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AIR HYBRID TRICYCLE

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ABSTRACT

The air hybrid tricycle system is a systems project that incorporates two different ways of charging lithium-ion battery: solar power and alternator, which is used to power an air compressor running tricycle.

It will be having regenerative charge system (alternator) and solar panel which enables substantially longer distance power assistance cycling by regenerating power from pedaling energy (human energy) and solar energy and charging it in the battery.

Compressed air filled by electricity through battery using a compressor. The electricity requirement for compressing air has to be considered while computing overall efficiency.

Nevertheless the compressed air tricycle will contribute in reducing air pollution and tend to zero pollution level and promoting great environment.

KEYWORDS: Eco-friendly use, tricycle.

INTRODUCTION

In present scenario, with increase in number of automobiles the need for petroleum products is reaching the peak point. This petroleum products are non-renewable sources, and it has danger of exhaustion in future, so it is better to move an alternate energy sources. The price of crude oil has increased significantly over the past few years and there seems to be no turning back. The environment has also been more of a focus throughout the world in past few years and it seems that cleaner alternatives have been steadily on the rise with no end in sight.

It is hard to believe that compressed air can be used to drive vehicles and that is true and air tricycle as it popularly knows has caught the attention of research worldwide. It has zero emission and is ideal cycle on temperature for city driving condition.

This air hybrid tricycle uses two types of energy for driving the vehicle that is one is solar energy which will be conserved by using solar panel and then it will be stored in the battery which will be further used in driving the air compressor. And the other source is using the alternator which will store the energy of rotation in the battery and then will be further used for the compressor.

LITERATURE SURVEY

- **MADELINE R. HICKMAN PRESENTS A PAPER ON "POWER ASSIST FOR TRICYCLE RICKSHAWS IN INDIA".**

Bicycle rickshaws impose significant physical burdens on their drivers. Used throughout India for transportation, these rickshaws are not designed for driver comfort and safety. Instead, traditional rickshaws are only single-speed, with an extremely high gear ratio that makes it difficult for drivers to pedal with large loads. Particularly in India, many rickshaw drivers are under-nourished, and the physical exertion required to pedal passengers over rough roads and uneven terrain leads to serious health consequences. A power assist could go a long way towards improving rickshaw comfort and ease of use for drivers by easing the burden on the driver. Despite this, the cost and other constraints on modifications to the rickshaw severely limit which solutions are feasible. Measurements and analysis from the test setup will help determine how much power is needed to develop an effective assist, and which methods of assist can achieve that while staying within the cost constraint and other constraints on the design. The lack of gearing system and high gear ratio on the current Rickshaw Bank model make pedaling passengers incredibly difficult for rickshaw drivers. There are a number of potential solutions to this problem, ranging from an improved gear ratio to a power assist to aid the driver. Thus he presents an overview of the various ways to improve on the current single- speed rickshaw design, with various gearing and assist options like fixed gear ratios, changing gear system, two chain system, power assist, electric assist, mechanical assist.

- **RAVIKUMAR KANDASAMY PRESENTS A PAPER ON "DESIGN OF SOLAR TRICYCLE FOR HANDICAPPED PERSON".**

Solar plays a vital role in our day to day life. So they have developed the solar tricycle especially for handicapped person of ANANDVAN organization started by Mr. Baba Amate in Warora taluka of Maharashtra state (India). This organization is working for the leprosy affected people. In this paper they have discussed that how solar tricycle will help to reduce the effort of handicapped person. All the designs specification they have considered are after analyzing the problems from the handicapped person. Comfort of the person in the tricycle is an important and

They have given importance to it. The main content of the tricycle is Solar PV panel, Brushless PMDC motor, Charge controller and battery. Thus in this paper they discuss about the main idea of this project and to get a larger picture on what is the problem in the current technologies. Electric vehicles, which use 100% electric power, use electric motors instead of an internal

Combustion engine to provide motive force. Solar-powered vehicles (SPVs) use photovoltaic (PV) cells to convert sunlight into electricity. The electricity goes either directly to an electric motor powering the vehicle, or to a special storage battery. PV cells produce electricity only when the sun is shining. Without sunlight, a solar- powered car depends on electricity stored in its batteries.

- **MOHAMMED SHARIF PRESENTS A PAPER ON "FABRICATION ON COMPRESSED AIR BIKE".**

The compressed air bike is an eco-friendly bike that uses compressed air as the source of energy .Fossil fuels (i.e., petroleum, diesel, natural gas and coal) which meet most of the world's energy demand today are being depleted rapidly.

Also, their combustion products are causing global problems, such as the greenhouse effect, ozone layer depletion acid rains and pollution which are posing great danger for environment and eventually for the total life on planet. These factors are leading automobile manufactures to develop cars fueled by alternatives energies. Hybrid cars, Fuel cell powered cars, Hydrogen fueled cars will be soon in the market as a result of it One possible alternative is the air powered vehicle. Air, which is abundantly available and is free from pollution, can be compressed to higher pressure at a very low cost, is one of the prime option since atmospheric pollution can be permanently eradicated. Whereas so far all the attempts made to eliminate the pollution has however to reduce it, but complete eradication is still rigorously pursued. The concept of compressed air bike in practice reduces the air pollution to large extend as its exhaust is nothing but cool air.

- **DARSHIL G. KOTHARI PRESENTS A PAPER ON "HYBRID TRICYCLE".**

In present scenario, with increasing number of automobiles the need for petroleum products is reaching the peak point. These petroleum products are non-renewable sources and it has a danger of exhaustion in future, so it is better to move to an alternate energy sources. The price of crude oil has increased significantly over the past few years and there seems to be no turning back. The environment has also been more of a focus throughout the world in the past few years, and it seems that cleaner alternatives have been steadily on the rise with no end in sight. The Hybrid Bicycle System is a systems project that incorporates three different ways of charging a lithium-ion

battery: the 220VAC wall outlet, regenerative braking, and solar power; which is used to power an electric hub motor running a bicycle. In this electric hybrid bicycle, the front wheel has a compact & light weight hub motor. It will be having regenerative charge system and solar panels, which enables substantially longer distance power assist cycling by regenerating power from pedaling energy (human energy) and solar energy and charging it in the battery.

- **SAURABH PATHAK PRESENTS A PAPER ON "COMPRESSED AIR VEHICLE".**

So in this paper, Saurabh Pathak has took efforts to study the extent of research done and the potential advantages and disadvantages of the compressed air technology. The latest trend in the automotive industry is to develop light weight vehicles. Every automotive industry is looking to reduce the weight of the vehicle as it helps in the better handling of the vehicle and increases the efficiency of the vehicle. Today, the heavy vehicles are known for producing a large amount of harmful gases like CO2, SO2 etc. which act as the major source for global warming. So research is going on to find a light weight vehicle which does not pollute the environment. One of the alternatives is the use of compressed air to generate power to run an automobile. Due to the unique

And environmental friendly properties of air, it is considered as one of the future fuels which will run the vehicles.

PROJECT OBJECTIVE

The main objectives of this project is to construct a air hybrid tricycle for physically handicapped people who might have lost their legs and are having difficulty in travelling from one place to another .

This air hybrid tricycle will allow them to travel a certain distance and with no cost as this air hybrid tricycle will run off free renewable energy sources or mechanical and electrical energy with compressed air. The design of the air hybrid tricycle would be clean, eco-friendly, and completely dependent on renewable sources and mechanical and electrical energy sources with compressed air.

The objectives of air hybrid tricycle project is to develop a tricycle with low speed but which can cover longer distances with minimum efforts for the person riding the tri-cycle. The objective is to build this tricycle in a minimum cost so that this tricycle can be affordable to every handicapped person.

To reduce air pollution which is subjected to global warming by developing a tricycle which completely runs on renewable source of energy and compressed air and is totally eco-friendly.

CRITICAL REVIEW

This air hybrid tricycle can be further developed by some additional modifications. We can use solar panels to get more amount of power supply to the battery. We can also add another alternator to increase power supply and with the help of a bigger battery we can easily manage the energy acquired

from the resources to run the vehicle smoothly for long distances and a significant amount of time. We can further reduce the efforts to drive the vehicle by inclusion of a gear mechanism for the wheels. With help of these modifications and better resources it would help be easier to reduce the weight of vehicle by significant amount.

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