called the photovoltaic effect. Flows are created. An efficiency of about 15% is found to be a typical commercial PV cell. [12]

2. Solar Water heating: - Solar collectors are usually of rectangular chamber. In which many small tubes are found and through this water or any other fluid is circulated. It is like a black-colored plate. The absorbed heat is transferred to the fluid, in this way the heated fluid is stored in a tank. And they are also used to heat water. [13]



3. Passive Solar Energy: - Be seen directly and indirectly passive solar heating and lighting is achieved through two of these methods. The materials are used through direct gain which absorbs heat from the sun. Get sunlight directly on the surface. And radiate through the night. Heating the area and transmitting air to the rest of the building is an appropriate means of sunlight. The walls of the tramway are thicker than one side which is painted black materials that absorb heat. Abundance is useful for them here [14].

4. Solar Thermal Electricity: - Continuous solar energy can be promoted in hot water. Solar energy can also be used to heat water and build thermal power plants. Steam is produced by structural boilers. [15]

5. Solar Heating and Cooling: - For offices and large buildings, solar energy can be used well compared to homes and small premises. And on a large scale it can be used for space heating and solar water heating. Solar energy is also used in cooling systems [16].

III. FUTURE SCOPE

Based on technologies, the future of solar power has been considered to convert only two widely recognized classes into electricity. Photovoltaic (PV) and concentrated solar power (CSP) the energy supply system seen for many decades. Unlike some future studies, we are unable to make any predictions for several reasons. Like other studies in this series, our primary objective is the developed world itself.

Our primary objective is to join the developed world, particularly like other studies in the series. Our traditional sources of electricity focus on the use of grid-connected solar powered generators as much as possible. In many developing countries it is impossible for more than one billion people to access the electric grid. There is a steady flow of electricity through solar powered devices. Discussion may be possible with both of these valuable roles for solar energy in the developing world.

IV. CONCLUSION

In renewable power sector, there are so many methods are available. Studies of all are necessary to develop well understanding in it. This review work is helpful to create an environment to enhance knowledge and creation in solar field in this era.

REFERENCES

- [1] Mazdak Arzpeyma, Saad Mekhilef, Kazi Md. Salim Newaz, Ben Horan, Mehdi Seyedmahmoudian, Naveed Akram, Alex Stojcevski “Solar chimney power plant and its correlation with ambient wind effect” *Journal of Thermal Analysis and Calorimetry*, 26-nov-2019,
- [2] Tadej Bevk, Mojca Golobi “Contentious eye-catchers: Perceptions of landscapes changed by solar power plants in Slovenia” *Renewable Energy* 152(2020), pp.999-110
- [3] Kamran Hirbodi, Mahboubeh Enjavi-Arsanjani, Mahmood Yaghoubi “Techno-economic assessment and environmental impact of concentrating solar power plants in Iran” *Renewable and Sustainable Energy Reviews*, 120 (2020), pp1-27
- [4] Dorothea Ludwig, Sandra Lanig, Martina Klärle “SUN-AREATOWARDS LOCATION-BASED ANALYSIS FOR SOLAR PANELS BY HIGH RESOLUTION REMOTE SENSORS (LIDAR)”.
- [5] Dorothea Ludwig, Sandra Lanig, Martina Klärle, Steinbeis “Location analysis for solar panels” by LiDAR-Data with Geoprocessing-SUN-AREA” *Environmental Informatics and Industrial Environmental Protection: Concepts, Methods and Tools*. 2009 pp.83-89
- [6] T. Aziz, Tapan K. Saha, N. Mithulananthan “Analysis and Mitigation of Transient Overvoltage with Integration of Small Scale Power-Electronic Interfaced DG” *2012 IEEE*, pp.1-8.
- [7] Paul S Cannon “Solar Superstorms - a storm is a tea cup, or a global risk for society and economies?” *2014 IEEE*.
- [8] A. Cervone, D. Zaccagnini Romito, E. Santini “Design of solar chimney power plant for Mediterranean countries” *2011 IEEE*, pp.480-484.
- [9] Alpesh Desai, Indrajit Mukhopadhyay, Abhijit Ray “Theoretical Analysis of a Pico-hydro Power System for Energy Generation in Rural or Isolated area” *2014 IEEE*
- [10] Robert A. Jones, Thomas R. Sims, All F. Imece “INVESTIGATION OF POTENTIAL ISLANDING OF A SELF-COMMUTATED STATIC POWER CONVERTER IN PHOTOVOLTAIC SYSTEMS” *IEEE Transactions on energy Conversion*, Vol. 5. No.4, December 1990, pp.624-631
- [11] Imran Khan, “Impacts of energy decentralization viewed through the lens of the energy cultures framework: Solar home systems in the developing economies” *Renewable and Sustainable Energy Reviews*. nov-2019



- [12] Michael E. Ropp, Sigifredo Gonzalez “Development of a MATLAB/Simulink Model of a Single-Phase Grid-Connected” *IEEE TRANSACTIONS ON ENERGY CONVERSION Photovoltaic System*. 2009 IEEE, pp.1-8.
- [13] Ruchi Shukla, K.Sumathy , Phillip Erickson, Jiawei Gong “Recent advances in the solar water heating systems: A review” *Renewable and Sustainable Energy Reviews* 19 (2013).pp.173-190.
- [14] Paul Littlefair “Passive solar urban design] ensuring the penetration of solar energy into the city” *Renewable and Sustainable Energy Reviews*.2(1998)pp303-326.
- [15] M. LENZEN “GREENHOUSE GAS ANALYSIS OF SOLAR-THERMAL ELECTRICITY GENERATION” *Solar Energy Vol. 65, No. 6, 1999*.pp.353-368.
- [16] F.Calise , M. Dentice d’Accadia,L.Vanoli “Thermoeconomic optimization of Solar Heating and Cooling systems” *Energy Conversion and Management* 52 (2011).pp. 1562–1573.