

SMART ELECTRIC TRAIN USING ZIGBEE TRANSMITTER AND RECEIVER

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ABSTRACT

This proposed project deals with vacancy seats and control of electrical equipments in the compartment. A sensor is placed below each seat in all compartments. When a person occupies a seat, seat count for the compartment is decremented from the total seat value. This data is transmitted to the next station through ZigBee transmitter and displayed in respective platform. Seeing this data people can stand accordingly before respective compartment. Addition to this when a person sits on a seat, we can control the electrical devices of respective berth and turn OFF unwanted fans and lights and save energy.

The add-on feature to this project is that we made an attempt to use renewable energy to run the electrical apparatus of train. For this purpose we are employing a solar panel and piezo electric crystals.

The existing EMU across the country has lot of disadvantages. The one of the disadvantages taken in this project is it the status of the train is unknown for the people in the platform also there is no proper system to control the loads according to the need.

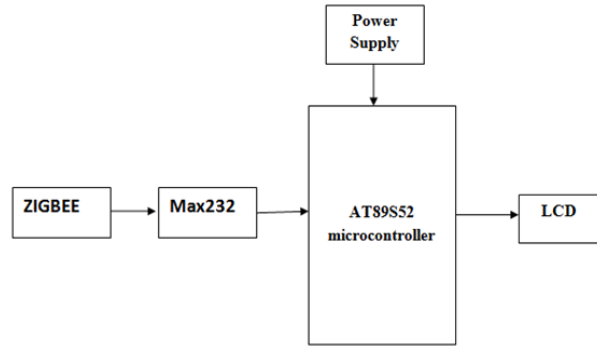
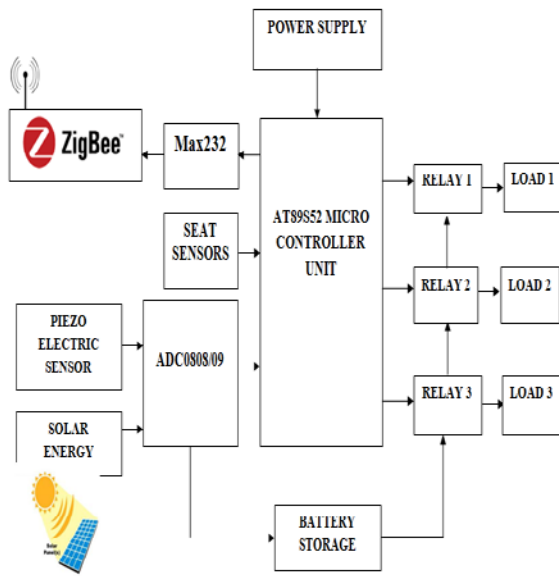
PROPOSED SYSTEM

1.SETUP INSIDE THE TRAIN

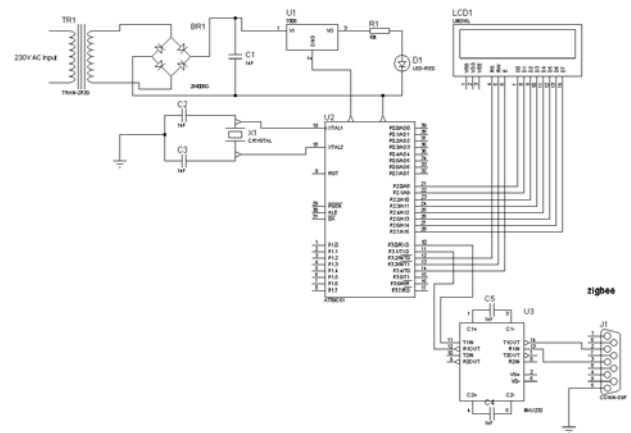
Microcontroller is the main controlling part of the unit. To the microcontroller the seat sensors are attached which gives the information about the occupied seat count. The other input to the micro controller is the ADC unit which is used for giving the digital value for the corresponding analog value of renewable sources.

The output of the microcontroller block consists of the relay circuit which is used to terminate unnecessary loads when it is not consumed. The other outputs are given to the MAX232 unit through which the vacant seat value is transmitted to the forthcoming station with the help of the zigbee transmitter block.

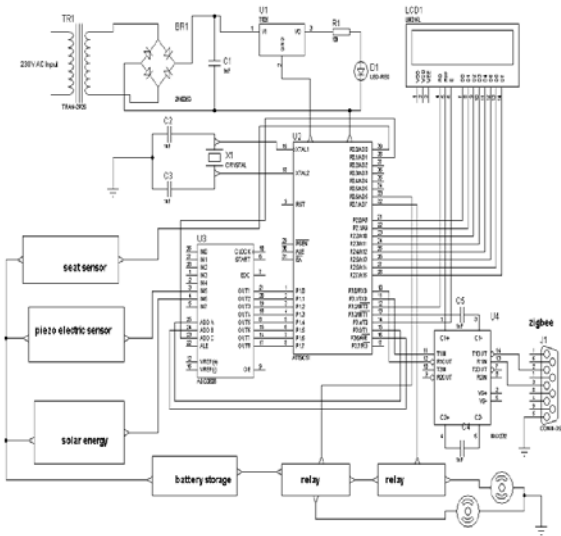
EXISTING SYSTEM



4. CIRCUIT DIAGRAM



2. CIRCUIT DIAGRAM

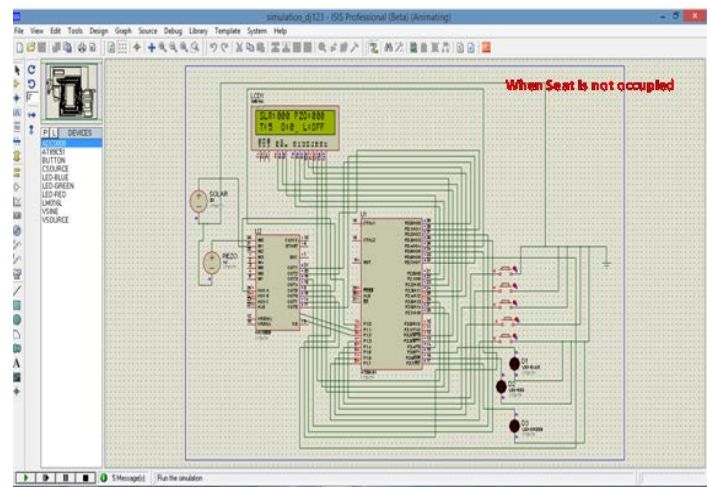


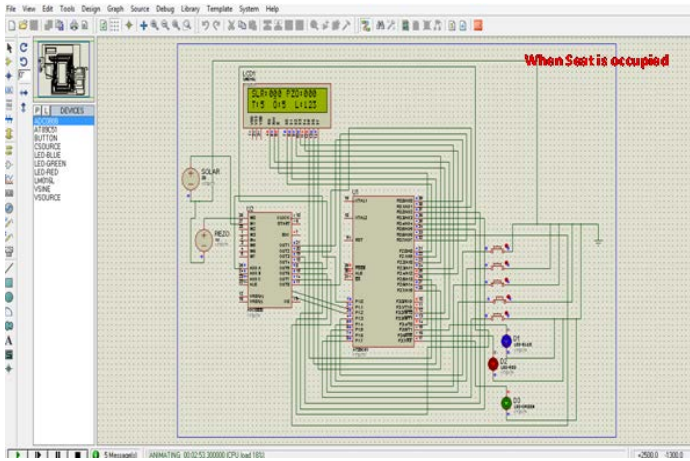
3. THE SETUP AT THE PLATFORM

The input of the microcontroller is Max232 input, which carries the information about the number of vacant seat from the zigbee receiver block. The output of the microcontroller goes to the LCD block. The LCD block displays the information of vacant seats.

SIMULATION RESULTS

The results of the proposed system when seat is empty and seat is occupied is shown in the simulation results.





CONCLUSION

In this work, we focused on the development of a smart train system which is actually an improved model of existing EMU across the state. In this new proposed system we use a concept using seat sensors which makes the train more passenger friendly. Thus our project gives clear idea of vacant seats in each compartment to the passengers waiting. Also we have implemented the setup, which switch off the loads when not in use. The load is supplied using renewable energy like solar energy and the energy developed due to vibrations from piezoelectric crystals.

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