SOLAR POWERED ELECTRIC SKATEBOARD

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ABSTRACT
In the 21st century the smart & advanced or hybrid electric vehicles is the need of this fast pacing world. So we thought solar powered Small sized vehicle is the best solution for many of the problems. We have built up a platform modules to provide local community with a short-distance environmental friendly private transportation service. In this project we help to promote the popularization of eco-friendly way to travel and astonishingly improve the short-distance travel efficiency.
Solar powered electric skateboards have tremendous scope in next few years as a transportation facility. We hope in future, we will also modify our project with more functions to make it perfect & personal daily life assistant to individual. It is not only for a means for transportation, but also carrying the function of intelligent terminal. It is having cite portability, can be used for exercise, and environmental friendliness as some of the benefits of skateboarding as an alternative to automobiles.
Till the date this kind of vehicles are not in the Indian market & have the large scope in future as it works on renewable energy source. This project is definitely going to help & to improve the trend of vehicles of this generation.

KEYWORDS: Solar panel, Skateboard, Battery for storage, Motor, Motor Controller, Braking System etc.

INTRODUCTION
In the age of technology we need to find & generate different resources of energy & parallel options for the conventional resources. While considering the different aspects like Traffic problems, increased fuel costs, investment problems, size, parking problems etc. for all these problems we have the best solution of 'Solar powered Small sized vehicle'. And among all sized vehicles the best suitable vehicle is solar powered Electric skateboard. At the moment we have a huge problem of social energy and transportation issues. Air pollution and traffic congestion or traffic blocking have become most common problem for everyone & for

this the electric vehicles of small sizes of short-distance transport - solar electric skateboard is the best possible solution.

Currently electric bikes & electric scooters are the closest competition as both of them fulfil some of the requirements of the said problems, still fail to satisfy all kind of problems. The biggest problem with all other modes of transportation is of parking issue. And also we have to lock bike or scooter outside of your destination which is not safe. We tried to make something which is powerful enough to take us around quickly while still being small and portable, to bring with or into any location (such as school /work/office etc.).

OBJECTIVES OF PROJECT

The major objectives of project are as:

- ➢ To solve traffic problem by reducing the size of vehicle.
- ➢ To get transportation facility at cheapest cost through combination of both Grid Supply energy & renewable energy.
- ➢ To control the air pollution & to generate eco-friendly vehicle with no utilisation of fossil fuels.

SPECIFICATIONS

Table 1. Specifications of Solar powered electric skateboard

Sr. No.	Particulars	Description
1	Weight of vehicle	25 Kg.
2	Weight carrying capacity	100 Kg.
3	Maximum speed	25-30 Kmph.
4	Travelling Distance	25-30 Kms.
5	Battery type	Rechargeable battery
6	Brake type	Mechanical (Disc) Braking
7	Motor power	200W
8	Body material	Plywood, Metal sheet
9	Panel rating	25 Watts
10	Time for charging: with only solar panel With only AC charger (Adapter)	 8 Hrs. 4 Hrs.

SYSTEM DESCRIPTION

There are many problems with most vehicles today that can be fixed by a Solar Panel Skateboard. Today's vehicles have high consumption of petroleum products and causes exhaust gases, which are harmful to both humans and environment. Solar skateboards havethe ability to minimise these problems, as solar energy is clean energy and is pulled out from the 'Sun' a natural & mother of all energy resources.

We faced several problems during up gradation of a conventional electric powered skateboard to Solar-Powered Electric Skateboard. The suitable connection of solar cells, rechargeable batteries and DC electric motor with skateboard needed to make sure that project will work with more optimum energy use. So we made the system dual chargeable i.e. from Solar Panel (DC Supply) and through AC Adapter (24v AC Charger). This made our project more feasible. Here the electric motor used must have to support the weight and size of the skateboard, size of solar panel and to sustain with the conditions of the road surface. Actually, function of Electric Skateboard is much similar as the traditional skateboards, with one big difference. You aren't propelling it by yourself, you are just a passenger and standing on it, whereas, skateboard can itself carry you as fast as 25 to 30 kilometres per hour.

Obviously, the most important thing that you have to remember is that anything that can travel that much faster may cause lot of damage to your body if you crash while you are driving it. So it is mandatory to start

out slowly and when you know for sure that you are ready increase the speed to the faster speeds possible. You have to use the proper safety equipment while riding.

BLOCK DIAGRAM

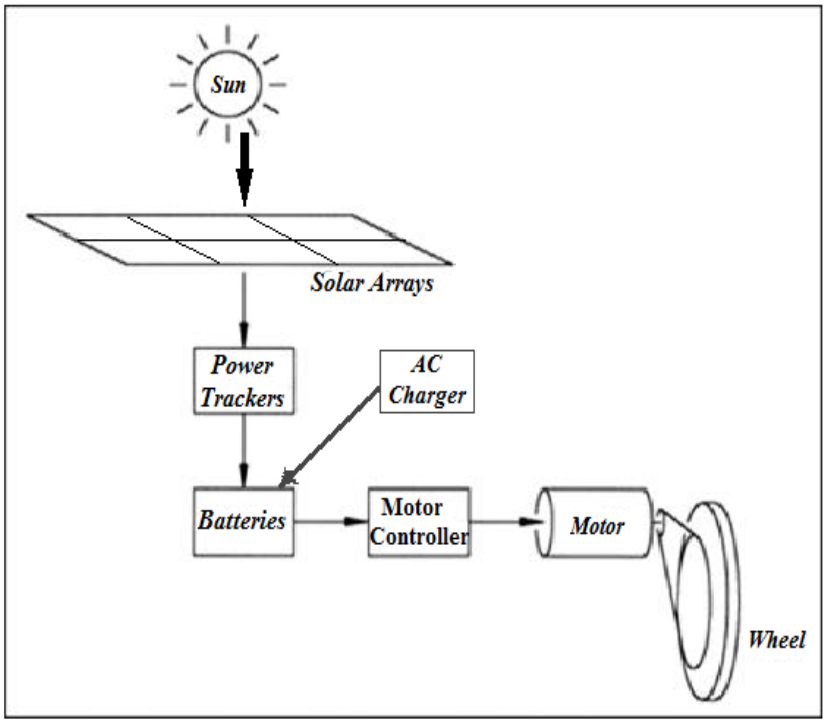

Figure 1: Working principle of solar powered Electric Skateboard

SYSTEM PERFORMANCE

An electric board is genius because you can carry it around and take it on or in the bus/train. It is comparatively very small and can be charge it wherever needed. But most importantly it's really useful and makes our life easier. Technologies used are really simple and in case easy modifications & repairs can be done by the individual.

With regards to air-resistance we can excite the rider at speeds less than 25 kms per hour and thus air resistance can be minimised. Gravity can be beaten by proper use of slope ratios, aerodynamics, ground clearance, low pressure strategies. Once we have good physics in place to overcome these issues, we will rely on the ability of the rider to skateboard. Indeed this will require experience and skill and some additional considerations of the physics of deflection of relative wind, lift and board aerodynamics in various positions during transitional motion.

We do have weight limitations, which are most important to be considered. As we increase the strength of material used for body of our vehicle the weight of vehicle will also increase. Still our model can lift unbelievable amounts of weight. If the speed is maintained as the rider increases the height or slope angle, rider should use proper techniques to control the board and should have the skill to maintain some relationship with slope of ground & speed.

ADVANTAGES

The Solar powered Electric skateboard has following advantages:

- ➢ User friendly,
- ➢ Can handle all age people,
- ➢ Low cost vehicle,
- ➢ Low maintenance,
- ➢ Saves time and energy.

LIMITATIONS

As we are using AC charging system also so we have limited charging Locations. So the recharging can only be done at where an external source is available. Solar panel capacity is low so recharging time by only solar is more. So we can use this vehicle only for short distance travelling.

FINAL LOOK OF PROJECT

Photograph 1: Final Look of Project

RESULT

In this project we have achieved all the objectives as mentioned before. Our project is running successfully on solar power. It can carry the weight upto 100 kg. It also can run upto 30+ Kms on a single full charge. As the battery is getting charged while running also so the distance will get increased depending upon time of day. Our model is dual chargeable: through solar panel & through AC charger.

CONCLUSION

The motive of the project is to reduce the environmental pollution by designing an electric skateboard using renewable energy source, which can be used to travel for short distances. And thus the skateboard is running successfully as per the desired objectives.

FUTURE WORK

We can get some more features like higher speed range, greater travelling distance, higher efficiency & manufacturing cost can be reduced in mass production.

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