GSM BASED AUTOMATIC WATER IRRIGATION SYSTEM

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ABSTRACT

An embedded system is a special-purpose computer system designed to perform a dedicated function. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded system comprises of both hardware and software. Embedded system is fast growing technology in various fields like industrial automation, home appliances, automobiles, aeronautics etc. Embedded technology uses PC or a controller to do the specified task and the programming is done using assembly language programming or embedded. Many devices are used for monitoring the humidity conditions. In early days, all the systems are analog devices and the measured value can be displayed by using recorders, and CROs. This project is used to eliminate the drawbacks in the existing system. Here the humidity is monitored by sensor that can be converted in to corresponding signal to the microcontroller.

The main feature of this project is that, according to the humidity levels, the controller activates the relay driver unit and pumps the motor by using relay switches. The controller also generates signal corresponding to the humidity level, and then the signal can be transmitted through the GSM modem to mobile. When the pump is ON the corresponding message will be forwarded to our mobile number which was already programmed in controller unit.

Keyword : GSM modem, automatic water irrigation

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1. INTRODUCTION

GSM based Control System" implements the emerging applications of the GSM technology. Using GSM networks, a control system has been proposed that will act as an embedded system which can monitor and control appliances and other devices locally using built-in input and output peripherals. Remotely the system allows the user to effectively monitor and control the house/office appliances and equipment via the mobile phone set by sending commands in the form of SMS messages and receiving the appliances status. The main concept behind the project is receiving the sent SMS and processing it further as required to perform several operations. The type of the operation to be performed depends on the nature of the SMS sent. GSM (Global System for Mobile Communications): It is a cellular communication standard. SMS (Short Message Service): It is a service available on most digital mobile phones that permit the sending of short messages (also known as text messaging service).Technology has advanced so much in the last decade or two that it has made life more efficient and comfortable. The comfort of being able to take control of devices from one particular location has become imperative as it saves a lot of time and effort. Therefore there arises a need to do so in a systematic manner which we have tried to implement with our system. The system we have proposed is an extended approach to automating a control system.

2. OBJECTIVE

The system supports water management decision, which determines the controlling time for the process and monitoring the whole system through GSM module. The system continuously monitors the water level in the tank and provide accurate amount of water required to the plant or tree (crop).The system checks the temperature, humidity and dew point so as to forecast the weather condition. Low cost and effective with less power consumption using sensors for remote monitoring and controlling devices which are controlled via SMS using a GSM using android mobile**.**

Mainly the system is designed in order:

To enable farmers to water their lands without using manpower.

To save water

Water is only delivered where it is needed.

Saves time as the timer delay as per environment can be added to the system for automatic watering.

3. LITERATURE SURVEY

In Veena Divyak, Ayushakhouri "A Real time implementation of a GSM based Automated Irrigation Control System using drip Irrigation Methodology" deal GSM based Irrigation Control System, which could give the facilities of maintaining uniform environmental conditions. For this, a software stack called Android is used for mobile devices that include an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. Mobile phones have almost become an integral part of us serving multiple needs of humans. This application makes use of the GPRS feature of mobile phone as a solution for irrigation control system. This system covered lower range of agriculture land and not economically.

In Mansour "Impact The Automatic Control Of Closed Circuits Raingun Irrigation System On Yellow Corn Growth And Yield" this research paper deals of automatic control of closed circuits drip irrigation system as a modified irrigation system on yellow corn crop vegetative and yield parameters under (KSA) Saudi Arabia conditions at Al-Hasa region. The field experiment carried out under automatic irrigation system for three irrigation lateral lines 40, 60, 80 m under the following three drip irrigation circuits (DIC) of: a) one manifold for lateral lines or closed circuits with one manifold of drip irrigation system (CM1DIS); b) closed circuits with two manifolds for lateral lines (CM2DIS), order to compensate for ETC and salt leaching requirement and take more power.

In M. Guerbaoui,elafou,a.ed-dahhak GSM based automated drip irrigation system " we proposed a system contribution to the development of greenhouse production in Morocco. The proposed solution involves the development of an integrated system for automate the drip fertilizing irrigation in green house. The solution adopted involves a data acquisition card PCL-812PG controlled by PC. The irrigation is provided by a hydraulic circuit based on an electric pump. Water needs are evaluated by measuring soil water status by soil humidity sensor. In Purnima, S.R.N Reddy, "Design of Remote Monitoring and Control System with Automatic Irrigation System using GSM-Bluetooth" proposed artificially supplying water to land where crops are cultivated. Traditionally hand pumps, canal water and rainfall were a major source of water supply for irrigation. This method has led to severe drawbacks like under irrigation, over-irrigation which in turn causes leaching and loss of nutrient content.

3. BLOCK DIAGRAM

GSM based Irrigation water pump controller for illiterates
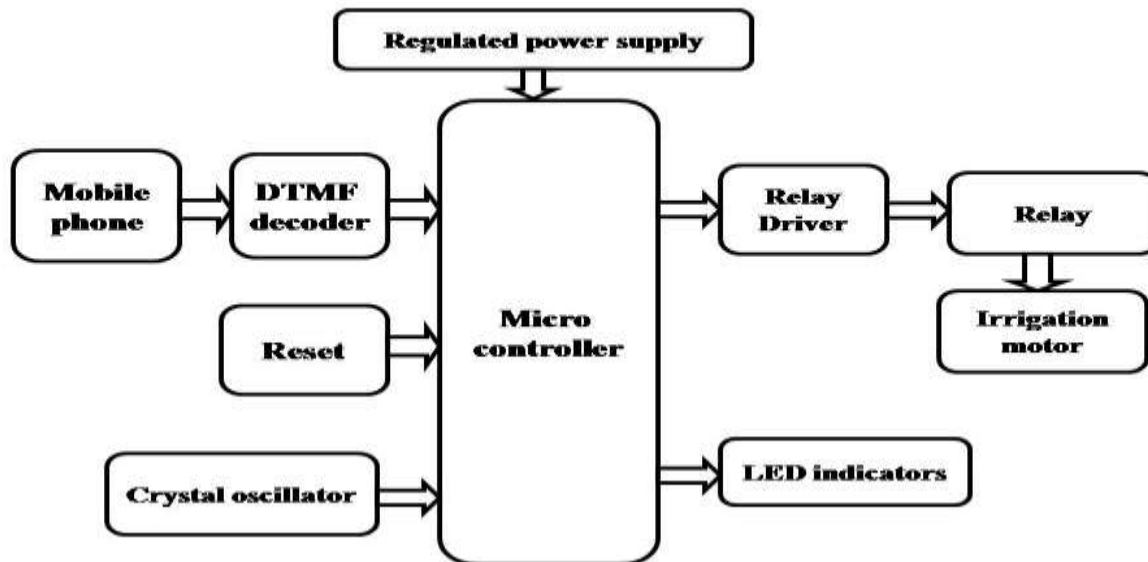
3.1 DESCRIPTION

GSM stands for Global System for Mobile Communication. It is a globally accepted standard for digital cellular communication.

GSM is the name of a standardization group established in 1982 to create a common European mobile telephone standard that would formulate specifications for a pan-European mobile cellular radio system operating at 900 MHz

The GSM modem basically consists of a
- SIM card holder to hold the activated SIM card for sending and receiving SMS.

- 5V AC power supply header to which the 5v ac adapter is connected.

- Power led which gives the indication of modem status that is on or off.

- 9 pin female to which the GSM antenna is connected.

4. CONCLUSIONS
>The project "GSM based water irrigation system." has been successfully designed and tested.

>Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

5. ACKNOWLEDGEMENT

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