



# Renewable Energies, Lamps and Communication Technologies: A Review

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**Abstract:** Now a days the use of electricity is a measure issue in an India. Where the wastage of light observed highly in street lighting area. Street light system performs an important role for providing security at night times, for avoiding accidents during night time and also for avoiding many other problems. The street light can be controlled manually but this method is very costly and difficult to monitor, it involves high power consumption and this system is time consuming. So to avoid this problem we can automatically monitor street lighting system by using GSM. The problem of power consumption can be minimized by using renewable energy source instead of using conventional source. Renewable energy causes energy saving and system is ecofriendly. By using renewable energy sources many problems can be solved. In this paper we make a review on renewable sources, lampposts and communication technologies.

**Keywords:** Renewable energy source, street lights, communication technology.

## I. INTRODUCTION

In previous systems numbers of street lamps are less but with development of urbanization the numbers of streets increase rapidly. There are some factors needs to be considered during designing of good street lighting system. When considering the effects of technical system on the environment energy is the most important parameter. The traditional street light system is not much effective system it includes disadvantages like high power consumption, high cost and more manual work.

The above problems can be minimized by using various methodologies as:

- Use renewable energy source instead of using conventional power sources.
- Use LED lighting technology which gives energy efficiency, ecofriendly environment.
- Remote control system- In this LED lamp will be ON/OFF manually.

Lighting control is one of the important parameter in intelligent buildings. The invention of LED lighting device consumes half of energy than fluorescent lighting device. Solar powered street lighting system is proposed in order to reduce burning of fossil fuels, to generate electricity, to reduce air pollution. For this purpose we introduce renewable energy source based street lighting system.

## II. LITURATURE REVIEW

The paper [1] is based on remote control. They use master and slave boards. Master board is placed in electrical panels and slave board is place on each lamppost which are used to turn ON/OFF the lamppost which causes

power consumption. Finally this project achieved 28-32% power consumption with just a 3-5% illumination reduction. In paper [2] they use zigbee based wireless technology which allow more efficient street lighting system. It uses many sensors for controlling the system. Zigbee is used to transfer information in point-by-point manner. This system is mainly appropriate for street lighting in remote urban and rural areas where the traffic low.

Paper [3] introduces new technologies which offers easy maintenance and energy saving. Here in this paper they used conventional source. The [4] paper is based on zigbee technology which effective management. Here 20-22% power reduction is possible. GSM based Automatic Street light control system which depends on light intensity and traffic density introduced in paper [5]. This project is cost effective and the general purpose of project is reduction of crime. Paper [6] is completely based on different sensors, lamps and different publications. It satisfies the problems faced by common street lighting system. This paper deals with survey on experimental part of research. The comparison of zigbee with other technologies is given in paper [7]. This system can be elongate, modifiable and adaptive new technologies.

The paper [8] is a review on comparative study on various wireless technologies which are used to build different smart networks. The contents of paper [9] are policies of India about renewable energy sources. There are various renewable energy sources introduced in this paper such as hydroelectricity, geothermal, biomass, solar, wind.



**III. COMPARATIVE STUDY OF LAMPS**

There are different types of lamps. Lamps are necessary for lighting in home, society, buildings, hospitals, for

street lighting etc. Following tables gives information about different lamps and describes how they are different from each other.

Table 1. Comparison of various lamps:

Sr. No.	Lamp	Days	Efficacy(lumens/watt)	Characteristics
1.	Incandescent	42-208	11-15	Extremely ineffective & short life time
2.	Mercury Vapour	500-1000	13-48	Very ineffective, UV emission& contains mercury
3.	Metal Halide	417-625	60-100	High maintenance, UV emission contains mercury and lead, danger of blasting at end of life
4.	High pressure Sodium	500-1000	45-130	Contain mercury & lead
5.	Low Pressure Sodium	417-750	80-180	Contain mercury & lead
6.	Fluorescent	417-833	60-100	UV emission and contains mercury & diffused non-directional light
7.	Compact Florescent	500-833	50-72	Short life, dimmer in cold weather & contains mercury
8.	Induction	2500-4167	70-90	High initial cost, limited directionality
9.	LED	2083-4167	70-150	High initial cost

**IV. COMPARATIVE STUDY OF RENEWABLE ENERGY SOURCES**

Energy is mainstay of technology and economic development. India can fulfill all energy needs with

renewable energy sources. Renewable energy is the energy which is regenerated by using natural sources such as water, sun, wind, etc. Hydroelectricity, geothermal, biomass, solar and wind energy are the various types of renewable energy sources.

Table 2. Comparison of different renewable energies:

Sr. No	Parameter	Hydropower	Geothermal	Biomass	Solar	Wind
1.	Installation cost	High	High	Low	Moderate	Moderate
2.	Location	Not suitable in many location due to lack of resources	Suitable to particular regions	Rural/village areas	Installed on rooftops	Installed in open and spacious area
3.	Source	Water	Underground heat	Cow dung, Organic components	Sun	Wind
4.	Impact on ecosystem	More	More	Less	Less	Less
5.	Problems	In colder climate freezing of pipes	May release harmful gases	May release harmful gases	Absence of sunlight	Direction and pressure of air
6.	Pollution	No	Yes	Yes	No	No
7.	Maintenance	High	High	High	Low	Low

**V. COMMUNICATIONTECHNOLOGIES**

There are different types of communication technologies used for wireless communication such as Bluetooth, Wi-Fi, Zigbee, GSM etc.

Table 3. Comparison of various communication technologies:

Parameter	Bluetooth	Wi-Fi	Zigbee	GSM
Range	10m	100m	100m	0.5k



				m to 35km
Data rate	1 Mbps	11-50 Mbps	2040250 kbps	270 kbps
Frequency	2.4GHz	2.4 to 5GHz	2.4GHz	900M Hz band
Power consumption	medium	high	Verylow	low
Complexity	High	high	low	low
Battery life	1 to 7days	1 to 5days	100 to 1000days	More than zigbee
Cost	Low	Medium	Low	High
IEEE standard	802.15.01	802.11bgn	802.15.04	2G

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**CONCLUSION**

The continuous increase in use of nonrenewable energies has created problems of demand and supply. Because of this the future of non renewable energies becoming uncertain. Energy is mainstay of technology and economic development. Energy problem is global problem. It is not possible for government to do everything to solve this problem. So we have to try individually with co-operative manner.

We introduce solar and wind energy together in our project. To reduce power consumption we will use LED lamp. Out of various communication technologies we select GSM technology because it has long range as compared to other.

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