International Journal of Advanced Technology in Engineering and Science
Vol. No.5, Issue No. 04, April 2017
www.ijates.com
ijates
ISSN 2348 - 7550

ECO-FRIENDLY BUS

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ABSTRACT

This paper aims at the possibility of charging the electric vehicles contactlessly using inductive coupling . We are exploring a key enabling element that will overcome problem associated with charging of moving electric vehicles and which will successfully demonstrate the feasibility of contactless power transfer directly to vehicles cruising at highway speed, via magnetically-coupled resonating coils located in the roadbed and in the vehicles. This paper uses RFID technique for authentication of vehicles .Also two sources of energy for contactless charging which are inductive coupling and solar energy. This paper will contribute to overcoming a vital limitation of existing electrical vehicles, by offering range at competitive costs in development of eco-friendly bus.

Keywords: Bluetooth, Eco-friendly, Inductive Coupling, RFID.

I. INTRODUCTION

Electric vehicles offers superior energy efficiency while offering tremendous potential for reducing co_2 emissions if electricity is supplied from renewable or nuclear sources. The global demand for electricity is endlessly growing, electricity is most versatile and widely used form of energy. This paper aims exden-ding the contactless power transfer to charging of moving electric vehicles however ,they are presently neither range nor cost competitive compared to conventional vehicles due to limited option for recharging and expensive energy storage, the success of this idea may prove to be a very significant step forward towards possibility of unlimited range emobility by extending the range of electric vehicles, this paper will contribute to overcoming a vital limitation of exiting electric vehicles, by offering range at competitive cost. Electromagnetic induction non-contact power transmission employs the phenomenon in which application of an electric current to one of adjacent coil induces an electromotive force in other coil with the magnetic flux as the medium. The objective of such a initiative is to investigate on the feasibility, financing and development of new plans. we are exploring key enabling element that will overcome this challaneges and which will successfully demonstrate the feasibility of wireless power transfer directly to the vehicles cruising at highway speed via magnetically coupled resonating coils located in roadbed and in the vehicles.

II. LITERATURE SURVEY

In today's era , almost all buses operate on petrol or diesel . the major problem with this buses is air pollution which is harmful for mankind solution for these problem is the buses which operate without such fuel . the first BRT bus was the rede integrada De transporte in Curitiba ,brazil.

2.1 Wireless chargeable eco-friendly bus

Now a days conventional buses which run on fuel results in release of the harmful gases such as carbon dioxide which leads to increase in environment pollution and global warming , this also affects the health of mankind , along with this fuels which is used in buses is non-renewable source of energy. Electric vehicle offers superior energy efficiency while offering tremendous potential for reducing emission. In order to control the situation there is a method in which instead of using a fuel implemented the electric bus. This bus is eco-friendly and uses renewable energy.[1] As an optional part charge through the circuitry. Along with this the BRT bus indication unit i.e. signaling system and verification system is also provided to verify the BRT bus and to indicate the status of the bus. [2]

2.2 wireless power transmission using solar power system Under the sun of photovoltaic cell act as a photosensitive diode that instantaneously converts light but not heat into electricity.

2.3 An innovative design of wireless power transfer by high frequency resonant coupling

The main objective of this paper is to develop the concept of transferring power without use of any wire.the concept is based on conversion of low to high frequency. High frequency is transmitted into inductor through air core by using two self-resonating coils, non-radiative power is transmitted over distance upto thrice the radius of the coil of inductor.[3]

2.4 Design of RFID for electric vehicles smart charging infrastructure

With an increase number of electric vehicles on the roads, charging infrastructure is gaining also it has an important role meeting the needs of the electric vehicles users. This paper proposes RFID system for user identification and charging authorization as part of smart charging infrastructure which is providing charge monitoring and control. [4]

2.5 Analysis and design of non-contact charger using LC load resonant coupling for electric vehicle system

The system concept is using resonant inductive coupling of primary coils arranged in linear array in the roadway to secondary coil in the electric vehicles due to using of electronic devices, wireless energy transfer system in various field of industry.

2.6 Introduction and overview on contactless transfer of electric power

This paper have introduced technology in which we can transfer the electric energy using contactless technology. We have short overview on contactless power transfer of electricity. Efficient non-radiative power transfer over the distances upto 8 times radius of the coil. Also we Can generate the charge using high frequency(HF) transformer.[5]

III. PROPOSED SYSTEM WITH WORKING PRINCIPLE

The block diagram of proposed system is divided into three parts:

1.Bus stop unit

2.Bus Unit

3.Andriod system which act as a depo unit

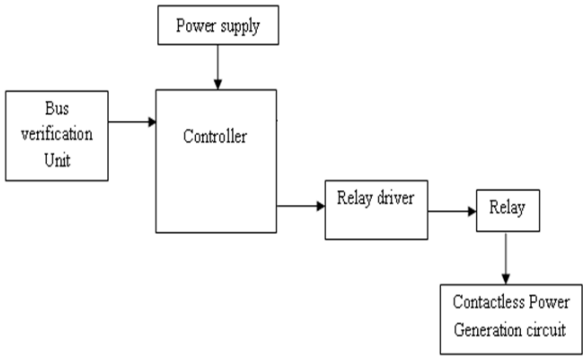

Fig.1 bus stop unit

At bus stop unit, the bus verification unit i.e. RFID identifies the bus by sending the bus info to controller. Then the controller switch ON the relay through relay driver circuit. Then the relay activates "contactless power generation circuit" through inductive coupling where the battery gets charged. The current status of the battery is displayed on LCD display. RFID module will send the bus location updates through Bluetooth to the depo(Android).

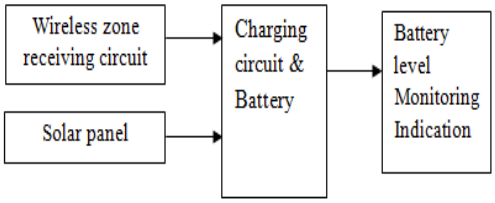

Fig.2 bus unit

In bus unit, we also use wireless zone receiving circuit and solar panel, through which we can charge the battery. Then the RFID tag is identified by the RFID reader and it is processed by the microcontroller. According to which bus is passed and what is the number of bus ,this status indicated through Bluetooth to the android system. Here it also shows the status of the bus.

IV. SPECIFICATION OF HARDWARE

The following are the important elements in the block diagram:

1)Microcontroller:

The signals from EM transponder are given to the microcontroller. Microcontroller processes all these signals and gives data to LCD display.

Table1.Comparision

	AT89S52	PIC	AVR
Flash program memory	8K	4K/8K	2K
Data Memory	256	192	128
Ports	4	3 to 5	4
Timers	3	3	2
ADC	8 Channel	8 Channel	Not Present
Micro-Controller	8 bit	8 bit	32 bit
I/O Pins	32	22	15

2) EM reader:

When EM transponders come in the range of EM reader it will read the unique id number.

Features:-

- Read frequency is 125khz.
- EM4001 64-Bit RFID Tag compatible..
- Requires single +5VDC supply.
- Magnetic stripe emulation output.
- Read Range 100mm

3) EM transponder:

EM transponders are used for unique identification.

There are two types of RFID tags:

i)Active RFID

ii)Passive RFID

i)Active RFID:

Identification system in which tags have their own power source (mostly battery), enabling them to broadcast an identifying signal. This extends the range of the tags and also the capability for communicating advanced information such as location.

ii) Passive RFID:

Identification system, in which the tags are not powered, by using active signals from the transmitters for their response. This limits the range of the tags to a few feet.

4)LCD display :

It is used for the displaying the information .

5)Relay:

It is used to drive ac or dc load and also used for auto switching.

6)Solar Cell:

It is used to convert solar energy into electrical energy . photovoltaic system converts light energy directly into electricity. generally known as “solar cell”.the simplest system can provide to calculator.more complicated systems can provide a large portion of the electricity.

7)Battery :

A battery is a device that converts chemical energy to electrical energy. There are two types of batteries.They are primary battery and secondary battery.Primary batteries (disposable batteries) are designed to be used once and discarded, and secondary batteries(rechargeable batteries), which are designed to be recharged and used multiple times.

V. CONCLUSION

This paper develop wireless charging system which is having the RFID authentication for the moving vehicle. This will reduce the emission of harmful gases such as Co_2 that are produced by the fuel vehicles.

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