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PORTABLE SOLAR IRON BOX

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Abstract

Due to the technological advancement and population and explosion, the world's demand for energy has a rapid growth. So a renewable energy source that is cost-effective, reliable and everlasting must be opted to meet the future energy demands. There are many renewable energy sources out of which solar energy is free of cost. It is also suitable for long-term issues. Due to energy's high demand, the solar industry is developing all over the world. Many other energy sources like fossil fuel are expensive and also have limited applications. It has become a tool to sustain the underprivileged people's life. It also has a great part in developing in the economic status of various countries. Solar industry is the best energy source than other energy sources and a solution to meet the future energy demands as it has various benefits. The various benefits include capacity, cost-effectiveness, accessibility, availability and efficiency. Based on the interest and above view point researcher selected the area of solar energy. This paper on "Designing and Evaluating the Performance of Solar Powered Iron Box" briefly describes the design and performance of the solar powered iron box. A study was conducted in Coimbatore city among four hundred samples using interview schedule for which questionnaire was developed which entailed sociodemographic profile of the participants, solar devices used by them, limitations faced, other device they would like to have operated on solar power etc. During the study it was revealed that majority of participants opted for solar powered device

1. INTRODUCTION

India uses the solar power more than other renewable resources and India has high solar ionization. Solar energy is a renewable energy source, maintenance cost is low, diverse applications, and electricity bill gets reduced through its usage and it also helps in technology development. Solar energy has various residential applications which include solar heating for swimming pool, solar powered ventilation fans, solar house heating, solar water heater, charging batteries through solar power, solar powered pumps and so on. Adoption of renewable solar energy has various environmental advantages

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also. It reduces pollution, It is clean source, reduces the usage of water, helps to fight the climate change, reduces non-renewable energy dependence and improves health of humans in long-term. India possesses the second-highest worldwide population with 1.2 billion people. Poverty in rural areas leaves local Indians unable to find job security. They instead must resort to street vending. Approximately 10 million street vendors exist in India, with many representing the laundry and textile industries. In particular, impoverished Indian families tend to choose the path of ironing clothes, a lucrative business considering the needs of everyday workers. However, there is one downside of the traditional method of ironing clothes in India: charcoal powers the irons. With innovations like Umashankar's solar-powered iron, India shows promise for improved environmental conditions and reduced poverty rates. Although expensive, new technologies are constantly emerging and individuals as young as 14 years old are working to prioritize cost-efficiency and sustainability. Given the fact that street vending is a widespread market in India, a solar-powered iron has the potential to transform the harmful coal-sourced iron industry into one that is profitable and environmentally conscious.

2. RELATED WORK

Charcoal iron is the substance created by the smelting of iron ore with charcoal. All ironmaking blast farnace were fueled by charcoal until Abraham darby introduced coke as a fuel in 1709. The more economical coke soon replaced charcoal in British furnaces, but in the united states, where timber for charcoal was abundant, charcoal furnaces lingered much longer. Even after the introduction of anthracite smelting to the US in 1839, and the development of American coke production later in the century, charcoal iron continued to find favor because of its heat-resistance, toughness, and malleability. The last charcoal furnace in the US did not close until 1945. In Britain, the penultimate furnace built was Alderwasley in 1764, followed by Warsash Furnace in 1869. The last working furnace at backborrow converted to coke in 1922. Early Indian society used a coal-fuelled iron box to smooth out clothingAn electric iron or a stream iron or an iron box is a tool used to press the wrinkles out of your cloths so that when you dress up you look smart and neat. It is a basic tool that converts electric energy to heat. It consumes more electric power than most of the other appliances you have at home. This energy usage calculator for electric iron can help you calculate the energy

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consumed by the iron box and the usage charges. Electric iron shall not remain ON always. Once the set temperature is reached the power to the heating element is cut off. Electric irons are available in various rating and features. Electric irons consume roughly between 350 watts to 3000 watts of power, varying from one model to other.Enter the wattage, hours of usage and cost per kWh. This electricity usage calculator for electric iron gives you the total energy consumed by an electric Iron and utility charges.Electric iron boxes are mostly used in domestic and industrial purposes. It consists of a resistance circuit inside the iron box, and during the current flow, the resistor emits the heat.Steam ironing station is a device consisting of a clothes iron and a separate steam-generating tank. By having a separate tank, the ironing unit can generate more steam than a conventional iron, making steam ironing faster. Ironing works by loosening the ties between the long chains of molecules that exist in polymer fiber materials. With the heat and the weight of the ironing plate, the fibers are stretched and the fabric maintains its new shape when cool. Some materials, such as cotton, require the use of water to loosen the intermolecular bonds.

3. IMPLEMENTATION

"PORTABLE SOLAR IRON BOX" new modern technique which decreases the power consumption and it is eco-friendly. IT absorbs the solar energy and stores the energy in the battery. The energy stored in the battery is used to run the iron box and other equipments. It is portable and mostly very usefull for street venders. Iron box are mostly used in our day to day life. But due to high consumption of power by electric iron box, most of them scared to use. On other side coal type iron box producing toxic gases which causes health issues. To assess the solar devices used by the households To examine the most popular device among the household To know the troubles encountered by the household while using the device Our device is going to work on a simple mechanism. Solar powered iron box is linked to solar panels in figure 4.2 . DC electricity is generated when the sunlight falls on the solar panels. This electricity charges the in-built battery in solar powered iron box. When the battery filled with charge, it powers the connected electrical load-DC fan, light, TV and phone charging. This gives the energy consumption for the solar powered device and it makes less energy consumption.

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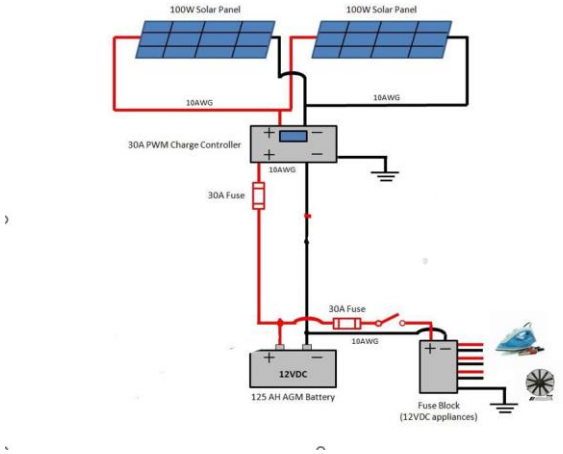

4. EXPERIMENTAL RESULTS

Quick heating quality of the device and also it is safe to use on all types of fabrics. Hundred percent and Ninety three point three percent iron men and homemakers said that solar powered iron box removes all crease from the cloths respectively. It was revealed during the evaluation of device that as it is new device for both homemakers and iron men they faced certain difficulties in operating the device . According to only 33.3% of homemakers solar powered iron box occupies less space in their home remaining 66.7 % of homemakers said devices occupies more space to store it whereas among iron men 80% said solar powered iron box occupies less space in their shop.

5. CONCLUSION

The solar-powered iron box was efficient in ironing the clothes and helped homemakers & iron men to acquire crease-free clothes. Solar-powered iron box not only uses solar energy which is available in nature free of cost but also reduces the consumption of energy. The present study may initiate households in adopting solar devices for day to day activates and encouraging them to use new and renewable sources of energy to protect our environment

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