K.RAMAKRISHNAN COLLEGE OF ENGINEERING

(Autonomous)

Accredited by NAAC with - 'A' Grade, NBA Accreditation of EEE

DEPARTMENT OF ELRCTRICAL AND ELECTRONICS ENGINEERING

BATCH NO : 10

PLC Based Automatic Irrigation System

UNDER THE GUIDANCE OF

Dr.R.ILANGO , M.Tech., Ph.D.,

Professor

Electrical and Electronics Engineering

K.Ramakrishnan College of Engineering,

An Autonomous Institution

Samayapuram, Tiruchirappalli – 621 112

PLC Based Automatic Irrigation System

PRESENTED BY

BHARATHI A - EE2111

DHIVAKAR S - EE2113

GOKULRAJ M - EE2114

LINGANATHAN M - EE2123

Department of Electrical and Electronics Engineering

Third Year / 6th Semester

K.RAMAKRISHNAN COLLEGE OF ENGINEERING

(Autonomous)

PROJECT TITLE JUSTIFICATION

=> The technology is fully automated,
which reduces the need for manual work .

=> It enables the farmer to easily increase their operations.

ABSTRACT

=> Watering crops, lawns, and gardens with an autonomous sprinkler irrigation system based on PLCs is very effective and dependable.

=> The PLC-based system is simple to set up and manage, and it can be modified to match the unique requirements of various crops and soil types.

OBJECTIVE

=> The objective of the project is the use of Automatic Irrigation we can save more water.

=> It Increase our economy with increase in production of crops and reduction in man power.

=>It can be easily modify the programs for our specific requirements.

METHODOLOGY

=> Choose the right parts to build an automatic irrigation system based on a PLC that satisfies the indicated watering needs.

=> Assemble the parts in accordance with the system design, making sure that all connections are safe and correctly set up.

=> Based on PLC program that the irrigation system will be controlled , modifying watering schedules and amounts as necessary to maintain ideal soil moisture levels.

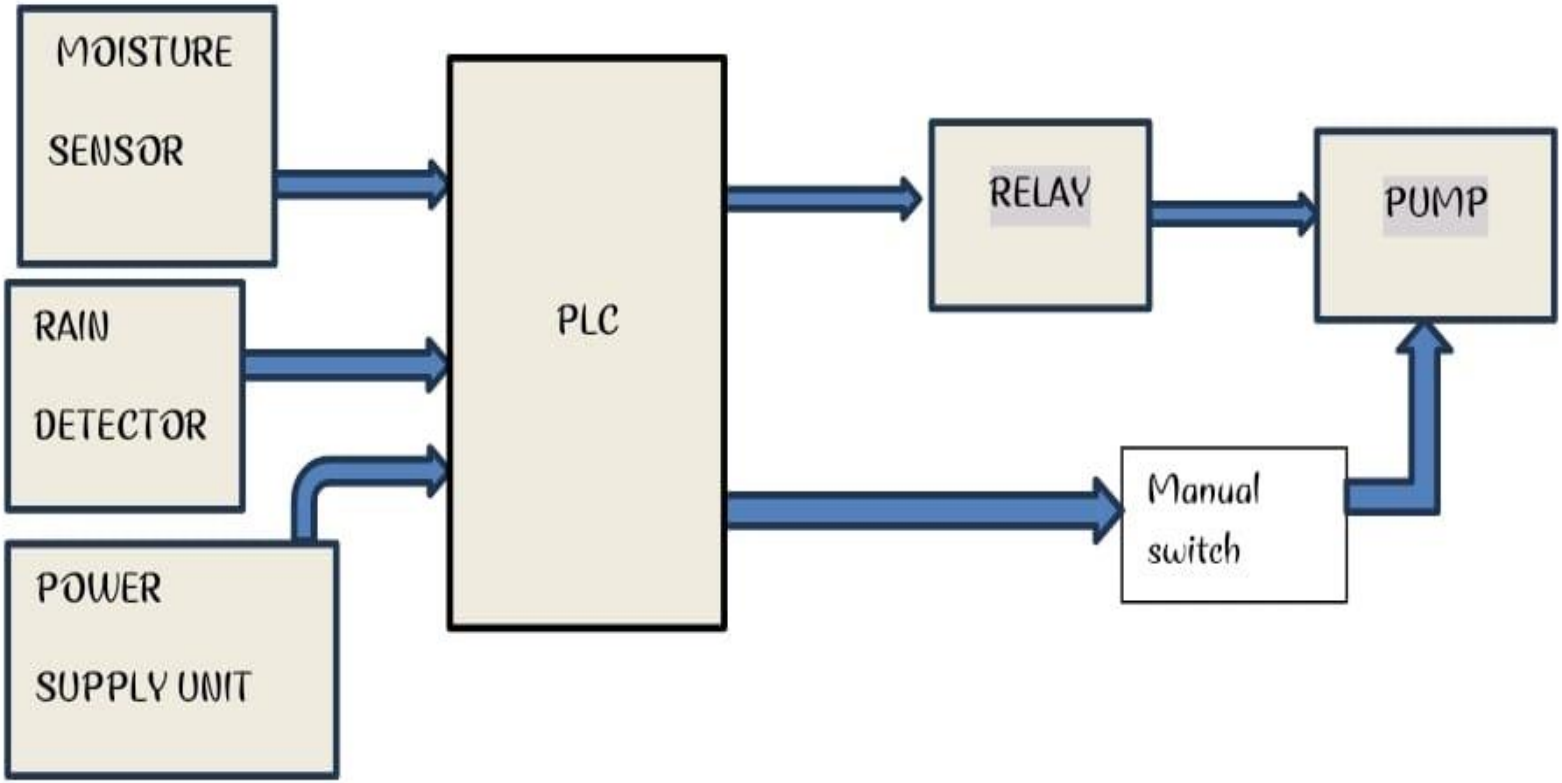
WORKING

=> The soil moisture sensor detects whether, soil is dry (or) soggy and provides to PLC.

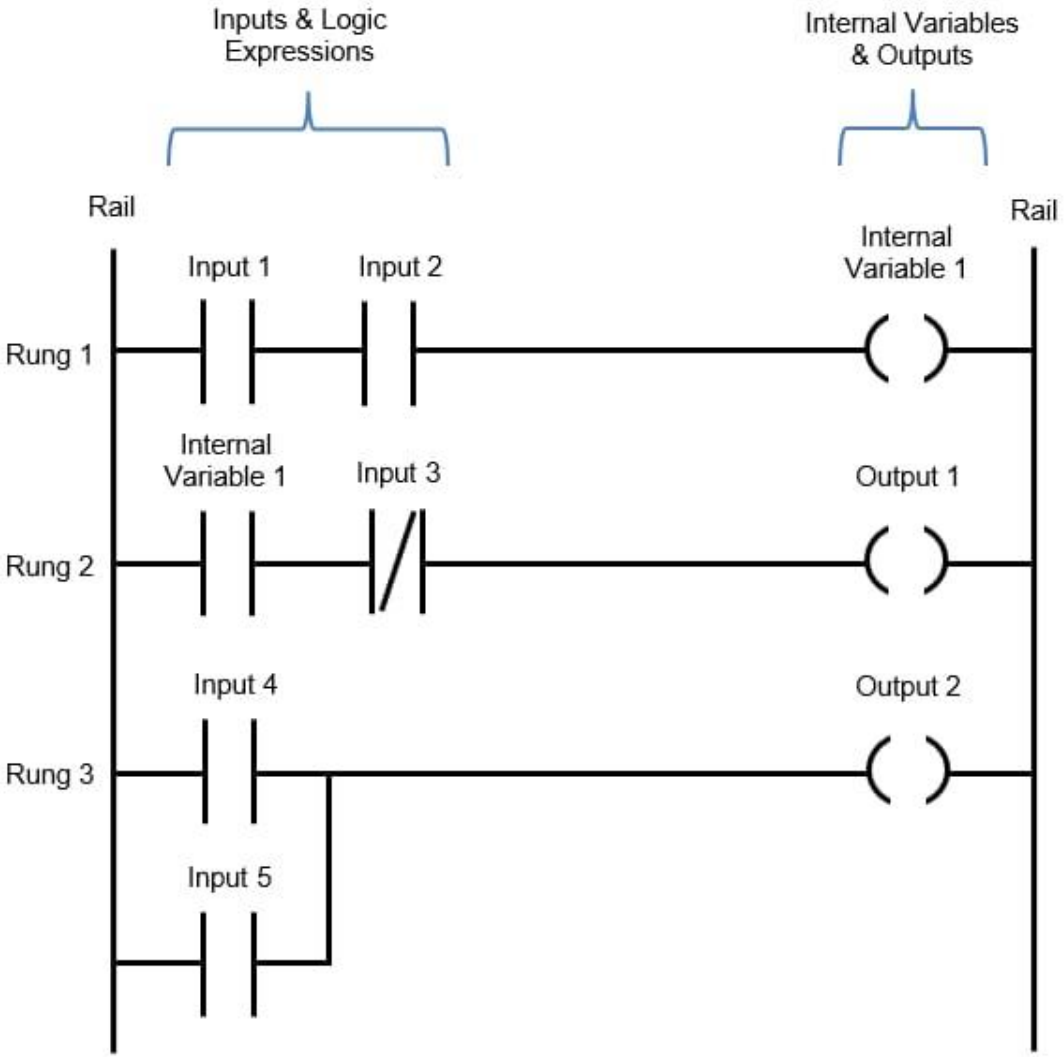
=> The soil is wet, it displays on control unit, PLC sends control signal turn OFF the pump.

=> If the soil is dry, it displays on control unit, PLC sends control signal to turn ON pump.

BLOCK DIAGRAM



PLC (Ladder Logic Diagram)



HARDWARE COMPONENTS

1. PLC (Programmable Logic Controller).
2. Sensors.(soil moisture sensor).
3. Rain Detector.
4. Relay Driver Circuit.
5. Stepdown Transformer.
6. 12v DC Motor.
7. Control Unit.

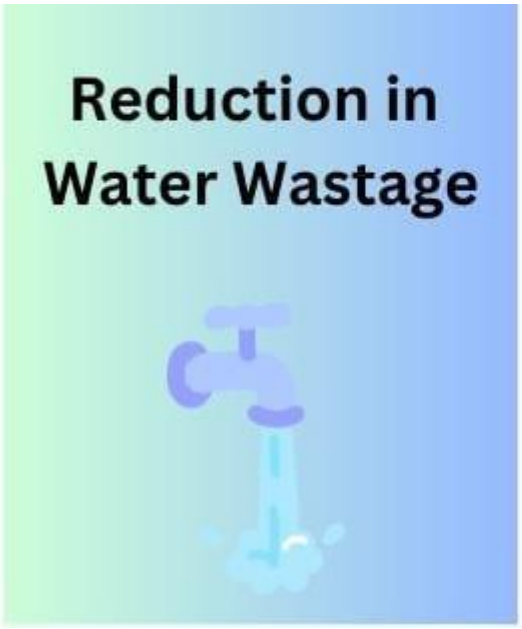
SOFTWARE COMPONENTS

1. RS LOGIC 500 – PLC Programming Software.
2. Ladder Logic Diagram for plc operation.
3. RSLinx Classic Litev2.57

ADVANTAGE

=> To reduce runoff from over watering saturated soils, High Reliability.

=> Avoid irrigating at the wrong time of day.



LITERATURE REVIEW

1.”AUTOMATED IRRIGATION SYSTEM USING PLC”

AUTHOR: Pillalamarri Madhavi,B.Aarthi,B.Nandini, G.Vyshnavi,P.Vijaya Lakshmi.

PUBLISHSED IN:Hyderabad Institute of Tech. and Management, Medchal, India.

SUMMARY:

Automation or automatic control is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching on telephone networks, steering and stabilization of ships, aircraft and other applications and vehicles with minimal or reduced human intervention.

The benefit of automation includes labor savings, savings in electricity costs, savings in material costs, and improvements to quality, accuracy, and precision

REFERRENCE

- **Prashant S. Patil, Shubham R. Alai, Ashish C. Malpure, Prashant L. Patil**, "An Intelligent and Automated Drip Irrigation System Using Sensors Network Control System", International Journal of Innovative Research in Computer and Communication Engineering, 2014.
- **Chetna V. Maheshwari, Dipal Sindha,** "Water Irrigation System Using Controller", International Journal of Advanced Technology in Engineering and Science, 2014.
- **Santosh, Sanket, Shriyo, Sugandha, Sakina, Priyanka harsha, Anuradha Desai,** "Plc Based Automated Drip Irrigation", International Journal of Current Research in Multidisciplinary (IJCRM), 2016.
- **Jose Cavero**. "Relevance of sprinkler irrigation time and water losses in maize Yield". Agronomy Journal, 2013.
- **Prathyusha et al**. "International Journal of Computer Science Engineering and Applications", 2013

CONCLUSION

=> We conclude that the system reduces water consumption and hence minimizes the wastage of water.

=> In this system as we provide controlled supply of water to the crop it improves the productivity.

=>Also due to an automated system the manpower is reduced


Thank you!