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SOLAR WIRELESS DYNAMIC ELECTRIC VEHICLE CHARGING SYSTEM

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Abstract - This paper details the making plans and design of a The Solar Wireless Dynamic Electric Vehicle Charging System, a solution to the dual problems of costly gasoline and dangerous emissions. The range of countries with electric cars on the road is gradually rising. In addition to assisting the surroundings, electric cars have validated useful in reducing down on transportation fees by means of substituting highly-priced gas with much greater less costly strength. Here, we create a novel and powerful solution to this problem by means of designing an electric powered vehicle dynamic charging infrastructure. There is no need to stop the car for charging due to the fact the EV can achieve this whilst it's far in movement, the device is powered with the The Solar Wireless Dynamic Electric Vehicle Charging System solar energy and there is no want for an additional power source.

Key Words: Solar energy, Solar cell, Arduino Uno controller, Wireless charging, Electric vehicle, Dynamic charging.

1. INTRODUCTION

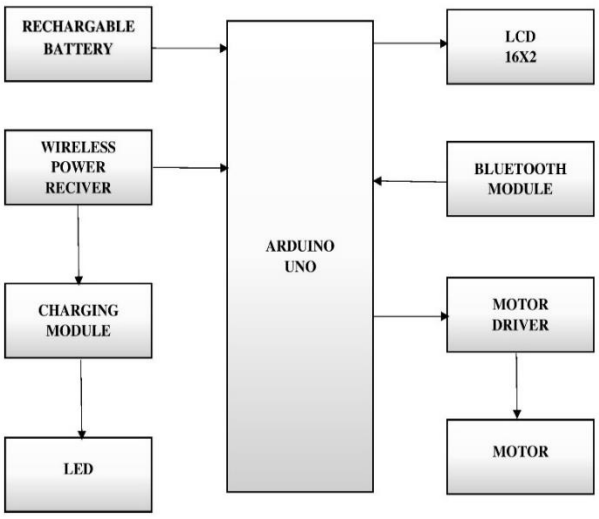
The Solar Wireless Dynamic Electric Vehicle Charging System (SWEVDCS) is an innovative answer that permits Electric vehicle proprietors to price their cars wirelessly the use of solar energy. The Solar Wireless Dynamic Electric Vehicle Charging System makes use of numerous additives to offer a continuing and green charging revel in. The Atmega controller is the centre of the machine, supplying manipulate and coordination of the charging method. The coils are used to wirelessly switch the strength from the charging machine to the Electric vehicle's battery. The LCD display affords clear indicators of the charging development, including the battery percentage, charging percentage, and time remaining for a full charge. The rechargeable battery store the sun or solar electricity, and the boost converter guarantees efficient transfer of the power to the Electric vehicle's battery. The Solar Wireless Dynamic Electric Vehicle Charging System operates by way of harnessing solar electricity through solar panels and converting it into electric electricity that is saved in a rechargeable battery.

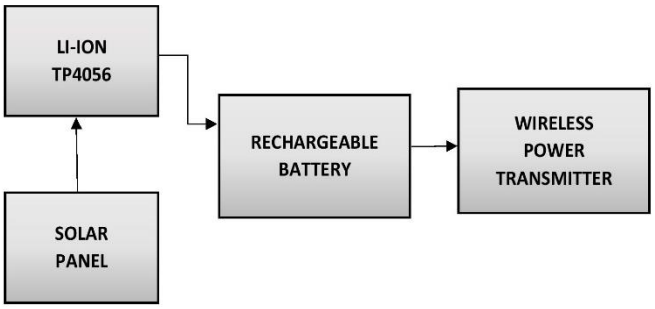
2. EXPERIMENTAL DETAILS

2.1 METHODOLOGY

In terms today's complexity, the proposed automobile is straightforward. Construction-wise, it is a breeze compared to gas-powered vehicles. Vehicles and their controllers, a reversing circuit, a rechargeable battery a solar photovoltaic (PV) module with a charge controller. When the brakes are applied, the motors will stop going for the brake switches. Today cumbersome cords, magnetic resonance generation has enabled Wireless power transmission (WPT). Without a doubt, the WPT today's the same essential principle as inductive electricity transfer, which has been studied and delicate for as a minimum three a long decades. As a field, WPT has visible awesome advancement in latest years. Electricity in mill watts to kilowatts, the power transfer distance grows from a few millimetres to hundred millimetres at a load performance latest higher. The problems trendy restricted variety, excessive expenses, and inconvenient charging for EVs may be with no trouble conquer with the implementation brand new WPT. We expect that researchers will be stimulated by the results and could use this motivation to further WPT and Electric vehicles.

2.2 BLOCK DIAGRAM





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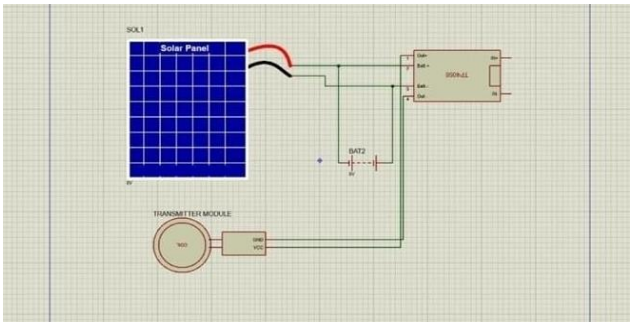
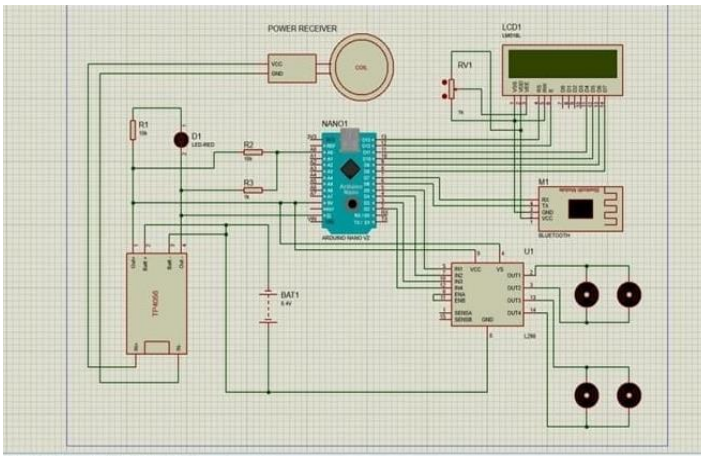


CIRCUIT DIAGRAM

3. RESULTS

Charging electricity is about connecting electricity to further connect or change the path. However, there are some problems with hardwired charging methods. For example, they require bulky charge cable and plugs. Most importantly, both the power supply and the device being charged must be manually connected to the charger. Additionally, wired charging solutions are not pleasant for either users or the environment. For example, using a wireless Dynamic charging system can eliminate the need for large, heavy batteries and reduce the input cost of the entire system. WPT technology is also efficient and effective by eliminating the need to deal with complex cables and connectors found in electrical plugs. WPT and its applicability is a general research topic as it can be used in many different areas of business and engineering. Application areas of WPT include electric vehicles (EV), electrical appliances.

3.1 SIMULATION



4. CONCLUSIONS

In conclusion, The Solar Wireless Dynamic Electric Vehicle Charging System (SWDEVCS) advanc the usage of Atmega controller, wireless coils, liquid crystal display and rechargeable battery and improve converter presents a sustainable and efficient answer for charging electric powered cars. The device's use of wireless electricity transmission generation, coupled with a solar panel, permits for flexibility and sustainability in charging, even as the atmega controller of the charging procedure ensures most excellent charging performance and safety. The LCD display offers clean warning signs of the charging process, making it smooth for users to monitor the progress of the charging cycle. The Solar Wireless Dynamic Electric Vehicle Charging System shows indicates outstanding ability for decreasing dependence on grid electricity and minimizing the carbon footprint of the charging procedure, contributing to an extra sustainable future for transportation. However, in addition testing and refinement of the system are needed to optimize its overall performance and make sure its safety and reliability in actual-world programs. Overall, The Solar Wireless Dynamic Electric Vehicle Charging System gadget project presents a promising solution for charging electric cars sustainably and efficiently, contributing to the worldwide efforts in the direction of a more sustainable future.

5. REFERENCES

[1] "Wireless Power Transfer for Electric Vehicles and Mobile Devices" by Chun T. Rim.

[2] "Electric Vehicle Technology Explained" by James Larminie and John Lowry

[3] Wireless Power Transfer for Electric Vehicles: Foundations and Design Approach" by Pedro Alou, Miguel Castilla, and Luis G. de Vicuña

[4] "Wireless Charging of Electric Vehicles: A Techno-economic Assessment" by Marc Mültin, Florian Schlögl, and Clemens M.

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[5] Ram vara prasad, bugatha & geethanjali, m & sonia, m & ganesh & krishna, p. (2022). Solar wireless electric vehicle charging system. International journal of scientific research in engineering and management. 06. 10.55041/ijsrem 14449.

[6] Ram vara prasad, bugatha & deepthi, t. (2021). Solar charging station for electric vehicles. 7. 10.48175/ijarsct-1752.

[7] Bertoluzzo, manuele & di monaco, mauro & buja, giuseppe & tomasso, giuseppe & genovese, antonino. (2020). Comprehensive development of dynamic wireless power transfer system for electric vehicle. Electronics. 9. 1045. 10.3390/electronics9061045

[8] S. Y. Choi, b. W. Gu, s. Y. Jeong and c. T. Rim, "advances in wireless power transfer systems for roadway-powered electric vehicles," in ieee journal of emerging and selected topics in power electronics, vol. 3, no. 1, pp. 18-36, march 2015, doi:

[9] Patil, devendra. (2019). Dynamic wireless power transfer for electric vehicle.

[10] C. Qiu, k. T. Chau, c. Liu and c. C. Chan, "overview of wireless power transfer for electric vehicle charging," 2013 world electric vehicle symposium and exhibition (evs 27), 2013, pp. 1-9, doi: 10.1109/ivs.2013.6914731