

FINAL YEAR PROJECT REPORT

(Energy optimization by using sensing network)



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Abstract

In our project we will optimize the energy by using a number of sensors. Every sensor has a specific function to control the electric appliances. Each sensor generates the signal and sends it to the relays and magnetic contactors which is directly control the electric appliance .this automation is control by a microcontroller circuit which connected to the computer by serial communication. In computer we can control all the system by using excels datasheet which is communicated with microcontroller. When system is activated by this technique we can control all the appliances instantly, as a change made in excel timetable. By this automation we can save a significant amount of energy and a lot of money.

Dedication

To our beloved parents, who give us strength to seek knowledge.

Acknowledgements

First of all we are very thankful to ALMIGHTY ALLAH who has given us enough courage to complete this project.

We would like to express our gratitude to the University of Management and technology for letting us to be a part of it for 4 years and the facility and their keen support provided for the project.

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Chapter I. Introduction

1.1 Background

Due to rising demand and a failing power infrastructure severe electricity shortages have occurred in Pakistan. This has led to widespread rolling blackouts that have paralyzed industry and led to protests and rioting. Power outages can last 6–8 hours a day in the cities and many more in the rural areas. According to Mahnaz Parach of Network for Consumer Protection "Children can't do their homework. Housework doesn't get done, as washing machines and other appliances cannot work. When you go home from work, you have no idea whether there will be electricity at home. Your whole life is disturbed.

1.2 Purpose

Energy conservation has been an area in which a lot of focus is required. Pakistan has been suffering from an energy crisis for about half a decade now. The power crisis is proving to be unbearable.

The purpose of this project is to efficiently utilize the energy resources. We focused on the usage of electricity in our own institute. We performed calculation several times and came to know that 30.42 Kilowatts of energy is wasted yearly. Students and teachers while leaving the class rooms or offices forget to switch off the lights, fans and other electrical appliances. In this period a considerable amount of energy is wasted. So we decided to do an automation project to control the wastage of energy.

1.3 Introduction

When a person enters a class room or in office all appliances are automatically switched on by detection of the person and after that when he leaves the class room all devices are automatically switched off. This whole system is controlled by a computer using control circuit of microcontroller. We controlled all devices by using microcontroller which is programmed using BASIC language. We use serial communication of PC to PIC controller in which we send data from excel data sheet to the microcontroller. We have programmed in our computer in such a way that if any changes occur in excel data sheet or timetable in excel sheet in runtime it does not affect the program of microcontroller. Serial communication from excel sheet timetable

provide us an enable bit, it means that all appliances are operated only in a relevant time table which is provided by excel data sheet.

1.3.1 Extra Feature

In any case if system fails or any problem occurs in system there is a panel of INFRARED (IR) receiver installed in it, using a remote control we can manually switch on or off the appliances.

1.4 Applications

you can use this project for the automation of your home, university, college, offices, industries or anywhere and saves the thousands watts of energy.