Electric Vehicles

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Abstract— Since the petrol and diesel vehicles produces smokes and pollutes environment (Air) so, one of the biggest car manufacturing company, Mahindra Reva (Earlier Reva electric car company) has started a project to develop electric vehicles in India. The development of Mahindra Reva named this electric car as e20 (E-T0-0h). As per the engineers of Mahindra Reva, they had started a project of manufacture 4500 electric car throughout the world (24 countries) to reduce air pollution because, like petrol and diesel engines they do not produces smokes. In this project the developers of Mahindra Reva are trying to replace fuel engines with batteries and other highly advanced electrical equipment. It is assumed that the Mahindra Reva e20 (E-To-oh) will change the means of transportation and mobility throughout the world. All the reasons for electric vehicles project is reduce the consumption of fossil fuel as well as the air pollution. This paper presents the implementation of those technologies, cause of implantation, benefits of using electric and so on.

Key words: Mahindra Reva, E2O, 5s, Electric Vehicles, Clean, Convenient, Connected, Clever, Cost Effective

I. INTRODUCTION

The idea of the new electric car is desired from various factors which includes advances in technology increase in environment concmern, cost effective and a hope for the clean mobility and transportation system in near future.

The main motive of this project is to develop a clean fuel less mobility system which is cost effective, convenient, easy and fast. The 5s principle is the sole principle of this project

Fig. 1: The 5Cs

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Fig. 2: E2O Mahindra Riva

The main motive of this project is to develop a clean fuel less mobility system which is cost effective, convenient, and easy and fast connect and clever which may make environment pollution free.

In short, it works on the principle of 5s. These 5s are discussed one by one.

A. Clean

Developed countries are trying their best to invent something that may do not have any pollution agent. In the result of this experiments, the electric car/vehicles is manufactured which have all the point that hints that it is clean and have no any pollution agent. It will surely help us to make India/world green.

The manufacturing process of this, electric vehicles is also designed to be clean as much as possible, the charging system must be clean also.

Fig. 3: Manufacturing Plant of E2O

This project, also assure that the energy consumption of electric equipment is not too much so that output result of this electric vehicles may increase.

Other Clean features of the manufacturing plants are –

1) Implementation of natural lightning and ventilation (lightning through sunlight)
2) LED light implemented where artificial light needed.
3) Electricity generation based on solar PV plates.

4) System of harvesting system.
5) Solar system equipped parking lot.
The E2O provides system by which car can be directly charged while running on road.

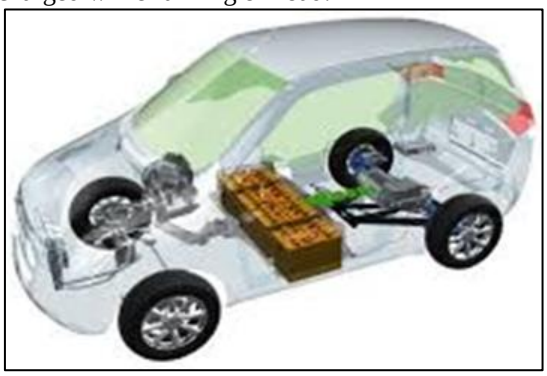

Fig. 4: Internal Designing of E2O

From the above points we concluded that this project never produces pollution from its manufacturing to disposal of waste, everything is pollution less. So it is proved that this project of manufacturing electric vehicle is clean.

B. Convenient

The Mahindra Reva E2O has designed to be convenient to charge, convenient to drive, convenient to maintain and convenient to own & use.

Convenience of usage and trouble less driving experience is one of the main guiding principal of the electric vehicle design.

Fig. 5: Sitting Arrangement

The developers and manufactures of this vehicles tried their best to focus on convenience some of them are

1) No gear shifts, it does not need any gear shifts.
2) High quality tyres for hill holding feature.
3) Simple charging method, that it can be charge at home easily.
4) 4 sitter, comfortable design.
5) Size is small which is convenient for parking. The turning is also small.
6) Remote service is also available.
7) Fast charging feature.

C. Connected

One of the most important technologies, element of E2O is connectivity. All information regarding the car is directly controlled by owner of the car through a smart phone.

Door lock, unlock climate control on/off etc. are the specific commands which is enable by connectivity.

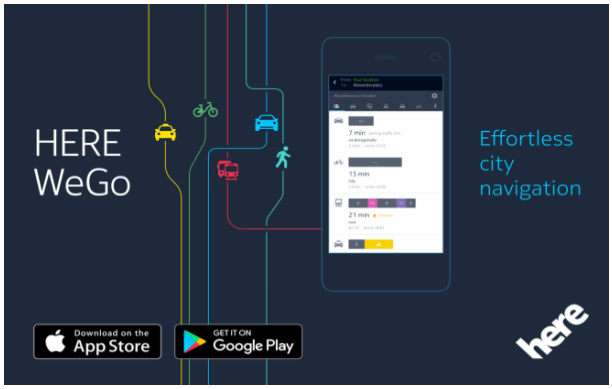

Fig. 6: Connectivity through Smartphone

D. Clever

E2O electric car is very smart, its ecosystem are built with various layers of intelligence that constitutes the smartness of this vehicles.

Fig. 7: Navigation System

It consists various devices that look after the functioning of energy management, save charging mode, safety belt etc.

Some of the clever function of the E2O includes:

- High quality display of drive efficiency.
- Display for distance covered, time taken, speedometer etc.
- Display for charging or discharging condition.
- A message centre on an LCD IP cluster.
- The overall design is flexible that can be upgrade as per requirement in future.

E. Cost Effective

- Since the India has more opportunities of solar energy so E2O must have cost effective so that even middle class may buy electric vehicles easily.
- The Mahindra Reva tried their best of reduces useful expenditures in this electric car.
- Manufacturing process is not expensive which makes E2O cost effective.
- Mahindra Reva may use alternate was for the selling E2O so is to save sales and service charges.
- Despite of being well equipped, highly advance, this electric vehicles cost is effective.

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