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Compatibility of Wireless Electric Vehicle Charger using IOT Technology

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Abstract
Electrical vehicle is used everywhere and it is one of the essential requirement nowadays because it replaced petrol which is costly and it is one of the non-Renewable Energy Resources. Charging of Electrical vehicle was a big task and there is no proper charging station available and people are very much worried about the location of charging Station. In the advancement of IOT Technology Wireless Electrical vehicle Charger plays a vital role without any wires charging can be done automatically without human interaction. The main objective of this research is to work on compatible wireless electric Charger using IOT Technologies. For Charging the main source was Electricity. Electricity can also be generated from the solar panels as well as Wind Turbines which is the powerful source of Renewable Energy Resources. When there is power Failure for more time the alternative source of energy was using Solar panels as well as using Wind Turbines. During Summer Seasons this method will be useful for charging Vehicle and cost will be less. Proposed System divided into two section i) Generating Section ii) Charging Section In Generating Section Solar panels as well as Wind Turbines are used to generate Electricity. In Charging section Wireless Power Transfer (WPT) System along with IOT technologies is used for charging electrical Vehicle.

Keywords: Wireless electrical vehicle, solar energy, wind energy, IOT.

Introduction

In our rapidly evolving world, the Internet of Things (IoT) has become an integral part of our daily lives. IoT devices are increasingly becoming part of mainstream electronics culture. They are changing the way we interact with everyday objects. From smart homes to health monitoring, IoT adds a level of digital intelligence to devices that would be otherwise mute. One area where IoT is making a significant impact is in the field of electric vehicles. Specifically, it is revolutionizing the way we charge these vehicles. Furthermore, the implementation of wireless charging for electric vehicles using IoT technology is a game-changer.

The concept of wireless charging is not new. It has been around for a while. However, its application in electric vehicles is relatively recent. It works on the principle of electromagnetic induction. In essence, the charger uses an electromagnetic field to transfer energy between two objects. A transmitting pad generates a magnetic field, which a receiving pad in the vehicle converts back into electric power. Wireless charging brings a host of benefits. Firstly, it eliminates the need for cables and plugs. This not only reduces clutter but also enhances the user experience. Moreover, it opens up new possibilities for automated charging. IoT makes the wireless charging of electric vehicles smarter. It allows for real-time monitoring and control of the charging process. Through the use of smart sensors and advanced analytics, it can optimize charging efficiency.

For example, IoT can automatically adjust the charging rate based on various factors. These include the battery's state of charge, its temperature, and the available power supply. Thus, it ensures optimal charging performance at all times. Furthermore, IoT enables remote management of the charging process. Users can start, stop, or schedule charging sessions from their smartphones. They can also check the charging

status and receive alerts when charging is complete. Hence, it adds a level of convenience and flexibility that was previously unheard of.

Literature Review

1. Charging Station of Electric Vehicle Based on IOT:

A REVIEW-This article provides an in-depth analysis of significant studies concerning Internet of Things (IoT) integrated charging stations and the various charging methodologies employed at these facilities. It furnishes a comparative examination of these charging types, as well as the energy sources, which may encompass both renewable and non-renewable forms. The incorporation of IoT technology expedites the process of locating these stations, with users able to leverage mobile applications for this purpose. It also opens up the potential for situating these charging stations in public areas and parking lots, thereby facilitating a smoother transition towards the adoption of these innovative vehicles.

2. IOT Based Wireless EV Charging and Battery Monitoring System

The objective of this article is to propose a solution for streamlining the charging procedure of electric vehicles by eliminating the need for cables. The various charging ports required for different models often complicate the process of finding the appropriate charging station. However, Wireless Power Transfer (WPT) can significantly reduce this effort. We will also delve into the Battery Monitoring System, which uses either conventional or optimization techniques. The primary role of the Battery Management System (BMS) is to safeguard the battery by preventing any operations that exceed its safety parameters.

3. IOT Based Driverless Electric Vehicle With Wireless Charging

The objective of this study is to formulate a smart electric vehicle that is energized through wireless power transmission. The vehicle ingeniously utilizes wireless power transmission coils to harness energy, storing it in the battery. This accumulated energy then propels the battery, subsequently driving the robotics of the vehicle.

4. IOT Based Smart Car Parking With Wireless Charging Feature For Electric Car

This paper offers the twofold benefit of providing parking solutions and charging facilities for electric vehicles. Consequently, the comprehensive blueprint of a wireless electric vehicle charger, boasting an output of 104V and 64A, is elaborated upon in depth. The use of wireless charging addresses several issues such as charger adaptability for diverse vehicles and minimizes the hazard of electrical shocks due to its non-contact nature. Live data will be accessible via the app, guaranteeing enhanced security and dependable service. The encouragement of electric vehicles usage will further result in diminishing the world's carbon footprint.

5. Solar Based Battery Charging System through IOT

This paper centers around the creation and advancement of a cost-effective, entirely solar-dependent battery charging mechanism, utilizing a microcontroller. The engineered system incorporates features such as MPPT and an Arduino Uno interface for effective battery management. An LCD display is also included, offering users real-time data such as the system's optimal charging capacity at any particular moment. Additionally, it comprises a data storage and GSM module for remote monitoring and live data transmission, which can also be instrumental in analyzing the battery's health and facilitating its upkeep. This solar-dependent battery charging tool was designed with DC hundreds, keeping Solar Home Systems (SHS) in mind.

6. SPBCSEV

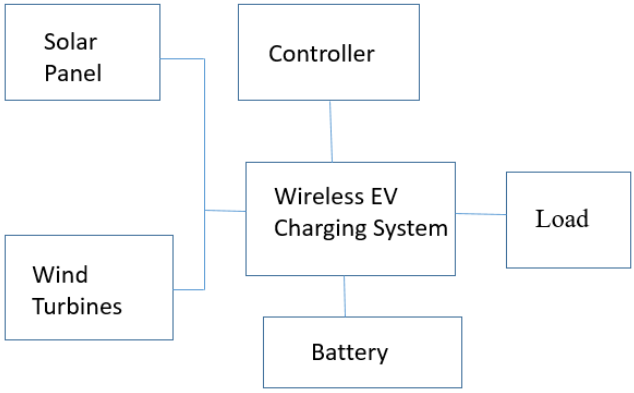
Solar Power Based Charging Station for Electric Vehicles: The objective of this study is to offer an enduring and easy-to-use power source for electric vehicles, harnessing renewable energy such as solar power. In addition, this research involves the development of an electric vehicle charging station using components such as an Arduino microcontroller, wireless charging coil modules, a solar panel, and an ESP8266 Wi-Fi module.

7. Small Wind Turbine Systems for Battery Charging

The primary aim of this input is to offer guidelines for choosing miniature wind turbines. These turbines, often termed as wind generators, with a capacity under 10 kW, are predominantly utilized as battery chargers in areas lacking an electricity grid. The focus is on harnessing wind energy for electricity generation in a small-scale setup

Methodology

The Proposed System consists of Solar panel and Wind turbines which can be able to generate Electricity. Electricity for Wireless EV charging system will be generated either by Solar Panel or Wind Turbines. Power for Later use will be Stored in the battery. Controller plays a vital role and charging system will be controlled by controller such as Microprocessor, Microcontoller, Arduino, etc. Depending upon the performance the controller can be chosen. Wireless EV charging system consists of Transmitting coil and receiving coil by the principle of Electromagnetic induction it works. Load here is Electric Vehicle. Charging done here is wireless. The proposed structure encompasses both solar panels and wind turbines, capable of producing electricity. The power supply for the wireless Electric Vehicle (EV) charging system is derived either from solar panels or wind turbines. Energy reserved for future use will be securely stored in a battery. The controller, which could be a Microprocessor, Microcontroller, Arduino, etc., plays a critical role in managing the charging system. The choice of controller depends on its performance. The wireless EV charging system operates on the principle of electromagnetic induction and includes both transmitting and receiving coils. The electric vehicle serves as the load in this case, with the charging process being completely wireless.



Conclusion

In conclusion, the compatibility of wireless electric vehicle chargers with IoT technology represents a significant advancement. Not only does it make electric vehicle charging more convenient and efficient, but it also makes it more sustainable. By harnessing solar and wind energy, we can reduce our reliance on fossil fuels and move towards a cleaner, greener future. The future of electric vehicle charging is here, and it's wireless and smart.

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