

# SMART IRRIGATION SYSTEM USING GSM

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**Abstract--** Unique - Our paper gives the headway of wireless as a remote control application for the enrollment motor, siphon which is used in the agribusiness on account of relentless power It is imperative to spread water profitably to the field during run of the mill condition. This is finished by exchanging the information between customer phone and GSM as messages. The system is made with PIC microcontroller. The microcontroller join affirmation against over current, Dry running condition and single arranging. It is excepted that this application give basic access of motor so to speak.

**Keywords** –Induction motor, Pump, GSM, PIC Microcontroller.

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## I.INTRODUCTION

At the present time resources depend upon the rustic yield. With the brisk progression of agribusiness in India, various modified advances have been brought into cultivating manifestations. The hard and fast precipitation in a particular zone may be either insufficient, or not all around arranged. In order to get the most extraordinary yield, it is essential to supply the perfect measure of water, and keep up right arranging of water. This is possible simply through a deliberate water framework structure by social occasion water during the hours of plenitude precipitation and releasing it to the yield as and when it is required. Water framework is the investigation of masterminding and arranging a capable, insignificant exertion, money related water framework structure custom fitted to fit customary conditions. By the improvement of proper movement structure, the yield of gather may be extended because of controlled water supply. The purpose of this paper is to develop a monetarily canny game plan that will give remote control of acknowledgment motors through mobile phones using messages. The compact customer on the planet has a tremendous rising during the past very few years Remote

checking of methods, machines, etc., is standard as a result of advances in development and diminishing in gear cost. Cell frameworks offer Short Messaging Support (SMS) approach offers fundamental interface with just objective telephone address and message essential with no header/show overhead.

## II. LITERATURE SURVEY

[1] Now-a-days every system is automated in order to face new challenges in the present day situation. Automated systems have less manual operations so that the flexibility, Reliabilities are high and accurate. Hence every field prefers automated control system especially in the field of electronics automated systems is doing better performance. This paper is an implementation of the idea of the wireless communication between a mobile phone and a microcontroller. They have to go to the remote area and ON/OFF the appliance. But in this new design, the systems need not be reprogrammed to control another home appliance without changing the programming of microcontroller. The user will make a call from his phone and he will be able to control the appliance. This system is developed with AT89C51Microcontroller which in connected

to the GSM and the motor. The microcontroller includes the protection against dry running and single phasing.

[2] Drip irrigation system makes the efficient use of water & fertilizers. The concept of this irrigation system is to irrigate only the root zone of the plants. Drip irrigation allows water to drip slowly to the roots of plants. Drip irrigation system which supply controlled amounts of water to plants.

Subsurface application of water to the root zone also has the potential to improve yields by reducing the incidence of disease. The data from sensors is continuously uploaded to the cloud hosted for drip irrigation system. This system also enables suggestions for the admin & user. The motor can be ON-OFF with mobile application and automatically. With an Intelligent data analytics algorithm this system can optimize the utilization of water and can cultivate more food.

[3] The paper presents the design of agriculture farm especially for the plane region which can well utilize by the farmer to sort out the scarcity of water for crop growth. The farmers are subjected with the lots of problem in agriculture like improper irrigation, selection of crops, non availability of whether information according to their region, the problem from pest and wild animals. Due to these problems, the suicidal case of farmers gets increase day by day. These problems can be sort out by using IOT.

Here we use ARDUINOYUN having inbuilt Wi-Fi to transfer and analyze data using any IOT platform likes KAA IOT, Watson IOT, and Cayenne. We can use different IOT communication technology like Z-wave, 6LowPAN, Thread, Sig fox, and NEUL to communicate various sensors to the external world according to the application. Here we simulate the design of entire sensor network used in this project using Net SIM simulator and emulator software.

After emulation of designed network design by taking 50 m as field size, we obtained various graphs which show through put of each link from sensor node up to the monitoring base station, graphs of various parameter like packet transfer, collided packets, payload and overhead transmitted and battery consumed by each sensor for specified duration. Also, farmers are able to grow a health hazard free crop for the upcoming generation.

[4] In this paper a computer-based control and monitoring system is designed and tested to automate drip irrigation. The model greenhouse can be used as a prototype where several sensors are connected to an acquisition and control system using a PC and a data acquisition card. The designed system can be used as a stand-alone system by lay farmers with no technical background where they can command full control through a screen command.

The system is set up to handle several crops by using a user screen to adjust certain parameters on the front panel. A web server enables users to remotely monitor and control the greenhouse through VI's from any place in the world with internet access. Moreover, the system periodically generates alarms and automatically sends emails to notify users of the conditions inside greenhouse.

[5] The traditional irrigation system involves most manual lab or intensive task. Farmers usually work on large portions of land to grow different types of crops. It is not always possible for one person to be able to keep track of entire farm land about crop and the soil moisture due to health problems, age and unavailability of a person. To overcome this problem a solution is proposed to automate the irrigation system using ARDUINOYUN and monitoring the farm field by using photos captured by the camera. Depending upon the level of soil moisture content, the system supplies the water to a farm field by sensing the soil moisture. The process of producing appropriate amount of water to plants avoids some of situation like mud cracks, plant disease etc. When the water level reaches the threshold value it automatically stops, sends the notification of a farm field to the farmers. This helps in irrigating the field even during night time, so does not require the farmer to switch on motor manually. Ultimately a farmer can monitor the condition of farm field from anywhere.

[6] In India, agriculture plays an important role for development in food production. In our country, agriculture depends on the monsoons which is not sufficient source of water. So the irrigation is used in agriculture field. The greenhouse based modern agriculture industries are the recent requirement in every part of agriculture in India.

In this technology, The overhead structure is created for the movement of water spraying machine. This machine unit which is programmed by the microcontroller will spray the water from start to end plant in the rows. This system provides

the equal amount of water to every plant in the greenhouse unit. One of the objectives of this work is to see how human control could be removed from irrigation and also to optimize the use of water in the process.

In greenhouse effect it is very difficult to provide adequate amount of water by manual watering process Hence, Automated irrigation system plays an important role. It also helps in time saving removal of human agriculture and the climatic conditions. The most important factor of this system is microcontroller is used to control the movement of water spraying machine.

[7] Agriculture has been one of the most important industries in human history since it provides humans with absolutely indispensable resources such as food, fiber and energy. The agriculture industry could be further developed by employing new technologies, in particular, the Internet of Things (IOT). In this paper, we present a connected farm based on IOT systems, which aims to provide smart farming systems for end users. We hope this work will show the power of IOT as a disruptive technology helping across multi industries including agriculture.

[8] Farming is the broadest monetary segment and assumes as a critical part in general financial advancement of a country. Technological headway in this field of agribusiness will find a way to build the cultivating exercises.

Smart farming has a potential to deliver a productive and sustainable agricultural production, based on a precise and resource efficient approach. Smart farming is an improvement that underscores the utilization of data and correspondence innovation in the digital physical farm administration cycle.

New advancements for example the internet of things and cloud computing are relied upon to use this improvement and present more robots and computerized reasoning in cultivation. This is done by the big data gigantic volumes of information with a wide assortment that can be caught, broken down and utilized for basic leadership. This survey expects to pick up understanding into the next in class of data applications in smart farming and distinguish the financial difficulties to be tended to.

### III. PROPOSED METHOD:

#### 3.1: BLOCK DIAGRAM:

Agriculture is the most important field as compared to others in India. The underground water level is slowly falling down and as well as rainfall is also reduced due to deforestation.

In order to get the maximum yield in agricultural process, it is necessary to supply the optimum quantity of water, and it should be supplied periodically.

This is achieved only through a systematic irrigation system. In recent years, there has been a rapid increase in wireless network deployment and mobile devices in the market.

With various research that promises higher data rates, future wireless networks will likely become an integral part of the global communication infrastructure.

Ultimately, wireless users will demand the same reliable service as today's wire-line network provides.

Through our device controller we can represent a safe & secure wireless communication with proper authentication and less loss of data.

This cell phone having wireless GSM remote controller helps the farmer to handle agricultural pump sets easily.

It also helps the farmer to irrigate the crops in proper schedule. Farmer can set the total running time of pump set to be run.

This "CELL PHONE BASED MOTOR CONTROL WITH VOICE ACKNOWLEDGMENT SYSTEM" is a boon to agriculturists.

It can help the Indian farmers to save life in case of snake-bite during night time, saves water, time and electricity. Cell phone is a device for everyone in today's world.

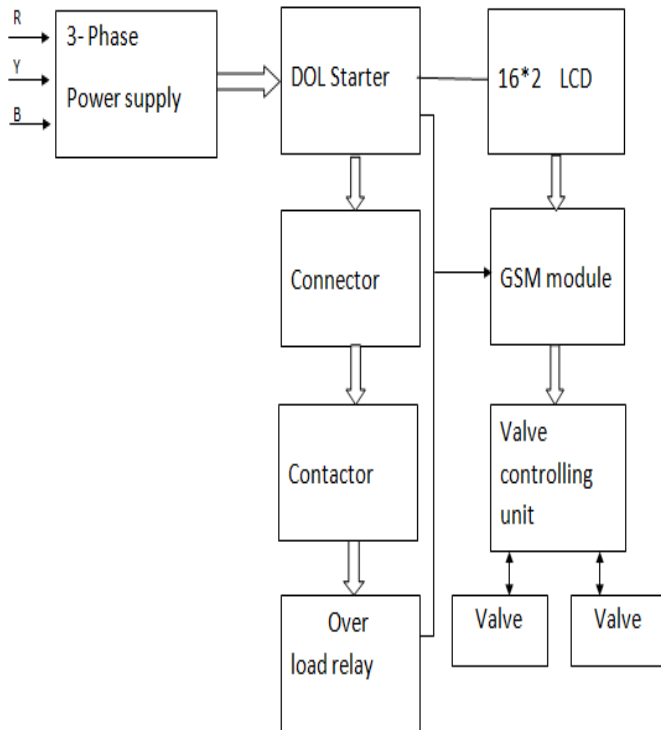


Fig:1 Smart drip irrigation system.

### 3.2: NORMAL CONDITION:

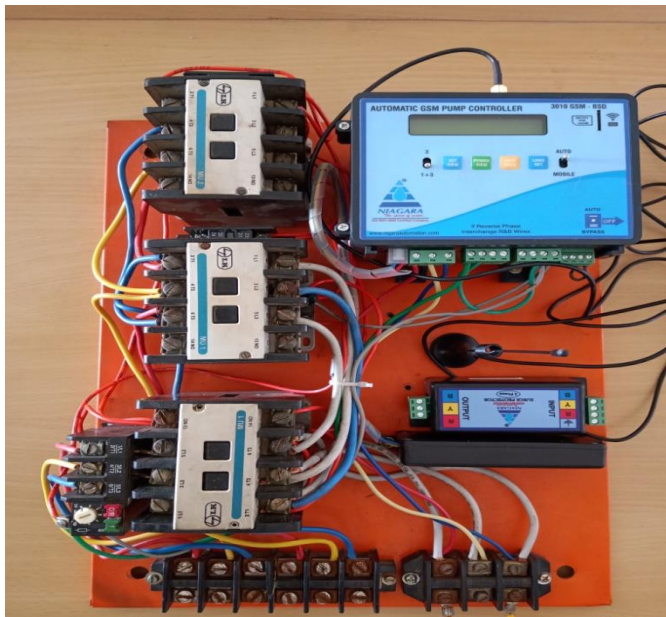


Fig:2 Normal condition

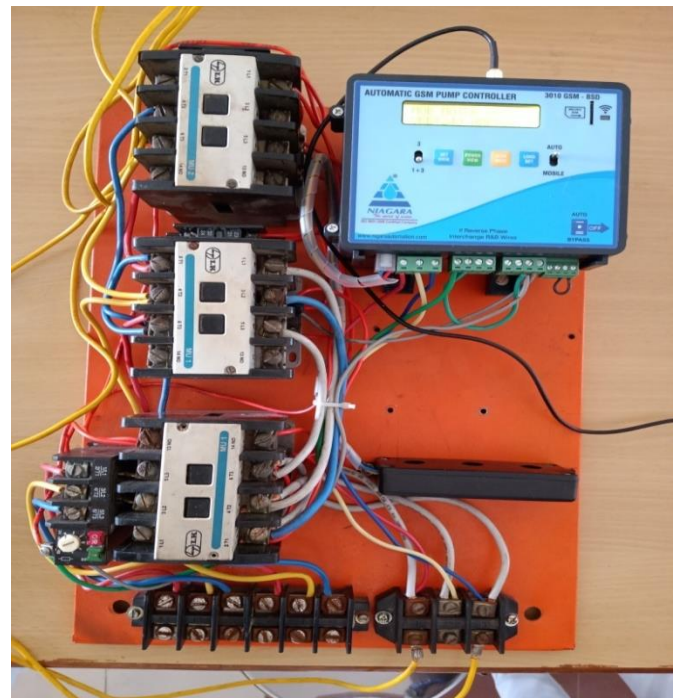


Fig:3 Hardware set up in working condition.

The figure shows the hardware set up of our project. In this we use the contactor, connector and GSM pump controller unit.

### 3.3: WORKING OPERATION:

First we switch on the power supply. Here, we have to use the starter to start the motor. It is mainly used for limit the starting current. It will act as a star-delta starter .

It can be used in single phase and three phase power supply. Now we switch on the GSM pump controller. Put a SIM card in GSM pump controller for the calling purpose. Make a call for switch on the motor.

The keywords are used in the mobile is to press 8 to switch on the motor and press 9 to stop the motor. We can see voltage status and water consumption by pressing the keys \* and # keys.

The LCD display will shows the results. Here we use the microcontroller for controlling the motor. The whole unit is controlled by the GSM and microcontroller. It is a predefined function. The keywords are already set in microcontroller. We can send the call and message to control the motor.

In this the user can make a call for switch ON the motor by using keyword 8 to the GSM pump controller is shown in the below figure.

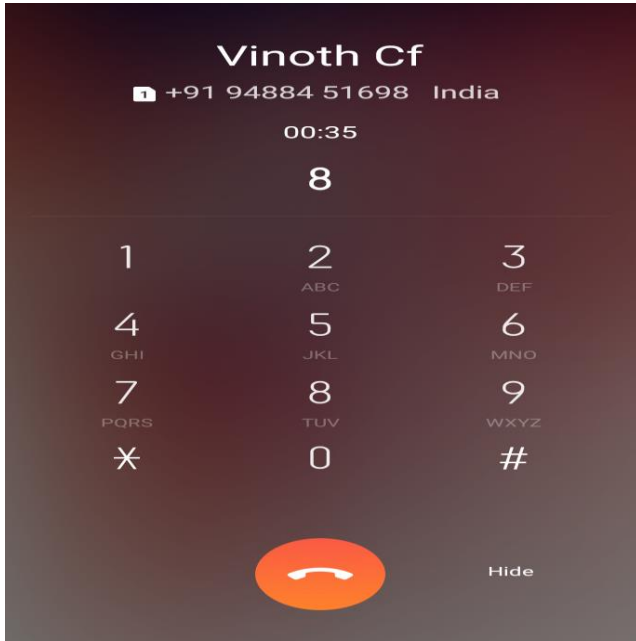


Fig:4 ON Condition

Already we start the motor by pressing the keyword 8. Now we press the key \* an 9 to know about the voltage status and switch OFF the motor respectively.

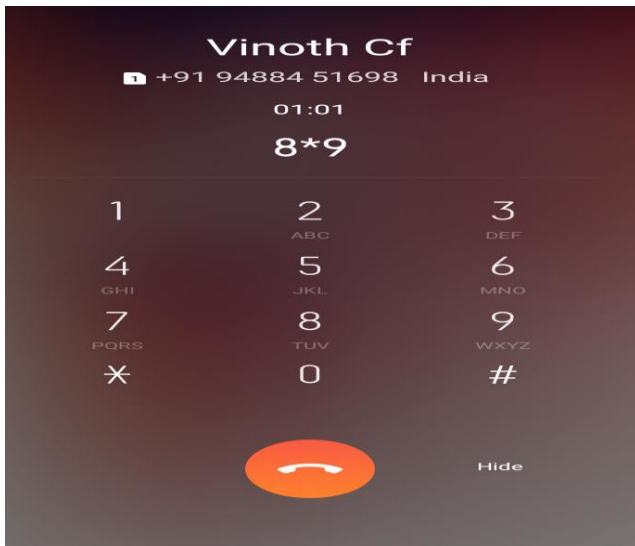


Fig:5 OFF Condition

3.4 GSM MODULE:

The Global System for Mobile Communications (GSM) is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe the protocols for second-generation (2G) digital cellular networks used by mobile devices such as mobile phones and tablets.

It was first deployed in Finland in December 1991.

Instead of using analoge service, GSM was developed as a digital system using TDMA technology.

Using TDMA, a narrow band that is 30 kHz wide and 6.7 Milliseconds long is split time-wise into three time slots. Narrow band means channels in the traditional sense.

Each conversation gets the radio for one-third of the time. This is possible because voice data that has been converted to digital information is compressed so that it takes up significantly less transmission space.

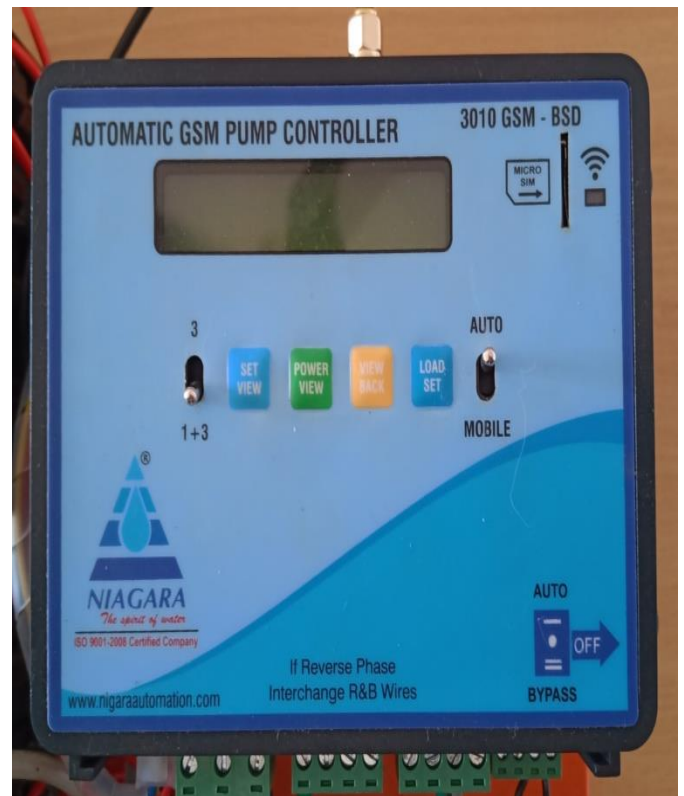


Fig:2 GSM Module

GSM module control the whole unit on the system . It transmit and receive the signal .

### 3.3 STARTER:

A **DOL starter** (or **Direct On Line starter** or **across the line starter**) is a method of starting of a 3 phase induction motor. In DOL Starter an induction motor is connected directly across its 3-phase supply, and the DOL starter applies the full line voltage to the motor terminals. Despite this direct connection, no harm is done to the motor. A DOL motor starter contains protection devices, and in some cases, condition monitoring.

The automatic work on when manual operational mode. Semi operation condition it work on 1 phase & 3 phase condition dry run condition and it automatically define solution for start and stop condition . High voltage condition 530V. Low voltage condition 310V.

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### V. CONCLUSION:

In this paper the distribution transformer key parameters like voltage, current; temperature, oil level and frequency are monitored using PIC micro controller. If any fault occurs in the transformer the information is intimated to the Electricity Board through PIC micro controller. At the same time a relay is operated to trip the faulted area to save the entire circuit.

### VI. FUTURE WORK:

In this project the fault is only intimated and monitored and relay is operated to trip the circuit. In future it may be developed such as it will automatically rectify and repair the fault itself using robotic.This project can be Extended by using GPRS technology. System can make solar panel operated.

### BIBLIOGRAPHY:

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