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Solar and wind powered electric vehicle charging using wireless charging lane

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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.

KEYWORDS: Wireless charging, electric vehicle, FEA.

I.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.

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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.

II. 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.

III. LITERATURE SURVEY

World's originally jolted street for charging vehicles opens in Sweden

The world's originally jolted street that revives the batteries of autos and trucks driving on it has been opened in Sweden. About 2km (1.2 miles) of electric rail has been installed in an open street close to Stockholm, however the

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administration's streets office has just drafted a national guide for future extension. Sweden's objective of accomplishing freedom from petroleum product by 2030 requires a 70% decrease in the vehicle division. The innovation behind the zap of the street connecting Stockholm Arlanda air terminal to a coordinations site outside the capital city plans to take care of the prickly issues of keeping electric vehicles charged, and the production of their batteries moderate. Vitality is moved from two tracks of rail in the street through a portable arm joined to the base of a vehicle. The structure isn't not at all like that of a Scalextric track, despite the fact that should the vehicle surpass, the arm is naturally separated.

Evatran: Plugless Charging Systems Compatible With 80% Of EVs By 2017

As an update, Evatran sells its remote charging frameworks under the Plugless brand name. The organization as of now offers items that work with a scope of various models, including the Tesla Model S, Nissan LEAF, and Chevy Volt. Green Car Reports gives more: "The Evatran remote framework utilizes inductive charging, in which an attractive field is made by running power through a loop. Likewise with other comparable frameworks, one loop is put on the ground, and another is mounted to the vehicle's underside. Evatran claims the accepting curl that connects to the vehicle is simply 1.0 inch thick, guaranteeing that leeway won't be an issue."

WiTricity Is Buying Qualcomm Halo's Wireless Electric Car Charging Tech

Remote electric vehicle charging is the perfect innovation for EV drivers who truly need to consider charging their vehicle as meager as could be allowed. With enough attractive reverberation cushions introduced in the ground and in autos, individuals could essentially continue on ahead precisely the same way they do today yet would quite often have a completely energized vehicle when they haul out of their unique parking space. That is the fantasy, in any case, and WiTricity reported today that it has made another large stride towards making it a reality with the obtaining of "certain innovation stage and IP resources" from its previous rival Qualcomm Halo. As a component of the arrangement, Qualcomm Halo will presently turn into a minority WiTricity investor. Point by point money related parts of the securing were not reported.

IV. METHODOLOGY

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).

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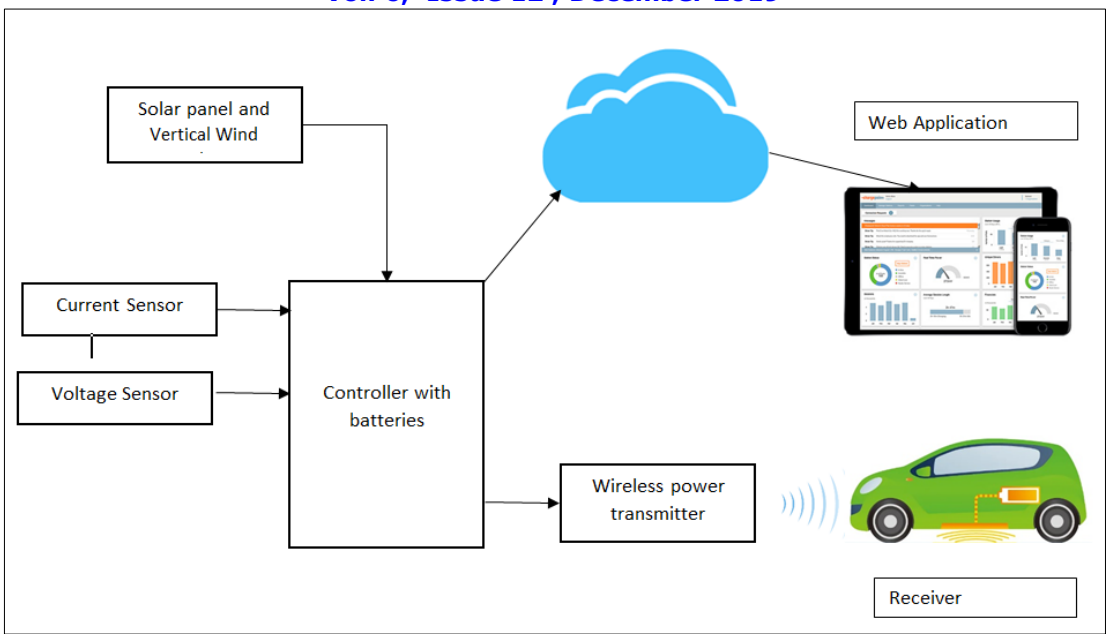

Fig . System Architecture

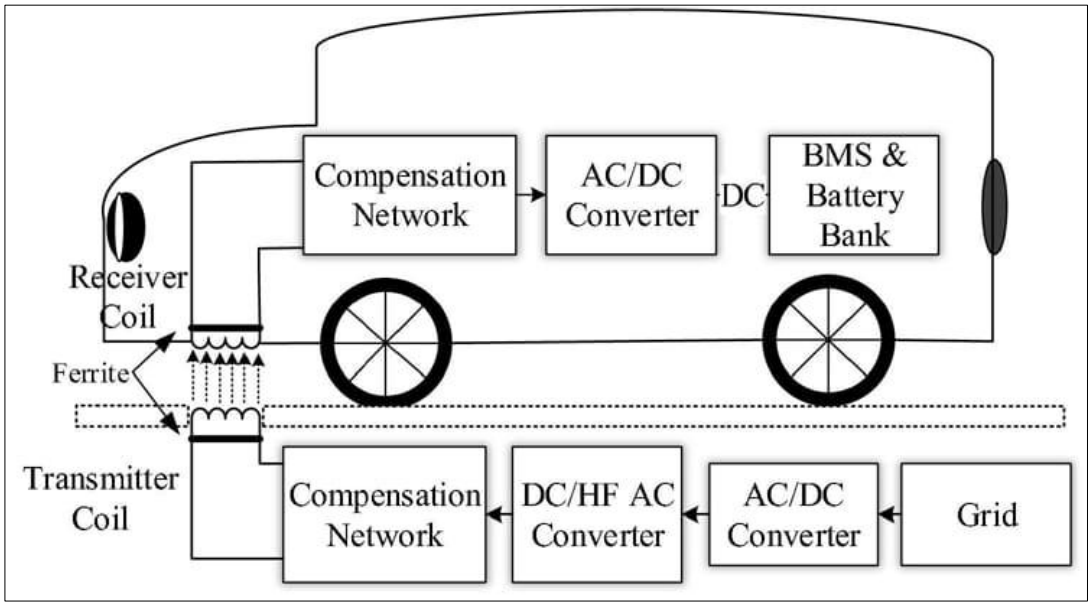

Fig . Wireless charging module

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V.EXPECTED RESULT

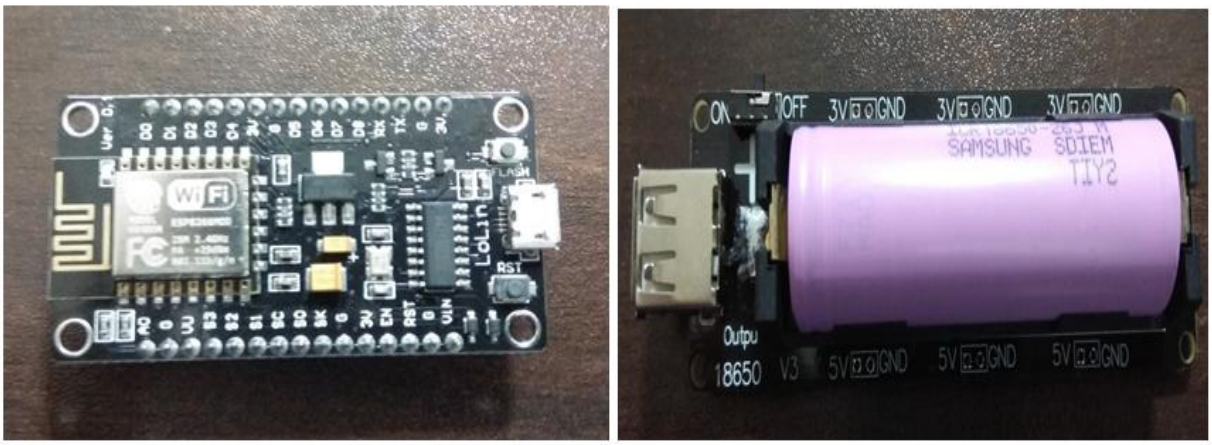

Fig1: Node MUC AND Charging device node MCU

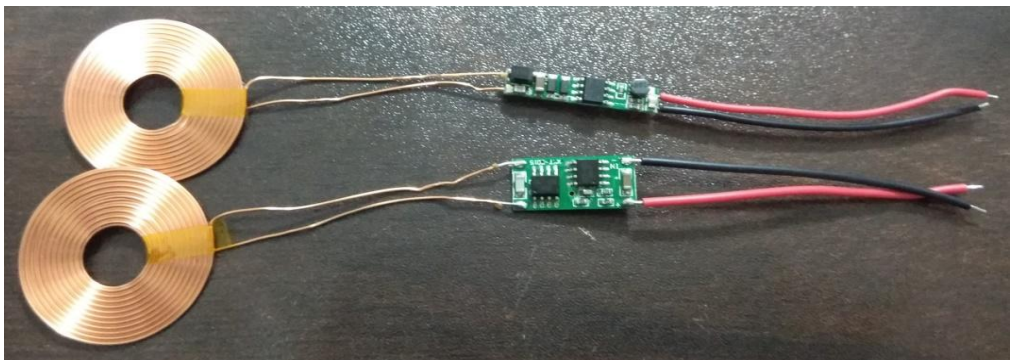

Fig2:-wireless charging module

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Fig . Result -1

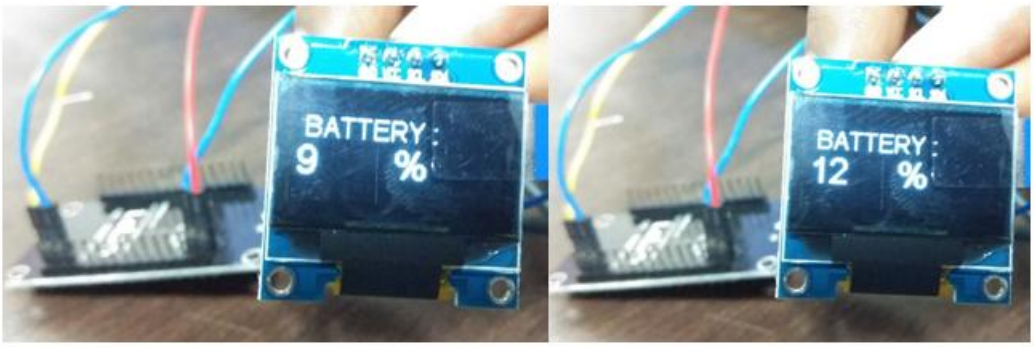

Fig. Result -2

VI.CONCLUSION AND FUTURE WORK

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 centersaround 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.

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Contribute to an Improvement in Air Quality. Reduce the emissions that contribute to climate change and smog, improving public health and reducing ecological damage. Wireless vehicle charging while driving. Non-renewable energies is that they are abundant and affordable.

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