SMART DRIP IRRIGATION

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Abstract : —Today we are living in an era where automation is playing important role in human life where luxuriousness is simplified and provided for common layman .The proposed smart drip irrigation system is cost effective and useful for the illiterate farmers in remote areas and villages who have large and small agricultural lands .The system uses the hardware component ; which is subjected to various environmental conditions such like temperature , humidity , moisture .The Moisture sensor which finds out the moisture needed for the plant ; The temperature sensor is used for the continuous monitoring of soil humid , when moisture content required is detected to be much lower than the provided threshold value it sends the signal to the relay ;The solenoid valve opens to fetch water to the plants Based on the usage of water the sump or tank automatically fills water from other water resources using wires .The myRIO which is used to acquire data's from the experimental setup and gives the exact readings and calibrated values .This project would also help during drought where there are minimal water resources .This framework is explicit for a product and subsequently its use is constrained. Appropriate booking of water system is basic for proficient water the executives in harvest creation ; especially under states of water shortage.

Index Terms - : ***My rio, Sensors, Data Acquisition, Solenoid Valve..***

I. INTRODUCTION

The water which is the important constituent for all living things on this Earth .In this present era there is a great demand for water for all just like water we need food for survival for humans Food which contains starch is stored in plants. Plants do need water for significant growth. The scarcity of water is some things a major problem in present era .This project deals with supply of water for plants in an sufficient manner using data acquisitions, through sensors as in [1] and my rio enabled with process of acquiring of data which the processor pays the vital role . The myRIO is the heart of the system . the myRIO has special features like portable , highly reliable , good data accuracy facility which gives the major highlighted task achievement as in [2], the achievable requirement of water for the studied and taken as a reference from the paper by , the early stage of design of drip irrigation as in [3] that enhances knowledge to the present theory of design is enabled with the use of advancement of the relay and solenoid valve for the supply of water for the plants in early mornings and evenings as in [4] , the time duration for watering plants is made as half an once during days and one hour once during winter [7].

II.ADVANCEMENT OF THE PRESENT IRRIGTION SYSTEM

The present irrigation system has made an overall review of finding ways to overcome and help the farmers in solving the drawbacks of the existing systems designed globally as in [5].

A. Maintaining the Integrity of the drip irrigation

The proposed system helps to figure out the need of systems with enhanced advancement and automation enabled in it for the lame man , and the pic - microcontroller is been replaced with the my rio which is used in the data acquisition and generation of signals respectively , the commonly used water valves are been replaced with the solenoid valve which induces the mechanical switching of the valve .

The moisture sensor which helps to sense the plants moisture level and gives the acquired data to the plant and the temperature senor send the required data to the my rio from which the myRIO generates the signal to the solenoid valve once when the condition is been satisfied , the my – rio follows the condition such that if the test case of that neither both moisture and temperature sensors is false and either moisture sensor is true or temperature sensor is false vice-versa the myRIO condition is not satisfied of generating signal to the relay and solenoid valve , only when both the conditions are true then only the myRIO satisfy the condition of the test case and hence allows the generation of the signal as in [6] .

B. Flow Chart:

The flow chart describes the process of execution of the proposed system with moisture and temperature sensors attaining the required threshold level its said to be ON with the relay enhanced to it respectively.

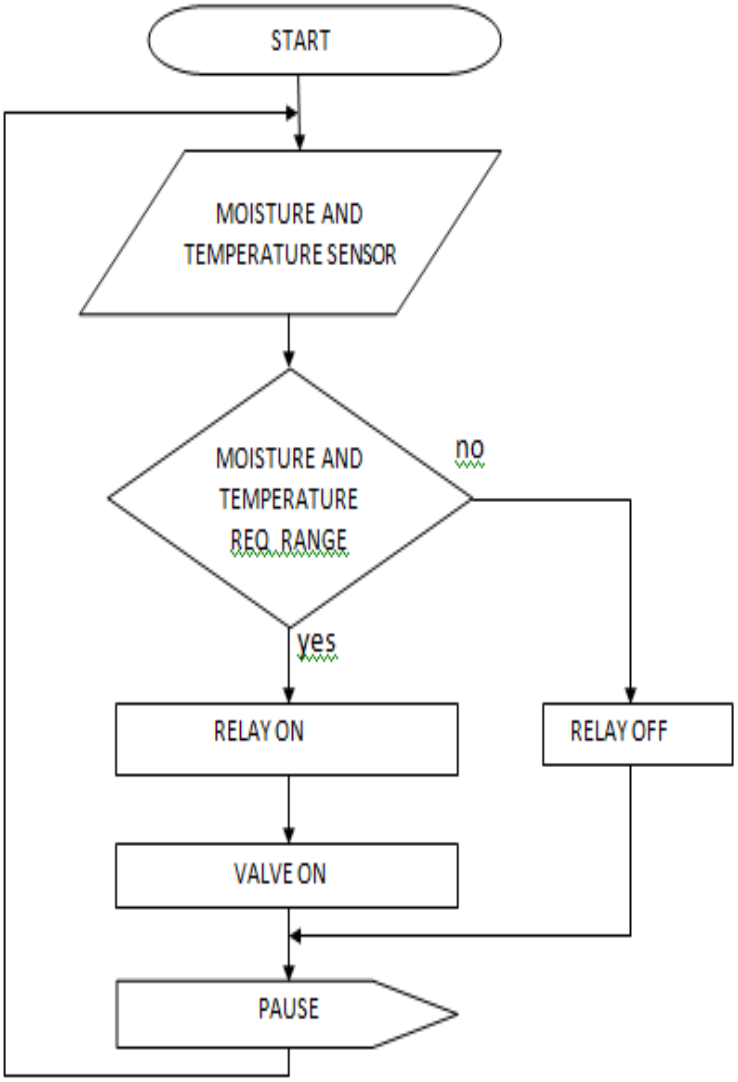

Figure 1: Flow chart

C. Block Diagram

The block diagram shows the data acquisition of signal from the PC with my RIO and LABVIEW.

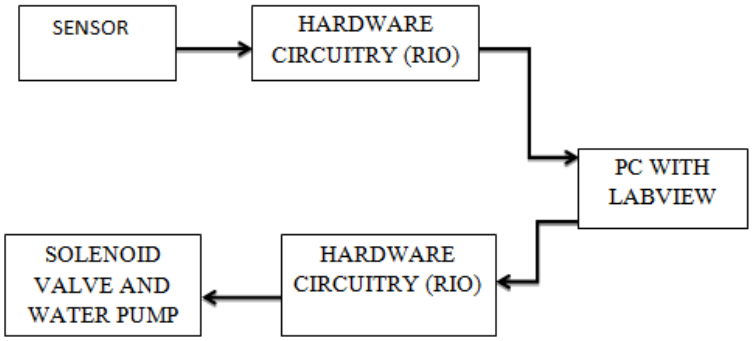

Figure 2: Block Diagram

III.METHODS AND MAKING

Before as in [8] the advancement as been made for the proposed systems

A.acquisation of my RIO.

- The myRIO is used to cover an area of 0ne acre in area .
- The myRIO which generates the signal that is useful to fetch water from the water resource available from the water abundantly available area .
- The moisture sensor which is given a threshold value and temperature sensor is also given a threshold value .thus the data acquired obtained is used to attain the test case equation design in the LabView coding.
- Then the solenoid valve receives the data of signal from the myRIO and supplies water to the plant respectively
- The acquisition of signals and its specifications is shown in Figure 3 below

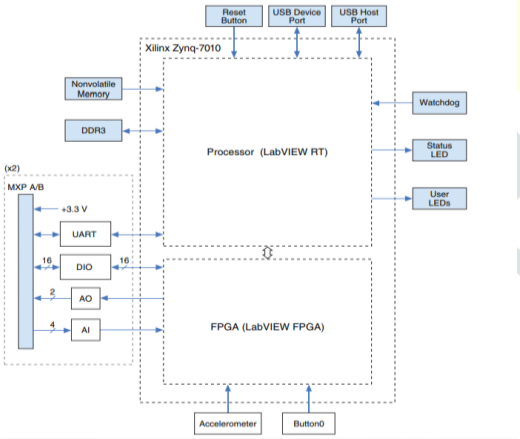

Figure 3: Specifications Of myRIO

B.Units

- The moisture sensor that is been used measuring the soil moisture is measured in the SI unit of grams per cube meter.
- The temperature sensor which in Celsius.

C.Equations

- The condition to be satisfied so called test case for the program is called as equation.
- The proposed system consist of the three equation which is highly required to satisfy the test case in order to achieve the output desired

FROM MOISTURE SENSOR AND TEMPERATURE SENSOR:

Assume that the moisture sensor as "X" for the plants and temperature sensor as "Y" from the atmosphere; then the my RIO acquires data generates signal and signal to the relay and solenoid valve

Hence we have the condition as :
X > 4 ; Y< 30
If X > 4 , Y < 30 = ON of the RELAY , SOLENOID VALVE.
myRIO data generation Of signal

FILLING OF WATER TANK FROM THE AVAILABLE

SOURCE:

The water tank is enhanced with wires which has the three level identification of water level of signals Threshold level wire = indicates the depth of the tank . Low level wire and Threshold level wire= ON (fetch water the water resource) High level wire and Low level wire Threshold level wire = OFF
(Switch off the tank from fetching water from the water resources stops conducting as it has neutral values).

IV. CONCLUSION

The designed system has placed a vital role in the field of automation and communication engineering which has paved a way for binding the lame man and technology together. Thus the water of plants during day and evenings are been successfully implemented for tomatoes, brinjal , spinach plantations . This proposed system can be used cash crops like paddy , wheat , sugarcane , jute plantation which are abundantly been grown by our Indian farmers .

REQUIRED SOFTWARE OUTPUT:
The output of the proposed system is based on the evaluated survey of the climatic conditions which is given in the Table 1.

Table 1 Average number of days of MDI operations in a year

Average number of days of MDI operations in a year			
Type of model	Rainy	Summer	Winter
Demo	57	90	64
Replication	26	88	51
Subsidy	48	97	73

An additional survey which deals with different crop type and their yield rate in normal conventional method and drip method is given in Table 2.

Table 2 Yield of main crops under conventional and MDI method

Yield of main crops under Conventional and MDI Method Yield(Kg/Acre)			
Crop	Conventional Method	Drip Method	% Increase
Tomato	576	894	55
Bitter Gourd	2560	4200	64
Chilly	1280	1600	25

The output of the desired proposed system is executed PC with my RIO and LABVIEW is shown in Figure 5.

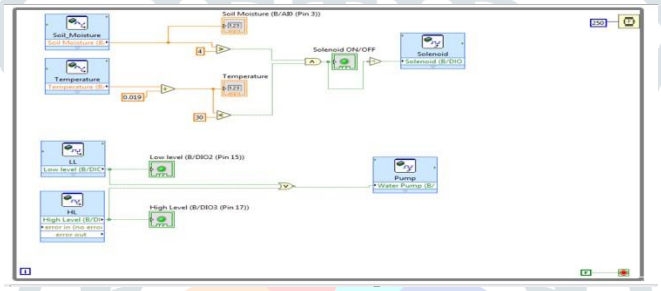

Figure 5 my RIO Block Diagram

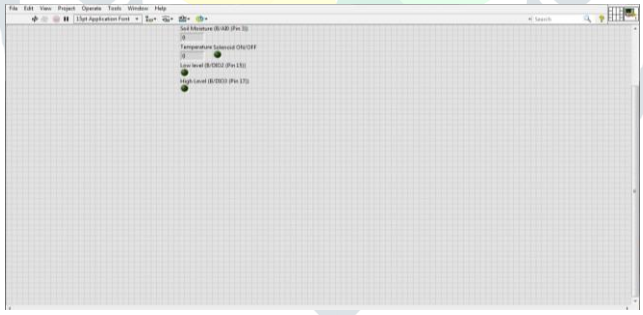

Figure 6 my RIO Front Panel

REQUIRED HARDWARE OUTPUT:

The required coding for the proposed system is coded and thus the acquisition of data obtained for the myRIO and output is fetching water for plants via drip irrigation is obtained successfully shown in Figure 7 and Figure 8 below and the water of the plants using drip irrigation is been implemented successfully for the plants where watering of the plants is been done.

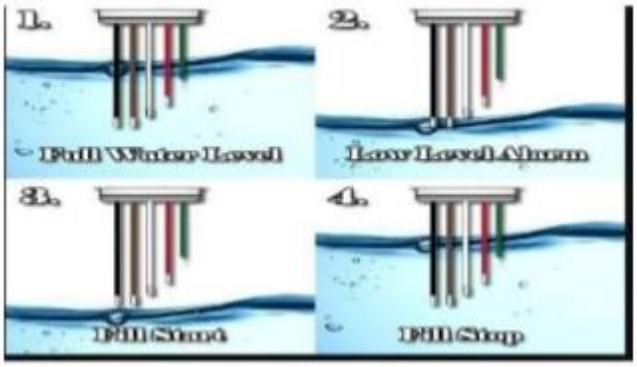

Figure 7 Level sensor

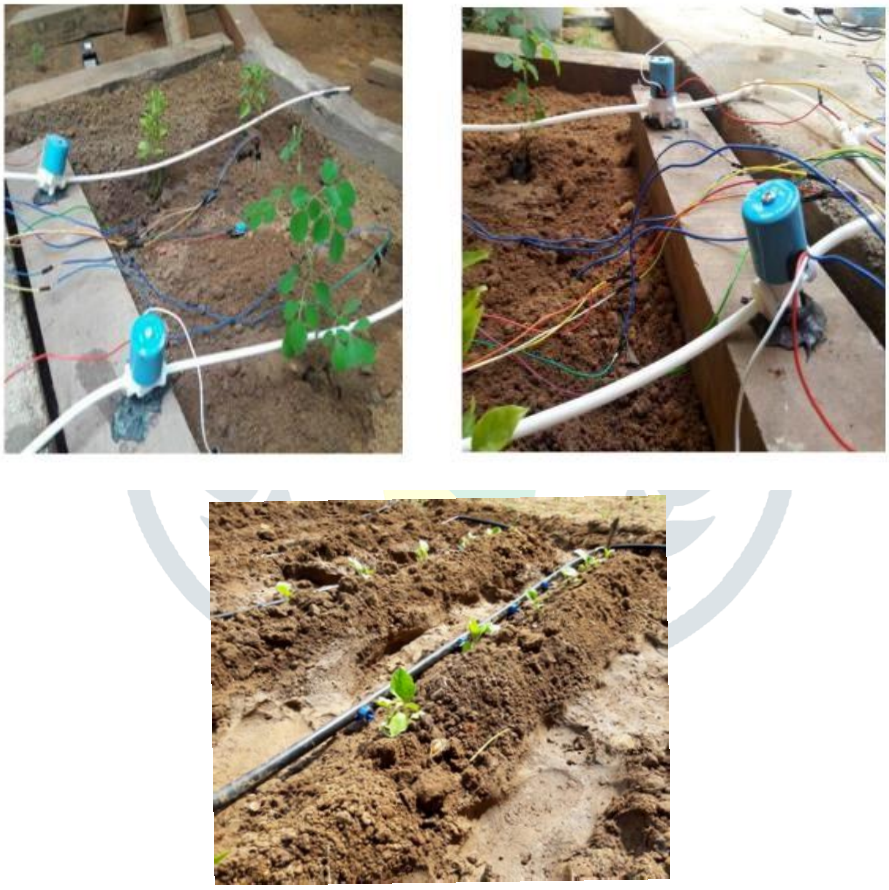

Figure 8 Hardware implementation:

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