Wireless Driven Car

Mr. Mitke S. S[1] Ms. Karkute P. R[2] Ms. Khadke J. A[3] Mr. Kahar S. N[4]
[1,2,3,4]BE Student
[1,2,3,4]Department of Electrical Engineering
[1,2,3,4]Savitribai Phule Pune University, Maharashtra, India

Abstract— The project is designed to transfer power wirelessly to one or more DC motors for an electric car or train without requiring any fuel /battery or electrical connection to run it in a specified path by inductive resonance coupling at the ground level fixed coil developing a 40 KHz power from the mains AC source. Wireless power transfer makes a remarkable change in the field of electrical Engineering and eliminates the usage of conventional copper overhead wire for train. Based on this concept, the project is developed to transfer power to a robotic vehicle or electric car or electric train wirelessly. This project can also be used for high-power charging batteries in conventional electric cars wirelessly while on the run. Since charging of the battery is not possible to be demonstrated, the project has a robotic vehicle that runs totally through wireless power. This project is built upon an high frequency PWM inverter circuit with a gate-driver IC to drive a MOSFET based half bridge system .It first converts AC 230V 50Hz to AC 18V using a step-down transformer and then that is converted to DC which powers the high frequency inverter. This output is fed to a tuned coil forming the primary of an air-core transformer. A high-frequency AC is fed to the primary coil with a capacitor to make a resonance tuned circuit. The primary coil is placed under the road that gets inductively coupled to the secondary coil mounted on the moving vehicle to wirelessly receive power to drive the robotic vehicle DC motor after being rectified. Moreover, this technique can be used in number of other applications too such as to charge a mobile phone, iPod, laptop battery, and propeller clock or any moving object wirelessly. An also, this kind of charging provides a far lower risk of electrical shock as it would be galvanically isolated.

Key words: Microcontroller, Bluetooth, IR Sensor

I. INTRODUCTION

Nowadays smart phones are becoming more powerful with reinforced processors, larger storage capacities, richer Entertainment function and more communication methods. Bluetooth is mainly used for data exchange; add new features to smart phones. Bluetooth technology, created by telecom vendor Ericsson in 1994, shows its advantage by integrating with smart phones. It has changed how people use digital device at home or office, and has transferred traditional wired digital devices into wireless devices. A host Bluetooth device is capable of communicating with up to seven Bluetooth modules at same time through one link. Considering its normal working area of within eight meters, it is especially useful in home environment. Thank for Bluetooth technology and other similar techniques, with dramatic increase in Smartphone users, smart phones have gradually turned into an all-purpose portable device and provided people for their daily use. In recent years, an open-source platform Android has been widely used in smart phones. Android has complete software package consisting of an operating system, middleware layer and core applications using a Smartphone as the "brain" of a microcontroller is already an active research field with several open opportunities and promising possibilities. Our experimental setup and Section 5 presents our conclusions. Every minute, on average, at least one person dies in a vehicle crash. Auto accidents also injure at least 10 million people each year, and two or three million of them seriously. Aim of reducing injury and accident severity, pre-crash sensing is becoming an area of active research among automotive manufacturers.

Vehicle accident statistics. Consequently, developing on-board automotive driver assistance systems aiming to alert a driver about driving environments, and possible collision with other vehicles has attracted a lot of attention. In these systems, robust and reliable vehicle detection is the first step a successful vehicle detection algorithm will pave the way for vehicle recognition, vehicle tracking, and collision avoidance. This paper provides a survey of on-road vehicle detection systems using optical sensors.

II. LITERATURE SURVEY

At present criteria, we cannot detect where the accident has occurred and hence no information related to it, leading to the death of an individual. The research work is going on for tracking the position of the vehicle even in dark clumsy areas where there is no network for receiving the signals. In this project GPS is used for tracking the position of the vehicle, GSM is used for sending the message and the controller is used for saving the mobile number in the EEPROM and sends the message to it when an accident has been detected. Hence with this project implementation we can detect the position of the vehicle where the accident has occurred so that we can provide the first aid as early as possible the literature related to the research topic has been reviewed for last twenty years in order to find out work carried out by various researchers.

The concept of remote access of systems existed in different form since the era of automation and computers that well predates mobile communication technologies. It had been known by different names like telemetry, industrial automation, SCADA, etc. Mostly the technology solutions for remote access that existed at that time had been proprietary or custom-developed and highly expensive. This not only restricted its wide spread implementation but also constrained its implementation wherever used. Hence, presence of these technologies was limited to large sectors like process industries eg. oil and gas industry, electricity transmission and distribution, railway networks etc. However, in 1990s the trends of globalization imposed the requirement of adhering to international and open standards for survival in the market. This in parallel was supported by remarkable growth in sector of programmable devices and communication technologies. This opened up opportunities of using various non-proprietary, open standard off-the-shelf technologies with embedded systems for the purpose of

remote access. Literature is available discussing the use of various off-the-shelf technologies like public switched telephone network (PSTN), GSM, GPRS, Internet, Wi-Fi, power line carrier communication (PLCC), Bluetooth, Sigsbee, IrDA, etc, for remote access.

III. BLOCK DIAGRAM

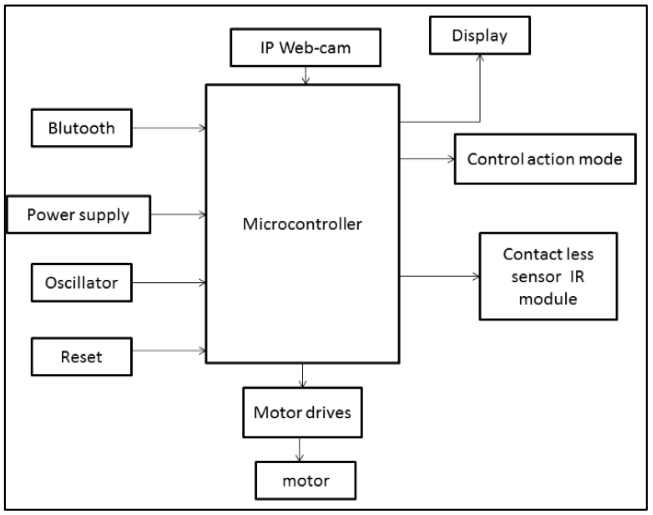

Fig. 1: Wireless Power Driven Train.

A. Bluetooth, Zigbee Technologies:

Many Wireless Technologies like RF, Wi-Fi, Bluetooth and zigbee have been developed and remote monitoring systems using these technologies are popular due to flexibility, low operating charges, etc. Today Wireless Sensor Network are used into an increasing number of commercial solutions, aimed at implementing distributed monitoring and control system in a great number of different application areas. Designed a general purpose controlling module designed with the capability of controlling and sensing up to five devices simultaneously.

The communication between the controlling module and the remote server is done using Bluetooth technology. The server can communicate with many such modules simultaneously. The controller is based on ATMega64 microcontroller and Bluetooth communication TDK Blu2i (Class 1) module which provides a serial interface for data communication. The designed controller was deployed in a home automation application for a selected set of electrical appliances proposed a home appliance control system over Bluetooth with a cellular phone, which enables remote-control, fault-diagnosis and software-update for home appliances through Java applications on a cellular phone.

B. Crystal Oscillator

Even though the microcontroller has built in oscillator, it cannot operate without external components which stabilize its operation and determine its frequency (operating speed of the microcontroller). Owing to the fact that it is almost impossible to make oscillator which operates sterilely over a wide frequency range, the microcontroller must know which crystal is connected in order that it can adjust the operation of its internal electronics to it.

C. AVR Microcontroller at MEGA 328

The AVR core combines a rich instruction set with 32 general purpose working registers. All independent registers to be accessed in one single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers. The ATmega48P/88P/168P/328P provides the following features: 4K/8K/16K/32K bytes of In- System Programmable Flash with Read-While-Write capabilities, 256/512/512/1K bytes EEPROM, 512/1K/1K/2K bytes SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible Timer/Counters with compare modes, internal and external interrupts, a serial programmable USART, a byte-oriented 2-wire Serial Interface, an SPI serial port, a 6-channel 10-bit ADC (8 channels in TQFP and QFN/MLF packages), a programmable Watchdog Timer with internal Oscillator, and five software selectable power saving modes. The Idle mode stops the CPU while allowing the SRAM, Timer/Counters, USART, 2-wire Serial Interface, SPI port, and interrupt system to continue functioning. The Power-down mode saves the register contents but freezes the Oscillator, disabling all other chip functions until the next interrupt or hardware reset. In Power-save mode, the asynchronous timer continues to run, allowing the user to maintain a timer base while the rest of the device is sleeping. The ADC Noise Reduction mode stops the CPU and all I/O modules except asynchronous timer and ADC, to minimize switching noise during ADC conversions. In Standby mode, the crystal/resonator Oscillator is running while the rest of the device is sleeping. This allows very fast start-up combined with low power consumption

D. 1N4007

Diodes are used to convert AC into DC these are used as half wave rectifier or full wave rectifier. Three points must he kept in mind while using any type of diode.

1) Maximum forward current capacity
2) Maximum reverse voltage capacity
3) Maximum forward voltage capacity

The number and voltage capacity of some of the important diodes available in the market are as follows: Diodes of number IN4001, IN4002, IN4003, IN4004, IN4005, IN4006 and IN4007 have maximum reverse bias voltage capacity of 50V and maximum forward current capacity of 1 Amp.Diode of same capacities can be used in place of one another. Besides this diode of more capacity can be used in place of diode of low capacity but diode of low capacity cannot be used in place of diode of high capacity. For example, in place of IN4002; IN4001 or IN4007 can be used but IN4001 or IN4002 cannot be used in place of IN4007.The diode BY125made by company BEL is equivalent of diode from IN4001 to IN4003.

E. Capacitors

A capacitor or condenser is a passive electronic component consisting of a pair of conductors separated by a dielectric. When a voltage potential difference exists between the conductors, an electric field is present in the dielectric. This field stores energy and produces a mechanical force between the plates. The effect is greatest between wide, flat, parallel,

narrowly separated conductors. An ideal capacitor is characterized by a single constant value, capacitance, which is measured in farads. This is the ratio of the electric charge on each conductor to the potential difference between them. In practice, the dielectric between the plates passes a small amount of leakage current. The conductors and leads introduce an equivalent series resistance and the dielectric has an electric field strength limit resulting in a breakdown voltage. The properties of capacitors in a circuit may determine the resonant frequency and quality factor of a resonant circuit, power dissipation and operating frequency in a digital logic circuit, energy capacity in a high-power system, and many other important aspects. A capacitor (formerly known as condenser) is a device for storing electric charge. The forms of practical capacitors vary widely, but all contain at least two conductors separated by a non-conductor. Capacitors used as parts of electrical systems, for example, consist of metal foils separated by a layer of insulating film. Capacitors are widely used in electronic circuits for blocking direct current while allowing alternating current to pass, in filter networks, for smoothing the output of power supplies, in the resonant circuits that tune radios to particular frequencies and for many other purposes.

F. Resistors

A resistor is a two-terminal electronic component designed to oppose an electric current by producing a voltage drop between its terminals in proportion to the current, that is, in accordance with Ohm's law:

$$V = IR$$

The primary characteristics of resistors are their resistance and the power they can dissipate. Other characteristics include temperature coefficient, noise, and inductance. Less well-known is critical resistance, the value below which power dissipation limits the maximum permitted current flow, and above which the limit is applied voltage. Critical resistance depends upon the materials constituting the resistor as well as its physical dimensions; it's determined by design. Resistors can be integrated into hybrid and printed circuits, as well as integrated circuits. Size, and position of leads (or terminals) are relevant to equipment designers; resistors must be physically large enough not to overheat when dissipating their power.

A resistor is a two-terminal passive electronic component which implements electrical resistance as a circuit element. When a voltage V is applied across the terminals of a resistor, a current I will flow through the resistor in direct proportion to that voltage. The reciprocal of the constant of proportionality is known as the resistance R, since, with a given voltage V, a larger value of R further "resists" the flow of current I as given by Ohm's law:

$$I = \frac{V}{R}$$

Resistors are common elements of electrical networks and electronic circuits and are ubiquitous in most electronic equipment. Practical resistors can be made of various compounds and films, as well as resistance wire (wire made of a high-resistivity alloy, such as nickel-chrome). Resistors are also implemented within integrated circuits, particularly analog devices, and can also be integrated into hybrid and printed circuits.

The electrical functionality of a resistor is specified by its resistance: common commercial resistors are manufactured over a range of more than 9 orders of magnitude. When specifying that resistance in an electronic design, the required precision of the resistance may require attention to the manufacturing tolerance of the chosen resistor, according to its specific application. The temperature coefficient of the resistance may also be of concern in some precision applications. Practical resistors are also specified as having a maximum power rating which must exceed the anticipated power dissipation of that resistor in a particular circuit: this is mainly of concern in power electronics applications. Resistors with higher power ratings are physically larger and may require heat sinking.

G. Advantages

1) Wireless Control from Remote places
2) Easy of operation
3) By using any mobile possible to on/off motor.
4) Speed of motor varies simple pressing remote mobile buttons.
5) Display the status of current operation.

H. Disadvantages

1) It may not be work in some environmental condition.
2) Cost is comparatively more than existing system.
3) It needs better condition of crowded roads for working of sensor in proper manner.

IV. CONCLUSION

The need of electricity is increased day by day to reduce the need of electricity and power loss we need a new technology. Wireless power transfer makes a remarkable change in the field of electrical engineering and eliminates the usage of conventional copper overhead wire for train.

Also this technology reduces the electricity waste and expenses which is needed for installing wires and also reduces the maintenance.

V. RESULTS

From This Project We Have To Analysis the Car Have 2kg Weight Sustained

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