Controlling of agriculture motor with water level using GSM and Arduino Nano

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Abstract: This paper is aimed to design a Controlling field Motor using wireless technology GSM. In India agricultural field play a crucial role in economic development. That is the way to concentrate on that point. Farmers facing a variety of problems. Electric power supply not available in 24 hours. The farm aloof from his house, hence to on and off the motor automatically using our project, is about making this system efficient and dynamic. This automatic control is for controlling the motor from a far off place, look over its operating conditions; get feedback from the motor itself. So here our target is to regulate the motor from the distant place by mobile SMS and also get feedback by SMS while it's in ON or OFF condition. This provides the event of mobile phones as an overseas control application for the induction motor pump which is employed in agriculture. In India because of the frequent power cuts and abnormal voltage conditions in India, it is necessary to distribute water efficiently to the fields during normal conditions. This can be followed by exchanging the data between the user phone and GSM within the sort of messages. This technique is developed with Micro controller which is connected to the GSM and also the motor. This Micro controller includes the protection against over-current, dry running and single phasing. In this project, it's expected that this application provides easy accessibility to the motor to an excellent extent.

Keywords: Agriculture, GSM, Irrigation system, Motor controlling, SMS.

I. INTRODUCTION

India is basically an agricultural country, and all its resources depend on the agricultural output. With the rapid development of agriculture in India, many automatic technologies have been introduced into agricultural productions.The total rainfall in a particular area may be either insufficient, or ill-timed. In order to get the maximum yield, it is essential to supply the optimum quantity of water, and maintain correct timing of water.This is possible only through a systematic irrigation system-by collecting water during the periods of excess rainfall and releasing it to the crop as and when it is needed.Irrigation is the science of planning and designing an efficient, low-cost, economic irrigation system tailored to fit natural conditions.By the construction of proper distribution system, the yield of crop may be increased because of controlled water supply.

II. CIRCUIT DIAGRAM
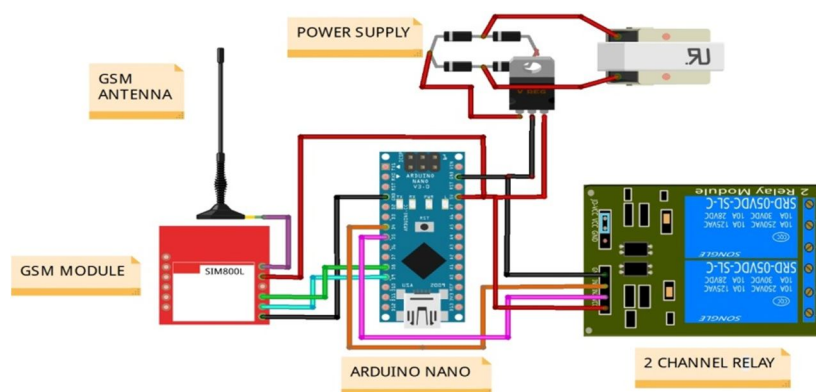
III. WORKING PRINCIPLE

This smart agriculture works based on GSM communication[7]. Generally we used 230v voltage for agriculture, But our smart module doesn't take 230v. that's why we need a step down transformer to decrease the voltage level. This step down transformer converts 230v into 12v. to avoid the fluctuations in this 12v dc voltage we use bridge rectifier and low pass filter. It avoid fluctuations and allow minimum voltage. From this voltage divider board we have TWO 12v terminals and TWO 5v terminals. One of this 12v terminal directly connected to the Arduino(AT mega328P)board and another 12v terminal connect to the GSM module. The 5v terminal connect to the 5v sprinkle motor. The moisture sensor and 16*2 display module directly connect to the micro controller board. The GSM module send the data of moisture sensor and sprinkle motor to the host(the GSM module connect to the which mobile)[8]. In the program primary we initialize the sensor value low. First we check the status of moisture in the field by sending 4-bit command (9999) to the GSM module, When the sensor values low means the moisture is absent then the host send a 4-bit data 1111 to the GSM module, this 4-bit command activate the sprinkle motor. The moisture in the field is sufficient the GSM module send the data of moisture sensor to the host. By using 4-bit command 2222 we can stop the sprinkle motor

IV. BLOCK DIAGRAM
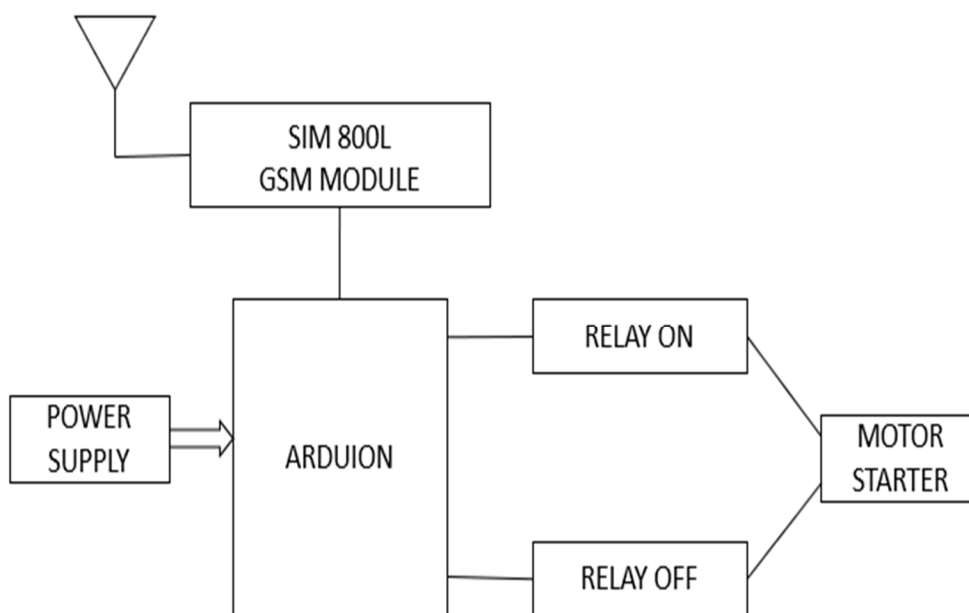
V. CONCLUSION

This project can be widely used in agriculture.
1) Checking the presence of three phase current in the phone is a very time saving approach
2) This project can also be used to irrigate small and large farms.
3) The irrigation system of the farm can be controlled from the farmer's figure tips from anywhere.
4) This project helps farmers to not only protect the motor but also saves power by turning it off anytime.

VI. RESULT

1) We observed that when we send "Motor ON "message to the GSM through the mobile phone, Arduino will turn ON the motor and when we send "Motor OFF", the Arduino will turn off the motor. And we also got an acknowledgement regarding the status of motor.
2) Pump is working on 3-phase power supply if and phase is braked pump will immediately OFF and GSM will inform status of 3-phase supply to mobile . Then mobile will display message "PUMP OFF".
3)

VII.   FUTURE SCOPE

This system mainly developed to the farmers, but it also use in industry area. In the industrial area for three phase motor protection gives through this system. This is best example of the embedded system. Any automation is provided through this system. In that microcontroller use to control the overall operations and as per our requirement we change the controller operation. The motor is switch on/off to give a missed call. This helps to reduce the labor cost and maintain the proper timing of water. We get the all condition of the motor from any place. It also very useful to industry area to control the motors.

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