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A Review on Solar Power Automated Irrigation System

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ABSTRACT: This review paper is on Solar Power Automated Irrigation System. This paper presents a model of uneven rate automatic microcontroller-based irrigation system. Solar power is utilized as only source of power to overall system. Sensors are located on paddy field & these sensors interminably sense by water level &give text to countryman about notifying water level. Without look up at paddy fields, countrymen can get details about water level. Based on water level, a countryman can manage motor by sending a text from his mobile even from a rural place. However, if water level reaches to riskylevel; motor will automatically start without support of countryman to check actual water level infield.

KEYWORDS: Microcontroller, PV (photovoltaic)Cell, Arduino UNO (one in Italian) , GSM (Global System for Mobile), Mobile, Humidity Sensor, Moisture Sensor, Water Level Sensor, Battery, Inverter.

I. INTRODUCTION

The continuously rise in demand of eats essentials quick development in eats production technology. In most of enlarge countries such as Bangladesh, national providence mostly hangs on Agriculture. But these countries are incapable to make actual use of husbandry resources due to high reliance on rain. Currently different irrigation systems are used to reduce reliance of rain & mainly existing irrigation systems are driven by electrical power & manually ON/OFF scheduling swayed. Countryman's usually control electric motors notice soil, crop &weather conditions by look up on sites. These manually swayed irrigation systems cannot ensure a actual level of water in site. Due to absence of electricity & mismanagement in manually swaying systems, sometimes their fields become dry & sometimes flooded with surplus water. These unplanned & manually swayed irrigation systems also can use a notable amount of water waste. Automatic irrigation system is usually pattern for warranty actual level of water for growing up plants all through season. Even when countrymen are away, these automatic irrigation systems always guarantee actual level of water incites. In addition, it provides maximum water usage efficiency by monitoring soil moistures at supreme level. Several research works have supposed aspects of development of automated irrigation system with development of technology in water saving irrigation & automation, automatic irrigation is going to be more popular informs. For example, a GSM based automatic irrigation water control is proposed. A mobile irrigation system has been exp& which improves water organization by saving water. Artificial Neural Network (ANN) based intelligent control system is proposed for effective irrigation scheduling in paddy fields. Inpats, most of proposed irrigation models are manage by electricity & their similar automated hardware are fixed rate. & these models are highly precious as those were made of costly devices. Thus, due to higher cost, general countrymen

cannot buy it for their deploy; usually these models are utilized informs only for trial or demonstration sponsor by executive or any private organization. Another hand, uneven rate automated swaying approach improves overall irrigation system reducing total cost &increases produce of crop yield. Therefore, cheap price, alternative source of electricity &uneven rate automated operation key concern In Design of an irrigation system for common countrymen. In this paper, we present a solar power swayed automated irrigation system. Sensors collect statistics about water level of paddy fields &update countryman microwave. Countryman can switch ON &OFF motor based on water level even from distant places using a cell phone. However, if water level reaches to threat level, then motor will automatically start to ensure actual water level in paddy field.
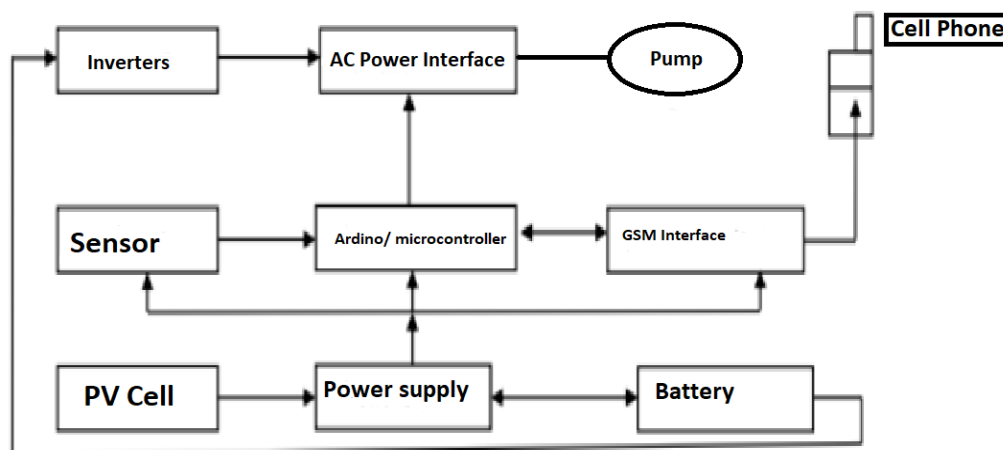

Fig no. (1): Block Diagram of Automated Irrigation System

II.LITERATURE REVIEW

1. Jia Uddin, S.M. Taslim Reza, Qader Newaz, Jamal Uddin, Touhidul Islam, & Jong-Myon Kim, Dept. Of Electrical & Electronic Engineering, International Islamic University Chittagong 154/A, College Road, Chawk Bazar, Chittagong-4200, Bangladesh. This paper proposes a model of uneven rate automatic microcontroller-based irrigation system. Solar power is used as only the source of power to control the overall system. Sensors are placed on the paddy field & these sensors continuously sense the water level & give the message to the countryman informing the water level. Without visiting the paddy fields, countrymen can get the information about the water level

2. Avinash Chitransh, Akash Sagar, Amit Kumar UG Student Galgotia's College Of Engineering & Technology, Greater Noida, UP, India UG Student Galgotia's College Of Engineering & Technology, Greater Noida, UP, India 3UG Student Galgotia's College Of Engineering & Technology, Greater Noida, UP, IndiaThis paper discusses about the various automated irrigation techniques available to the countryman. The key objective of this paper is to provide a solar powered microcontroller based automated irrigation system. Minimization of human intervention in farm l& irrigation can be done by using this automated technology

3. A. Senthil Kumar, K. Manikandan Assistant professor, Dept. of ECE, Salem Engineering College, Salem, Tamilnadu, India PG Student [VLSI], Dept. of ECE, Salem Engineering College, Salem, Tamilnadu, IndiaAgriculture is the source of living of majority Indians & it also has a countless influence on economy of the country. The objective of our project is to reduce this manual involvement by the countryman by using an automated irrigation system which purpose is to enhance water use for husbandry crops. The inspiration for this project came from the countries where economy is based on agriculture& the climatic conditions prime to shortage of rains & scarcity of water.

III. PROPOSED SYSTEM

A complete block diagram of modern automated irrigation system. The sector of paddy field usually may wrap up several hundreds of hectares; to wrap the whole sector we need to place unlike sensors in the paddy field. sensors

will always notice water level of fieldwill send a text to user's cell phone to inform the condition of irrigation. Countryman will control the motor sending assigned code to the microcontroller. A Photo Voltaic (PV) cell is the only source of energy to drive this advance system. The energy will be stock the DC Battery through power supply. The sensors, microcontroller& cell phone interface are handle by power. However, pump is handled by AC power; inverter is used to convert DC to AC power, & AC power interface verify the actual AC power supply to pump.

A. HARDWARE& SOFTWARE COMPONENTS

The process has to be done both on software & hardware. The required equipment is as follows: PC with Arduino software, ArduinoUno. Soil moisture sensor (YL 69), Humidity sensor (DHT11), Temperaturesensor, GSM module, Relays, Solar panels, LCD 20*4 display, DC motors, DC fan.

B. SENSORS

The involvement of sensors in mechanized irrigation is most prime. They play essential role to make the system mechanized. Without them, the procedure cannot be visualizingas automatic. Three different sensors may be used. These three sensors measure three different parameters. The sensors may include: i. YL 69 ii. DHT11 iii. LM35 YL 69 is the soil moisture sensor. They sense the water content in soil. These are most prime facts furtherby them is most relative concerning water requirement. The sensor may have two prongs which are submersed in the soil. It has 4 ports. Ports are for GND, VCC & outputs for analog & digital values. DHT11 is the humidity sensor. They detect the water content in atmosphere. The high humidity may increase dampness in soil. LM35 is the temperature sensor. They judge the temperature of environment. The supremacy of LM35 is its characteristics that it always gives temperature in Celsius further calculations are not required to remodel output to get temperature in Celsius. The modern two sensors are used to make the system steadier. These two sensors may leave in open environment. They constantly give the value of temperature &dampness. When the temperature or dampness level of environment alter, it may affect the wetness level of soil so to eliminate any changes that may vary the procedure of irrigation these sensors send signal to Arduino to take some action. In the design, if humidity level goes above our defined value then to mild its effect the Arduino sends signal to DC fans located near the sensors. The DC fans automatically turn on themselves & kept on streaming until normal conditions are execute
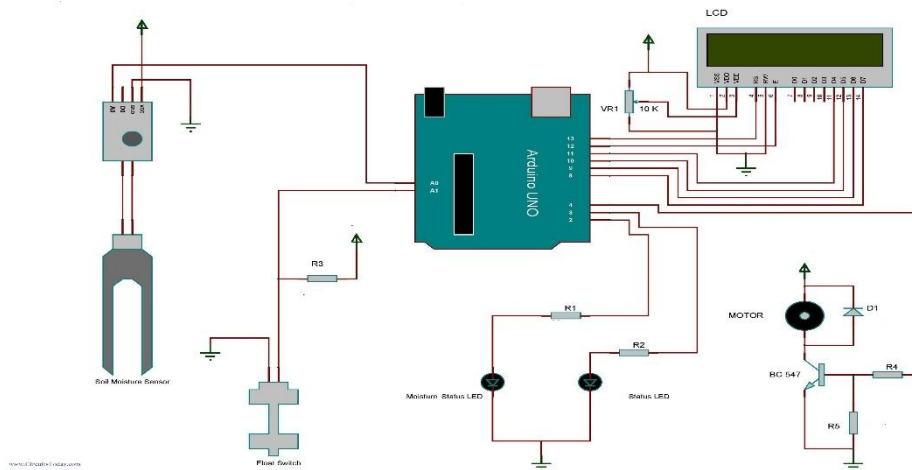

Fig (2): Circuit Diagram of solar automated irrigation system

C. GSM MODULE

GSM has been used for GPS purpose. This module makes the system wireless. The standing of experienceoperation will be modernized to user via SMS. This module is attached to the Arduino board.

D. PHOTO VOLTAIC PANELS

Solar panels are used to release irrigation from the fetters of load discharge. Thedemand of water is judged & information is transfer to the solar circuit which adjust its arrangement such that it supply enough DC power to operate the pumps &fulfil the allocate task. This technique is not only power methodical but also demonstrate to be

cost virtual when regard in long run. The solar irrigation process proves to be of great worth to the irrigation town which are far from grid stage.

IV. CONCLUSION

Agriculture sector is the backbone of our country. Due todecreased availability of water & increasing demand forhigher agriculture productivity, the water saving automatedirrigation technique has now emerged as a topic of highconcern & immense importance. It is the precise method forfarm irrigation & an important tool for accurate soilmoisture control for good crop yield. Also, the use of solarpanels for supplying power to irrigation systems decreasesthe burden on grid power. The overall benefits are high &system is economical in long run.

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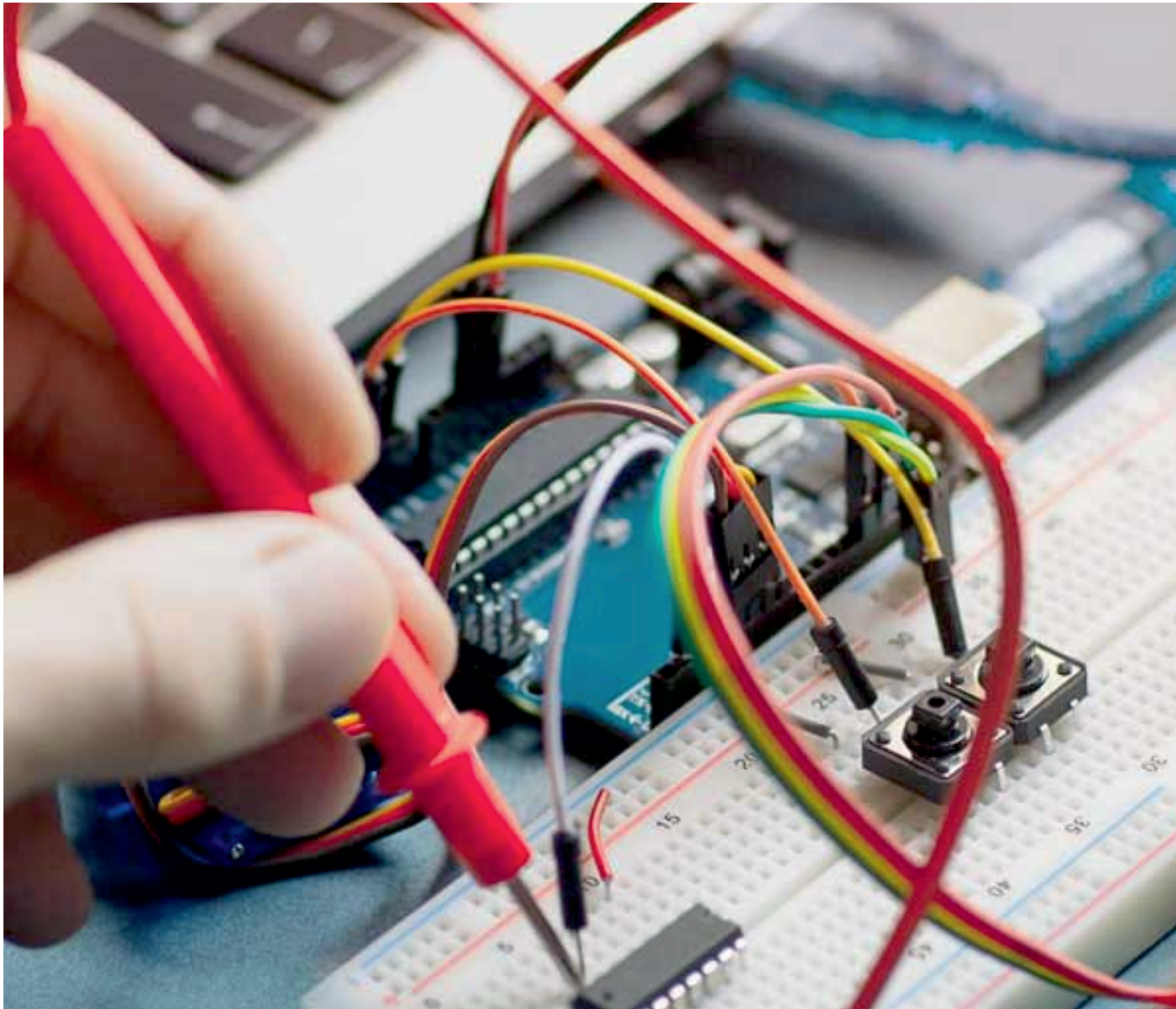
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