REFURBISHMENT OF IC ENGINE VEHICLE TO ELECTRIC VEHICLE

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Introduction:

Oil prices are growing every day, which results from the general idea that oil is a resource that will be virtually exhausted in the next 50 years. Whereas, it is expected an increase of the overall vehicles number from 700 million to 2.5 billion during the same period. Alternative solutions are needed, and are being proposed. Electric Vehicles (EVs) and Hybrid Electric Vehicles (HEVs) that main manufactures are proposing, reveals a change in cities mobility paradigm. Furthermore, several organizations and energy experts are suggesting new policies to encourage research, development, and demonstration projects promoting EVs. When the subject is EVs research, generality, is made an association with new and revolutionary vehicles. However, low-cost solutions using reliable off-the-shelf components can also be proposed. This way, the conversion of Internal Combustion Engine (ICE) vehicles in EVs is an attractive solution for the transitory period of coexistence. This process is called “electric vehicle conversion”.

In terms of engineering, this is a challenging process that needs knowledge about mechanics and electronics. The main systems that need to be integrated are the electric motor and respective controller, an energy storage system and corresponding charging system. Different solutions for the energy storage system are being proposed, however, the most common are batteries. Therefore, a battery charging system is also needed. Traditionally, batteries charging systems are implemented with static power converters. Different topologies can be used. In order to respect batteries technology, different charging algorithms need to be used. Batteries charging systems can also be used to transform EVs and HEVs in energy storage.

While using the electric vehicles the operating cost of the vehicle can be reduced. It can be made as cost effective. Due to the impact of increase in the fuel price, it is difficult among the public to use internal combustion engine vehicles. The future of automobile is going to be the era of electric vehicles. Thus, the existing internal combustion vehicles cannot be demolished. The pollution emitted by the automobiles is increasing rapidly nearly about 73% of total pollution due to the usage of internal combustion engines.

The newly manufactured electric scooters are higher in cost. The main advantage of the electric vehicles is reducing emissions. Electric vehicles use large battery packs for the energy which are higher in cost. They use lithium-ion batteries which prices around

thousands. Obviously, everyone is looking for ways to make electric vehicles less costly. One way of doing this is to consider converting an internal combustion engine (ICE) vehicle into a new electric one. There are a number of kits on the market that can be utilized to do this conversion, but these kits costs higher.

Electric vehicles consist of batteries for energy, an electric motor for power, a controller to control the flow of energy to the motor, and a potentiometer to allow accelerator pedal to provide input to the controller. The vehicle's gasoline engine, exhaust system, petrol tank, and clutch assembly will no longer be needed. Electric vehicle conversion is the replacement of a vehicle's combustion engine and connected components with an electric motor and batteries, to create an all-electric vehicle.

The experimental setup of our project consists of an ordinary scooter, lithium-ion battery, a BLDC motor and a controller. A new and improved design for the conversion of IC engine vehicle to electric vehicle was developed based on the literature review and the problem identification. The proposed design consists of electric rear wheel-drive with a BLDC motor and battery.

Objectives:

1. Re-useable resource.
2. Zero pollution.
3. Zero emission.
4. Availability of resource is more.
5. Increase in efficiency.
6. High torque for minimum battery consumption.
7. The mechanical design of the vehicle is simple.
8. Low manufacture and maintenance costs as well as easy maintenance.
9. This system has more initial torque and high-end power is more.
10. Minimum the environment impact from the system.

Methodology:

As the future is in the hands of electric vehicles, the existing IC engine vehicles cannot be completely demolished if we are changing into electric vehicles and this is the problem identified in the problem identification stage. Then in literature review stage, the patents, journals, online references were collected, studied in detail and the literature review was summarized. Based on the problem identification and literature review the conversion of IC engine vehicles to electric vehicles was designed.

Then the calculations were made to select the required components. After the fabrication work of our vehicle with propose design the performance, efficiency, speed of the vehicle and also the load carrying capacity of the vehicle will be teste

Conclusion:

Operating Parameters	
Parameters	**Element**
Top Speed	**35 Kmph**
Range	**45 Km**
Charging time	**4 - 5 hours**

1. In the existing electric vehicles, there are many disadvantages.
2. The hub motored electric vehicles does not provide more initial torque and then the vehicle will not provide more speed as given by the BLDC motor.
3. By implementation of this project, it reduces the cost of an electric vehicle and with these components the speed and range for the vehicle can be achieved

Scope for future work:

1. Implementation to 3-wheeler and 4-wheeler vehicles to further reduce natural
2. Resource consumption and also to reduce the carbon footprints on the environment.
3. Further implementation to heavy duty vehicles can also be done.