

CHAPTER ONE

1 INTRODUCTION

Until now, people around the globe depend on fossil fuels for their energy needs. Fossil fuels are limited in amount, expensive and polluting the environment. Therefore, a lot of research and developments have been proposed to solve those serious problems. One of the ways is to utilize renewable energy resources. Such resources are free of cost and also available in abundance. For our region solar energy is the most ample, direct and clean form of renewable energy especially in the united Arab emirate. Total solar energy absorbed by the Earth is about 3,850,000 extra joules (EJ) in one year, which is even twice as much as all the non-renewable resources on the earth found and used by human being, including coal, oil, natural gas, and uranium. Taking this idea into consideration, we are designing a solar powered LED street lights with mobile application for FPA campus. This technique utilizes energy-saving technology to reduce energy consumption, and hence improve utilization of solar energy available to us. Maintenances of public lighting system can be a hassle without proper monitoring system. In this project we are incorporating an all in one light monitoring system, which has motion sensor and dimming function.

The main consideration in the present field technologies are Automation, Power consumption and cost effectiveness. Providing street lighting is one of the most important and expensive responsibilities of a city. Energy efficient technologies and design mechanism can reduce cost of the street lighting drastically. There are various numbers of control strategy and methods in controlling the street light system to ensure that it consumes less energy and is efficient in terms of money and usage.

1.1 AIM AND OBJECTIVE

The main objective of this project is to provide a better solution to minimize the electrical wastage in operating street lights, in this electronic era human restless. Manual control is prone to errors and leads to energy wastages and manually dimming during mid night is impracticable. A rapid advancement in embedded systems had paved path for the virtual mechanisms based on micro-controllers. This paper presents an automatic street light controller using light dependent resistor(LDR) which is also known as photo resistor made cadmium sulfide, a 8052 microcontroller which is programmed using C language to act as a pulse width modulator. The circuit also consists of a charging circuit and a measurement of the solar cell is done using a microcontroller of PIC16F8 family. The light intensity is monitored using an LDR sensor, the voltage by voltage divider principle, the current by current sensor and the temperature by temperature sensor. All these data are displayed on a 16X2 LCD interfaced to the PIC microcontroller.

1.2 STATEMENT OF PROBLEM

The idea of designing a new system for the streetlight that do not consume huge amount of

electricity and illuminate large areas with the highest intensity of light is concerning each engineer working in this field. Inefficient lighting wastes significant financial resources every year, and poor lighting creates unsafe conditions. Energy efficient technologies and design mechanism can reduce cost of the street lighting drastically.