Electric Solar Two Wheeler Performance and Analysis in Visakhapatnam

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ABSTRACT- The territory of Andhra Pradesh experiences huge interest supply befuddles in the power area. The enterprises in the states have been confronting the brunt of the low supply of power and are compelled to cut creation altogether. Countless plants in the state utilize petroleum gas as fuel and the supply of gaseous petrol, as well, has fallen essentially crosswise over India.

Visakhapatnam to be world's best sun oriented power maker the greater part of the parts Andhra Pradesh state is invested with an immense sun powered vitality potential and having around 300 radiant days in a year. The day by day sun powered vitality rate is somewhere in the range of 5.5 and 6kwh/m2 at various parts of the state. By and large, the territories Srikakulam, Vizinagaram, Visakhapatnam, East Godavari, West Godavari, Krishna areas are possible to set up sunlight based power ventures. The Floating sunlight based power plant began area is Mudasarlova, Arilova, Visakhapatnam District for setting up the 5MW power venture based sun oriented photovoltaic innovation; Solar vitality exhibits an exceptionally sensible answer for the poor power circumstance in the state. The state government as of late offered undertaking designers delicate to set up 1,000 MW of sun based power limit. The delicate got a staggering reaction with engineers offering to introduce up to 1,340 MW of sunlight based power ventures.

Fig: Floating solar power plant started location is Mudasarlova, Arilova, VSP District

There are numerous kinds of bikes on the planet individuals need to utilizes fuel as its prime power and electric bicycle that must be adequate for 60 minutes. In light of a few shortcomings in the presence framework, the

possibility of a sunlight based bicycle came as a primary concern. The thought is to make the sun powered bicycle last more and can be naturally energize when the bicycle isn't being used by the sustainable sunlight based vitality. The idea of the sun powered vitality is that a high torque engine will be put on the bicycle which will be produced by the sun oriented vitality. The sun based vitality will be consumed by the compact sun oriented board to produce the power. The power that had been consumed by the board can be utilized straightforwardly by the engine if the power coordinates the power necessity. If not, the engine will utilize the power from a battery. At the point when the bicycle was not being used amid the day, the sunlight based board will charge the battery. The framework will influence bicycle to work all the more effectively.

Keywords: Bicycle, Solar Energy, Visakhapatnam, Solar Panel, Solar Charger

1. INTRODUCTION

This paper will talk about the principle thought of this task and to get a bigger picture on what is the issue in the present advances, what that I need to accomplish in this venture and the zone that will cover on this undertaking. This part is isolated into a few classes that are venture foundation to portray the motivations to do this task, issue explanation to advise about the issue or shortcoming of the current innovation, target to ensure what really this undertaking must accomplish and extent of this task to indicate what will be utilized in this task.

There will be a major zone at the BITS grounds Visakhapatnam when it is completely assembled and works. So under studies require a vehicle to move starting with one side then onto the next. In condition of utilizing vehicle or cruiser that are exorbitant, understudy will be like to utilized bike as their vehicle. There a few kinds of bike that can be picked, for example, paddle bike, mechanized bike and electric bike. In any case, there are a few shortcomings about that kind of bike. To conquer the shortcoming this undertaking will build up a superior bicycle. In light of Visakhapatnam is situated in the actuator region, this undertaking will make utilized the vitality of the sun that once in a while utilized in Visakhapatnam to create the Electric Solar Two Wheeler.

II. PROBLEM STATEMENT

As what had been notice before, there are a few kinds of bikes that can be classifications that is mechanized bikes, and electric bikes Next, mechanize cycle that utilized fuel as it prime mover. The mechanize bike use fuel that is exorbitant. As an understudy, their stipend is restricted and just can be utilized for their examination material and for their nourishment to get by at the grounds. Other than that, mechanize bike will make contamination that can be awful for our condition particularly in this period that an unnatural weather change happen to the earth. Finally, electric bikes that produce by battery can be just be adequate for around 60 minutes. The client needs to discover control supply to revive the battery.

III. OBJECTIVE

To defeat the issue and the shortcoming, this undertaking need to do some examination and concentrate to grow better innovation. To make it accomplishment there are a few things that we have to know, for example, what will be the prime mover, how to put away it and the benefits of this new vehicle. All things considered, these are the rundown of the goal to be direct before keep on continuing on this task,

1. To develop a vehicle that use renewable energy, environmentally friendly and heap.
2. To develop an electrical bicycle that can charge the battery when it is not in used.
3. To develop low speed bicycle, but for a longer distance

IV. DESIGN

Front View; Isometric View; Back View

Side View

Table 1 Initial Dimension

Length:	170 cm
Width:	50 cm
Height:	122 cm
Ground Clearance:	26 cm
Wheel Base:	1980 mm

Table 3 Chassis Analysis by APDL, ANSYS

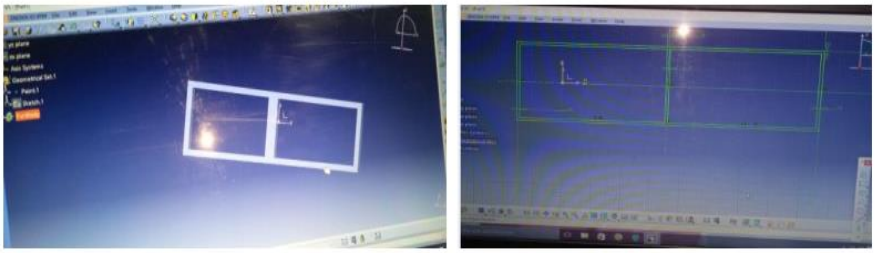

Table 3 Chassis Analysis by APDL, ANSYS

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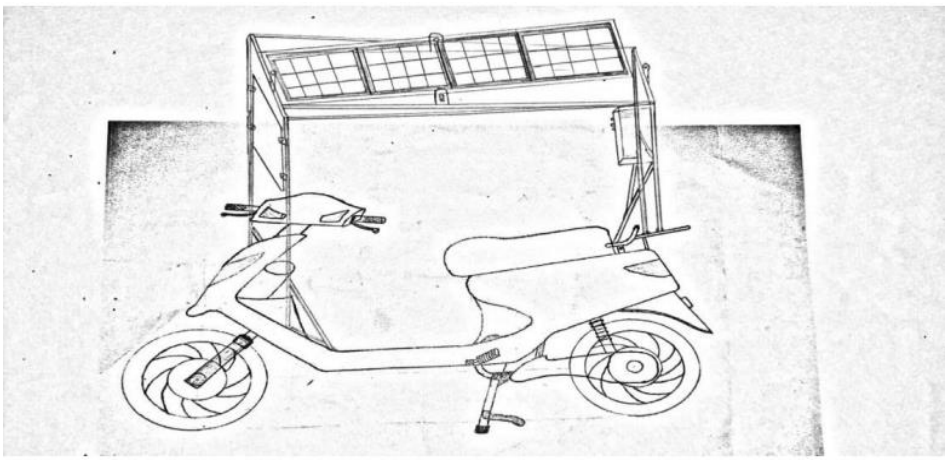
ANALYSIS TYPE	FORCE Applied	Max Stress (M Pa)	Factor of Safety
TORSIONAL ANALYSIS	1000 N – (2G)	31.9	1.09
FRONT IMPACT ANALYSIS	1000 N – (4G)	12.084	3.01
REAR IMPACT ANALYSIS	1000 N – (4G)	0.11608	2.54
SIDE IMPACT ANALYSIS	1000 N - (3G)	0.11860	3.4



Body diagram

48V500W CONTROLLER FOR HUB MOTOR

V. SOLAR PANEL

A photovoltaic module or photovoltaic board is a bundled interconnected get together of photovoltaic cells, otherwise called sunlight based cells. The photovoltaic module, referred to all the more normally as the sunlight based board, is then utilized as a segment in a bigger photovoltaic framework to offer power for business and

private applications. The essential trouble with sunlight based power and in fact with its cousin wind control has been one of effectiveness. There is all that anyone could need vitality hitting the earth as sunlight based radiation to address control issues of our species. Appraisals demonstrate that there is four fold the amount of wind vitality accessible for our utilization as the species utilizes each year. Sunlight based power is significantly progressively emotional; the sun gives the planet more vitality consistently than we use in a year. So the trouble has never been the accessibility of sun and wind, they are promptly accessible.

Motor calculations

Since the total cycle weight is equal to 100 kg, the Normal reaction acting on each tyre is equal to (50 x9.81) Newton each.

Friction force acting on the tyre

$F = \mu N1$

$F = 0.3 \times 490.5$

$F = 147.15$ N

Specified Torque=21Nm. Speed calculations:

$\omega = v \div r$, $\omega = (20 \times 1000) \div (0.33 \times 3600)$

$\omega = 16.83$ rad/sec

$\omega = (2 \pi N) \div 60$

$N = (60 \times \omega) \div (2\pi)$

$N = (60 \times 16.83) \div (2\pi)$

$N = 161$ rpm

Power calculations:

$P = (2 \pi N T) \div 60$

$P = (2 \pi \times 161 \times 21) \div 60$

$P = 353.878$ W

The solar power is used as a supplementary energy to ride the bicycle.

A motor with power of 350 W with peak wattage 388W is selected.

Battery specification:

Power = Voltage x Current P = V.I

350 = 24 x I I = 14.58Ah

Consequently as indicated by the above computations, to drive an engine of 350 W, 24 V limit, we select 2 batteries of 12V, 12.5Ah. We associate these batteries in arrangement to accomplish a voltage of 24V as required by the engine.

Electrical Charging:

Time required to fully charging the battery is calculated. Power Supplied to Battery during sAC Charging: AC Adapter

Specification: 12V, 3 A

P = V.I

P = 12 x 3

P = 36 W

Therefore, the time required to charge the battery completely is:

t =300 ÷ 36

t = 8.5 hours

Hence, it is found that, the time required to charge the batteries completely is 8.5 hours

VI. RESULTS AND DISCUSSION

The Electric Solar Two Wheeler was put in daylight and was discovered that it requires 7.5 hours for completely charging the battery. Yet, with electrical charging it needs 8.5 hours. The release time of battery hypothetically is 60 minutes. In any case, it was seen that the release time of battery is 3 hour and release happens exponentially. The Electric sun powered bike was tried on plain level street and a most extreme speed of 40 Kmph

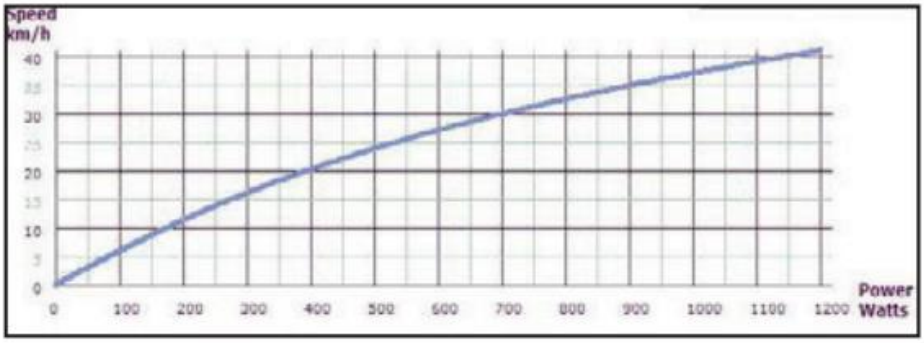


Fig::Speed Vs Power on a flat Horizontal Road

VII. CONCLUSION

The Electric Solar Two Wheeler has the accompanying striking highlights. A sunlight based fueled bicycle can keep running at a normal speed of 40 kmph The battery can be charged in double mode, Solar or Electrical supply. The battery can be charged in blustery season or at evenings moreover. The expense is less (Rs 25,000/ -) contrasted with mechanize cycle (Rs 65000/ -) or E – Bike (Rs 50000 or more). Eco - well disposed, No Pollution. The battery is being charged while riding in sun. Subsequently charging and utilization happens at the same time. No running expense. It tends to be effectively suggested as a neighbourhood vehicle

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