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DYNAMIC WIRELESS POWER TRANSFER IN ELECTRIC VEHICAL

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ABSTRACT
This paper details the planning and design of a solar-powered charging for electric vehicles, a solution to the dual problems of expensive gasoline and harmful emissions. The number of countries with electric vehicles on the road is steadily rising. In addition to helping the environment, electric vehicles have proven useful in cutting down on transportation costs by substituting expensive fuel with much more affordable power. Here, we create a novel and effective answer to this problem by designing an electric vehicle charging infrastructure. There is no need to stop for charging because the EV can do so while it is in motion; the system is powered by solar energy; and there is no need for an additional power source. For its construction, the system employs a solar panel, battery, transformer, regulator circuitry, copper coils, AC to DC converter, atmega controller, and LCD display. This technology follows the ideology that charging electric vehicles can be done without having to pull over to a charging station. So, the technology proves the viability of a road-integrated, solar-powered wireless charging system for EVs.

Keywords: EV (E-Vehicle), (DWC) Dynamic Wireless Charging, (SWC) Static Wireless Charging.

I. INTRODUCTION

In the field of transportation, electric vehicles (EVs) represent a novel concept. Electric vehicles (EVs) are predicted to take over the automobile market in the near future. The charging procedure for electric vehicles (EVs) must be regulated in this context in order to preserve the quality of the power networks. In spite of this, with the growth of electric vehicles (EVs), there will be a significant quantity of energy stored in the batteries, which will allow for the opposite effect. EV interactivity will be important technology in future smart grids, contributing to the autonomy of the power grid. Due to decreasing carbon dioxide emissions and rising fossil fuels, the electric vehicle has become more competitive than the conventional internal combustion engine vehicle. In spite of these drawbacks, the EV was not generally adopted in the market because of its high vehicle cost. There is a dearth of fast-charging stations and a paucity of all-electric vehicles. There are two types of

electric vehicles: those that are powered entirely by electric power and those that are partially powered by electric power. In addition to their low operating costs and little impact on the environment, electric vehicles utilize little or no fossil fuels at all. Electric vehicles will be the primary means of transportation in the future to enhance charging station efficiency. When it comes to acquiring an electric vehicle, the absence of charging infrastructure is the most common argument given for not doing so. The portable EV charger was tested by lowering charging time with renewable energy. A hybrid power system is used in this study to provide a unique service to long-distance EV drivers. Between major highways, there aren't any places for these drivers to refuel their automobiles with electricity. The wireless EV charger is a great choice for people who want to use electricity to charge their electric vehicles. Because of rising fossil fuel prices and declining CO2 emissions, electric vehicles are now more cost-competitive than traditional Considered as a continuous vehicles. Electric vehicles were not extensively adopted because of restrictions such as high car costs . There is a dearth of fast-charging stations and a paucity of all-electric vehicles. It is possible for EVs to be powered entirely or in part by electricity. Due to their lack of moving parts and little impact on the environment, electric cars have lower operating expenses than gasoline-powered counterparts . Our project system uses a solar panel, battery, transformer, regulator circuits, copper coils, AC to DC converter, atmega controller, and LCD display to build the system. There is no need to stop for recharging with this system because electric vehicles may be charged while travelling. A charge controller connects the battery to the solar panel. dc electricity is being stored in the battery. Now, in order to send the DC power, it must be converted to AC power. A transformer is used here to accomplish this task.

II. METHODOLOGY

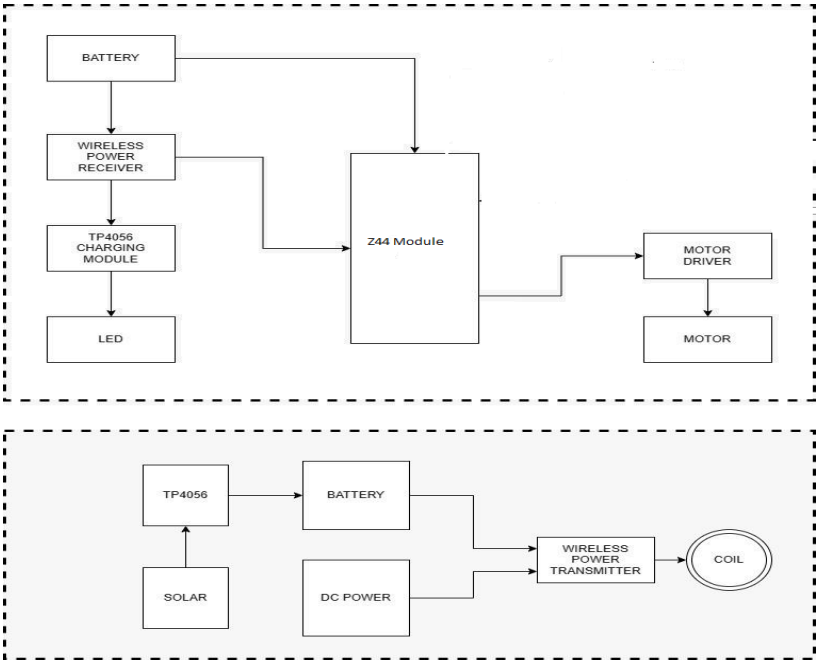

Figure 1

In terms of complexity, the proposed vehicle is simple. Construction-wise, it's a breeze compared to gas-powered cars. Design of an electric car. Two motors and their controllers, a reversing circuit, a battery pack, a solar photovoltaic (PV) module with a charge controller, and a speed controller are the essential components both controllers share a common accelerator to trigger. When the brakes are applied, the motors will stop running because of the brake switches. When you turn the car in the opposite direction of a motor, that motor will shut down. To accomplish this while the vehicle is in motion, the two phases and two control wires are switched. The reverse button is conveniently located on the steering column. To eliminate cumbersome cords, magnetic resonance technology has enabled wireless power transmission (WPT). Actually, the WPT uses the same fundamental principle as inductive power transfer, which has been studied and refined for at least three decades. As a field, WPT has seen remarkable advancement in recent years. power in milliwatts to kilowatts, the power transfer distance grows from a few millimeters to a few hundred millimeters at a load efficiency of higher. The transmitter coils are charged by a solar panel, which in turn charges the battery, which is then stored in the regulator. To avoid energy waste, the primary and secondary coils of a transformer are connected via a magnetic field that must be directed by the transformer's core. An induced electric current is recorded by the receiver coil as the net magnetic flux from the stimulated spin system oscillates. That wirelessly charges the receiver coil. The atmega controller is powered by the DC power generated by the AC to DC converter once the ac power has been converted. The vehicle's initials can be displayed on an LED that has been integrated into the system.That's just how the system works.

III. MODELING AND ANALYSIS

Figure 1: Actual model.

IV. RESULTS

An instructional and research-focused wireless power transfer (WPT) system on electric vehicle (EV) charging. Based on coupled magnetic resonance technology, which allows for the transfer of power in the non-radiative near field, the simulation. The topology of a streamlined power transfer system is suggested and put into practice. It is done to simulate and analyze the proposed charging scheme mathematically. Based on this architecture, simulation and analysis were done on the counter- electromotive force (counter EMF, CEMF) in the receiving coil in relation to constant transfer distance and driving frequency. Significant implications are drawn from the simulation analysis of the wireless charging system, and specific design recommendations are offered. The simulation can be employed as a tool for additional investigation into WPT optimization for EVs.It is cumbersome, costly, and dangerous to charge an electric vehicle battery with a charger and wire. If drivers are to make long trips, electric vehicle charging stations must be available. A series of these stations must be placed strategically to span large distances. Additionally, recharging a battery completely often takes three hours, which is a lot longer than the time required to refuel a gas- powered car. unsecured charging cords on the floor could be a tripping hazard. In colder climates, leakage from outdated, damaged cable may present the owner with additional concerns. The efficiency of wireless power transmission can be affected by variations in lateral distance and primary-secondary coil spacing. Anxiety about a car's range, or the concern that it won't have the power to reach certain distances.

V. CONCLUSION

Electrical vehicles are the means of transportation of the future because they can maximize the efficiency of charging stations. There will be a major role for electric vehicle charging stations. Increasing EV demand in the market requires addressing the fundamental barrier to EV adoption: a dearth of public charging stations. We looked at the portable EV charger that uses renewable energy to speed up the charging process. The work presented herein presents a novel service to long-distance electric vehicle travelers through the use of a hybrid power system for a vehicle battery charging station. Unfortunately, there is a severe lack of convenient charging infrastructure for drivers of electric vehicles along interstates and highways. The wireless EV charger is the best option for charging their electric automobiles.

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