



Solar Based Smart Water Utilizer For Domestic Purpose

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Abstract:

As solar system is playing a vital role in development of the world. So looking forward to the domestic problems solar system can be used to resolve the problems. One of the major problems in the world is the spreading of disease caused by contaminated water or by using unhygienic water or the water whose Ph level is high and is acidic so looking forward to this problem we are coming with a solution in this paper to solve it by the help of solar system. So the idea is such that every house contains a water tank in it to store the water so we can modify the water tank in such way that it can be distributed in 4 layers such that the first layer will contain the water which come from the Municipal Corporation followed by the second layer which will contain the heating coils which will work on the solar system so when the heating coils will heat the water will start boiling has the water is boiled it can be used for bathing a separate output can be taken and provided to the bathroom so there is no need of fitting any other electric or gas geezer and also the water will become clean. Following the second layer the third layer will contain the charcoal sheet and the copper sheet fitted in it such that charcoal can kill the remaining germs and copper sheet can cool the boiled water and this clean water can be used for washing utensils has many of the people wash utensils and clothes from the high acidic water or normal water there are many germs that catches the utensils and clothes so many of the problems can be solved by doing this following the third layer fourth layer consists UV lamp which will also work on the solar system so that one who installs such unit will not require any type of water purifier so water will be purified in the tank only and the one can directly drink the water. Installing and following such idea can help the people to solve the problem of the diseases which are cause by the water and also has a benefit that one will not require to buy separate water purifier, water geezer etc.

1. INTRODUCTION

Load management for electricity is a crying need to develop the sectoring a sustainable manner. Only it can provide more benefit to our citizens and environment. Harnessing the sun 's energy is within our grasp, and for developing countries, this is a golden opportunity. Solar power is an increasing market for more developed countries, which can benefit from less electric expense over time. It is also good for the environment because it replaces the traditional, and in effect harmful, methods of energy production. There are other renewable energy sources besides solar, but it is especially practical for sunny areas which have less wind and water resources. Because of the extensive research being conducted in this field, solar panels are developing into more efficient models than ever. The higher competition level between manufacturers allows for cheaper prices as well. Reasons for choosing solar energy are also clearly indicated by the growing number of projects conducted by various organizations and governments. Applications for this energy source can be from single houses and large electrical grids to cars, exhibiting a versatility perfect for the needs of a developing country.

The present energy demand is increasing day by day due to various reasons such as increasing population, the aspiration for improved living standard and general economic and industrial growth. The power generation system is principally depended on 2 imported petroleum oil and own natural gas. On the other hand, as the information about the deposits of fossil fuels. if they are consumed at the present rate, the reversed natural gas and coal will be exhausted by the year 2020 to 2030. To reduce the

dependency on imported fuel and the pressure on natural gas, the present power generation system must be diversified and at the same time indigenous energy resources have to be explored and developed. It may be mentioned that concern for environment is a now universal issue and conventional energy gives rise to greenhouse gases with adverse consequences for health and climate. In these perspectives, harnessing of renewable energies and development of relative technologies is a highly important strategic option. Communities in rural areas and mainly in remote areas have very little possibilities to participate on the national electricity supply. Therefore, and in the context of environment protection, renewable energies can contribute substantial to the delivery of alternative energy to the users etc. are some of the key issues that determine the need for technological inventions in solving energy problems in the rural areas.

Solar energy is a renewable source of energy that is gaining ground because of the benefits it offers. In India, sunlight is available in abundance and there is technology available to harness this energy and convert it into electric power. Most homes have a roof or a backyard which can be utilized to install. When the water comes from Municipal Corporation it going on compartment number first there is normal water which we can use for watering plants, cleaning floor and in washroom. In the second compartment there is a charcoal shit applied over the components. This charcoal components purify the water and this after we can use in kitchen for washing vegetables, fruits, utensils. Also, for cooking because most of the diseases comes from contaminated water. This water will reduce water borne diseases.in the third compartment there is heating coils. Which heat the water until it is useful for bathing? this water we can also use for washing the clothes. It is said that hot water kills all the germs so this water will also destroy the germs in the clothes.in the in the fourth compartment there is total proper purified water which we can drink in our day-to-day life. Due to this water system, we can live contaminated diseases free life. It reduces diseases to live a happy life.

Fossil fuels have caused increasingly serious environmental problems, such as the pollution haze. Electricity is one of the most important energy forms for us, without which the motor of civilization would sputter and slow down. With growing population and rapid development of industrialization, the total consumption of electricity power goes higher and higher every year. Meanwhile, pollution of power plants continues to deteriorate. A broad consensus is widely reached on energy conservation to save the planet nowadays. Smart grid is an effective way to reduce the abuse of electricity. Many organizations and researchers have proposed meaningful work to achieve intelligent electrical energy saving. Great efforts have been made to electrical energy generation and transmission such as thermal power plants. The research on smart grid on the demand side is a systematic project. It mainly covers the renewable energy generation, the electrical energy transmission, the electrical energy storage, the distribution of electrical energy, and the optimization of household appliances. All the elements above are combined together to make the optimization process more difficult especially from the perspective of space complexity and computational complexity. Renewable energy resources are increasingly used around the world. The solar energy is the main part of renewable resources this energy can be converted to electrical current by photoelectric effect directly. Besides, the intelligent energy scheduling is beneficial to make the produced energy effectively consumed.

2. RESEARCH METHODOLOGY

When sunlight falls on the solar panels it gets absorbed by the PV cells and the silicon semiconductors in the cells convert the solar energy into electric energy through the PV effect. This electric energy is in the form of DC power which can directly charge the battery. The DC power in the battery is sent to an inverter which converts it into AC power. This AC power is now sent to the mains in the home which in turn can power all necessary applications. Solar power panels serve the purpose of absorbing solar energy and converting it to electric power through the photovoltaic (PV) effect. Most homes have a roof or a backyard which can be utilized to install solar panels and produce electricity.

An inverter converts the DC electricity from sources such as batteries or fuel cells to AC electricity. The electricity can be at any required voltage; in particular it can operate AC equipment designed for mains operation, or rectified to produce DC at any desired voltage. The working of an inverter is, it converts DC to AC, and these devices never generate any kind of power because the power is generated by the DC source. In some situations, like when the DC voltage is low then we cannot use the low DC voltage in a home appliance. So due to this reason, an inverter can be used whenever we utilize solar power panel.

Heating elements contain an electric current, which flows through the coil or ribbon or wire and becomes very hot. The element converts the electrical energy passing through it into heat, which spawns outward in every direction. Most resistance wire heating elements use nichrome 80/20 wire, ribbon, or strip. Nichrome 80/20 is an ideal material, because it has relatively high resistance and forms an adherent layer of chromium oxide when it is heated for the first time.

A battery is a device that stores chemical energy and converts it to electrical energy. The chemical reactions in a battery involve the flow of electrons from one material (electrode) to another, through an external circuit. The flow of electrons provides an electric current that can be used to do work. The cathode and anode (the positive and negative sides at either end of a traditional battery) are hooked up to an electrical circuit. The chemical reactions in the battery causes a build-up of electrons at the anode. This results in an electrical difference between the anode and the cathode.

Activated charcoal is carbon that has been treated with oxygen. The treatment results in highly porous charcoal. Since adsorption works by chemically binding the impurities to the carbon, the active sites in the charcoal eventually become filled. It is often used as a construction material, especially for exterior roofing projects. For example, because of its malleability, copper sheet makes an excellent material for many roof shapes. It is easily bent around chimneys, as well as roof edges. Copper sheet is used to make parts for automotive, and HVAC. A sensor converts stimuli such as heat, light, sound and motion into electrical signals. These signals are passed through an interface that converts them into a binary code and passes this on to a computer to be process.

When the water comes from Municipal Corporation it going on compartment number first there is normal water which we can use for watering plants, cleaning floor and in washroom. In the second compartment there is a charcoal shit applied over the components. This charcoal components purify the water and this after we can use in kitchen for washing vegetables, fruits, utensils. Also, for cooking because most of the diseases comes from contaminated water. This water will reduce water borne diseases.in the third compartment there is heating coils. Which heat the water until it is useful for bathing? this water we can also use for washing the clothes. It is said that hot water kills all the germs so this water will also destroy the germs in the clothes.in the in the fourth compartment there is total proper purified water which we can drink in our day-to-day life. This compact water system gives us proper purified water for all the house holding uses. It is an all-in-one system that's why the cost is cheaper. Due to this water system, we can live contaminated diseases free life. It reduces diseases to live a happy life. It should also be capable of providing AC power as traditionally all homes use AC power to operate lighting systems, gadgets, appliances and equipment such as computers, refrigerators, mixers, fans, air conditioners, TVs and music system.

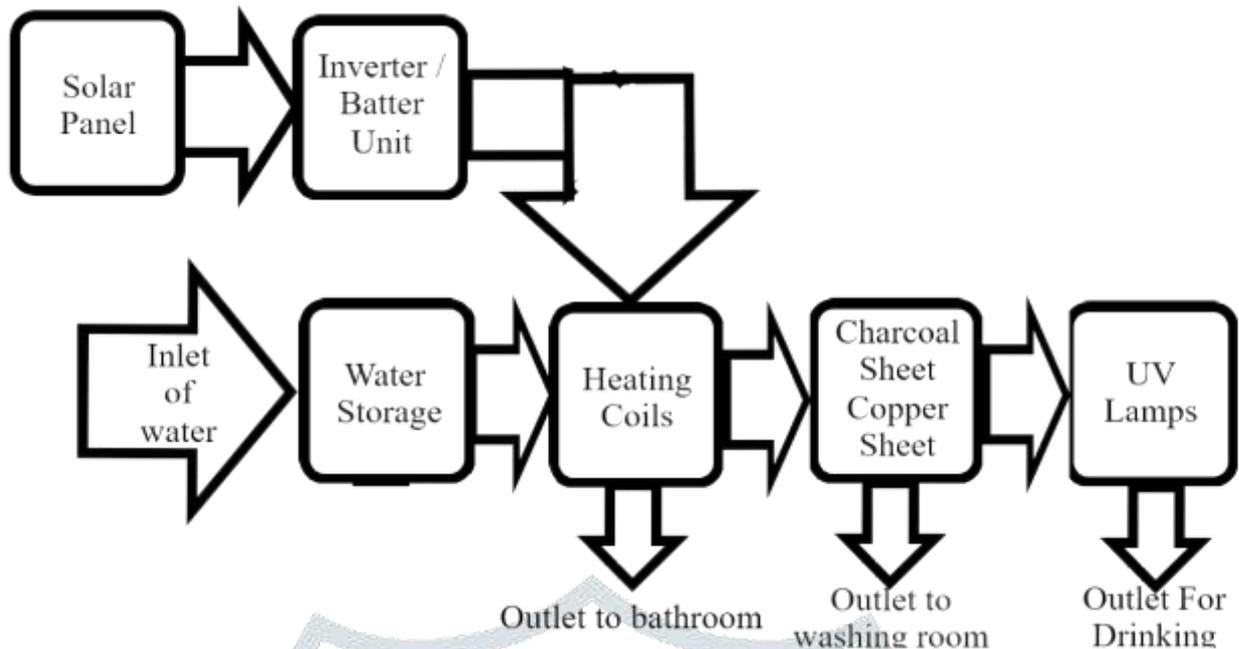
3. Area of Paper:

- Free energy utilization technology.
- Energy conservation
- Illumination technology

4. Features of the Paper:

- Due to this water system, we can live contaminated diseases free life.
- This compact water system gives us proper purified water for all the house holding uses.
- It is an all-in-one system that's why the cost is cheaper.
- A home solar system must provide enough electric energy to fulfil all the power requirements of a home.
- It should also be capable of providing AC power as traditionally all homes use AC power to operate lighting systems, gadgets, appliances and equipment such as computers, refrigerators, mixers, fans, air conditioners, TVs and music system.

5. Block Diagram:



6. Components of The Block diagram:

- Solar Panel
- Invertor
- Battery
- Charcoal sheet
- Copper sheet
- Heating coils
- Water storage tank

7. Advantages:

- It is highly sustainable as it is derived from sources that are inexhaustible.
- It does not emit any greenhouse gases or toxic waste making the world a cleaner and safer place.
- It is highly cost effective as fuel does not need to be brought to sustain the electricity plant.
- It is also cost effective as less labour is needed to operate a renewable energy station and they require less maintenance
- Due to this water system, we can live contaminated diseases free life.
- This compact water system gives us proper purified water for all the house holding uses.
- It is an all-in-one system that's why the cost is cheaper.
- A home solar system must provide enough electric energy to fulfil all the power requirements of a home.
- It should also be capable of providing AC power as traditionally all homes use AC power to operate lighting systems, gadgets, appliances and equipment such as computers, refrigerators, mixers, fans, air conditioners, TVs and music systems.
- Protect yourself against rising energy costs.

8. Limitations:

- Limited number of supplier & lack of experience in the solar technology market, resulting the high price. So, it is necessary to increase technology market
- During Rainy season sometimes sunlight area available.
- Initial costing is high that's why some middle-class family can 't affords it.
- If Solar panel is damage, then have to change the panel.
- If the coils are damage or short circuited, they have to change the coils.

9. Result and Conclusion:

• Result:

Thanks to the technology of photovoltaic cells, it is now possible to convert energy from the sun directly into electricity that can be used in the home. With solar electric systems, you can enjoy free, inexhaustible, renewable power that is environment friendly as well. In the short word we can say the rate of water tank is around the middle-class family & the

poorest are able to afford it. This is an all-in-one system for providing water in homes from their roof to their rooms. For heating and purifying the water we have to take different machines but now this water tank gives you both in one system and its cost is also cheaper. From this we also learn the different type of connections of equipment. Solar energy is very vast and useful energy in future use. Definitely it will be very useful in future uses. electing the right solar water heating & boiling system for a facility depends on three key factors like climate, budget, and water usage requirements. Solar water heating & boiling systems are economical, especially in commercial buildings when the energy used to heat & boil the water is significant. Although, the sun is capable of heating, its applications in water heating & boiling will be much effective when various factors such as safety, maintainability, and also efficiency of the system are considered. From equation we saw a direct proportionality between volumetric flow and volume. Therefore, the larger the amount of water to be heated and also boiled in the fourth compartment. the longer the time it will take. This is because the efficiency and area of solar collector affect the time it would take to heat & boil the water for an average of 20.05oC temperature difference. In climates like Nigeria, issues of overheating and freezing protection rarely occur as our temperatures are hardly extreme. This therefore makes solar water heating &boiling system very viable, cost effective and a good alternative to other forms of water distribution systems.

- **Conclusion:**

From this paper we concluded that solar energy protect yourself against rising energy costs. From this compact system the watering system of house will change in future. Solar energy is being used for the purification of water, which is cheap and abundant, it can be used everywhere where electricity is not available. In the short word we can say the rate of water tank is around the middle-class family & the poorest are able to afford it. This is an all-in-one system for providing water in homes from their roof to their rooms. For heating and purifying the water we have to take different machines but now this water tank gives you both in one system and its cost is also cheaper. In this we use ancient times purification system of water that good for our health and wealth too. In this busy life of 20th century health is most important factor so we have to take care of our self. many dieses are coming from water which affect our health and make us unhealthy that's why we are making this water tank which gives us proper purified water for drinking, bathing, cleaning, etc. it is very useful for house holding. Hence, it will prove to be useful in the near future.

10. ACKNOWLEDGMENT

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