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GSM Based Green House Monitoring System

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***Abstract*: In this activity, we have developed a framework that can collect data identified temperature and production efficiency and control the system automatically based on the data collected. By looking at oral conditions from time to time, this study has reason to find a link between sensory flags and reference limits. The control system will provide details of the acquisition of the ongoing show. Through long-term and effective use, the draft has been shown to have many interesting points. Monitoring the environment within hot temperatures depends on various parameters such as light, temperature, humidity, soil moisture etc. using various sensors such as DHT22 temperature sensor and humidity sensor, LDR, grove-moisture sensor etc. which the microcontroller will interfere with. It is a closed loop system that will perform the control action to adjust the temperature, humidity, light intensity and soil moisture in the event of unwanted errors (high / low).**

***Keywords*: GSM, temperature control, GSM temperature sensor, SMS tech.**

1. Introduction

We live in a world where everything can be controlled and operated automatically, but there are still a few important areas in our country where automation has not been fully adopted or used, perhaps for a few reasons. The reasons for one reason are expensive. One such field is agriculture. Agriculture has been one of man's major occupations since early civilization and even today handicrafts in agriculture are inevitable. Kindergartens form an important part of agriculture and the agricultural sector in our country as they can be used to grow crops under controlled conditions to produce good yields. The automation of hot temperatures takes into account the monitoring and control of climate parameters that directly or indirectly affect the growth of plants and hence their production. The automated process of industrial machinery controls and processes, thereby replacing human activities.

2. Literature Review

Concerns about consumer demand and demand for agricultural products have raised awareness among farmers that they are expanding their products in the market by introducing advanced technologies in the industry. Important products that can meet the interests of farmers who control the use of natural resources and the environment that regulates agriculture in a variety of ways. Therefore, this problem creates farmers' interest in exploiting agricultural conditions by sending messages to farmers using GSM and SMS technology. The proposed system is intended to be reliable and inexpensive. The agricultural ecosystem can be used in a variety of conditions such as temperature, soil and water. By using available technology, environment and natural resources, temperature is the most important way for plants to be properly monitored. In the past, human activities played a major role in the surveillance farm and in the agricultural sector. In some critical plants such as vegetable and flower plants, which need 24 hours human attention so that the quantity of plants and qualities is controlled by proper management of the data collected and data from the field. This will provide a good foundation for future growth and future development of their plants in the green house. However, with the increase in size in agricultural areas, this type of manual labor increases the time spent on labor costs.

3. Performance

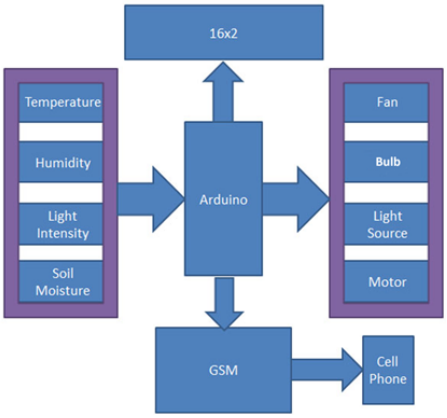

Fig. 1. Block diagram

In this system Arduino is the heart of the whole system that controls the process. When the senses sense any changes in the environment or in the ground Arduino works and processes the required function. When the ground moisture sensor does not detect moisture in the soil Arduino turns on the water pump and sends a message to the owner of the condition that the vehicle

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is turned on. And when the LDR hears low light Arduino controls and turns on the artificial lights. In this system a 16 × 2 LCD is used to display the status of all functions such as Motor on or off, temperature, humidity and light conditions. LCD data pins are connected in 4-bit mode (data pin d5, d6, d7, d8 pin LCD is directly connected to pin no. 4, 5, 6, 7 Arduino pin and pin pin LCD's Rs and En are connected by pin no. 2, 3 of Arduino). LDR is used to detect light intensity and its output is connected to Arduino's Analog pin A0 while the input lamp is connected using a transmitter. Transfers are operated using ULN2003 and are controlled using Arduino PIN number 10. Moisture and temperature sensors are used to detect moisture and heat directly connected to Arduino's Analog pin A1. Fan connected directly to pin 8 of Arduino and CFL light (instead of Sprays) connected to pin 11 of Arduino via Relay. The water pump is also connected via a relay and controlled by 12 Arduino pin and ground moisture sensor, pin number 9 is used. The GSM module is also connected to the region with a message alert about the status to be sent to the owner. The GSM pin Rx module is directly connected to the Arduino Tx pin. For detailed messaging details using GSM please refer to our previous Messaging related projects using the GSM and Arduino module.

The heat sensor is used to sense the heat. When the temperature exceeds from a specified level or critical level, the system automatically turns on the fan and a message is sent to the owner or operator with information of all parameters (Temperature, Moisture, Light power and electrical appliances in closed mode). And when the temperature comes to a normal range or below a specified temperature the fan automatically shuts off. Moisture is measured using a humidity sensor If the natural humidity is below the specified levels, the sprays are turned on automatically and when the humidity level passes from the specified level spray is automatically turned off. But here in this project instead of spray I used CFL light to show spray. A status or notification message is also sent to the system owner via the GSM Module.Light intensity is an important factor in plant growth. When low light intensity affects plant growth. To solve the problem of low light, artificial lighting is used. When the light intensity is below the specified level, the artificial lights turn on, and when the bright light reaches a normal level the artificial lights go out and a notification message is also sent to the owner. LDR light detection is used. Light intensity is usually measured in LUX so displaying 100 LUX light is used as a defined or limit level. When the bright light exceeds from 100 LUX, the artificial lights turn on automatically.

The availability of water to plants is very important for good growth. So here in this show I used a water pump and a soil moisture sensor, to find soil moisture. Two soil moisture sensor probes used on the ground were used. When the sensor detects moisture in the soil the system will turn on the water pump until it reaches the required level. The notice is also sent to the owner with a water pump condition such as Motor on or Motor Off. Here to find soil moisture the transistor is used as a switch.

4. Arduino UNO

In this system Arduino is the heart of the whole system that controls the process. When the senses sense any changes in the environment or in the ground Arduino works and processes the required function. When the ground moisture sensor does not detect moisture in the soil Arduino turns on the water pump and sends a message to the owner of the condition that the vehicle is turned on. Arduino Has a microcontroller board based on ATmega328 (datasheet). It has 14 digital input / output pins (of which 6 can be used as PWM output), 6 analog input, 16 MHz ceramic resonator, USB connection and reset button. It contains everything needed to support a microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. The Uno is different from all previous board. It installs the Atmega16U2 configured as a USB-to-serial converter.

1) Power

Arduino Uno can be powered by a USB connection or an external power supply. The power source is selected automatically. External power may come from an AC-to-DC adapter or battery. The adapter can be connected by connecting a 2.1mm centre plug to the power board jack. Battery charging can be plugged into the Gnd and Vin pin of the POWER connector. The board can operate on an external supply of 6 to 20 volts. If given less than 7V, however, the 5V pin can provide less than five volts and the board may be unstable. If you use more than 12V, the voltage regulator can overheat and damage the board. Recommended distance is 7 to 12 volts.

The power pins are as follows:

- VIN: Arduino board power supply when using an external power source (unlike 5 volts from a USB connection or other controlled power source). You can plug in with this pin, or, if you power it with a jack jack, get it with this pin.
- 5V: This pin removes 5V controlled from the controller on board. The board can be powered from DC power
- 3V3: 3.3 volt supply made controller on board. The maximum current drawing is 50 mA.
- GND: Earth anchors.

2) Inputs and outputs

Each of the 14 digital in Uno can be used as input or output.

- Series: 0 (RX) and 1 (TX). Used to receive (RX) and transfer (TX) TTL serial data. These pins are connected to the ATmega8U2 USB-to-TTL Serial chip compatible connectors.
- LED: 13. There is a built-in LED connected to a digital pin 13. If the pin has a high value, the LED is turned on, when the pin is FULL, turned off.

The Uno has 6 analog inputs, with labels A0 to A5, each offering ten pieces of resolution (i.e. 1024 different values). They automatically measure themselves from the ground up to 5 volts, but it is possible to change the top end of their range using the AREF pin function and the analog Reference () function. In addition, some anchors have special functions:

- AREF. Reliable power of analog input. Used for

analog () indicator.

- Reset. Bring this queue to reset the controller. It is usually used to add a reset button to the blocking protection on that board.

5. Test and Analysis Result

It is important to know the parameters that will be measured in the interface for obtaining visual data, and how it should be measured. Central to managing the control framework is the control system to be followed. The most straightforward process is the use of sensors on the edges that have a direct impact on the reconstruction of gadgets. Where possible, the temperature inside the heater can be influenced by temperature control, fans, or window openings beyond the maximum allowable distance. Light intensity can be controlled by using four levels of edge. As the light intensity decreases one light can be illuminated.

6. Conclusion and Future Work

This project provides the construction of a complete automated temperature control system. From the test it seems to meet all the temperature monitoring requirements. Automatic temperature sensor design can help increase plant productivity. As mentioned earlier, we not only provide automatic controls for devices to inform farmers about temperature parameters in the house in order to take precautionary measures. So with this establishment, crop production can continue to grow to address the problem of world hunger. We can therefore say that the thermal monitoring system that uses GSM is much better than the same system using different technologies.

References

[1] Advantages and disadvantages of Greenhouse, available on the EHOW website online :: http://www.ehow.com

[2] GSM features. Retrieved from GSM's online website: http://gsmserver.com/articles/gsmcharact.p hp

[3] Jiabul Hoque, Md. Razu Ahmed Saif Hannan presented the paper on “An Automated Greenhouse Monitoring and Controlling System using Sensors and Solar Power”

[4] Priyanka P. Deshmukh, Swarup D. Deshmukh presented a paper entitled “Monitoring and Managing a Green House Using Gsm and Android.

[5] GSM course. From website: http://ecee.colorado.edu/~ecen4242/gsm/index.htm