



K. E. Society's
Rajarambapu Institute of Technology, Rajaramnagar
An Autonomous Institute, Affiliated to Shivaji University, Kolhapur.
Department of Electrical Engineering

SYNOPSIS OF CAPSTONE PROJECT 2021-22

Class : Third Year B. Tech. (Electrical Engineering) Semester VII

Course & Course Code : EE3582 Capstone Project Phase- I

Project Group Students : 1. Shreyas Ranjit Patil (Enroll No: 1908057)
2. Aditya Arvind Desai (Enroll No: 1908058)
3. Aishwarya Ashok Nagargoje (Enroll No: 2058003)
4. Devika Sachin Desai (Enroll No: 2058010)

Name of the Supervisor : Prof. Rajanikant Metri
Department of Electrical Engineering
Rajarambapu Institute of Technology, Rajaramnagar.

Is Project Sponsored : Yes

Sponsored Company : Tulip Farms, RIT Rajaramnagar, Islampur.

Proposed Project Title :

Automated irrigation system to provide solution for efficient use of
water and electricity.

Introduction and Motivation:

India's ground water levels are critically low and present irrigation systems are poor in efficient water and energy management. So there is definite need of developing the efficient system for irrigation of water.

Our project is a fully automated irrigation system that highlights the optimum solution for the efficient use of water and electricity for agricultural purposes. The existing systems come up with two solutions, one is timer-based and another one is moisture-based. The time-based system has demerits like being semiautomated i.e. timer needs to be changed manually according to climate. Similarly, in moisture-based systems, reliability is the issue. So our main objectives are to overcome the demerits of the present systems, to develop a fully automated irrigation system, to manage the use of water, electricity, and to add a remote controlling system. Our idea includes the integration of moisture and timer-based system which provides the optimum efficiency of water and the use of solenoidal valve and siphon technology decreases the use of electricity while our future idea is to prepare a smartphone application that gives us the advantage to continuous monitoring over the system and provides control over irrigation from anywhere.

Literature Review:

1) Mehamed Ahmed Abdurrahman (2015) Sensor Based Automatic Irrigation Management System : International Journal of Computer and Information Technology (IJCIT)

In the present review, an attempt has made to make an automatic irrigation system using PIC 16F877A, moisture sensor and induction valve. The sensors are used to measure the moisture level of an soil and control the valve according to the level of moisture.

2) Bishnu Deo Kumar, Prachi Shrivasthav, Reetika Agrawal and Vanya Tiwari (2017) Microcontroller based automatic plant irrigation system : International Research Journal of Engineering and Technology (IRJET) :

In the present review, an attempt has been made to provide Information about the automated irrigation system using microcontroller (ATMEGA 328). The efforts are made to provide continuous readings of the temperature of atmosphere along with humidity content of soil with an Auto mated control over irrigation based on ATMEGA 328 and GSM module.

3)Raja. G, Abhiraj. R, Arunkrishnan, Febin Malik, Jesu Jorof Divin. J and Rajarathinum (2018) Smart Polyhouse Farming Using Iot Enviroment: International Journal Of Trend in Scientific Reasearch and Development (IJTSRV)

In this paper some essential sensors, Relay and Power supplies used in polyhouse are discussed in brief. The sensors which have been discussed are Temperature, Humidity, Moisture and ultrasonic sensors. By implementing automation inside the polyhouse all things are monitoresd through mobile.

Objectives of the Project:

To develop an automated irrigation system for efficient management of water and electricity.

To analyze the data by comparing it with the present system.

To integrate moisture sensor based system with timer based system.

Proposed Work:

Phase I- Literature Survey :

In this phase, a literature survey will be carried out by referring to earlier research works published in the reputed international journals.

Phase II – Theoretical study :

In this phase, the information about current technologies their merits and demerits are gathered . The most appropriate microcontroller and compatible sensors are selected. The programming skills for particular microcontroller are developed.

Phase III – Design and Instrumentation :

Making a virtual model of proposed system takes place here. After successful completion of the simulation practice assembly will be executed.

Phase IV – Testing, Results, and Analysis :

After the completion of the model testing for various condition will take place. The proper irrigation timing for each type of vegetable will be calculated. The changes are made into program such that we can get the water and electricity to match the optimum requirement.

Phase V – Comparison and Correlation.

After successful completion of our project our system will be compared against various present systems . Our results will correlated and final judgement will be made on whether the system is optimum or not.

Project Plan:

SN	Task	Academic Year 2022-23											
		Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
1	Literature Survey												
2	Theoretical Study												
3	Design and Development												
4	Experimental setup preparation												
5	Testing & Measurement												
6	Analysis and verification												
7	Presentation												
9	Report writing												

Expected date for completion of work: - December 2022.

Facilities available:

The following facilities to carry out project work are available at Rajarambapu Institute of Technology, Rajaramnagar.

1. Instruments
2. Central and Departmental Library
3. Digital library.
4. Workshop facility.
5. Testbench For Experiment.

Approx. Expend. : - INR 15,000/-

Date: 04 – 05 -2022

Place: Rajaramnagar. (Sakharale)

Students:

Sign:

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Prof. Rajanikant Metri
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Dr. V. N. Kalkhambkar
Head,
Electrical Engg. Department

Selected References:-

- [1] Mehamed Ahmed Abdurrahman (2015) Sensor Based Automatic Irrigation Management System : International Journal of Computer and Information Technology (IJCIT) , Vol. 04, Issue. 03, pp. 05-15
- [2] Bishnu Deo Kumar, Prachi Shrivasthav, Reetika Agrawal and Vanya Tiwari (2017), Microcontroller based automatic plant irrigation system : International Research Journal of Engineering and Technology (IRJET), Vol. 04, Issue. 05, pp. 05-17
- [3] Raja. G, Abhiraj. R, Arunkrishnan, Febin Malik, Jesu Jorof Divin. J and Rajarathinum (2018), Smart Polyhouse Farming Using Iot Enviroment: International Journal Of Trend in Scientific Reasearch and Development (IJTSRV) , Vol. 02, Issue. 03, pp. 03-18
- [4] R.Nageswara Rao,B.Sridhar(2018)IOT Based Crop Filed Monitoring And Automation Irrigation System: second international coferance on inventive system and control(ICISC)This system is used for controlling and monitoring of crop field and this research paper describe the block diagram of IOT based automatic crop field monitoring.
- [5] G.K.Banerjee,Rahul Singhal(2010)Microcontroller based polyhouse automation controller :International symposium on electronic system design.
In this research paper they discussed that how to control the temperature and relative humidity inside polyhouse using microcontroller.