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Automatic Irrigation and Fertigation System

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ABSTRACT. The aim of this study was to develop and evaluate a low-cost automation system for management of different crops. Fertigation is the process of delivering plants nutrients along with water to produce a quality crop with higher yields. Employing an automated fertigation system can help farmers by significantly improving water and nutrient usage. These fertigation systems are suitable for the all areas and all climatic conditions. These systems are in order to improved technologically by sensor used for long distant communication. venturi is replaced by pump for reducing the pressure and moves the flow of fluid by mechanical action, typically converted from electrical energy into hydraulic energy. Followed by objectives are given below.

KEYWORDS: Automatic irrigation system, Fertigation system, GSM sensor.

I. INTRODUCTION

Fertigation is a new agriculture technology, which is automatically done and also operated in various places. This technology uses a pressure system to combine soluble solid or liquid fertilizers with irrigating water according through the soil nutrient content and nutritional needs of crops through the help of controllable pipeline system (drippers). This allows the root soil to remain loose and to maintain the appropriate water content. This fertigation system is suitable for all types of crops in all climatic condition. The crops receive a proportional amount of water and nutrition regularly and quantitatively and water loss is also less. This system is operated by the users, they can set the particular amount of fertilizer mixture for the process. when the ground water level is low, automatically the process will be stopped and messages will be received to the users. And when the one row is irrigated, then it is automatically starts irrigated to the other rows with the help of the valve. And the filters are fitted over the pump to filter the dust particles, sand etc. Mostly all are use venturi for fertigation which helps to feed the crop, but it generates the pressure, so it replaced by pump to reduce the pressure and the fluids flows in a particular direction. The advances in the technologies related to wireless communication as lead to emergence of several engineering designs to aid the human requirements. Thus, with creeping interests in the wireless and GSM based projects, we came up with idea of developing a simpler, multipurpose, cost-effective design to control the on-off mechanism of various device in field.

II. RELATED WORK

Agriculture is the basic profession of vast population world-wide. Some modifications can be done in this system. It is related for irrigating the crops in human power is replaced by automatic machine. This system is used in all climatic conditions. In future this project can be used for multipurpose control done via SMS reducing the manual efforts and time required while paying individual attention for controlling each device. For farmers who need to switch on the water motors at night due to water supply problems with most of the Indian villages this system will surely be very helpful and reduced the risk of night visit to the farm, saves time and energy of the individual. The system requires less design and implementation cost. For handicapped people it may be really not entertaining to involve much in manual work. Farmers can make use of this system for controlling motor, sprinklers, tanks and also several other devices necessarily operated in agricultural lands.

There are many alternatives for controlling devices individually but the proposed system is a multiple device control which really saves the time, energy and cost of the farmer being more reliable and effective.

Alternatives :

- Timing device for monitoring of tank filling.
- Zigbee based water motor control.



III. METHODOLOGY

1) Observe the literature survey about the project 2) Identifications of problems 3) objectives of this system 4) purchasing the components 5) And assembling the components 6) The irrigation system connected with sensor 7) At finally testing the system of results.

IV. EXPERIMENTAL RESULTS

The motor is switch ON by dialing the personal number which is connected in the kit. After 5sec the mobile will reached the message. After reached the message we can operate it in long distancing. Here all applications are done automatically by gdm sensor. And the relay unit will ON the dry land circuit. The dry land sensor will be fixed in the agriculture land after the relay unit is ON the dry land sensor will sense and the gate valve will open. The single phase preventor will sense the motor having three phases or not. If three phase supply is present means the motor will turn ON. When the water reaches the certain level in the field the sensor will sense the level of the water and it will OFF the motor.

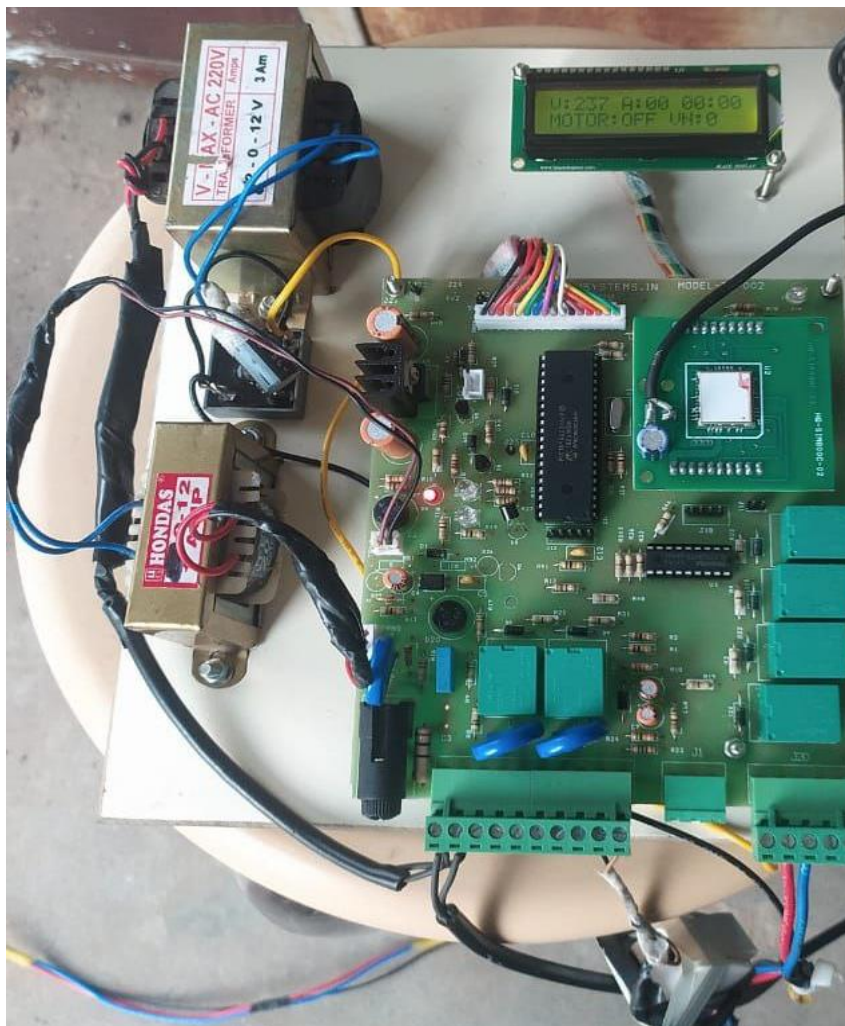




Fig:1.1 experimental setup



V. CONCLUSION

Thus we conclude by saying that future development must be in the project to improve the standard of security as well as controlling system. Some of the modern implement in project are incorporating 3G mobile network for security purpose of the industrial applications. This project is one of the cheap and best methods for security and control purpose of motors. We assure that this project will create a great revolution for industrial monitoring and controlling system.

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