

# Vehicles Operated On Solar Power

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**Abstract-** *In the current state of technological development, the longer term of vehicles looks to be with the conjugation of assorted energy sources. This type of development in vehicles seeks to require the advantages from the simplest quality of every energy supply and it's particularly help full in urban driving vehicles. In cities of India one amongst the foremost medium of transportation is car rickshaws, that is manufacturing an enormous quantity of pollution still as greenhouse gases like dioxide. Fuel that is employed may be a non-renewable supply and additionally that prices high as a results of that transportation charges will increase. it'd additionally have an effect on the economy still because the users of the car jinrikisha. so they ought to select a reliable supply as apprehend that current trend of victimization the reliable supply like alternative energy that is obtainable in lots in country like India. Adopted alternative energy because the further sources additionally to the standard IC ENGINES. They victimization the solar array, controller associated DC motor setup to convert the sunshine energy as an voltage that is fed to the DC motor to get mechanical motion. The mechanical motion was transferred to wheels through chain drive within the propellor shaft that results in low-cost and effective transmission. Finally, fictitious a thought car jinrikisha with the assistance of changed gear mechanism and energized with alternative energy to run it.*

**Indexed Terms-** *solar energy; photovoltaic (pv); transmission*

## I. INTRODUCTION

If we have a tendency to quote star technology, it deals with the variability and therefore the cyclic nature of the Sun i.e. to store excess collected energy till it's

required. This is often more practical for fulfilling the shortage of sunshine at night-time. For example, a 0.1-m thick block of concrete within the floor of a home can store the alternative energy absorbed throughout the day and unleash it to the area at night-time. Once observations are created for an extended amount of your time like one year, or over an outsized geographic area like a continent, alternative energy offers bigger service. The utilization of each these ideas of your time and house, at the side of energy storage, has enabled designers to provide more practical and advanced star systems. The property of alternative energy of inherent variability is that the most helpful once it's integrated with alternative energy supply that are getting used within the place of alternative energy once it's not offered. However there's nice potential for integration direct alternative energy with alternative RE technologies. Today automotive engineers and customers are a lot of involved and looking out towards the foremost fuel economical vehicles. The consequences of the combustion engine automobile are various and widespread. analysis in grain alcohol, hydrogen, biodiesel and electrical vehicles aims to enhance energy efficiencies whereas decreasing pollution .In the early 1900's, the bulk of vehicles sold within the us were electrically operated. Since the acceptance of the interior combustion engine, electrical vehicles became a vital portion of the auto market, however are gaining market share in recent years. Within the 1990's, American state passed the Zero Emissions Vehicle authorization and made automotive corporations to provide electrical vehicles. The commandment was later modified and therefore the engineers gained inflated flexibility within the have to be compelled to turn out electrical cars. As a result, the electrical vehicles in today's market are getting a lot of demandable. The progress of electrical battery-powered cars has been a continuous and difficult method. Variety of technologies are developed getting to increase the potency of star

vehicles with decrease in costs. For 3 decades, hefty educational efforts are applied to the event of star battery-powered cars.

This analysis has created several advances, although the technologies haven't nevertheless been applied to the lot of general electrical vehicle. Several of the enhancements may benefit electrical cars and more their efficiencies in an exceedingly stern market.

## II. SOLAR VEHICLES

### A. History of Solar Vehicles

In the late 1970's electrical phenomenon devices and electrical vehicles were combined for the primary time. Facing the pressure of the oil crisis, engineers and environmentalists started trying to find various an alternate supply of energy and eventually found star because the best alternative. so as to make additional coverage and examine interest in star powered transportation, Hans Tholstrup organized a one,865 mi (3,000 km) race across the Australian outback in 1987 ,better referred to as the globe star Challenge (WSC), within which competitors were invited from trade analysis teams and high universities round the globe. General Motors (GM) with their Sun raycer vehicle won the event by an oversized margin, achieving speeds over 40mh [2]. In response to their success, gram came up with the USA Department of Energy (DOE) to carry the gram Sun rayce in 1990 [3]. more or less identical length because the WSC, Sun rayce is taken into account to be a tougher race because of additional varied piece of land and climates also as tougher road surfaces and traffic block. USA conducted yank star Challenge in 2001, then the North yank star Challenge in 2005, that area unit currently command each 2 years across completely different routes. a replacement record for the longest star vehicle race, covering 2460 mi (3960 km) from capital of Texas, Texas, USA to city, Alberta, North American nation was setup within the year 2005. ab initio impelled by analysis, the building of star vehicles is currently referred to as —brain sport,l developing dozens of latest vehicles annually for the only purpose of competition, not production. star vehicle competition allows engineers to analysis and develop new technologies. With the distinctive nature of the star community and events, these technologies

stay associate out there resource. Extended enhancements and attentive technologies of electrical vehicles has been developed which will be applied to a broader vary of cars to produce additional economical, effective and affordable alternatives over combustion engine vehicle.

## III. RELATED THEORY

Hybrid star automotive elements -Electric vehicle was initial designed and developed by the Baker Motor Company since Nineties. A main advantage of energy unit over the inner combustion engine will therefore be exploited in terms of no carbon emissions occurred thanks to solely use of the electrical motor to drive the engine [5]. Generally, the electrical automotive and hybrid star automotive is consisted of six main parts: PV panel, motor, electrical Generator, battery bank, IC engine and electronic dominant unit (ECU) severally.

Main elements of hybrid star automotive

1. PV panel convert daylight into electricity that is keep in batteries. Then its energy are utilised for hybrid automotive propulsion.
2. Motor has, generally, been used for driving the hybrid star automotive (HSC). However, we will observe that the brushless DC motor (BLDC) is usually operated within the (HSC) over the classical DC motor thanks to long period operation, high speed and additionally high force.
3. Electrical Generator is self-energy generated during an automotive throughout a regeneration brake or slop on a road.
4. Battery bank is a very important element for the HSC. It's been generated 24V DC for supply to the electrical motor and additionally electronic devices within the HSC.
5. IC engine has been used for driving of hybrid star automotive which may be used throughout an evening or minimum electrical energy of HSC.
6. Electronic dominant unit (ECU) is associate physics circuit that's used for dominant the energy within the motor which may be provides a speed variation

#### IV. TYPES OF TRANSMISSION SYSTEM

##### A. Front drive system

The IC engine is placed on the front of the car. With the help of chain drive mechanism, the power stored in crank shaft is driven to the axle of front wheels.

##### B. Rear drive system

The motor is placed close to the rear shaft of hybrid star automotive which might be operated by charged batteries then electric motor rotate the rear shaft of rear wheels each systems area unit placed in hybrid star automotive, at a erstwhile one system are often employed in transmission of power to wheels as either rear or front wheels of a hybrid star automotive. If one system gets fail then we've got associate degree choice to make a choice from different driving mechanism.

Hybrid star automotive is that the location of solar battery across on roof, bonnet and boot section of an automotive, at virtually horizontal and vertical beverage of an automotive. In a very general model, it can be think about of a minimum of 2 further choices as

#### V. SOLAR BATTERY SPECIFICATIONS

Solar cells area unit solid state semiconductor devices that convert light-weight energy directly into current. An electric cell contains a coffee voltage usually concerning zero.45 volts per cell; cells area unit connected serial to extend voltage [3]. The model of electric cell are often classified as P-N semiconductor junction, once exposed to light-weight, the DC current is generated. The generated current depends on the starir radiance, temperature and cargo current. The energy made by solar battery obtained from 2 forms of energy contribution as mentioned in below equation

#### VI. WORKING

After giving a summary of the cars that area unit already in use, here could be a careful description of our star battery-powered vehicle. It's a four wheeler, 2 seater vehicle. During this vehicle we've used a belt machine mechanism. The solar power is controlled mistreatment star panels that area unit used for

charging the batteries. The batteries run the motor that drives the wheel of the vehicle. The vehicle that we've created as our project uses a belt machine mechanism during which the shaft of the motor is connected through the belt machine system. The ability provided to the batteries is from the star panels that area unit giving a complete output of 400W and this output is employed for charging the batteries. The batteries that we tend to area unit mistreatment area unit lead acid batteries that area unit of 48V rating every of 12V. The motor's rating is of 48V that gets charged through the 3 12V batteries. The belt employed in our project could be a temporal order belt that has teeth that work into an identical toothed machine. Once properly tensioned, they need no slippage, run at constant speed, and area unit usually won't to transfer direct motion for assortment or temporal order functions. They're usually employed in function of chains or gears, thus there's less noise and a lubrication bathtub isn't necessary. Temporal order belts want the smallest amount tension of all belts, and area unit among the foremost economical. we've arranged stress on the economical half so it are often wont to cowl short distances while not overwhelming energy from external sources and at a similar time it keep the setting pollution free.

#### VII. APPLICATION

Electric vehicles will become a lot of sensible and usable by applying several of the technologies refined inside the star vehicle community. to maximize performance and vary, designers should maximize the potency of the electrical parts whereas minimizing the facility needs for motion. for pair, the density of the air, Cd, the constant of aero- dynamic drag of the vehicle, Af, the cortical area of the vehicle, V, the rate, m, the mass of the vehicle, g, the acceleration because of gravity, z, the road grade and atomic number 24, the vehicle's constant of rolling resistance. In any given surroundings, pair, g and z square measure constants not inside the management of the vehicle

#### CONCLUSION

The star vehicle solves several issues associated with the surroundings and is that the best pollution free technique. we want to create use of them so we will cut back our dependence on fossil fuels. star vehicles

do have some disadvantages like little speed vary, initial value is high. Also, the speed of conversion of energy isn't satisfactory (only 17%). however these disadvantages will be simply overcome by conducting additional analysis during this area; just like the downside of star cells will be resolved by victimization the ultra- economical. star cells that offer concerning 30-35% potency. As this field of cars are explored the issues can get resolved. The star cars have an enormous prospective

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