iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** I **Month of publication:** January 2022

DOI: https://doi.org/10.22214/ijraset.2022.39995

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue I Jan 2022- Available at www.ijraset.com

A Review on Solar Powered Irrigation System Using Arduino UNO

Asiya Sheikh[1], Tejaswini Lambat[2], Aashna Shrirame[3], Leena Lohe[4], Dr. Rahul Burange[5]
[1, 2, 3, 4, 5]*Dept. of Electronics Engineering, K. D. K. College of Engineering, Nagpur*

Abstract: ***Water and meals are the simple requirement of human being to live to tell the tale life. Along with a number environmental worries and weather change, water shortage and meals safety are developing in today's society. Water irrigation stays the largest water utilization globally and creates a lot of water wastage. With the development of applied science nowadays, number of techniques are developed in order to limit the poor influences on the environment. Using renewable resources and IOT technology, it can generate a sustainable and accountable conservation gadget over time. The Solar-Powered Smart Irrigation System ambitions to furnish an IOT answer in automating the watering procedure using an Arduino-based microcontroller and sensors.***

Keywords: Arduino UNO, Soil Moisture Sensor, LCD Display, DHT11, Water Pump.

I. INTRODUCTION

In closing ten year, there is a rapid development in Smart Agricultural Systems. Show that agriculture has magnificent significance worldwide. Indeed, in India for example, about 70 percent of the humans depends upon the necessary region of agriculture. In the past, irrigation structures used to be established on the mills to irrigate the farm with the aid of traditional techniques besides understanding the gorgeous portions of these crops. These historical structures are a primary reason of the waste of massive portions of water and for this reason spoil some plants due to the fact of the lack of ample portions of water. However, with the current technological developments, there have been revolutionary structures for irrigation except the farmer interfering in the irrigation process. Because the Sultanate of Oman is in a vicinity struggling from lack of rain during the yr and lack of groundwater, present day irrigation structures will decrease this problem of lack of water. Indeed, clever structures have established their functionality to modify the irrigation of crops. It additionally works to quit the waste of water in irrigation. Furthermore, it will work to reduce variety of personnel which lead to saving money. In this paper, we strive to resolve the troubles of irrigation such as mistakes brought about by way of farmers and the consumption of massive portions of water. These mistakes have an effect on bushes as their fungi can also additionally have an effect on the universal inventory of water.

II. LITERATURE SURVEY

We have studied this following refrences and get targeted expertise about the work, and additionally talk about some of them to analyze matters which required in this project.

1) MPPT-Based Solar Powered Water Pumping with RMS: Augmentation of IoE Technology. By S Mukherjee, S Chattaraj, D Prasad. published by- igi-global.com in 2021 that in the present era of technology drift, the Internet of Things (IoT) is a promising technology that shows the considerable transition from enterprises to businesses. In this context, renewable energy has played critical roles in developing the agricultural sector with its.

2) Role of IoT technology in agriculture: A systematic literature review by MS Farooq, S Riaz, A Abid, T Umer, YB Zikria . published by- mdpi.com in 2020 According to this research every WSN-based system monitors the rainfall and water level in irrigation systems. A web- WSN and solar powered Unmanned Aerial Vehicle (UAV) system has been presented.

3) Solar powered water pumping systems for irrigation: a comprehensive review on developments and prospects towards a green energy approach by SS Kumar, C Bibin, K Akash, K Aravindan…published by - Materials Today in 2020 – Elsevier. From this we get to know that there are around 18 million pump sets and around 0.5 million new connections per year is

4) Smart Agriculture System Powered by Solar Energy by IMI Altahir, MEA Ahmed, MEA Adam, IMI Mahmoud.published by- repository.sustech.edu in 2020. According to this in each year we will get the cost of one kWh in each year of the comparison period, which carried out by sending the message "AUTO IRRIGATION SYS", from the Arduino to the LCD. a smart irrigation system was designed to irrigate small and medium farms powered by solar. Still number of research are going on this irrigation system project. The system may be further modified in the emerging technology which stores the data to the cloud server for further analysis and immediate actions if necessary.

©IJRASET: All Rights are Reserved

III.PROPOSED SYSTEM

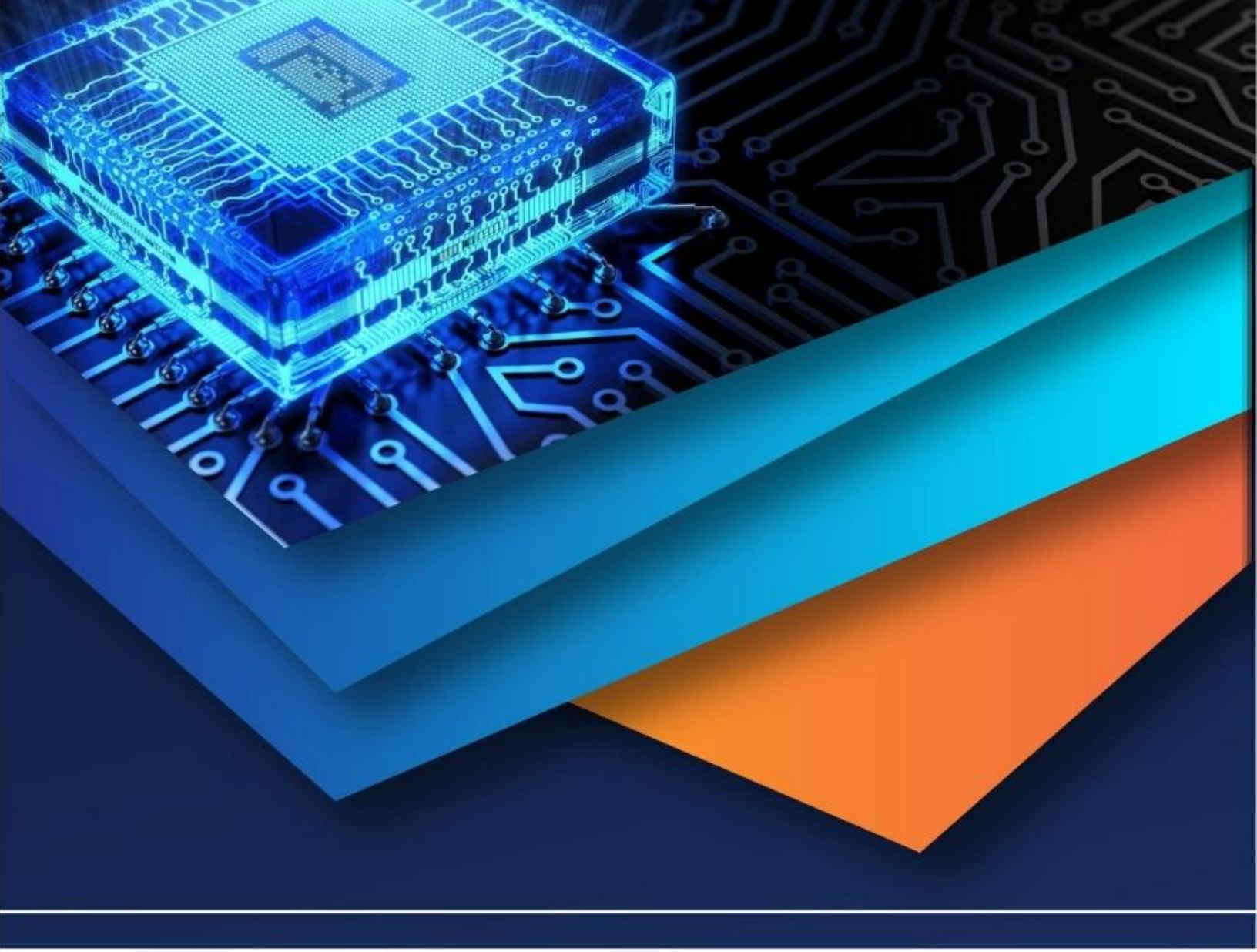
The photo voltaic powered irrigation system, the use of Arduino demonstrates a series of statistics. The use of sensors for productiveness and efficiency. It generates the easy electricity by way of using the photo voltaic technology which improves the fee administration and waste discount for standard accelerated gadget performance. The device is set to supply an extra productive and sustainable irrigation technique and advisable to the environment. The gadget may additionally have modified in the rising science which sends the record to the cloud server for an addition evaluation and on the spot moves if necessary. Also, countless sensors can be delivered to the device such as monitoring the local weather prerequisites with rainfall sensor and similarly improvement on the large scale basis.

IV.CONCLUSION

By imposing the proposed system, there are quite a number advantages for the authorities and the farmers. For the authorities an answer for electrical disaster is proposed. By the usage of the automated irrigation system, it optimizes the utilization of water by means of lowering wastage and minimize the human intervention for farmers. The extra strength produced the use of photo voltaic panels can additionally be given to the grid with small changes in the device circuit, which can be a supply of the income of the farmer. Hence encouraging farming in India and identical time giving an answer for electricity crisis. Proposed machine is handy to put in force and surrounding pleasant answer for irrigation fields.

REFERENCES

[1] MPPT-Based Solar Powered Water Pumping with RMS: Augmentation of IoE
   a. Technology by S Mukherjee, S Chattaraj, D Prasad. published by- igi-global.com in 2021
[2] Role of IoT technology in agriculture: A systematic literature review by MS Farooq, S
   a. Riaz, A Abid, T Umer, YB Zikria published by- mdpi.com in 2020
[3] Solar powered water pumping systems for irrigation: a comprehensive review on developments and prospects towards a green energy approach by SS Kumar, C Bibin, K. Akash, K Aravindan… published by - Materials Today in 2020 – Elsevier
[4] Smart Agriculture System Powered by Solar Energy by IMI Altahir, MEA Ahmed, MEA Adam, IMI Mahmoud.published by- repository.sustech.edu in 2020
[5] Burgess, M. (2018, February 16). What is the Internet of Things? WIRED explains. Retrieved from WIRED: https://www.wired.co.uk/article/internet-of-things-what-isexplained-iot
[6] Hans Hartung, L. P. (2018). The benefits and risks of solar-powered irrigation – a global overview. Food and Agriculture Organization of the United Nations, 51. Retrieved from Food and Agriculture Organization of the United Nations.
[7] Irrigation New Zealand. (2018, August 29). Irrigation New Zealand: Good Farming Practices and Fast Facts. Retrieved from Irrigation New Zealand: https://www.irrigationnz.co.nz/KnowledgeResources/Category?Action=View&Category _id=75
[8] Jaycar Electronics. (2019). Miniature 12V 3A PWM Solar Charge Controller. Retrieved from Jaycar Electronics: https://www.jaycar.co.nz/miniature-12v-3a-pwm-solar-chargecontroller/p/MP3762
[9] Last Minute Engineers. (2019). How HC-SR04 Ultrasonic Sensor Works & Interface It with Arduino. Retrieved from Last Minute Engineers: https://lastminuteengineers.com/arduino-sr04-ultrasonic-sensor-tutorial.
[10] McFadden, C. (2017, May 06). How Exactly Does Drip Irrigation Work? Retrieved from Interesting Engineering: https://interestingengineering.com/how-exactly-does-dripirrigation-work
[11] Pravina B. Chikankar, D. M. (2015). An automatic irrigation system using ZigBee in wireless sensor network. 10.1109/PERVASIVE.2015.7086997, 1-5.
[12] Roblin, S. (2016, August 3). Solar-powered irrigation: A solution to water management in agriculture? Retrieved from Renewable Energy Focus: http://www.renewableenergyfocus.com/view/44586/solar-powered-irrigation-a-solutionto-water-management-in-agriculture.
[13] Saurabh Suman, S. K. (2017). Solar Powered Automatic Irrigation System on Sensing Moisture Content Using Arduino and GSM. International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE), 549-555.
[14] Sciforce. (2019, February 12). Smart Farming: The Future of Agriculture. Retrieved from iOT For All: https://www.iotforall.com/smart-farming-future-of-agriculture/



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)