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Survey on Vehicle Movement Based Street Light

Lucky Gangwar, Farooq Husain, Mohd Azaz, Mohit Singh, Mubashshir

Department of Electronics and Communication Engineering, Moradabad Institute of Technology, Moradabad, India

E-mail: lucky.gangwar123@gmail.com, mjazaz786@gmail.com, fmohit2@gmail.com, mubashshirkhan028@gmail.com

Abstract

Street light-weight system that operates mechanically is not solely best, however, conjointly the intelligent system. This technique is set to work in automatic mode that regulates the road light-weight consistent with brightness and dimness formula and lightweight intensity. We are able to take the initiative to regulate street lights through computer monitor terminal. This street light-weight system conjointly includes a time cut-out perform, associated an automatic management pattern for even additional electricity preserving once vehicles move, the sunshine can activate mechanically, later put off. Nowadays, human has become too busy, and is unable to search out even to modify before the sun sets and that they are transitioned ensuing day morning once there is enough light-weight on the roads. Conjointly, the manual operation of the lighting system is totally eliminated.

Keywords*: Street light, lamps, light dependent resistor, energy saving*

INTRODUCTION

Basically, street lighting is one of the important parts of a city's infrastructure where the main function is to illuminate the city's streets during dark hours of the day. Previously, the number of streets in the town and city is very small. India faces major problem regarding electricity, i.e., its rate of generation of electricity is less than rate of consumption. Even small implementations can make large contributions on large scale. We know in this era of development more and more numbers of highways, expressways etc. thus, automation is needed to improvise the working of street lamps on

this ways. In the prior automation system, i.e., only using LDR the system could only reduce the manual switching, but power saving could not be handled. Since the lamp were switched on throughout the night. Lighting can account for 10–38% of the total energy bill in typical cities worldwide. Manual control is prone to errors and leads to energy wastages and manually dimming during mid night is impracticable. Also, dynamically tracking the light level is manually impracticable. The current trend is the introduction of automation and remote management solutions to control street lighting.

Working with the premise that public street lighting will and may be designed to fulfill the requirements of individuals of all ages, together with those with age-related vision loss, the analysis includes best management practices and lessons learned from cities, wherever, semiconductor diode street lighting has been put in. The report outlines general recommendations concerning street lighting, also as technical specifications for replacement semiconductor diode fixtures on existing luminaries poles. It provides direction on ways in which to exploit the extra advantages of semiconductor diode technology, like the utilization of management systems for dimming, dynamical color, emergency events, and, therefore, the use of accent color lights to be used in approach finding, place creating and event coming up with in business districts. It conjointly suggests ways in which within which cities will transcend street lighting to contemplate all public and personal outside lighting in a very comprehensive manner.

LITERATURE REVIEW

R. Husain proposed that LED lighting in the street light provides a greater amount of power consumption in comparison to high pressure sodium lamp due to its various advantages [1]. The system was designed for automatically turn OFF during the day time and automatically turn ON during the bad weather and night time.

M. Saad, *et al.* proposed that manual operation for the street light specifically lighting street light at a particular time of the day and switching them off at another specific time consumes to be wastage of a lot of electric energy [2]. The proposed paper uses two kinds of sensors, light sensors and photoelectric sensors. The light sensor will detect darkness to activate the ON/OFF switch, so the street light will be ready to turn on and the photoelectric sensor will detect movement to activate the street light. LDR varies according to the quantity of light falling on its surface. The LDR is controlled by microcontroller PIC16F877A.

G. W. Denardin proposed a control network for LED street lightning system [3]. LEDs

have higher lifetime and higher luminous efficiency and higher CRI, and hence re considered to be the promising solution to modern street light system. In the proposed control network, during the peak load time, street lighting system disconnects from the mains, and hence decreases its impact upon distributed power system automatically. Also, management cost is also reduced. In order to meet the system requirements, a wireless sensor network based on IEEE 802.15.4TM standard is employed.

Suganya, *et al.* proposed a system which uses LED lamps over high pressure sodium lamps, etc. [4]. This proposed system makes use of infrared photoelectric sensor (G123C3PA) for vehicle detection. It uses the microcontroller AT89S52. The IR diodes are placed on one side of the road and photodiodes are placed on the other side of the road, directly facing the IR diodes. When a vehicle obstructs the IR radiation path, IR radiation is blocked and it does not fall on the photodiode, which implies that photodiode does not conduct.

R. Priyasree proposed a system for reducing the power consumption of lightning and hence reducing the insufficient wastage of financial resources [5]. This is done by dimming the street lights during the less traffic hours. PIR sensors have been used for this purpose. The paper also discuss about reducing the fatal crashes and road accidents caused due to the consumption of alcohol. This is done by using skin sensors which are placed in vehicles doors and using breath sensors inside the vehicle [6]. Death rates during the driving in such a case can be reduced up to a great extent. One can also detect the amount of alcohol taken by the driver and if it exceeds certain level, the driver will not be allowed to enter into the vehicle [7–11].

Table 1: *Comparison of Different Techniques used in the Papers.*

Papers	Components and Techniques	Merits	Demerits
Solar Lighting System	Solar Panel, Passive Solar Technology	Operation cost is minimum Less maintenance Non polluting source	Initial investment is higher. Cost of equipment is high. Climatic conditions may reduce the performance.
Gsm based Street Lighting System	Gsm Modem, Control-Circuitry Devices, Client Server Mechanism	Low cost Easy deployment Highly scalable	No appropriate communication protocol. Not defined in semantic point of view.
Street Light Control System With Single Chip Microcomputer	Photo Resistor and Fixed Resistor, Photosensitive Technique	Compact in structure. Low cost	Maintenance must be done regularly.
Wireless Self Localizing System	Wireless Retrofitting of Lamps	Installation flexibility, lower cost	Limited coverage.
Zigbee based System	Zigbee Communication Protocol	Reduce the manual work, Saves more energy	Complexity in design.

CONCLUSION

The project work has been studied and implemented a complete working model using a PIC microcontroller. The main advantage of the present system is power saving. It requires the initial cost only for designing and installation and not for utilization. Hence, such systems are very much useful for the government to reduce the utilization of conventional power (generated by hydraulic power stations). Therefore, such systems are once implemented on a large scale can bring significant reduction of the power consumption caused by street lights. This initiative will help the government to save this energy and meet the domestic and industrial needs. The other advantages of the circuit are that it is simple circuit, avoids constant supervision of time and flexibility in design.

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