

IoT Based Smart Street Lights Empowered by Piezoelectric Sensors

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Abstract: *The power generated from piezo plates is connected to the lead acid battery which is rechargeable battery and supply the energy to the street light under two conditions first is the LDR should detect a dark condition and the ultrasonic sensor should detect any human being or vehicle passes on the roadways under these conditions with a small delay and automatic turn on the street light with full brightness and as human being or vehicles go away from that location the street lights come back to low brightness mode. During daylight the LDR detects a full bright light due to this this circuit is in the disable state and no question of turning any of the street light during day time the microcontroller is programmed for the ultrasonic sensor which sense the object or human being and triggers the output relay to enable or disable the time based operation of the street lights.*

Keywords: Street Light.

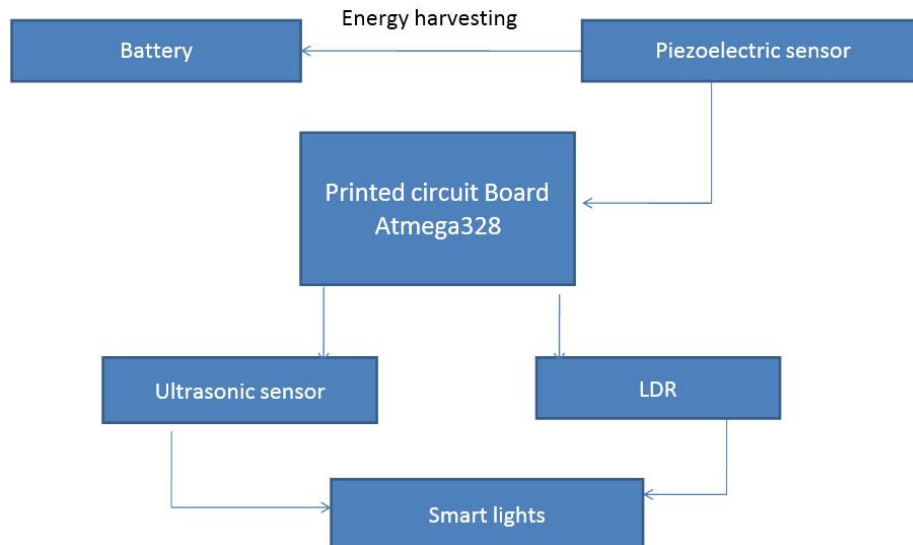
I. INTRODUCTION

Power generation is important aspect for the today's modern industrial and domestic automations there are so many different methods used to generate power and to run the street lights in this project we are using power generation method which uses piezo plate which are fixed on pedestrian path and with respect to the pressure created the voltage produced from piezo plates this power is stored in the battery and further utilize for the application of street lights using smart sensing method. The battery used here is a rechargeable LED does it battery which stores the energy and supply to the street lights.

II. COMPONENTS REQUIRED

1. Regulated power supply
2. Printed circuit board (PCB)
3. Lead acid rechargeable battery
4. Piezoelectric sensor
5. Ultrasonic sensor
6. Light dependent resistor
7. Relay
8. Transformer

III. BLOCK DIAGRAM



V. ADVANTAGES

1. Wireless communication
2. Energy saving
3. Reduction of light pollution
4. Reduction of man-power
5. Maintenance cost reduction
6. Automatic switching of street light

VI. APPLICATIONS

The applications of piezoelectric smart street light includes in streets lightening and also on roads & it also holds the application of the step potential production of energy.

- Step energy using solar
- Gardening
- Mainly used in roads

VII. CONCLUSION

Smart street lights empowered by piezoelectric sensor is designed and constructed in current work. The conclusion of the project is summarized as, using piezoelectric sensor it converts physical parameters (pressure, force, acceleration) into an electric charge. It reduces wastage of electricity. This can be employed in streets, Gardening. This project also offers new and advance idea to help the people by enabling continuous operation through light dependent resistor (LDR).

REFERENCES

- [1]. Eagle files: arduino-uno-Rev3-reference design.Zip (NOTE:works with Eagle 6.0 and newer) Note:The arduino reference design can use an atmega8,168,or 328,current models is identical ATmega328,but at ATmega8 is shown in the schematic for reference .