A Comprehensive Review On Smart Hybrid Electric Vehicle: Solar And Free Energy

Abstract

Air pollution is in an alarming situation is one of the reasons behind Global warming and climate change. This all situation has given a strong imputes to the growth and development of fuel-efficient vehicle Or using the dependency on forcing fuels such as petrol and diesel. Not only do hybrid electric vehicles provide better fuel economy and lower emission satisfying environmental legislation but also the damper that effect of rising fuel prices on consumers.

This paper presents an extensive review on using the energy from the system to produce energy for the system can also be called free energy

The inclusion of photovoltaic cells in a hybrid electric vehicle is a fairly new concept and has been discussed in detail.

Keywords: Hybrid Electric car, Solar energy, free energy

Introduction

The transportation sector mainly consists of road, railway, ships and Aviation where road transportation spends 75% of the total energy spent on transportation. The automobile industry plays an important role in the economic growth of the world hence affecting the entire population. Since vehicles mostly run on internal combustion Engines the Transportation is accountable for 25% to 30% of the total greenhouse gases emission.

Hybrid electrical vehicles were conceptualised to bridge the Power of internal combustion Engines and the emission-free nature of electrical Vehicles.

Hybrid electrical vehicles offer better fuel efficiency over internal combustion engine but it works on charge sustaining Mode. The issue with it is that its charging mainly depends on regenerative Braking and gasoline.

The possible approach for extending the range of a hybrid electric vehicle is to allow continuously charging of batteries while running.

The solar-driven hybrid electric vehicle and free Energy generation Leeds to continuous charging of the batteries by means of Solar and free Energy using dynamo coupling with the shaft. Which minimise the usage of gasoline and hence reduce environmental pollution

1.1 Solar operated cars

A Solar car is driven by solar energy obtained from Solar panels on the surface of the car or using a Solar jacket in electric bikes. Photovoltaic cells convert solar energy directly into

electrical energy. Solar cars combine technology typically used in the auto-rickshaw, bicycle, four-wheeler and automotive industries Solar cars are often figured with gauges as seen in conventional cars. In order to keep the car running smoothly, the driver must keep an eye on these gauges to spot possible problems. The term of the solar car usually implies that Solar energy is used to power all or part of vehicles propulsion. Solar cars are not sold as practical day to day transportation Devices at present-day but are primarily demonstration vehicles and engineering exercises and models of a car.

1.2 Hybrid Solar Energy and Free Energy operated car

A hybrid car is a vehicle that uses two or more distinct power sources to move the car.

The dome mostly refers to Electric vehicle which combines solar Energy and Electric Energy. But instead of using Solar panels for Energy Electric cars get their Energy from batteries. When the batteries run out they must be recharged by plugging the car to an Electric power outlet.

If you Drive an Electric car you would recharge its batteries overnight while you slept. Hybrid will help you charge while driving and also help in generating free energy while driving with the help of coupling a dynamo shaft with a cars shaft.

2. Literature survey

It is necessary to understand solar energy collection and its conversion into electricity, evaluation of electrical performance, and the current efforts being made to improve conversion efficiency. It was also important to examine the actual effect of the color filters on the light input into the panel.

The primary material used in the modern collection of solar energy is silicon. Even though it takes 100 times more surface area of silicon than that of other solid-state materials to collect the same amount of energy, silicon was already developed and in mass production when solar energy collection technology was developed, and so it was the practical choice[1]. However, any semiconductor is acceptable. The semiconductor is part of a panel called a photovoltaic, or solar cell. This cell absorbs sunlight and transfers it into electricity, typically with a 15-20% efficiency[2].The true principle of this study (the factor observed) centres not on the inner processes involved in the energy transfer, but rather on the efficiency of the solar cell.

The purpose of solar panels and solar energy collection is for the output of power, measured in Watts (P=V x I, V=voltage, I=current). However, in order to study how factors affect this output, it is crucial to understand how this performance is evaluated. A study was conducted by the Florida Solar Energy Center (1999) observing the performance of two separate solar setups for homes in Kissimmee, Florida. Analyses were done on the long-term performance and efficiency of the two systems, measuring power over time in Watt-hours. This study examines similar parameters on a smaller scale but does not look at many of the extra angles examined by this study. For example, the standard requirements of Electrical Codes had to be considered, which does not apply in this study. In essence, the Florida study was designed to incorporate all the elements necessary to practically supply a fully functional family home with all its electrical needs, whereas this study is more concerned with the general principles of solar energy collection. However, the most basic analyses are the same. The Florida study determined

photovoltaic to be an adequate and acceptable alternative to standard electrical power[3]. It examined the thermal efficiency of solar panels, a factor not being considered in this study, but still presents sound examples of useful graphics, aptly demonstrated analysis equations and a good explanation of what it all means. A scatter plot with linear regression was displayed and used to determine the thermal efficiency coefficient, which was then compared to calculated values of the same. These are sound statistical techniques that can be applied to a variety of situations.

Efficiency is the ratio of total energy input into a machine or other system to the total energy output (e = useful energy output/energy input). Solar energy collection efficiency has improved as the general technology has improved, growing from the first passive collection methods (efficiency approx. 1%) to the current applicable methods (efficiency approx. 15-20%)[2]. Studies have been done toward the next advance for increased output and efficiency. The issue has been examined from several angles, both from that of maximum possible efficiency and from that of highest possible efficiency while remaining industrially feasible. Kribus's study (2002) delivered an examination of a new process with efficiencies approaching 70%, although it would be difficult and extremely expensive, probably too much so to be economically feasible. In the conversion within the panel from sunlight to electricity, efficiency will rise if the panel can operate at higher temperatures. Normal panels use a double cycle conversion process; Kribus (2002) introduces a triple cycle, the first of which operates at extremely high temperatures. It is called a magneto-hydro-dynamic (MHD) cycle and can operate at temperatures in the range of 2000° - 2500°, up from the current limit of about 1300°. A panel with increased efficiency, possibly approaching 30%, is still feasible for mass production[4]. His design uses a different kind of silicon, called Czochralski silicon, with oblique evaporated contacts (OECO). The contact points are metalized using low-cost aluminium and obliquely evaporated using a very simple four-step process that may prove to be feasible for mass production.

These improvements being made in the technology are wonderful, but worthless unless they can be put to good use. Why should scientists bother with all the effort of improving alternative energy collection methods when the world is already quite happy with its current energy supply? Obviously, fossil fuels will only last so long, and solar energy is emerging as the heir-apparent to the oil dynasty, as the best choice economically and ecologically [5]. According to the U.S. Department of Energy's "About Photovoltaics" website: "PV systems are now both generating electricity to pump water, light up the night, activate switches, charge batteries, supply the electric utility grid, and more [6]. Whether you are a homeowner, farmer, planner, architect, or just someone who pays electric utility bills, PV may already touch your life in some way. the possibility of using photovoltaics to provide the energy needs of the 25,000 portable classrooms throughout Florida. Given the tremendous cost of powering these units, even with ventilation below recommended standards, an alternative was needed; but no such switch could be made without verification of its effectiveness. The energy consumption of an average classroom was observed using similar techniques to this study, but on a larger scale, and it was determined that the total energy [7]. Consumption could be significantly reduced with only modest modifications and additions to supply solar power.

3. Proposed Method

Sunlight is nowadays considered to be a source of energy that is implemented in various day to day applications. Solar energy is being used to produce electricity through sunlight. With the

help of this technology, we aim to make solar and electrical energy (using dynamo/free energy) powered cars. Preliminarily our objective would be to implement our idea on a remote control toy car and afterwards with help of this prototype we can extend our future work on building an actual car powered by solar and electrical energy which is both cost-effective and of course environmentally friendly.

When sunlight falls on the solar panel then solar energy gets converted into electrical energy and stored in the battery. Mechanical energy is the most common renewable source of energy. It can be converted into various forms of energy such as electrical energy. The dynamo converts mechanical energy into electrical energy. It is implemented in our project such that it regenerates the electrical energy which is spent by the batteries to run the motor and it is stored in the battery, and battery is employed, and solar controller circuit supplies required power to the motor.

4. Components

1. Solar Panel
2. Solar controller circuit
3. Battery
4. DC Motors
5. Pic Microcontroller
6. Dynamo

5. Conclusion

The integration of photovoltaic panels in electric and hybrid vehicles is becoming more feasible, due to the increasing fleet electrification, to the progress in terms of PV technology, the increase in fuel costs and PV panels cost reduction. Hybrid Solar Vehicles may therefore represent a valuable solution to face both energy-saving and environmental issues. Significant benefits in fuel consumption and emissions can be obtained with intermittent use of the vehicle at limited average power, compatible with typical use in urban conditions during working days.

But, despite their development being based on well-established technologies, re-design and optimization of the whole vehicle- powertrain system is required to maximize their benefits. Particular attention has to be paid to maximizing the net power from solar panels, and in energy management with the help of free energy concept using dynamos and control, where advanced look-ahead capabilities would be required. Interesting perspectives are also related to the possible reconversion of conventional vehicles to Mild Hybrid Solar Vehicles.

The perspectives about cost issues of PV assisted vehicles are encouraging. Anyway, as it happens for many innovations, their economic feasibility could not be immediate. But the recent and somewhat unexpected commercial success of some electrical hybrid cars indicates that there are grounds for hope that a significant number of users is already willing to spend some more money to contribute to saving the planet from pollution, climate changes and resource depletion.

6. References

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