

Solar Tree: A Source of Energy- A Review

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Abstract - Solar Energy is accepted as a key resource for the future of the world. The utilization of solar energy could cover a significant part of the energy demand in the countries. One of the most popular example of utilized solar energy that is solar tree. In this paper illustrates the various review about the solar tree and development of Solar Tree for domestic application considering the average requirement of small Indian house. Therefore, in this paper, an attempt has been taken to summarize the past and current research in the field of solar tree technology. The main objective of this paper is to present the review about the solar tree.

Key words: Solar panel. Battery, LED light

1. INTRODUCTION

Rein Trifled is a solar environment a list artist that has also begun to construct solar trees. He is one of the founders and the current president of the Solar Tree Foundation which began in 2008. The Solar Tree Foundation designs programs for elementary school students to show them the creative process for constructing a Solar Tree in order to educate a broad audience on the environmental and technological material. It's also designed with the intention of instilling an appreciation for artistic aesthetics interpreted through sculptures as a medium of expression. This is performed by online lectures and webcams in which the students can engage with the architects and see the construction process in real time. Trifled believes that his Solar Trees will help preserve natural trees in the long run. The latest solar tree constructed by the Solar Tree Foundation was erected for North Hillsborough Elementary School in Hillsborough California. At peak efficiency, the 10,000 lb. Solar Tree is claimed to produce 20,000 watts of energy per day.



Fig: solar tree

2. LITERATURE SURVEY

C. Bhuvaneswari, R. Rajeswari: He was publish the paper that is *Idea to Design a Solar Tree Using Nanowire Solar Cells* in International Journal of Scientific and Research Publications, Volume 3, Issue 12, December 20131 ISSN 2250-3153, To introduces a new solar technology that emulates how trees convert sunlight into energy. Trees, shrubs and plants use an inherent structural design to expose their leaves, height dense to sunlight for photosynthesis. They do this determines their survival. Based on this we describe the coconut tree growing u to 30m(98 feet) tall, with pinnate leaves 4-6m(1320feet) long to design a solar tree. Pinnate refers to a leaf resembling like a feather having the leaflets on each side of a common axis. It can be either even or odd. By this structured pattern that leaves follow to arrange themselves on a tree. With this arrangement we introduce a new idea to design a solar tree using nanowire solar cell. Nanoparticles exhibit a number of special properties relative to bulk material. A single Nanowire concentrates the sunlight upto 15 times of the normal sunlight intensity. The solar new technology presented in this paper will provides nearly high efficiency. The number of papers and patents published in this area has grown up exponentially over the last 10 years. However at the present, research efforts have largely focused on solar trees. Nanowire can concentrate the sunlight up to 15 times of the normal sunlight intensity and hence the surprising results have the potential for developing a new kind of highly efficient solar cell. This can be used to give a higher concentration efficiency of the sun's energy [1].

Dr. Suwarna Torgal: She is publishing the paper that is *Concept of Solar Power Tree* in International Advanced Research Journal in Science, Engineering and Technology Vol. 3, Issue 4, April 2016. Demand for energy is increasing with each period, to fulfill the required demand we must have to concentrate on utilizing non-conventional sources of energy. Energy from the Sun is the best alternatives among the renewable energy sources. It is free, inexhaustible, nonpolluting, eco-friendly and continuous source of energy. The paper detailed Solar Power Tree that generate large amount of energy by capturing very small land area throughout the year. Silicon-crystalline Photo-Voltaic (SPV) mounted on tall pole which direct convert solar energy in to electrical energy by means of the photo voltaic effect. In the world, oil is running out and it is estimated that 80% of the world's supply will be consumed in our lifetimes. Coal supplies appear to be very large but this stock is also stock out if rapidly uses. Nuclear power having a dangerous aspect. Thus unconventional energy sources such as geothermal, ocean tides, wind and sun is best option to meet future energy requirements. Cultivable land is the greatest crisis of the earth rather it is already a burning crisis in major countries, the cultivable land is god of the farmers, if used for other than agriculture, it will be unpredictable loss to the society. Therefore Solar Power Tree is very efficient to capture large amount of solar energy by utilizing a very small surface area of valuable land [2].

Deepak M. Patil, Santosh R. Madiwal: He was publish the paper that is *Design and Development of Solar Tree For Domestic Applications* in International Journal of Engineering Sciences & Research Technology, August 2016 ISSN: 2277-9655, he work Flat or roof top mountings of PV systems require large area or land. Scarcity of land is greatest problem in cities and even in villages in India. Solar Power Tree provides better alternative to flat mounting of PV systems. For domestic lighting and other applications use of Solar Tree is more relevant when PV system is to be used. In this article load or energy requirement of small house in India is estimated to 1.75kWhr/day. All the calculations are done considering solar radiation data at Kolhapur, Maharashtra (16.760). The solar tree concept is very successful to fulfill the increasing energy demand of the people, saving of land, and should be implemented in India to provide electricity without the problem of power cut-off and reduce the dependence on grid power. Daily average energy requirement of the small Indian family is calculated about 3.5kW. Such systems can be mounted on the terrace, in front of the house or near the wall avoiding shading areas. The initial investment cost of the solar tree is also equal to same capacity PV systems as other system components are similar [3].

Mr. A P R Srinivas: He was publishing paper that is *Design and Development of a SOLAR TREE* in International Journal of Scientific & Engineering Research, Volume 7, Issue 10, October-2016, 1319 ISSN 2229-5518. a new product called, 'solar tree' has been designed to increase the power output by many folds by consuming solar energy. It can be installed on the sides of heavy traffic roadways and on roof top

buildings. The tree consists of numerous solar panels connected to one another in series and parallel connections. The solar tree consists of number of branches welded to a stem and each stem has a solar panel mounted on it. It adds up voltage in series and current in parallel connection. The paper calculates the sun earth angles at different times of the day and designs solar tree based on these sun earth angles. The panels are put on the structure in a spiral fashion. It proves to be a useful system to meet the energy demands of the world and to use a given space more efficiently. The present system of roof top solar systems can be replaced by solar tree and the roof top space can be utilized for recreation purposes. The solar tree can be installed on ground also in addition to roof top spaces. So, this solar tree proves to be advantageous in saving space and increasing the power output by many folds. It saves a lot of energy over the years to come. The number of solar trees that could be installed in a given space depends on the wattage needed [4].

Sushma Gupta, Monish Gupta: She is publish the paper that is *The Benefits and Applications of Solar Tree with Natural Beauty of Trees* in SSRG International Journal of Electrical and Electronics Engineering (SSRG-IJEEE) – EFES April 2015, ISSN: 2348 – 8379. Now a days oil supply is decreasing therefore energy sources are becoming limited throughout the world. In all this Solar Tree proves to be most beneficial source of energy. This paper presents Solar Tree implementation as alternate source of energy in urban cities. A new idea of a solar tree design us in Nano wire solar cell is presented. Nano wires possess high physical light absorption properties which can be improved tremendously Hence we can say that it is a revolutionary urban lighting concept and these technologies lead to the development of high efficiency solar energy. Keywords -- Solar Tree, Renewable Energy, Nano-wire, solar cell, Solar Energy. To fulfill the increasing energy demand of the people, saving of land, the solar tree concept is very successful one and should be implemented in India to provide electricity without the problem of power cut and the extra energy can be provided to the grid. India as the 2nd largest country of the world in the increasing demand of the energy and try to find a way from which efficient and abundant source of energy cab be available. Also a solar botanic tree is a nonconventional source having many advantages of producing electricity as compared to the other sources. It is therefore the responsibility on the shoulders of the youngsters of the earth to think smartly and take the right decision. Everyone should starts as an individual to cooperate with the government to make life favorable for mankind [5].

3. CONCLUSION

In this paper we add the review about solar tree by studying the various research papers and also how to use solar tree in pour area and how its work and what is advantages or application of solar tree,

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