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# Contactless Bus Charging System

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**Abstract -** *The main objective of Contactless Charger System is to charge the battery by using Contactless charger. The technology will replace cables and standardize on one interface, potentially being able to charge battery. This is done using charging a resonant coil from AC and then transmitting subsequent power to the resistive load. The project is meant to charge a low power device quickly and efficiently by inductive coupling without the help of wires. In this project, oscillation circuit converts DC energy to AC energy transmitter coil to transmit magnetic field by passing frequency and then induce the receiver coil. The project shows as a small charging for 5V battery of phone in this method. The system bases on coupling magnetic field, then designed and constructed as two parts. There are transmitter part and receiver part. The system is safe for users and neighboring electronic devices.*

***Key Words***: electric vehicle, Contactless power transfer, solar panel, signal conditioning circuit, Arduino uno.

## 1. INTRODUCTION

Contactless charging technology enables contactless power transfer from a power source such as charger to a load such as a mobile device conveniently across an air gap by eliminating the bunch of wire. Contactless power transmission involves the exchange of power without the need for physical connections. The development of this technology started in the late 19th and early 20th centuries, when a number of important innovations in electromagnetic research were made. These advancements established the basic principles that served as the foundation for modern electrical power transport. During the past 20 years, improvements in contactless technologies have led to a revival of related research. Public interest in contactless power has also increased with the application of Nikola Tesla ideas and inventions. As a result of this, the feasibility of technological implementation merits examination. Various scientists and inventors contributed to the development of contactless power. Examining their backgrounds reveals the sources of their motivation and the methods by which they conducted research. The inventions developed during this time were more advanced than anything that had been seen before, solving challenging problems and developing the basic theories that yielded modern technology. These inventors' patents, papers, and experiments effectively describe the practicality and utility of contactless power propagation. Three prominent forms of power transmission are conduction, induction, and radiation. There are various formulas that explain how electrical power can be transmitted without the use of a physical conductor. Each mode of power transport has theories that govern how the electromagnetic waves carry power from a transmitter to a receiver.

## 2. BLOCK DIAGRAM

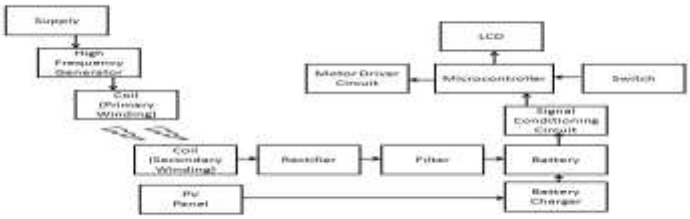



FIG.1.Block Diagram

## 3. COMPONENT USED

- **Solar Panel**
  Photovolatic solar panel absorb sunlight as a source of energy to generate electricity. Photovoltaic modules constitute the photovoltaic array of a photovoltaic system that generates and supplies solar electricity to the battery. PV solar panels generate direct current electricity. It is alternate way to charge the battery.
- **Battery**
  A battery is rechargeable batteries that supplies electrical current to a motor vehicle.batteries are designed to deliver maximum current for a short period of time. batteries are not designed for deep discharging, and a full

discharge can reduce the battery's lifespan.Battery can charge through solar panel as well as wireless transmitted power.It supplies power to Arduino and motor. 12V rechargeable battery is used.

- **Motor**
  A motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. Two types of motor are used here, one of them is for door opening and closing and another one is for movement of vehicle. The motor used for open close mechanism is connected to Arduino.
- **LCD**
  An LCD is an electronic display module which uses liquid crystal to produce a visible image. It is used to display battery charging is on or off as well as charging percentage.

**4. MEETHODOLOGY**

Electricity is a necessity of today modern life. It is difficult to live or passing a day without electricity. Today, contactless power transfer has been attracting a great deal of attention. Contactless power transfer is the transmission of electrical energy from a power source to an electrical load without interconnecting wires. It is used to power on the electrical devices without the wire. Contactless Power transmitter and receiver are used followed by battery charger to charge battery. Solar panel is there which will be fitted on the top of the bus. During day time, solar will charge the battery. It means during day time battery will be charged using both contactless charger and solar cell. Consequently, during night time contactless charger will charge the battery. Signal conditioning circuit is there which detects charging level of the battery. LCD is used to show the battery charging percentage .After detecting bus stop doors will be open or closed automatically .motor is used for door open close mechanism.

**5. FLOW CHART**

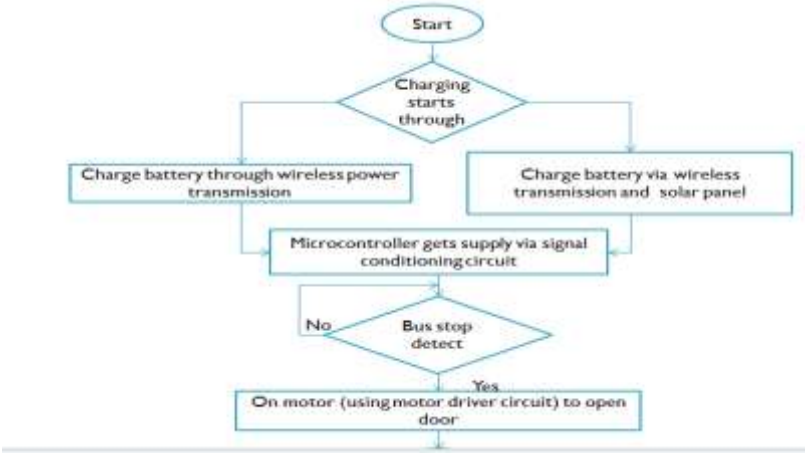
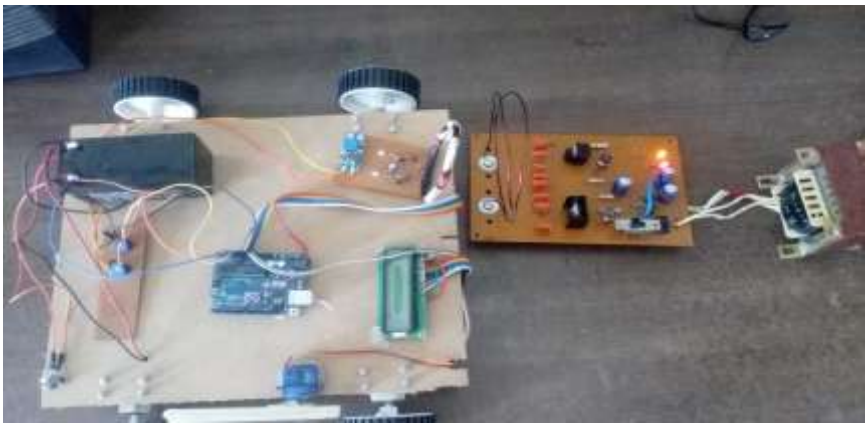



FIG.2.Flow Chart

**5. RESULTS**



## 6. ADVANTAGES

- Reduce amount of cables and power adapter
- No fuel required
- Automatic door open and close
- Avoid sparkle and electrical shock
- Static and Moving charging
- Zero carbon dioxide emission
- Very high transmission efficiency over a long distance

## 7. APPLICATIONS

- Cargo transportation in airports
- container transports at harbours
- cargo transporters in warehouses
- Public transport
- Wireless phone charging

## 8. CONCLUSION

In this project, a contactless energy transfer system based on RF principle for power transmission and recharging of electrical devices is studied. This paper illustrates a method for contactless transfer of electric energy. The secondary can move in relation to the primary. After detecting the stop doors will be open or closed. For automatic door open and closing, servo motor is used.

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