

Innovative Smart Road Technology for Optimizing Electric Vehicle Performance

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ABSTRACT

The main objective of Smart Road for Electric Vehicle System is to charge the battery of electrical vehicle running on Smart road by using wireless charging. The term refers to the ability to charge a vehicle while it is in motion. The objective is to demonstrate charging of electric and plug-in vehicle batteries, taking into account infrastructure challenges and communication requirements between the vehicles and charging sources with the purpose to extend the range of the vehicle. In 2012, the US Energy Information Administration reported that the US imported about 45% of the petroleum used in 2011. There is street roller on road with electric generator which get rotates while vehicle runs on road speed breaker to provide electricity via transmitter circuit. There is Sensor based Street light system to provide electric light whenever vehicle crosses that street at night time. Thus there are three functions as follow-Electric roller system on street road to provide electricity to vehicle and street light system. Wireless charging to electrical vehicle running on Smart Road. There is transmitter circuit smart road for electricity transfer to electric vehicle. It has oscillator circuit oscillates at 10MHz and with the help of transmitting coil it transmits the wireless power. Electric Vehicle has receiver circuit which receives the power through receiving coil and passes through voltage multiplier circuit (consisting of diode and capacitor voltage multiplier) and this multiplied voltage is used to charge their battery. Sensor based Street light System to provide facility on our traffic light at night time. As our road networks become more crowded, the use of street light is expanding, both to improve traffic flow, and to protect local environments from increased traffic exposure. Our Sensor based Street light system prevents wastage of electricity uses and provides advance lighting facility

Keywords: *Electric vehicle, Battery, Roller, Dynamo, Led.*

I. INTRODUCTION

The main objective of Fibre Road for Dynamic Wireless Charging System by Electricity Generation through Rolling Speed Breaker with Automatic Street Light is to charge the battery of electrical vehicle running on fibre road by using wireless charging. The term refers to the ability to charge a vehicle while it is in motion. The objective is to demonstrate charging of electric and plug-in vehicle batteries, taking into account infrastructure challenges and communication requirements between the vehicles and charging sources with the purpose to extend the range of the vehicle. In 2012, the US Energy Information Administration reported that the US imported about 45% of the petroleum used in 2011. There is rolling speed breaker to provide electricity to transmitter circuit. There is automatic street light system to provide electric light whenever vehicle crosses the road. Thus there are three functions as follow-

- Rolling Speed Breaker to provide electricity to fibre road and street light system.
- Wireless charging to electrical vehicle running on Fibre Road. There is transmitter circuit consists of Solar Panel. It has oscillator circuit oscillates at 10MHz and with the help of transmitting coil it transmits the wireless power. Electric Vehicle has receiver circuit which receives the power through receiving coil and passes through voltage multiplier circuit (consisting of diode and capacitor voltage multiplier) and this multiplied voltage is used to charge their battery.
- Automatic Street Lighting System to provide facility on our traffic light on road. Our Automatic Street Lighting system prevents wastage of electricity uses and provides advance lighting facility

II. DEVELOPMENT

Basic Structure:

In the structure of project smart road for electric vehicle, a flat structure of sufficient size is taken. A electric vehicle is made according to the project need. Fibre rollers are use in place of speed breakers which are connected to the generator for the production of electricity which is store in battery. There are three charging points are made for wireless charging in which one act as fuel station. Automatic lighting system is also available in project using sensors.

Block Diagram:

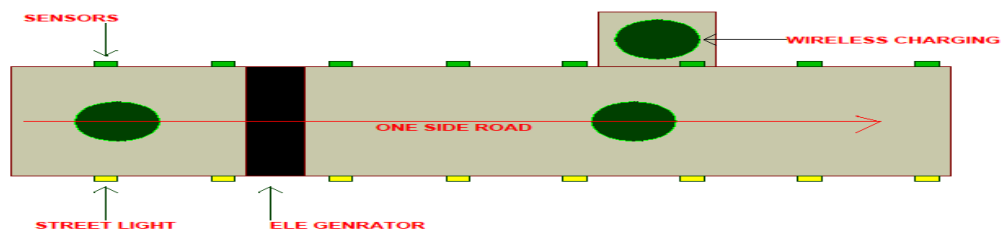


Fig : Block Diagram

Circuit Diagram and Description:

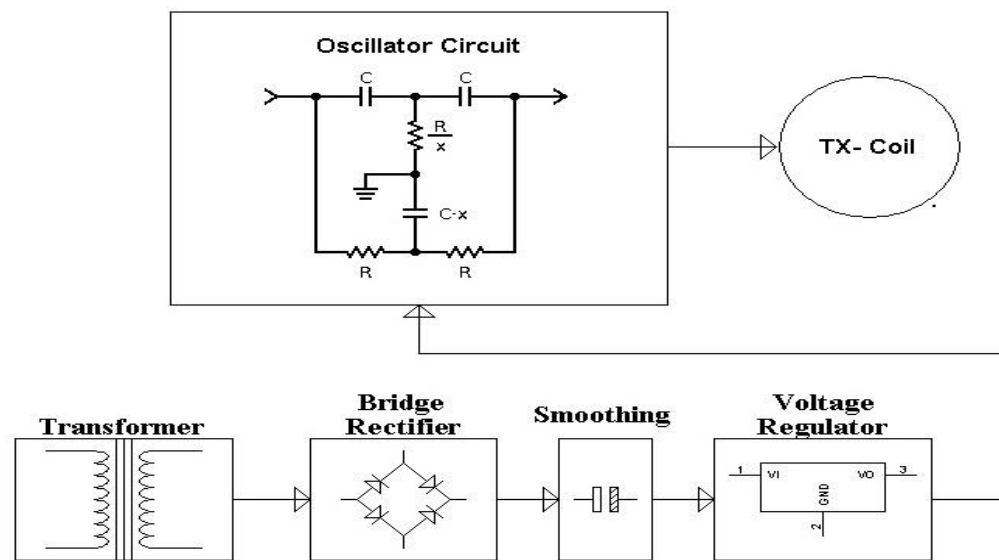


Fig : Transfer circuit

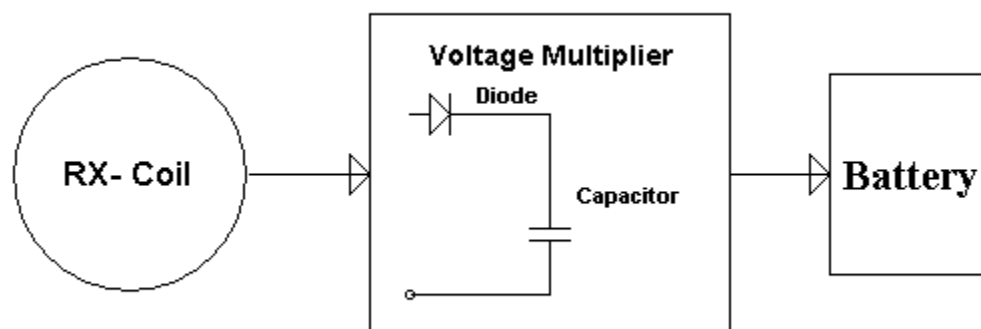


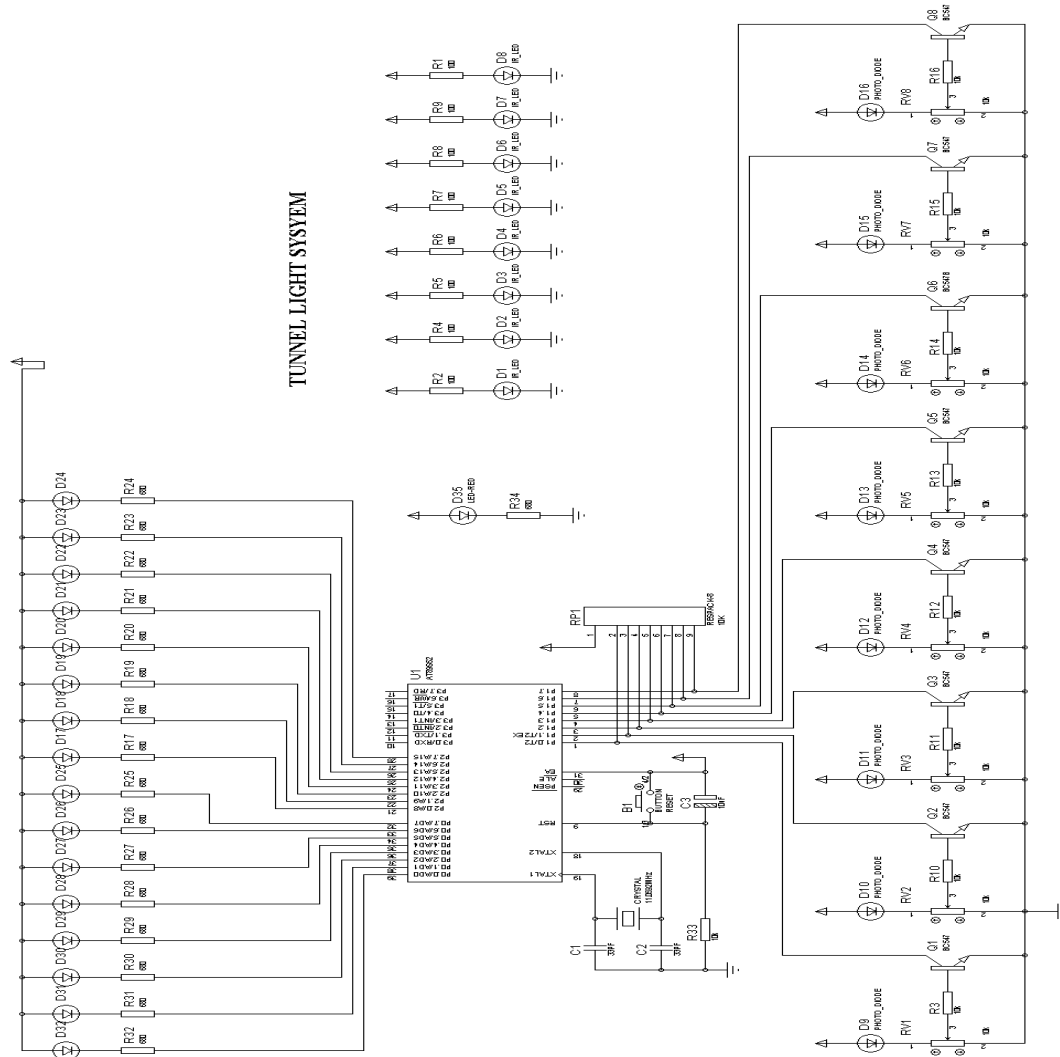
Fig: Receiver Circuit

Fibre Road for Dynamic Wireless Charging System by Electricity Generation through Rolling Speed Breaker with Automatic Street Light

Automation is a prime concern in our day-to-day life. Everyone wants to be automatic system as possible. The importance of our project “Fibre Road for Dynamic Wireless Charging System by Rolling speed breaker with Automatic street Lighting” is it generates electricity from solar energy and utilize it in proper way along with automation of tunnel lighting. There is wireless technology also included in our project which charge electric vehicles from saved energy.

Wireless power or wireless energy transmission is the transmission of electrical energy from a power source to an electrical load without man-made conductors. Wireless transmission is useful in cases where interconnecting wires are inconvenient, hazardous, or impossible. The problem of wireless power transmission differs from that of wireless telecommunications, such as radio. In the latter, the proportion of energy received becomes critical only if it is too low for the signal to be distinguished from the background noise. With wireless power, efficiency is a more significant parameter; enough energy sent out by the transmitter must arrive at the receiver or receivers to make the system economic.

The circuit diagram of “Fibre Road for Dynamic Wireless Charging System by Electricity Generation through Rolling Speed Breaker with Automatic Street Light” is shown in Figure 32, 33 and 34. This circuit contains 8051 micro- controller with its all basic components. Crystal oscillator is connected to pin 18 and pin 19 for frequency oscillation of microcontroller



Circuit Overview

III. CONCLUSION

Non-conventional source of energy provide the best option to replace convention source of energy. Smart road for electric vehicle is the best method to generate electricity in addition to the smart way for the lighting system and wireless charging of the electric vehicle.No pollution is cause by this.so it is the best method to generate electricity because it saves conventional fuel and it is economical.

IV. FUTURE SCOPE

Technology is reaching new heights in modern world. Study of science helps to develop technology for user friendly uses. Wireless charging has future scope along with the generation of electricity using speed breakers and can involve to a great extent in future.

1. Suitable for parking at multiplexes, malls, tall booths,signal,etc.
2. It use for charging batteries and lighting the streets and other places.
3. Its efficiency can be enhance in future it can change the scene power in the world..

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