

CHAPTER-1

INTRODUCTION

Street lights are the raised source of light on the edge of a road or walkway, which are switched ON in the evenings near the sunset time to provide the lighting for the passer's by. Major advantages of street lighting includes: Prevention of accidents and increase in safety. Studies have shown that darkness results in a large number of crashes and fatalities, especially those involving pedestrians. Sometimes they are also use to provide security to keep the nefarious activities at bay. They consume 20% of the total power and also it will contain many hurdles in the maintenance such as switching on and off daily at particular times, detection of over load and cost factor is also very high.

Automation, Power consumption and Cost Effectiveness are the important considerations in the present field of electronics and electrical related technologies. To control and maintain complex street lighting system more economically, various street light control systems are developed. These systems are developed to control and reduce energy consumption of a town's public lighting system using different technologies. They may include sending and receiving instructions via separate data networks, at high frequency over the top of the low voltage supply or wireless. Various protocols have been developed as well as compatible hardware for most types of lighting.

In the existing system by making small changes there are many possibilities to develop street light system according to our present day life without wasting time, power and money too. By adding automated and remote control system, based on time, which will automatically switch on and off the lights at particular predefined time and gives the information to the base station regarding the overload condition using the recent technologies GSM, by which we can provide simplified management and maintenance issues.

The scope of this work is to design and develop an android based distributed intelligent street light controller for switching ON and OFF street lights such that it provides services with ease and optimum energy utilization.

A general overview of the project is as explained below:

- SLC (Street Light Controller) is installed at the Feeder Pillar.
- SLC switches ON the moment the Main supply is present.
- SLC self-detects the Mode that it needs to work on, by default.
- The modes in which this project operates are:
 1. **Astro Mode (AM)** - Predefined Day and Night Modes based on Location.
 2. **Energy Saver Mode (ESM)** – The intensity of the load controlled by dropping the voltage using preset.
 3. **Staggering and energy saving Mode (SESM)** – The intensity of the load controlled and alternate lights are switched ON.
 4. **Remote Communication Mode (RCM)** – Controlled through a GSM mobile Phone.
- SLC continuously monitors the number of phases present.
- SLC continuously monitors the line faults like over voltage and over current.
- SLC trips off and saves the lamp in case of any fault detected.
- SLC can send SMS in case of over load.

The proposal here is to device and design an automatic Street Light Controller which is controlled by using a microcontroller in which all timing related details are fed and then the control signals are passed to a microcontroller based board which in-turn controls the various lights. This project includes controlling of lights through android phone in which the android application for device control code will be running. The Street lights are made to switch ON/OFF at specific timings using the RTC installed in the controller board. The voltage monitoring circuitry monitors the voltage between the poles and informs whether the supply to the bulbs is correct or not. The current status of the Controller and the street lights can be checked and mode is displayed on LCD.