International Research Journal of Education and Technology
Peer Reviewed Journal
ISSN 2581-7795

ELECTRIC VEHICLE CHARGING USING FLEXIBLE ENERGY SOURCES

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ABSTRACT

Electric Vehicle (EV) parking lots present a promising arena for implementing innovative energy sourcing solutions. This abstract proposes a comprehensive system integrating various technologies to harness renewable energy and enhance the sustainability of EV charging infrastructure. The core components include solar panels, which serve as the primary energy source, capturing sunlight and converting it into electricity. This solar energy is managed and optimized through a DC-DC converter, ensuring efficient utilization. Additionally, Peltier modules and piezoelectric sensors are employed to scavenge energy from temperature differentials and mechanical vibrations, respectively, further supplementing the power generation. To monitor environmental conditions and ensure optimal energy utilization, a noise sensor is integrated into the system. Excess energy harvested from these sources is stored in a battery for later use or redistribution. A L293D motor driver facilitates the management of power distribution and control, enabling efficient operation of connected devices such as motors. By leveraging a combination of renewable energy sources and

advanced energy harvesting techniques, this proposed system aims to enhance the sustainability and resilience of EV parking lots. Through effective utilization of available resources, it not only reduces dependency ongrid-based electricity but also promotes eco-friendly transportation infrastructure.

I.INTRODUCTION

The global transition towards sustainable energy sources and transportation solutions is imperative in combating climate change and reducing our dependence on fossil fuels. Electric vehicles (EVs) have emerged as a promising alternative to traditional internal combustion engine vehicles, offering lower emissions and reduced environmental impact. However, the widespread adoption of EVs necessitates the development of infrastructure capable of supporting their charging needs efficiently and sustainably. One innovative approach to addressing this challenge is the implementation of EV parking lots equipped with flexible energy sourcing mechanisms. These parking lots serve as more than just spaces for vehicle storage; they become hubs of energy production and distribution, leveraging renewable resources and advanced technologies to power the vehicles of tomorrow. At the heart of these EV parking lots are solar panels strategically placed atop parking canopies. Solar energy, abundant and renewable, serves as the primary source of power generation, harnessing the sun's rays to produce electricity. By utilizing the vast surface area available in parking lots, solar panels can generate significant amounts of energy, reducing reliance on grid electricity and fossil fuels.

II.PROPOSED SYSTEM

The proposed system aims to address the challenges faced by electric vehicle (EV) charging infrastructure

International Conference on Electrical Electronics & Communication Technology (ICEECT'24) ISBN: 978-93-340- 6066-9, PERI INSTITUTE OF TECHNOLOGY, Chennai. © 2024, IRJEdT Volume: 06 Issue: 05 | May -2024

by implementing innovative solutions within EV parking lots. This system integrates renewable energy sources, advanced energy management technologies, and efficient charging infrastructure to create sustainable and scalable EV charging facilities. At the core of the proposed system are renewable energy sources, primarily solar power. Solar panels will be installed on parking canopies, utilizing the vast surface area available in parking lots to harness solar energy. This energy will be converted into electricity through photovoltaic cells, providing a clean and renewable power source for EV charging. By generating electricity on-site, the system reduces reliance on grid electricity and minimizes carbon emissions associated with charging EVs.In addition to solar power, the proposed system may also incorporate other renewable energy sources such as wind power and geothermal energy. Wind turbines can be installed in suitable locations within the parking lot to capture wind energy, while geothermal heat pumps can utilize the constant temperature of the earth below the surface to provide heating and cooling for EV charging infrastructure. By diversifying energy sources, the system enhances energy resilience and sustainability, ensuring uninterrupted charging services even in adverse weather conditions.

III.KIT PROTOTYPE

IV.BLOCK DIAGRAM DESCRIPTION

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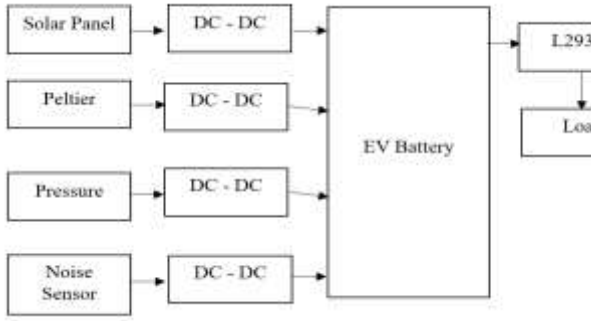

V.CONCLUSION

In conclusion, the integration of diverse technologies within electric vehicle (EV) parking lots holds immense potential for revolutionizing energy sourcing and sustainability in transportation infrastructure. By harnessing renewable energy sources like solar power alongside innovative technologies such as Peltier modules and piezoelectric sensors, this system offers a multifaceted approach to energy generation and utilization. The proposed system's ability to capture energy from various environmental factors, including sunlight, temperature differentials, and mechanical vibrations, underscores its adaptability and resilience. Moreover, the incorporation of a noise sensor enables real-time monitoring of ambient conditions, optimizing energy harvesting and usage efficiency. Through the storage of excess energy in batteries and the implementation of advanced power management and control mechanisms, this system not only reduces reliance on conventional grid-based electricity but also enhances the reliability and sustainability of EV charging infrastructure.

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