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RESEARCH ARTICLE

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ECO-FRIENDLY BUS

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ABSTRACT

Today we are facing the problem of fuel crisis because conventional buses which runs on fuel, results in release of the harmful gases like CO2 which leads to increase in environmental pollution such as global warming, also this affects the health of human being. These fuels which is used in buses is non-renewable source of energy and goes on decreasing day by day. For controlling the situation we are proposing a method in which instead of using fuel in buses we are developing an electric bus. This is eco-friendly bus and uses renewable source of energy. Electric vehicle offers higher efficiency than existing technology & also helps in reducing CO_2 emissions. This system aims at extending the wireless power transfer to charging of moving electric vehicles. In future we can use a solar panel if in case bus does not get fully charge through the circuitry. We have also introduced BRT bus indication unit i.e. signalling system and verification system. For detection purpose of the bus, RFID technology is used.

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I. INTRODUCTION

Electricity is the most widely used form of energy. There is high demand for electricity which is growing exponentially. To meet the increasing demand for power and reducing CO2 emission, the future generation system must meet the demands as well as reliability, efficiency requirements.

Hence here we are using wireless charging technology. Inductive charging is also known as wireless charging. Due to simplicity and efficiency it is more popular. The most important feature of contact less transformers is that they are placed separated by a large air gap. Inductive charging works with lower risk of electric shock hazards because it has no exposed conductors, no interlocks and no connector.

As the charging system is isolated then we can provide waterproof packages such as wireless charging which is efficiently work under water and also in humid conditions. Wide applications of wireless inductive-coupled contact less energy transfer systems is prevent the progress by their fast declining efficiency performance as a function of wireless relative energy transfer distance. It is

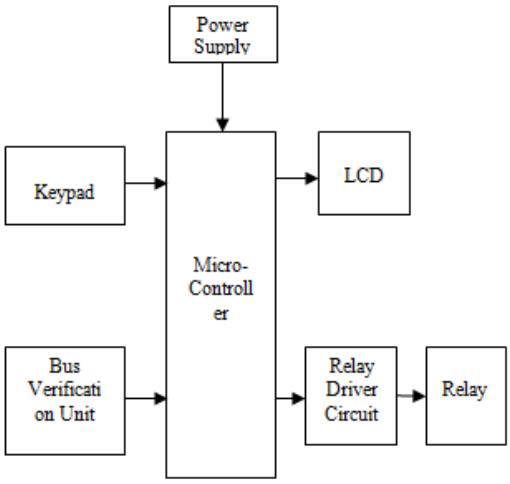
defined as the actual energy transfer distance divided by the radius of the wireless inductive energy transfer system.

However, the latest improvements in semiconductor technology provide an opportunity to almost complimentary improve on the system efficiency, because a higher operating frequency, in general, benefits the inductive energy transfer applications e.g. wireless charging of electrical vehicles by means of a magnetic coil in the road surface, thus become feasible and slowly ready for a market introduction.

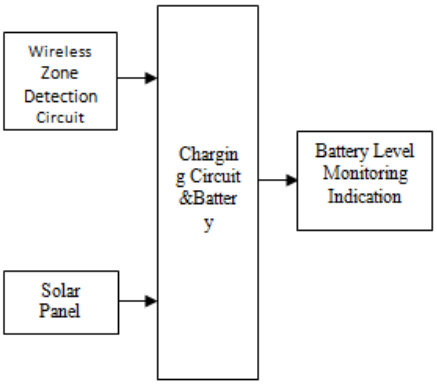
The successful implementation of this system may results in a very significant step towards the possibility of unlimited range electric mobility. The problems of fuel in existing system can be overcome by this proposed concept.

II. Proposed block diagram:

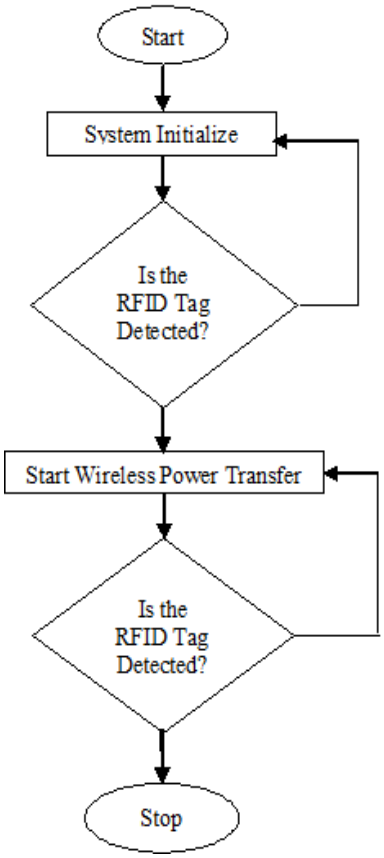
- **Bus Stop Unit**



Charging Unit:



III. FLOWCHART



IV. METHODOLOGY:

In this system we have two different sections that is “bus stop unit” & “charging unit”. We used RFID technology to detect the bus. Once the Bus is detected we charge the bus using wireless inductive charging. When the bus moves it is automatically detected & charging stop.

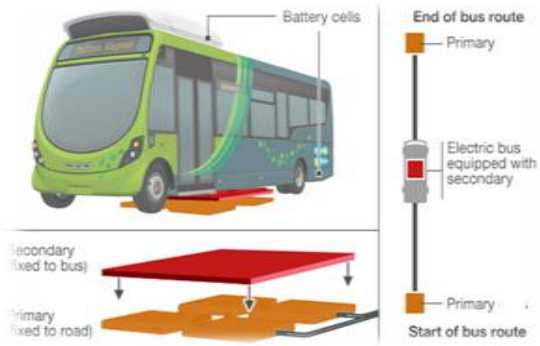
The block diagram of bus stop unit as well as charging unit is mentioned above .When bus comes at the BRT stop, at that time the RFID tag which is placed on the bus is automatically scan by RFID reader which placed at charging unit. The unique ID is fed to the reader by the tag.

The reader identifies each tag only by its unique ID. This pair of RFID tag and reader makes the bus verification unit. Its sole purpose is to check the authenticity of the bus. When a bus is authenticated the verification unit sends a signal to the controller that the bus is verified and detected. We have used a PIC16F controller. Microcontroller then initiates the charging by operating a relay. The

relay is controlled by a relay driver circuit. Relay acts as a switch to starts charging of bus unit.

The LCD is used to display the status of bus as verified or not on the bus stop unit. The bus stop unit also has a keypad to manually verify a bus in case the system faces some problem.

The charging unit is mounted on bus. The charging unit has the following blocks Battery, charging level indicator, wireless zone detection circuit. The charging level indicator shows the current percentage of battery remaining. For use of solar power we can use solar panel which is also supported by this system.



V. ADVANTAGES

- More convenient:
- No manual charging or recharging of batteries.
- Eliminate unsightly, unwieldy and costly power cords.
- Never run out of battery power.
- There is no need of having a line of sight.
- Eco-friendly system.
- Reduces the use of disposable batteries.
- Uses the efficient electric grid power directly instead of inefficient battery charging.

V. CONCLUSIONS

In this paper, a wireless energy transfer system based on transformer principle for power transmission and recharging of electrical devices is studied. This paper illustrates a method for wireless transfer of electric energy and information. This system is used for alimentation of moving load. The secondary can move in relation to the primary. In short we are developing a charging unit based on wireless energy transform which charge the bus. The main purpose is to reduce Co2 emission and fuel saving.

VI. REFERENCES

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