IOT BASED WATER QUALITY TESTING BY USING ANDROID

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ABSTRACT: Water is a one of the valuable resources to survive our lives. The quality of the drinking water should be monitored. So, a new approach Internet of Things (IOT) based water quality monitoring system has been proposed. In this paper, we present the design of IOT based water quality monitoring system which examines the quality of water. This monitoring system contains some sensors for measuring the water quality parameters like pH, turbidity, conductivity, dissolved oxygen, temperature. The measured values from sensors are processed by the micro controller. These values are transmitted remotely to the core controller called PIC micro controller by using IOT protocol. Finally, the data on the sensors can view on the internet browser application using cloud computing. If the quality of motor water is good then we can pump the water through motor. If any case the testing leads to bad content then we are switching on one more motor in order to make that water to purify.

Keywords: PIC16F877A microcontroller, 16*2LCD Display, PH Sensor, LM35 Sensor, Moisture Sensor, Humidity Sensor,ESP8266 IOT Module, Gear Motor & Motor Driver.

I.INTRODUCTION

An automation of irrigation systems has various positive effects. Irrigation is depends up on actual dynamic demands of the plant itself. The plant root zone is effectively reflecting all environmental factors which are acting on the plant.

The plant itself verifies the degree of irrigation required when operating within the controlled parameters. Soil moisture, soil temperature, conductivity of soil, humidity and pH level control the irrigation scheduling.These sensors provide feedback to the controller to control its operation.Smart water quality monitoring system is designed by Fiona Regon, Antoin, and Audrey. Sensors are used in this monitoring system. These sensors collect the data from all the nodes. This data is given to the remote sensors. The simultaneous perception of water is a free renewable resource. In many parts of North America, water consumption is taxed. Therefore, let us assume that water will soon become a very expensive resource.

Moreover, due to the excess cost of water the labour also become more and more expensive. As a result, if there is no effort invested in optimizing these resources, there will be more money involved in the same process. Technology is probably a solution for reducing the cost and prevention of loss of resources.

II.WORKING PRINCIPLE

The prototype has a necessity to examine the water consumption. It sends the data to the back end system that is internet. Water consumption patterns are analyzed by conducting at the data base in the back end. Ideal water consumption is calculated on the basis of quantity of water available in the primary source of supply that is reservoir. The circuit diagram is shown in below figure.

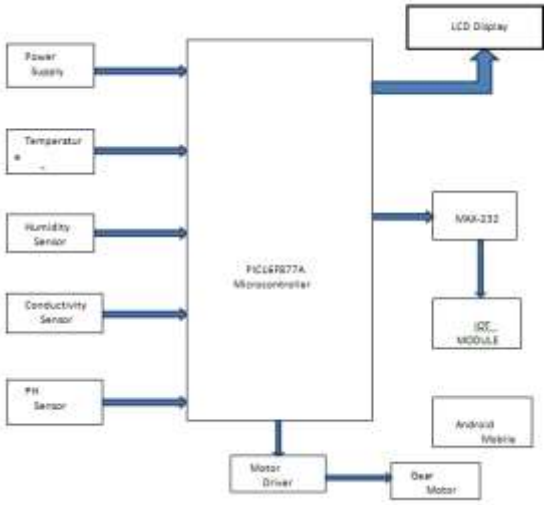

Fig 1. Block Diagram.

The installation cost is commonly determines the feasibility and viability of a project. The saving of water is an important aspect because there is a demand for minimizing the water loss and for maximizing the efficiency of water.

Hence, the main aim is to minimize the cost of labor, minimal supervision and calibration must be needed. The system should be operated with optimized consistency. The power consumption is also monitored. Automatic Water Quality Monitoring System Circuit Design

Regulated Power supply: Generally, the range of unregulated power supply is from 9v to 12v DC. KA8705 voltage regulator IC is used to make a 5v power supply. It is simple for the usage. The positive lead from the unregulated DC power supply is connected to the input

pin. The negative lead is connected to the common pin. The output pin can produce the 5v power supply.

III.PIC16F877A MICRO CONTROLLER

Micro controller contains many electronic circuits which are built in to it. They can decode the instructions and converted in to the electrical signals. There are different micro controllers. We can use the PIC16877A micro controller in this paper which is shown in the below figure.

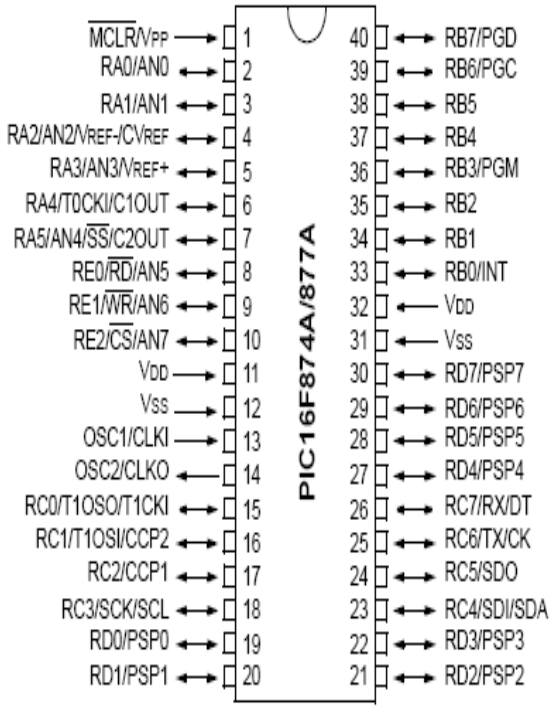

Fig 2. Pic16877a Pin Diagram.

LM-35 Sensor: By using thermistor we can measure the temperature more accurately. The sensor circuitry is sealed and not subject to oxidation, etc. The LM35 sensor provides a higher output voltage compared with thermocouples and may not require that the output voltage be amplified.

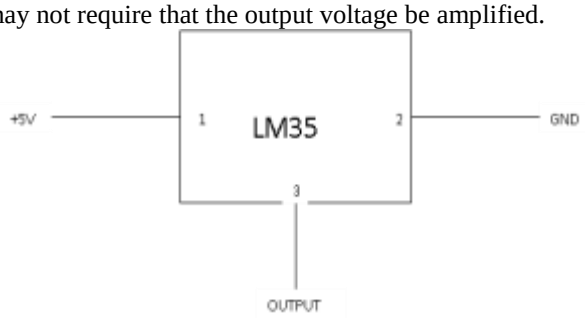

Fig 3. Lm-35 Sensor.

pH monitoring: pH monitoring is the current gold standard for diagnosis of Gastro Esophageal Reflux Disease (GERD). It provides the direct physiologic measurement of acid in the Esophagus. It is the most objective method to document reflux disease, assess the severity of the disease and monitor the response of the disease to medical or surgical treatment. It can also be used in diagnosing Laryngo pharyngeal reflux.

Fig 4. Ph Sensor.

LCD: A liquid crystal display commonly referred as LCD. It is a thin, flat display device which made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. It is often utilized in battery-powered electronic devices because it uses very small amounts of electric power.

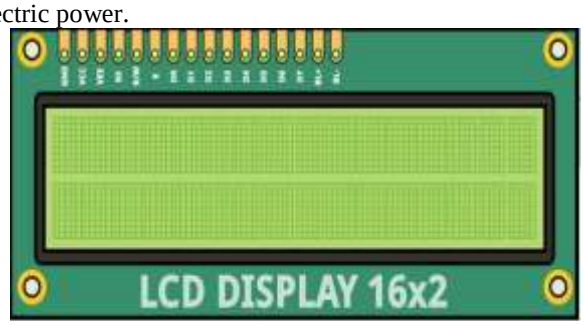

Fig 5. Lcd Display.

Humidity Sensor: Humidity is the presence of water in air. The amount of water vapor which is present in air can affect human comfort moreover many manufacturing processes in industries. The existence of water vapor also influences various physical, chemical and biological processes. In industries humidity measurement is critical because it may affect the business cost of the product and the health and safety of the personnel. Hence, humidity sensing is very essential, especially in the control systems for industrial processes and human comfort.

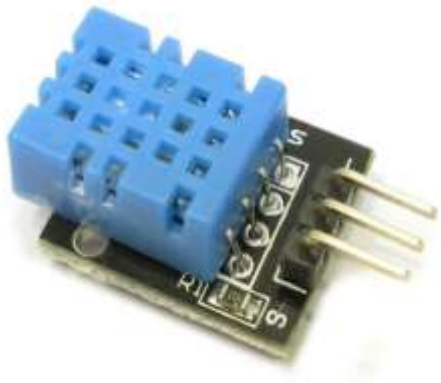

Fig 6. Humidity Sensor.

IV.RESULTS

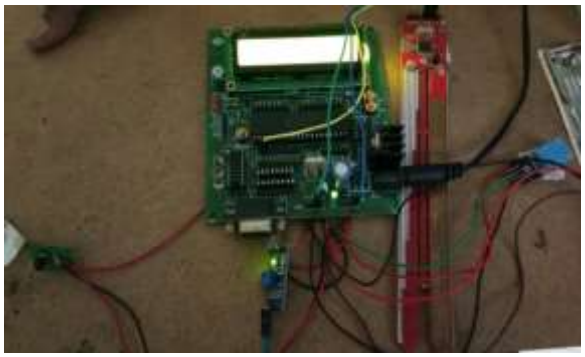

FIG 7. OUTPUT

V.CONCLUSION

The modern challenge for the improvement of plant growth and reducing costs justifies the development of an automated irrigation system that will minimize the waste of water and reduce labor. A feedback-based approach enables more efficient handling of resources than open-loop systems at the expense of complexity and stability issues. A design is proposed for a residential environment. The different sections have been simulated and tested. Their effectiveness in reducing water consumption and human intervention has been demonstrated. The design is also resource-efficient by itself by consuming low power. Nevertheless, much more testing on the system as a whole must be conducted to measure the real water and lab our savings.

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