

Electric Vehicles – A Brief Study

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Abstract - Today, the air we breathe is being highly polluted. The second major reason is the automobile that we use. To solve the problem, "Electric Vehicle" is the idea. But in the beginning, automobile ran with the help of electricity as a fuel in "1881" But later in "1887" to get more efficiency and power Internal Combustion Engines that takes petrol and diesel were designed and manufactured. But today, their Exhaust air made great carbon emissions in the world. So, Electric Vehicle has become the best option.

Internal Combustion Engine vehicles will have a slow gradual growth although there is always a demand in EV in India.

3. ELECTRIC VEHICLES – A BRIEF

Electric vehicles, in brief, is nothing about, same automobiles that run with the help of DC Induction motors as their prime movers. Instead Internal Combustion engines in conventional vehicles. The Electric Vehicle assembly is very much simple when compared to the Internal Combustion Engine. Vehicles. They don't need any additional balancing mechanisms and they are less complex than traditional vehicles. The major parts of an Electric vehicle is a Battery, Battery Management System, a DC Induction motor which is directly operated by a controller. The speed variation in the Induction motor is done by a sensor that is fixed at the bottom of our acceleration pedal. When we press the pedal, the controller absorbs the energy from the battery pack and gives it to the induction motor. Also, an electric vehicle is very safe when compared to traditional vehicles. The power-on refilling is nothing but electricity, what we use to run our daily home electric appliances. There are several types of Electric Vehicles namely

1. INTRODUCTION

In India, the emissions of carbon by automobile are step by step gradually decreased and controlled by making norms called Bharath Standards as BS 1 to 4. Soon BS 6 expected to launch on April 20. But this doesn't help greatly, because millions of vehicles have been manufactured. Due to this many countries globally decreased Internal Combustion Engine vehicles from their countries. They too worked very well and gave good results in carbon emission. Here in India, it is a common fact that Electric Vehicle isn't still successful. So let's see the real need for Electric vehicles, a brief about them, current problems and suggested or recommended solutions for them.

2. NEED OF ELECTRIC VEHICLES

To overcome pollution and avoid exhausting natural vehicles for transportation, the swapping of electric vehicles seems to be the best option. But its not only going to be a reason. The crude oil is going to be dry sooner. If this situation happens, our current Internal Combination vehicles will no more useful. Already Geological Researches from several countries warned it before and some of them confirmed with the activities of nature. So an alternative fuel for our vehicle at least for our transportation should be planned. Some other major reasons for the need for Electric vehicles are Excessive maintenance cost of Conventional Internal Combustion Engines, hike in the costs of petrol and diesel, less safety when compared to Electric vehicles, high pollution causing agent and enormous reasons too. Because of Stringent BS norms, some major automotive manufacturing hubs like General Motors and Volvo, etc left India. Even some manufacturers analyzed the future steps of India and at a very early stage started their research on Profitable Electric Vehicle Manufacturing like Mahindra etc. Currently in India, Electric Vehicles have become a major need. The situation in industrial is not so perfect, but startups utilize this opportunity. Still, there are some lags found. The replacement of Electric Vehicles instead of

1. BEV – Battery Electric Vehicles
2. HEV – Hybrid Electric Vehicles
3. PHEV – Plug-in Hybrid Electric Vehicles
4. FCEV – Fuel Cell Electric Vehicles

They get their names concerning their fuel type, working, etc. A converter is placed inside a car that helps to charge our vehicle at home. Our home's AC is converted as DC with the help of it. The time is taken to fully charge the battery is also derived as Level 1, Level 2, Level 3 (DC Fast Charging).

4. CURRENT PROBLEMS IN ELECTRIC VEHICLES

Electric vehicles especially cars in India are facing several problems. India has less infrastructure for charging Electric vehicles in public places etc. Further, the electricity consumption of electric vehicles is currently may be equal. If an electric vehicle has a sudden hike in its count, it will make a huge consumption of electricity and it will imbalance. This creates a need and further a demand in electricity; which is a basic necessity of India. Further, the cost of electric vehicles is high when compared to traditional Internal Combustion cars. Because it has one of the previous items to store electricity called Lithium-ion battery. The lithium-ion battery

is made up of rare earth elements which are difficult to manufacture on bulk and fast. Also, besides, lithium-ion battery is only imported from foreign countries. So this also adds up the cost of electric vehicles. The investment of R & D in the automobile industry are also too huge. So, it creates a lag in electric vehicle manufacturing. The speed of an electric vehicle is less when compared to conventional Internal Combustion Engine vehicles. They are also suitable for long distances without any refilling up to 500 to 700 km. But electric vehicles for a maximum of 150 - 200kms must need a charge. The time taken to fill the tank of an internal combustion engine takes some minutes, but for an electric vehicle, it takes at least 6 to 7 hours. Today because of Technology growth, level 3 DC fast charging is developed. But not everyone can buy that costlier technology. So it also creates another issue there. And every five years, it is advised to replace the battery. All this and some more reasons increases the price of electric vehicles. These are being the major problems for electric vehicles in successful in India.

5. SOLUTIONS FOR PROBLEMS IN ELECTRIC VEHICLES

For the discussed above problems, there can be some recommended solutions. Charging infrastructure should be developed as fast as possible and special importance should be given for the electric vehicle users in highways. Charging stations should be developed in most of the public places. Instead of boosting on Electric vehicle manufacturing, power generation production increase should be concentrated. Electricity should not be a demand and electric vehicles should not be a reason for that. Further, some incentives should be given to the industry to make the prices of electric vehicles less and continue the current tax deduction schemes for electric vehicles. As soon as the production in electric vehicle increase, several manufacturers will start their work in the manufacturing of electric vehicles. This will create a competitive market between them and further make to decrease the prices of their products. A special exhibition should be conducted in a combination of both the Govt of India and industrial. Only electric vehicles should be displayed. Camps and public initiative programs should be initialized and awareness of global pollution and the reasons of pollution with its effects should be clearly addressed. As of these further continues, people will slowly for opting electric vehicles and if it is easy and fair to make a deal for them to purchase. This will greatly boost the sales of electric vehicles. The term Electric vehicle is un successful doesn't mean it is entirely not successful, this term is coined by most of the industrial, where they can't profitably make electric vehicle manufacturing. And electric vehicles in India has become a major success and E - Rickshaws or the Toto rickshaws are the best examples. In further, India should introduce more schemes like Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME), National Electric Mobility Mission Plan (NEMMP) etc. If all the above measures start to be executed we can see more electric vehicles on the roads of India.

6. RESULTS

Electric vehicles are unsuccessful in India doesn't mean, electric vehicles are not properly giving their roles or they aren't suitable. The real truth is Electric vehicles are still not profitable is the real truth and it transferred as unsuccessful. Today several startups have started in the field of electric vehicles conversion of traditional vehicles to electric vehicles, charging infrastructure building, electric vehicle manufacturing, etc. Toto rickshaws are the best example. If the Indian Market and Indian people properly analyzed, electric vehicles can hit huge success. Similarly, companies like Mahindra, Nissan, Tata nearby completed their researches on Electric vehicles and the final stage of testing. Soon as they start manufacturing, they need to install a major infrastructure to manufacture electric vehicles and it will take a couple of years too. Soon in 2025, nearly 30 to 40% of vehicles would be electrified. It will be a gradual growth for electric vehicles in India. And this will help in decreasing the carbon emissions and already Delhi govt also introduces several news plans to increase the electric vehicles' moment entirely for them. The five-year plan scheme is a highly appreciable thing.

7. CONCLUSION

The implementation of electric vehicles in India is mainly to control and decrease greenhouse gas emissions and to avoid extra expenses of an Internal Combustion Engine vehicles which includes annual service every year, oil changing charges, etc. Here the maintenance is only for every five years, its the ultimate thing of replacing a Lithium-ion battery. Our Indian government is very stubborn about its decision to manufacture electric vehicles. Even many automotive experts also prefer electric vehicles for India, as they are more and safer when compared to traditional vehicles. May be speed and charge are their problems soon they will be solved with the requirements of the people. Govt has already profitable plans for people to purchase electric vehicles like fame, name and good subsidiary for purchase of electric vehicles. Govt should continue the offer and if possible it should introduce something more to the people. This will help a boost in sales of electric vehicles. The more electric vehicles we use the more we can save our earth and keep our environment clean. Already in the capital of India, the air we breathe is highly polluted. To control and save us we should opt for Electric vehicles. Let's Go Green And Save Earth.

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