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Charging Station for E-Vehicle Using Solar With IOT

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ABSTRACT: This paper is about charging E-vehicle module using the Solar panel, availability of maximum power is viewed by IOT device and the maximum power generated by the solar is being tracked using the MPPT controller. The simulation model is designed using Matlab software. The whole setup is connected to the Arduino UNO R3, the battery level, generated and distributes an amount of the battery is viewed using an LCD. GSM modem is used to get an alert message for any reduction of power occurred in the system. A web page is used to check the availability status of charge, the amount of power transferred to the charging module and the available location for the charging station can be displayed. The main idea of this paper is to reduce greenhouse gas emission and fossil fuel

KEYWORDS : Solar panel , MPPT Controller, IOT device, Matlab Software , Arduino UNO R3, GSM modem

I. INTRODUCTION

The demand for conventional energy like coal, natural gas, and oil is raised, so that the researchers forced towards the development of renewable resources or non-conventional energy resources. In the last couple of years, there has been a lot of discussion around the prices of fuel apart from the deregulation of petrol and fossil fuel prices. Moreover, these threats of disruption of supplies have brought the focus on to alternate drive train technologies. In 1800s electric vehicle had led on the road. While Robert Anderson, a British inventor introduces first crude electric carriage. Moreover, these threats of disruption of supplies have brought the focus on to alternate drive train technologies. In 1800s electric vehicle had led on the road. While Robert Anderson, a British inventor introduces first crude electric carriage. The upcoming year will come more and more solar electric vehicle due to these reasons : (1)Reduction of emission of fossil fuel for extracting power from renewable resources (2)intelligent compliance to electronic requirements that facilitate the monitoring the availability of used power using IOT, and(3)tracking of sun's radiation throughout a time. Electric vehicle confines the outlook of passenger a vehicle that draws current from the rechargeable battery. There are three types of electric vehicle: hybrid electric vehicle(HEV), plug-in hybrid(PHEV), battery electric vehicle(BEV) and extended range electric vehicle(EREV). The main objective of the paper is to provide power from solar PV cell to the charging station in which the vehicle can be charged through the rechargeable battery and also with the help of IOT, the availability status of the charging station can be monitored frequently at any moment

II. OBJECTIVE

To improve the charging the e vehicle with smooth and reliable fast charging methodology also with help of renewable source

III. LITERATURE SURVEY

Resonant inductive coupling, also known as “electro-dynamic induction” used by Nikola Tesla in 1894 to wirelessly light up phosphorescent and incandescent lamps. That was situated at the 35 South Fifth Avenue laboratory, and later at the 46 E. Houston Street laboratory in New York City [19-21]. A device called the high-voltage was patented by Nikola Tesla in 1897. In 1910 an experiment was held using incandescent light powered wirelessly by electromagnetic induction. The bottom of a large cylinder was made by using an electromagnet, a coil of wire with alternating current through it. It creates a magnetic field. Above the magnet's pole the lamp is attached to another coil of wire. The



magnetic field generate electricity that lights the lamp. The lamp then looks like an original Edison lamp with a carbon filament. Hatem Zeine an American physicist, inventor demonstrated how wireless power transmission using phased array antennas can deliver electrical power up to 30 feet in 2013. It uses the same radio frequencies as Wi-Fi [45,46]. Researchers at the University of Washington experiment power over Wi-Fi, at ranges of up to 20 feet in 2015. They also experiment using Wi-Fi that it can be used to wirelessly trickle-charge nickel–metal hydride and lithium-ion coin-cell batteries at distances of up to 28 feet [47,48].

IV. METHODOLOGY

Most electric and hybrid electric configurations use two energy storage devices, one with high energy storage capability, called the “main energy system” (MES), and the other with high power capability and reversibility, called the “rechargeable energy storage system” (RESS). MES provides extended driving range, and RESS provides good acceleration and regenerative braking. Energy storage or supply devices vary their output voltage with load or state of charge and the high voltage of the DC-link create major challenges for vehicle designers when integrating energy storage / supply devices with a traction drive. DC-DC converters can be used to interface the elements in the electric power train by boosting or chopping the voltage levels. Due to the automotive constraints, the power converter structure has to be reliable, lightweight, small volume, with high efficiency, low electromagnetic interference and low current/voltage ripple.

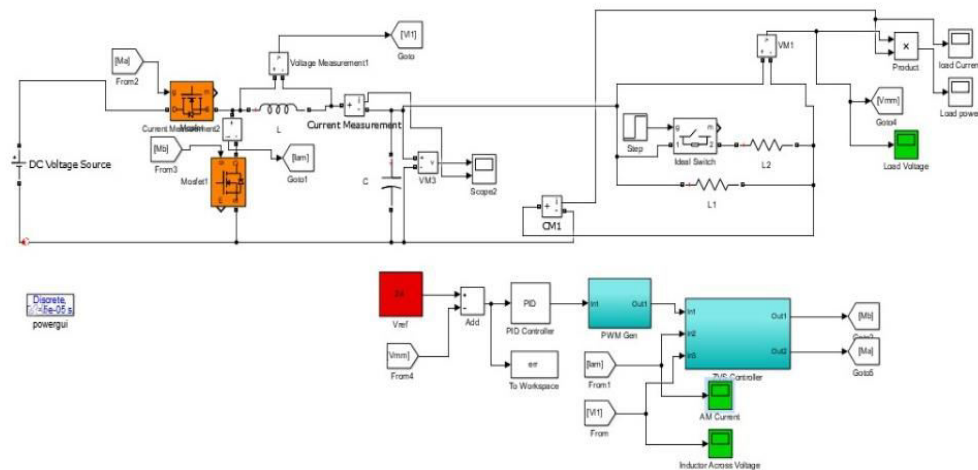
V. APPLICATIONS

- E vehicle charging stations
- Battery charger
- And various consumer needs

VI. RESULTS

Internet of Things (IOT) based battery sensor monitors the real-time status of the battery as an energy storage management system. The IOT developer uses a cloud based platform for management and operation purpose. The vehicle user can seamlessly check the destination to reach the charging station and can also view the withdrawal of battery voltage from the system data. The information stored in the ARDUINO can withstand till the battery fails to charge. For future use, multiple users for the e-vehicle who settles in the station are stored and upgraded in the database so that the smooth distribution to the various users can be monitored.

Simulation output





VII. CONCLUSION

Internet of Things (IoT) based battery sensor monitors the real-time status of the battery as an energy storage management system. The IoT developed here uses a cloud platform for management purpose. The vehicle user can easily check the destination to reach the charging station and can view the withdrawal of battery voltage from the system. The data stored in the Arduino can withstand until battery fails to charge. For the future use, multiple user for the e-vehicle who settles the station are stored and upgraded in the database so that the distribution to the different user can be monitor

VIII. FUTURE SCOPE

EV charging using IoT System is really essential for basic electrical vehicles, utilization of Web application is helpful for monitoring clients previous activities easily. It looks forward to work in an IoTcomputerized, semi automated and in manual mode. It is economically affordable and easy to use for the normal authority

REFERENCES

- [1] "On-Chip Photovoltaic power harvesting System with Low-Overhead Adaptive MPPT for IoT nodes" by SarojMondal, Roy Paily, Volume:04, Issue:05, Oct.2017.
- [2] H. Anandakumar and K. Umamaheswari, "Supervised machine learning techniques in cognitive radio networks during cooperative spectrum handovers," Cluster Computing, vol. 20, no. 2, pp. 1505–1515, Mar. 2017.
- [3] A. Roshini and H. Anandakumar, "Hierarchical cost effective leach for heterogeneous wireless sensor networks," 2015 International Conference on Advanced Computing and Communication Systems, Jan. 2015.
- [4] H. Anandakumar and K. Umamaheswari, "An Efficient Optimized Handover in Cognitive Radio Networks using Cooperative Spectrum Sensing," Intelligent Automation & Soft Computing, pp. 1–8, Sep. 2017.
- [5] M. Suganya and H. Anandakumar, "Handover based spectrum allocation in cognitive radio networks," 2013 International Conference on Green Computing, Communication and Conservation of Energy (ICGCE), Dec. 2013.
- [6] Steven Ruddell, Udaya K. Madawala, "A Wireless EV Charging Topology with Integrated Energy Storage", IEEE, Duleepa J. Thrimawithana, Member, IEEE,2020,reference
- [7] Haris M. Khalid, "Bidirectional Charging in V2G Systems: An In-Cell Variation Analysis of Vehicle Batteries Member, IEEE, and Jimmy C.-H. Peng, Member,2020,IEEEref
- [8] YUAN LI1, 2, HAO GUO3, FEI QI4, ZHIPING GUO5, MEIYING LI5, "Comparative Study of the Influence of Open Circuit Voltage Tests on State of Charge Online Estimation for Lithium-ion Batteries", 2020 reference.



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