



# Wireless Electric Vehicle Charging by using Renewable Energy Sources

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**ABSTRACT:** Wireless power transmission is the way to transfer power without using wire. Wireless power transmission helps to connect those area where people are unable to get a suitable power source. Everyone can get clean and green wireless power. In future all the devices will relate to the power supply source wirelessly. Wireless charging of electric vehicles (EVs) has been in development for several years in preparation for the growth in adoption of these vehicles. In this paper we have presented the successful experimental attempts to transmit power wirelessly and future scope of wireless power transmission in Electric vehicles. Along with application of Footpath, in this context, we are proposing a system of piezoelectric generator which harvests the energy available on the conventional staircase in the form of mechanical vibrations. Embedded piezoelectric transducers convert the received vibration energy into electric power which is then transformed into the required form of energy (e.g. Lighting Applications) by a Static converter

**KEYWORDS:** Wireless Charging ,Solar Energy, Piezoelectric Sensors, Electric Vehicles (EVs), Renewable Energy, Wireless Power Transfer (WPT), Electromagnetic Induction

## I. INTRODUCTION

The transportation sector is one of the largest contributors to greenhouse gas emissions, with electric vehicles (EVs) emerging as a promising solution for sustainable transportation. However, the widespread adoption of EVs is hindered by charging infrastructure limitations and dependence on fossil fuels. This project addresses these challenges by designing and developing a innovative wireless electrical vehicle charging system that harnesses renewable energy from solar panels and piezoelectric sensors. This innovative system has the potential to reduce greenhouse gas emissions, decrease dependence on fossil fuels, and enhance the overall EV ownership experience.

## II. LITERATURE SURVEY

### Smart and Sustainable Wireless Electric Vehicle Charging Strategy with Re-newable Energy and Internet of Things Integration:

Sheeraz Iqbal , Nahar F. Alshammari , Mokhtar Shouran, This paper they are devel-oping a wireless electric vehicle (EV) charging system that integrates renewable energy sources and IoT technology to create a sustainable and efficient charging infrastructure.[1]

### Wireless charging system for electric vehicle:

Shital R. Khutwad; Shruti Gaur .The paper overviews novel technique for wireless charg-ing system of electric vehicle in which verifies the developed theory using battery charger application of electric vehicle.[2]

### Design of a High Power Transfer Pickup for On-Line Electric Vehicle (OLEV)

Boyune Song, Jaegue Shin, Seokhwan Lee, Seungyong Shin, In this paper, proposed inductive power pickup was developed using series capacitor with ferrite cores and multi-windings and was tested for its ability to transfer electricity wirelessly.[3]

**Reserving Charging Strategy for Electric Vehicles Based on Combined Model of Road- Charging Station-Electric Vehicle :**  
Haoming Liu, Man Niu, Weijie Wang, Charging resources in the charging stations are limited. How to make electric vehicles get

charging service with small cost is worth studying. The reserving charging model for electric vehicles is built based on the customer requirement model. The reserving charging model for electric vehicles is built based on the customer requirement model.[4]

#### Wireless Charging for Electric Vehicles:

Mohammad Rabih, Maen Takruri, Mohammad Al-Hattab, Amal. In this paper they provide a comprehensive guide and survey of wireless charging technologies for electric vehicles (EVs), covering fundamentals, benefits, challenges, and future directions.[5]

#### Evaluation of piezoelectric energy harvester outcomes in road traffic applications:

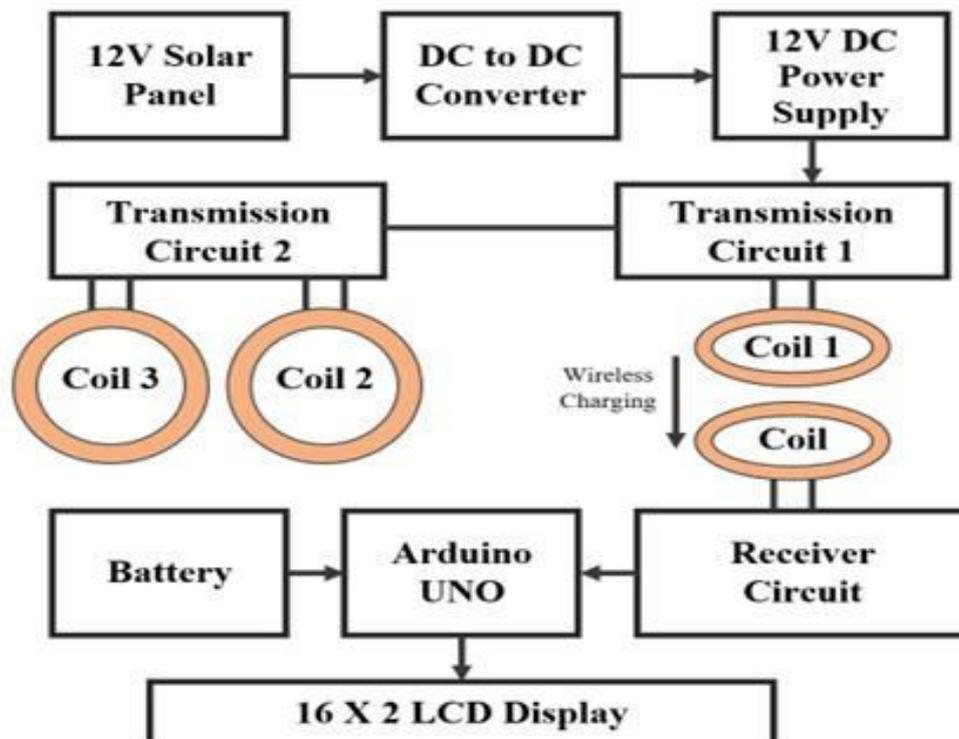
Saleh Gareh; B. C. Kok; C. Utraphan; K. T. Thong. This paper evaluates the probability of piezoelectric approach as energy scavenging devices for roadway applications using Two-Degree-of-Freedom (2DOF) electromechanical model[6]

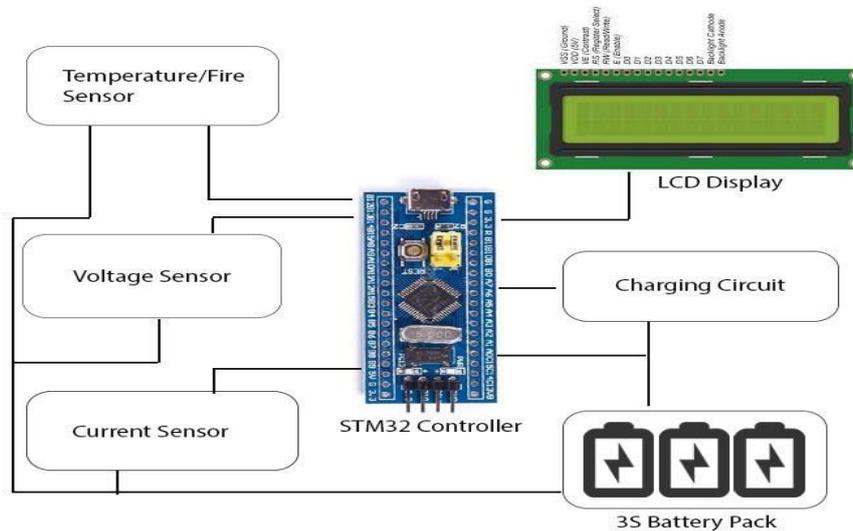
#### Piezoelectric paper for physical sensing applications:

Suresha K. Mahadeva; Konrad Walus; Boris Stoeber, We have developed robust and mechanically flexible piezoelectric paper. The fabrication process involves functionalization of barium titanate (BaTiO<sub>3</sub>) nanostructures onto wood fibers, followed by activation in a suspension of the commercially available paper-strength-enhancing additive, carboxymethyl cellulose (CMC), which improves fiber-fiber bonding.[7]

### III. METHODOLOGY

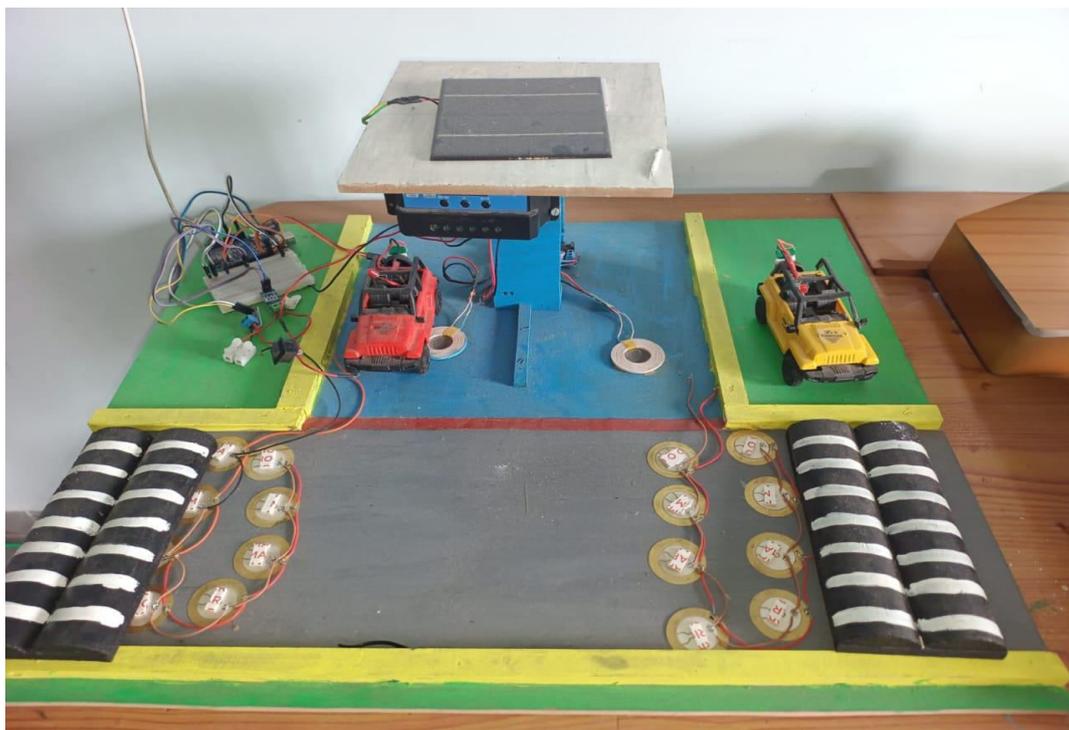
1. By referring various research paper published in reputed journals finding the topologies which is related to EV charging system.
2. Assess feasibility for integrating solar energy and piezoelectric sensors.
3. Integrate sensors for monitoring and enhancing system performance
4. Assemble charging station with solar panels and inductive coils
5. Assemble charging station with solar panels and inductive coils





#### IV. EXPERIMENTAL RESULTS

Solar-Powered Charging Stations experimental results have shown that solar-powered charging stations can reduce reliance on non-renewable energy sources and lower carbon emissions. Energy Storage Systems Studies have demonstrated the effectiveness in optimizing energy efficiency and reducing peak demand on the grid. Reduced Greenhouse Gas Emissions. Wireless EV charging using renewable energy sources can significantly reduce greenhouse gas emissions and promote sustainable transportation. Increased Energy Efficiency experimental results have shown that wireless EV charging can improve energy efficiency and reduce energy waste.



## V. CONCLUSION

Wireless electric vehicle (EV) charging using renewable energy sources represents a promising step toward a more sustainable and convenient transportation future. By integrating clean energy like solar and wind with wireless power transfer technology, we can significantly reduce carbon emissions, dependence on fossil fuels, and the need for physical charging infrastructure. This innovation not only improves user convenience but also supports the global shift toward greener energy solutions. With continued research and development, this technology has the potential to revolutionize how we power electric vehicles, making transportation cleaner, smarter, and more efficient.

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