**Final Project II**

# Green House Effect

## Batch 11

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we would like to conclude by saying that all errors, omissions and short-comings of this project lie on our responsibility and we hope that we are forgiven for this.

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# Abstract of project

This is an automatated green house that is totally self operative unlike the traditional green houses.

The idea of this autonomous green house is to provide such feasible conditions for a better growth of plant as are scientifically proved for optimum results. Autonomous green house includes an automatic temperature controlled system to control temperature to desired set point. The self cleaning feature will clean the green house from inside (i.e. water vapors, dust particles on the glass).Cleaning improves efficiency and provides maximum energy utilization.

The automated sprinkling of water is yet another very salient features of this a state-of - the art green house. This system is pre programmed for water showering, as per the plant requirements minimizing the usage of human resources.

In this project we are designing aqua flora caring green house. In this system we have controlled the temperature in the green house using LM35 temperature sensor, fans and heater. Which will be multiplexed using a multiplexer and will be convert to digital form using ADC.the working of the whole system will be controlled by 89s52 microcontroller.

The light in the green house will be controlled by the placement of light sensors and a plane of light. Automatic watering and automatic cleaning will be done using motors which are operated by 12V relays which in turn are controlled by diode clump and microcontroller.

For the display and input of temperature, light, automatic watering, automatic cleaning, and to set the desired value of temperature key pad and a 4*16 LCD will be used

# Dedication

I dedicate my efforts to my parents who tough me the first word to speak, first alphabet to write, the first step to take and under whose feet my heaven lays. Then we dedicate our project to our respected teachers who have always been source of inspiration and motivation for us.

# Chapter 1

## Introduction to Green House

### 1.1 Green House

A greenhouse is a structure with a glass or plastic roof that is heated with solar radiation, such that it can stay warm even during cold days of winter

### 1.2 What is a Green House?

A green house is made up of glass. It takes solar energy form the sun and converts it into thermal energy. You can easily observe this happening in your day to day life. On a hot sunny day, when you park your car in sunlight with the windows rolled up. The solar energy passes through the window and heats up the inner atmosphere of your car. As a result, everything in the car becomes warm. This happens because the infra red rays are of a shorter wavelength before they touch the window.

As they pass through the glass, they become of a longer wavelength. Infra red rays of a longer wave length cannot escape. As a result they get absorbed by the objects surrounding them. This is how a green house creates an ideal setting to grow plants. Plants get enough energy and sun light to absorb and grow.

Fig 1.1 the basic structure of green house

The incoming solar radiation from the sun warms plants, soil, and other things inside the building. Air warmed by the heat from hot interior surfaces is retained in the building by the roof and wall.

## 1.3 The History of Greenhouses

Greenhouses have come a long way since the wealthy Europeans and Americans used them to grow oranges and pineapples in glass structures known as orangeries and pineries. These structures became status symbols as well as a practical way to grow fruits, vegetables and exotic plants. One of the earliest known greenhouses was built around 30 A.D. for the Roman emperor Tiberius. Remember glass had not been invented so the "Specularium" was painstakingly fabricated from tiny translucent sheets of mica. All this was done to satisfy Tiberius's cravings for cucumbers out of season. It wasn't until 1599 that the first practical greenhouse was designed by Jules Charles a French botanist. It was built in (where else) Leiden Holland and used primarily to grow medicinal tropical plants. One of the favorite plants of the day came from the Tamarind (an Indian date) whose fruit was made into a curative drink.The idea caught on and greenhouses began spreading throughout Europe. The French, who had a love of a new fruit, the orange, began building orangeries to protect the trees from frost. These structures were cumbersome. One structure built by Soloman de Caus in 1619 in Heidelburg which held 340 orange trees. It had a removable roof that had to be painstakingly put up and taken down during the frost season.

Experimenting with angled glass walls and heating flues to improve the efficiency of greenhouses went on throughout the 17th century. New technologies and improved glass led to larger and more elaborate structures that housed plants simply to please the eyes and palates of the European aristocracy. The palace of Versailles was an example of the elaborate efforts of the royalty to build bigger and more spectacular orangeries. The Versailles orangery was more than 500 feet long, 42 feet wide, and 45 feet high. It had a southern exposure for light and heat. Despite the elaborateness of these structures, it was the Victorian age in England that ushered in the golden era of the greenhouse. By the end of the mid nineteenth century glass was plentiful and the prohibitive taxes were repealed. The wealthy began competing with each other to build the most elaborate greenhouse, again primarily just to grow citrus fruits and rare flowers. Little thought was given to using the greenhouse for a complete range of food production. The soaring conservatory at Kew Gardens in England is a prime example of the Victorian greenhouse. There is a replica in San Fransisco's Golden Gate Park called the Conservatory of Flowers.

In America the first greenhouse on record was built around 1737 by Andrew Faneuil, a wealthy Boston merchant. Like his European predecessors, Faneuil used it primarily to grow fruit. The concept spread slowly, since almost all greenhouses were built for the wealthy. George Washington, perhaps the richest man in America, craved pineapples and ordered a pinery built at Mt. Vernon so he could serve pineapples to his guests. By 1825, greenhouses were becoming increasingly common. Many of the

greenhouses were heated by furnace warmed air; some were pit greenhouses built into the earth and heated largely by south facing windows. This is a design that remains highly practical today.

Indeed the modern concept of the greenhouse is simple and practical. No longer is it the private domain of the monied class but something anyone interested in gardening can have for relatively little cost. Today a greenhouse can go virtually anywhere there is space; it can be attached to a house, placed in a backyard or perched on a deck, roof or balcony. In addition greenhouses are becoming more automated, reducing the time and care owners much spend. With new materials available today such as aluminum, PVC piping, fiberglass, acrylic, and polycarbonate panels as well as pressure treated wood ensures the consumer that their greenhouse will stand the test of time. Long gone are the days of shattered glass and overheated/under heated greenhouses.

## 1.4 Advantages of Automatic Green House

There are many advantages of automatic green house and some of them are explained below.

### 1.4.1 Excellent Output

This project is mainly related to the agriculture (gardening & cultivation) and gives a much better output to this industry as compared to presently occurring green houses.

### 1.4.2 Easy Handling

The best feature is the automated running of the entire system which will enable a single person to look after large number of green houses on commercial scale.

### 1.4.3 Operational in all Weather Condition

The modern electrical heating system makes it possible to get a green house that is operational in all weather & temperature conditions.

### 1.4.5 Less Maintance Required for Plants

As the plants and vegetation in the green house are protected as compared to the outer plant so they are less infected by insects and other plants diseases

### 1.4.6 Accurate Watering

Plants are given the accurate amount of water .that makes them healthy and so to produce more and healthy fruit