

E-SOL: A Power Bank on the Go

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Abstract

The increase of wireless devices and their use increased the need of faster processing power and continues background processing for user experience. The higher processing of devices drains the battery faster and creates problem for the user to charge the device in short duration of time which is not possible in case of travelling and business user. In this paper we are proposing innovative solar mobile charging poles named as E-SOL, Economical Solar the new generation smart charging point which can be located by a mobile application just in three simple steps Search Locate and Charge. E-SOLs are charging poles which can be deployed in busy/remote locations.

Keywords: E-SOL, Charge, Solar Energy, Devices

1. Introduction

In today's technology dependent world the day to day consumption of power has increased substantially. The processors' speed has been on a rise constantly but the battery backup is not able to catch up with the ever growing speed of processor. So we have to face the problem of battery break downs frequently. For this either we use charging cables which makes us immobile or we need power banks which again need to be charged at regular intervals. Consider a situation where you are stuck in an emergency situation with a very low battery in your phone and no means of communication around. Here comes the role of our proposed model named E-SOL. E-SOL are towers installed in remote areas, hilly areas, busy markets, bus stand, railway station etc., they operate on solar energy and are used to charge your electronic devices like mobile phones and laptops in time of emergency. Sometimes you put your phone on charge but forget to on the switch and you need to travel a long route then there comes the role of E-SOL. By which the user can find nearby plug-ins for E-SOL and get the charging on without any worry. The motto behind this is to reduce the natural source of energy than to use the electricity generation mode which require a lot of installation then solar. E-SOL is much easier to install in locations such as remote areas, hilly areas, busy market, bus stand and railway station. The source of conventional electricity is from the turbine which is being used to generate electricity by mean of thermal power and nuclear power. Thermal power uses coal combustion and gasification whereas nuclear power processes the nuclear reactions to generate electricity which pollute the environment and causes global warming.

2. Literature survey

A study says that in year 2008, nearly half of the electricity generated in the United States came from the burning of coal [source: EIA]. While coal is considered as cheap and easy way to generate electricity, it is also a major source of pollutants. A coal-fire power plant generates 59 percent of the sulphur dioxide in the air within the U.S., as well as 50 percent of the particulate pollutants. Apart from this coal-fired power plants also contribute heavily to mercury pollution. On contrary to all this Solar cells generate no emissions, waste or by products; those photons that aren't used simply pass through the silicon or bounce off of it as they would any other material.

Mobile phones which were used earlier were large and bulky, and required an enormous amount of power to operate. When the battery was recharged for 10 hours then it would result in approximately 30 minutes of talk time. The patent device invented by Wen-Chin Yang in the year 2000 for mobile phone battery charger had a USB interface, a

DC Converter and a mobile phone battery charging plug which could be inserted into a computer to have electric power.

Then came the Lithium Poly Ion Batteries which can hold 40 percent more power than the old NiMh batteries. With this new innovation the entrepreneurs were able to develop portable cell phone battery charger. [2]

Now we have solar panel chargers available in the market using which we can directly charge our mobile phone batteries, and which can easily fit in your handbags and briefcases. [3]

Apart from the entire above charging medium discussed there is a similar kind of project as ours which is successfully implemented by NRG Company under the name of Street Charge. Their vision is to provide a safe, clean power for mobile devices in any outdoor setting.[1] This design charges up to 6 mobiles at a time. They have used a replaceable lithium battery which keeps the station ready to energize a crowd even when the sun's not shining.

3. Problems and Design Proposal

In this paper we are proposing solar panels operated towers for mobile and laptop charging, which could be installed anywhere so that one can never face the problem of disconnection due to low battery scenario. These towers will give pollution free, safe 24*7 hours connectivity to a user. The below shown figure gives a view of the proposed model:



Figure 1

Along with the installation of these E-SOL towers we are also proposing a mobile application which will be telling the user the location of the nearby E-SOL tower so he will be facing no problem to locate the nearby tower. Free Wi-

Fi services could also be provided at these stations so the user can also complete his task or entertain him while the device is being charged.

The main problems which could be faced in these towers are that they require ample amount of sunlight, so they must be installed in areas where there is proper sunlight. Another problem is the safety issue. Such measures should be taken that these towers are not hampered by people. A solution for this could be of implanting cameras on these towers. As these towers have internet connectivity there can be notification or alert for the hampering of the tower.

The tower can be build by using two 100-Watt solar panels along with a 12 Volt power battery bank which can be used to store the power generated by the solar panel. A microprocessor help in connecting the tower to the remote server so that the tower can be located and a DC charging converter which convert the 12 Volt to 5 Volt and 2.5 Ampere output so the mobile devices can charge. These towers could be used to provide Wi-Fi zone also.

4. Summary

The purpose to implant power tower to give people a better experience to charge there devices on the go is that in India we are located on the equator and we have a great amount of sun light coming toward us. With this huge amount of sun light we can store the power generated by solar panel to battery bank and avail the power in night uses also so that even in no sun light user get the required power to charge his phone.

The design and functionality of the E-SOL tower provide clean and green with lesser CO2 emission and higher charging load design which can charge up to 5 devices simultaneously.

REFERENCES

[1]<http://www.nrgstreetcharge.com>

[2]<http://bowens40plus1.com>

[3]<http://www.selectsolargadgets.co.uk>