Solar & Wind Based Wireless Charging Lane For Electric Vehicle

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ABSTRACT

In this system, an inductive wireless charging lane for electric vehicles and battery swapping/charging station is introduced. In recent years, under the background of global warming, electric vehicles (EVs) using clean energy are getting more attention among the developed and developing countries, since they can help reduce the emission of carbon dioxide. However, the traditional electric cable charging for EVs brings up some problems. For instance, EVs have to be parked in the charging stations equipped with electric chargers with cables in order to get powered and it usually takes at least a couple of hours to get full charged. To avoid the limitation of position and time, the wireless power transmission (WPT) is proposed for an alternative solution for EVs charging. Through inductive coupling effect, EVs can be charged continuously as long as they drive along the roadway, under which coupled coils are laid. The basic WPT system only consists of two coils, one connected to a load while the other connected to a source. In addition, most of the research only discusses about the structure of either the single transmission coils or single receiving coils. In the efficiency of wireless power transmission of inductive coupled coils is calculated in the condition of vertical and horizontal deviations. The complete system is smart and internet connected so user and the owner can easily monitor or track the system using Web application.

Keyword: -*Wireless charging, electric vehicle, FEA. Etc….*

1. INTRODUCTION

In recent years, under the background of global warming, electric vehicles (EVs) using clean energy are getting more attention among the developed and developing countries, since they can help reduce the emission of carbon dioxide. However, the traditional electric cable charging for EVs brings up some problems. For instance, EVs have to be parked in the charging stations equipped with electric chargers with cables in order to get powered and it usually takes at least a couple of hours to get full charged. In the present scenario carbon emission due to conventional IC engine vehicles has increased drastically. The electric vehicles (EV) have captured the attention of many developed and developing countries since they reduce carbon emission and effectively global warming. However, the traditional cable charging has some constraints such as EVs have to be parked and it takes at least two hours to completely charge the vehicle. In this system, charging of EV by wireless power transfer (WPT) is presented. Constraints of cables charging such as position and time are overcome by WPT. With the precipitous development of WPT technology, dynamic charging for moving electric vehicles became a reality. With the inductive coupling effect EVs can be charged without interruption. In many practical applications, multiple receiver and/or multiple transmitter configuration are of interest.

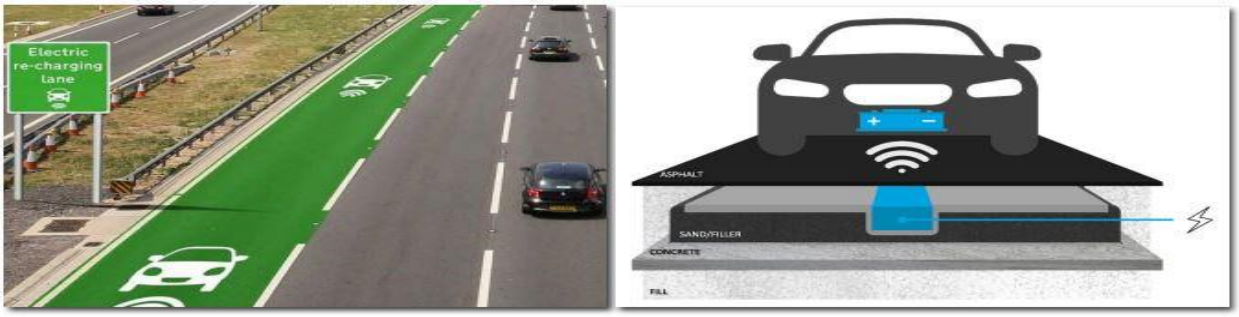

Fig:1: Wireless Charging lane

To avoid the limitation of position and time, the wireless power transmission (WPT) is proposed for an alternative solution for EVs charging. Through inductive coupling effect, EVs can be charged continuously as long as they drive along the roadway, under which coupled coils are laid. The basic WPT system only consists of two coils, one connected to a load while the other connected to a source. In addition, most of the research only discusses about the structure of either the single transmission coils or single receiving coils. In, the efficiency of wireless power transmission of inductive coupled coils is calculated in the condition of vertical and horizontal deviations. For multiple transmitters and multiple receivers' systems, some progresses have been made in. In, a formula on two-transmitter-single-receiver system is derived and simulation results are presented. Based on the basics mentioned above, this paper aims to propose a small prototype of a "charging-on-the-way" lane, which consists of multiple spiral coils. The coupling performance as the moving receiver coil moves along the designed wireless charging lane is investigated

1.1 Purpose:

During the last few decades, the adoption of using Electric Vehicles is continuously increasing due to a number of reasons. Their performance is improving, they have smaller environmental impact with no greenhouse emissions while their efficiency begins to outperform traditional fossil fuel vehicles. Therefore, many governments and organizations in the world have launched the policy to support the electrical vehicles in their countries. However, electric vehicles charging lanes which are important elements of electric vehicles are not as widespread yet. The main reason for this is that of electric vehicles charging lane not only increase the electrical grid demand but also increase high level of emission from petroleum-electrical generation also. Thus using only electricity from the grid is not best solution for charging vehicle.

1.2 Features:

- Wireless vehicle charging while driving.
- RFID based authentication for charging lane.
- Battery swapping facility for instant energy.
- Wired charging option is also available.
- Web Application for searching nearest charging lane.
- Use of non-renewable energy i.e. Solar and Wind to generate electricity.
- Owner of system can monitor system from anywhere in the world

1.3 Goals and Objectives:

- To increase the use of electric vehicle.

- To helping to reduce harmful air pollution from exhaust emissions.
- To avoid the limitation of position and time, the wireless power transmission (WPT).
- To use renewable energy to recharge your EV, you can reduce your greenhouse gas emissions even further.

1.4 Product Scope:

Design the scale of renewable energy system for sufficient supplying electricity to Electric vehicle charging lane demand. Investigate various renewable energy technology and climate of EV charging station to improve their performance in India.

1.5 Applications and advantages

Contribute to an Improvement in Air Quality. It will reduce the emissions that contribute to climate change and smog, improving public health and reducing ecological damage. Wireless vehicle charging while driving; hence, reduced waiting time. This are Non-renewable energies are that they are abundant and affordable.

2. SIGNIFICANCE OF THE SYSTEM

At the point when remote charging is actualized to its maximum capacity various advantages will be offered, which incorporates: Full independence: The use of self-ruling vehicles is yet to be completely acknowledged in light of the fact that they are as yet being created. In any case, if there is no compelling reason to stop so as to charge independent vehicles, they can move inconclusively – or if nothing else until fixes are required. This may build the degree and effectiveness with which they can be used. Charging station not required: There is no compelling reason to embed a link with remote charging, which implies it's a more easy to understand approach. You can approach your day without pondering charging the vehicle and it will consequently deal with itself. Littler battery units: The expansion in charging focuses implies the size of the battery pack can be diminished. This diminishes the expense and weight of the vehicle.

3. METHODOLOGY

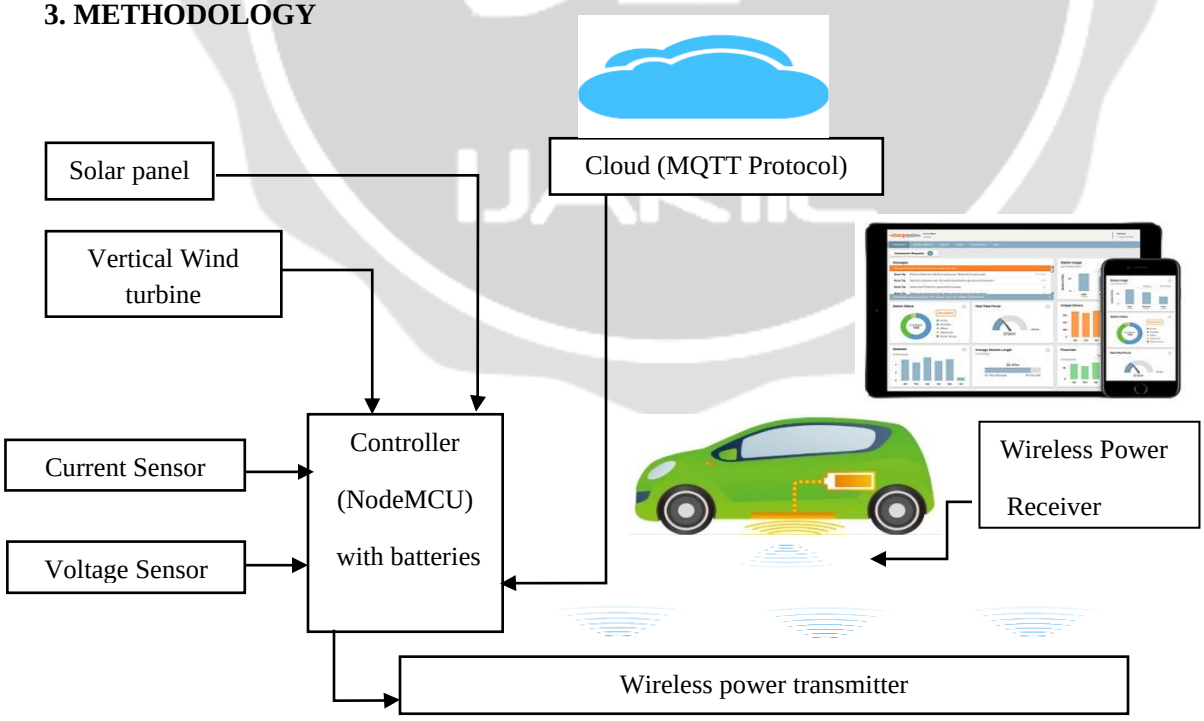

Fig: 2: System Architecture

Fundamental guideline of remote charging is same as transformer working standard. In remote charging there are transmitter and collector, 220V 50Hz AC supply is changed over into High recurrence exchanging current and this high recurrence AC is provided to transmitter loop, at that point it makes substituting attractive field that cuts the beneficiary curl and causes the generation of AC control yield in recipient curl. In any case, the significant thing for effective remote charging is to keep up the reverberation recurrence among transmitter and recipient. To keep up the resounding frequencies, remuneration systems are included at the two sides. At that point at long last, this AC control at recipient side corrected to DC and sustained to the battery through Battery Management System (BMS).

4. CONCLUSIONS

In this framework, a straightforward model of remote charging path will present and through the analysis, it is demonstrating that this path can furnish a scale-down model with remote power transmission for EVs, which makes charging-in transit into reality to begin with. Due to low move productivity, future work centers on the streamlining of the remote charging path. Furthermore, some control procedure can likewise be brought into the proposed framework. For example, curls won't be fuel until the vehicle is distinguished by position sensors.

5. REFERENCES

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