

Smart Electric Bus Transportation System

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Abstract: Now-a-days buses are electric buses, where the battery will be charged from an outside power sources such as, over headlines, trolley buses. in this system the batteries are charged by charging station which is placed on every bus station and by adding some smart features like safety means.

Keywords: Charging station, Solar power, Sensors, GPS, GSM module.

1. Introduction

Most of the buses are diesel buses which travels more than ten hours a day, which produces air pollution and related air borne health issues. meanwhile, electric buses are free from pollution. Chin is the first country which manufacture the electric buses. The Chinese company BYD (build your dreams) had delivered more electric buses throughout the world.

In India the number of electric buses are less compared to other countries. Where the electric buses charges that when they are not operation. maximum it takes 2-3 hours to charge the battery.

A. Objective of the project

Main objective of this project is placing charging station on each bus stand to charge the battery of the electric buses to avoid overnight charging with addition of smart feature's like card system, safety.

B. Methodology

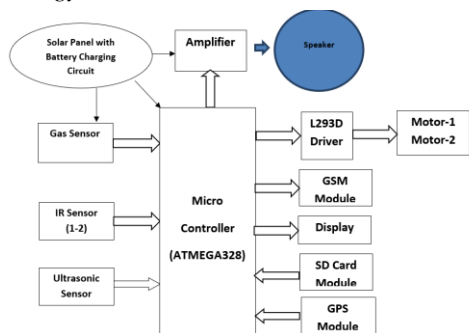


Fig. 1. Block diagram

The above block diagram shows the smart ways of an electric buses, where the gas sensors are used to detect the fire and ultrasonic sensors are used to detect the objects. The bus will run automatically by line following robot. IR sensors are used to follow the lane. LCD display and audio device are used to alert the travellers regarding place and other messages. GPS and GSM modules are used to track the location. Solar panel are

used to supply the power for the sensors and GPS and GSM module. In bus stop unit, we are using RFID module to read the smart card which will be used as ticket for the travellers.

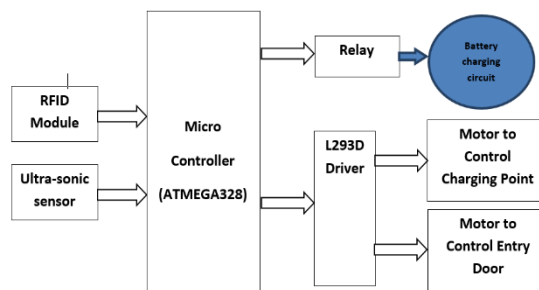


Fig. 2. Microcontroller connections

The door will open automatically by using controlling motor. To charge the battery of bus at every bus stop, we are using ultrasonic sensor to see whether the bus is reached at charging point. With respect to condition, controller will activate the charging circuit and motor to control the charging point to connect to the battery point of bus. Battery which we are using is Lithium Ion battery, because it consists long life cycle and also we are using Ultrafast capacitor to charge quickly and slow discharge.

Possible output:

- Pollution free.
- Placing charging station on each bus stop.
- Solar power is used to supply the power for sensors, GPS, GSM module and RFID module.
- Slow battery discharge capability.
- Display indication with voice.
- Emergency alert system.
- Smart card system.

2. Conclusion

Electric vehicles have an electric motor instead of an internal combustion engine. The vehicle uses a large traction battery pack to power the electric motor and must be plugged in to a charging station. In this proposed system the charging station is designed at every smart bus stop. Also, the system uses sensor, GPS and GSM technology to provide the secured way of travelling. It also provides the smart way of travelling the passengers in the bus.

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