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An Iot Based Modern Street Light System for Energy Efficient and Energy Auditing with Fault Identification System

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***Abstract*- Today's modern world people preferred to live the sophisticated life with all facilities. The science and technological developments are growing rapidly to meet the above requirements. With advanced innovations, Internet of Things (IoT) plays a major role to automate different areas like health monitoring, traffic management, agricultural irrigation, street lights, class rooms, etc., Currently we use manual system to operate the street lights, this leads to the enormous energy waste in all over the world and it should be changed. In this survey we studied about, how IoT is used to develop the street lights in the smart way for our modern era. It is an important fact to solvethe energy crises and also to develop the street lights to the entire world. In addition, with the study on Smart Street lighting systems we analysed and described different sensors and components which are used in Iot environment. All the components of this survey are frequently used and very modest but effective to make the unswerving intelligence systems.**

***Keywords*- islanding detection; distributed generation; integrated power distribution network; non-detection zone; islanding detection method.**

I. INTRODUCTION

This system is focused on the applications of auto streetlight for transportation facilities using electrical energy. Power has been a critical part of our lives from the time it was developed in the country. Power is characterized as a set of physical wonder connected with the stream of charge.Aswe all know, street lights are one of the main city's assets that provide safe roads and enhanced security in homes as well as city centres.

There are many alternate methods by which electricity can be generated. In the past few decades, there were few streets in a town or city, street lamps and management control was relatively simple, but as the country developed into a well-off society, and with urbanization, the number of streets in the town increased rapidly. So the control and management of street lights became a problem.

At present, street lamps are under manual control, a control switch set in each of the street lamps, it is also called as the first generation of the original street light control, which is inefficient and a waste of manpower. A huge amount of electrical energy is wasted. The highly discussed topic in the present situation in Science and Technology is "Energy conservation and reduction ofthe work force". The existing prototypes should be improvised in the manner of low power consumption, which is a major priority. Especially in developing countries like India. In rural areas vehicle movement is less so the need for full intensity street light is less.

II. BLOCK DIAGRAM

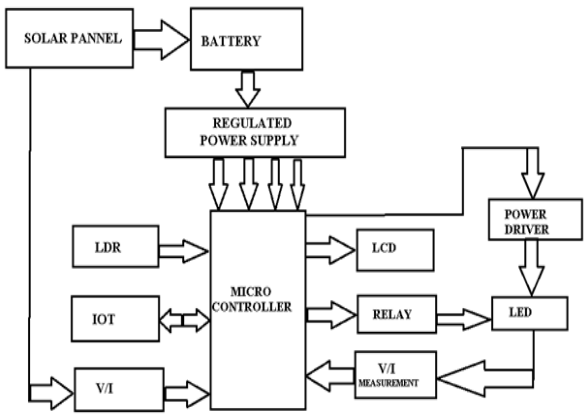

Fig 1. Block Diagram

III. EXISTING SYSTEM

Another form of streetlight is a low-power lamp that illuminates a street sign. Most streetlights are powered

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from high-voltage AC mains. Streetlights can be in the 25–250 W power range, with 100 W being common. In some cases the LEDs are required to be isolated from the AC mains, for safety reasons.

New street lighting technologies, such as led emit a white light that provides high levels of scotopic lumens allowing street lights with lower wattages and lower photopic lumens to replace existing street lights.

However, there have been no formal specifications written around Photopic/Scotopic adjustments for different types of light sources, causing many municipalities and street departments to hold back on implementation of these new technologies until the standards are updated.

IV. PROPOSED SYSTEM

Powering street lights completely using solar energy by connecting the lights to photovoltaic (PV) panels, which are accompanied by a set of batteries and a charge controller in order to store energy at day time, and provide it back for lighting the streets during night-time.

These street lights are not connected to the electrical power grid: the solar light will produce its own energy from the sun (photo voltaic panel) and store the energy in a battery until the light turns on once it is dark enough. There are a few different ways that solar lighting can be used off grid.

If there any fault occurs at the street light then it is IOT will update the fault status to the server and also the power consumption details of the battery details are also measured and updated over the server.

V. HARDWARE MODULE

1. Battery:
A lead-acid storage battery is an electrochemical device that produces voltage and delivers electrical current. The battery is the primary "source" of electrical energy used in vehicles today. It's important to remember that a battery does not store electricity, but rather it stores a series of chemicals, and through a chemical process electricity is produced. Basically, two differently types of lead in an acid mixture react to produce an electrical pressure called voltage. This electrochemical reaction changes chemical energy to electrical energy and is the basis for all automotive batteries.

2. Capacitor:
The capacitor is a component which has the ability or “capacity” to store energy in the form of an electrical charge producing a potential difference (Static Voltage) across its plates, much like a small rechargeable battery. There are many different kinds of capacitors available from very small capacitor beads used in resonance circuits to large power factor correction capacitors, but they all do the same thing, they store charge.

3. LCD:
LCD is a type of display used in digital watches and many portable computers. LCD displays utilize to sheets of polarizing material with a liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them.

LCD technology has advanced very rapidly since its initial inception over a decade ago for use in lap top computers. Technical achievements has resulted in brighter displace, higher resolutions, reduce response times and cheaper manufacturing process.

VI. SOFTWARE MODULE

1. Embedded:
Embedded C is one of the most popular and most commonly used Programming Languages in the development of Embedded Systems. So, in this article, we will see some of the Basics of Embedded C Program and the Programming Structure of Embedded C.Embedded C is perhaps the most popular languages among Embedded Programmers for programming Embedded Systems

2. Embedded System:
An Embedded System can be best described as a system which has both the hardware and software and is designed to do a specific task. A good example for an Embedded System, which many households have, is a Washing Machine. We use washing machines almost daily but wouldn’t get the idea that it is an embedded system consisting of a Processor (and other hardware as well) and software.

VII. CONCLUSION

Nowadays resources (water, power, air) are very precious. This work focused to protect one such resource ie.Energy. Electricity is one of the major losses of energy. Using IOT the street lights ON/OFF is automated based on the weather condition, the working status of the street light is observed. The LDR sensor senses the environmental changes, the ON/OFF of the street lights is made automatically.

REFERENCES

[1] Mr. Amey J. Manekar, Dr. R. V. Kshirsagar Implementation of Automatic Street Light Optimization International Journal of Advanced Design 99 and Controller for Energy FPGA", Using Research in Computer and Communication Engineering Vol. 5, Issue 6, June 2016.

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[2] Chaitanya Paridhi Holani, Rahul Kaul "GSM Based Autonomous Street Illumination Amin, Ashutosh Nerkar, Efficient System Management" International Journal of Engineering Trends and Technology- Volume 4 Issuel- 2013. for Power.
[3] Abdul Latif Saleem, Raja Sagar R, Sachin Datta N S, Sachin H S,Usha M "Street Light Monitoring and Control System" International Journal of Engineering and Techniques Volume 1 Issue2, Mar - Apr 2015.
[4] K. Y. Rajput, Gargeyee Khatav, Monica Pujari, Priyanka Yadav" Intelligent Street Lighting System Using Gsm" International Journal of Engineering Science Invention Volume 2 Issue 3, March, 2013.
[5] V.Sumathi, B.Tarun Kumar "Arm Based Street S A.Krishna Sandeep, Lighting System with Fault Detection" International Journal of Engineering and Technology- Vol 5 No 5 Oct-Nov 2013.

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