International Journal of Engineering Technology and Management Sciences
Website: ijetms.in Issue: 3 Volume No.7 May - June – 2023
DOI:10.46647/ijetms.2023.v07i03.083 ISSN: 2581-4621

Automatic water supply system and water level monitoring development

[1] Akash Kantikar, [1] Arunkumar, [1] Vinay J., [1] Kartik Vijayasinha Desai,
[2] Dr. Pavithra G., [3] Dr. Sindhu Sree M., [4]Dr. T.C.Manjunath*,
[5]Rajashekher Koyyeda, [6]Aditya T.G.
[1]First Semester BE (ECE) Students, Dept. of Electronics & Communication Engg.,
Dayananda Sagar College of Engineering, Bangalore, Karnataka
[2]Associate Prof., Electronics & Communication Engg. Dept.,
Dayananda Sagar College of Engineering, Bangalore, Karnataka
[3]Assistant Prof., Electronics & Communication Engg. Dept.,
Dayananda Sagar College of Engineering, Bangalore, Karnataka
[4] Professor & HOD, Electronics & Communication Engg. Dept.,
Dayananda Sagar College of Engineering, Bangalore, Karnataka
[5]Asst. Prof., EEE Dept., Tatyasaheb Kore Inst. of Engg. & Tech., Warananagar, Kolhapur
[6] Fifth Sem Student, CSE Dept., PES University, Bangalore

Abstract
In this paper the automatic water supply system and water level monitoring development is presented. In urban areas, fixed flow rates are provided for water supply to residences and commercial establishments. However, incidents of water theft have been reported where certain customers/users connect motor-pump sets to the waterlines to draw excess water. To prevent such theft, an embedded-based remote water monitoring and theft prevention system is proposed in this project. Each consumer will be provided with an embedded-based water flow monitoring system consisting of a microcontroller and a flow sensor to record the flow rate, and an electrically operated solenoid valve to supply water to the consumers. The valve will turn on/off to stop the water supply whenever the flow rate exceeds a predefined limit. The proposed system will use a GSM modem for wireless communication to transmit information to a responsible officer's cell phone for immediate action. This project aims to address the issue of water scarcity by managing and providing water resources using an automatic water management system with microcontroller and a python-based management software to handle user account details. This approach not only monitors consumption but also helps in finding water pollution, thus enhancing the overall efficiency of the water supply system. The work done & presented in this paper is the result of the mini-project work that has been done by the first sem engineering students of the college and as such there is little novelty in it and the references are being taken from various sources from the internet, the paper is being written by the students to test their writing skills in the starting of their engineering career and also to test the presentation skills during their mini-project presentation. The work done & presented in this paper is the report of the assignment / alternate assessment tool as a part and parcel of the academic assignment of the first year subject on nanotechnology & IoT.
Keywords : Water, Monitor, Embedded, Valve, GSM.

1. Introduction
The efficient management of water resources is crucial for ensuring sustainable and reliable water supply, especially in areas facing water scarcity or where manual water management systems are impractical. In response to these challenges, the development of automatic water supply systems with water level monitoring has emerged as a promising solution [1]. This paper introduces the concept of an automatic water supply system and explores the advancements in water level monitoring technology, highlighting its significance for efficient water resource management [2].
An automatic water supply system is designed to regulate the flow of water based on demand and ensure a continuous and optimized water supply. These systems utilize sensors, controllers, and

International Journal of Engineering Technology and Management Sciences
Website: ijetms.in Issue: 3 Volume No.7 May - June – 2023
DOI:10.46647/ijetms.2023.v07i03.083 ISSN: 2581-4621

valves to automate the water supply process, eliminating the need for manual intervention. The integration of water level monitoring further enhances the efficiency and effectiveness of these systems which is shown in Fig. 1 [3].

2. Monitoring technology

Water level monitoring technology enables the real-time monitoring and measurement of water levels in various reservoirs, tanks, or water sources. This data is crucial for accurate water management, as it allows for informed decision-making regarding water supply, distribution, and conservation efforts [4]. By continuously monitoring water levels, automatic water supply systems can adjust water flow, activate pumps, or trigger alarms when water levels reach critical thresholds, ensuring a reliable and sustainable water supply, which is shown in Fig. 2 [5].

The development of automatic water supply systems with water level monitoring brings several advantages to water resource management. Firstly, it enhances operational efficiency by automating the water supply process [6]. This eliminates the need for manual monitoring and intervention, reducing human error and optimizing the utilization of water resources. Additionally, the ability to monitor water levels in real-time enables proactive management and prevents potential water shortages or wastage, which is shown in Fig. 3 [7].

3. Design & development process

Moreover, the integration of automatic water supply systems with water level monitoring is applicable in various contexts. It is particularly valuable in agricultural irrigation, where precise control of water supply based on crop requirements is essential for optimal plant growth and water conservation [8]. Additionally, these systems find applications in urban water supply networks, industrial settings, and water distribution systems, ensuring consistent water availability and preventing overflows or leaks [9].

Advancements in technology have contributed to the development of more sophisticated water level monitoring systems. Traditional methods, such as float switches or manual gauges, have been complemented by modern techniques such as ultrasonic sensors, pressure transducers, or IoT-based systems [10]. These technologies provide accurate and reliable measurements, often with remote monitoring capabilities, enabling efficient water resource management even in large-scale or geographically dispersed systems.

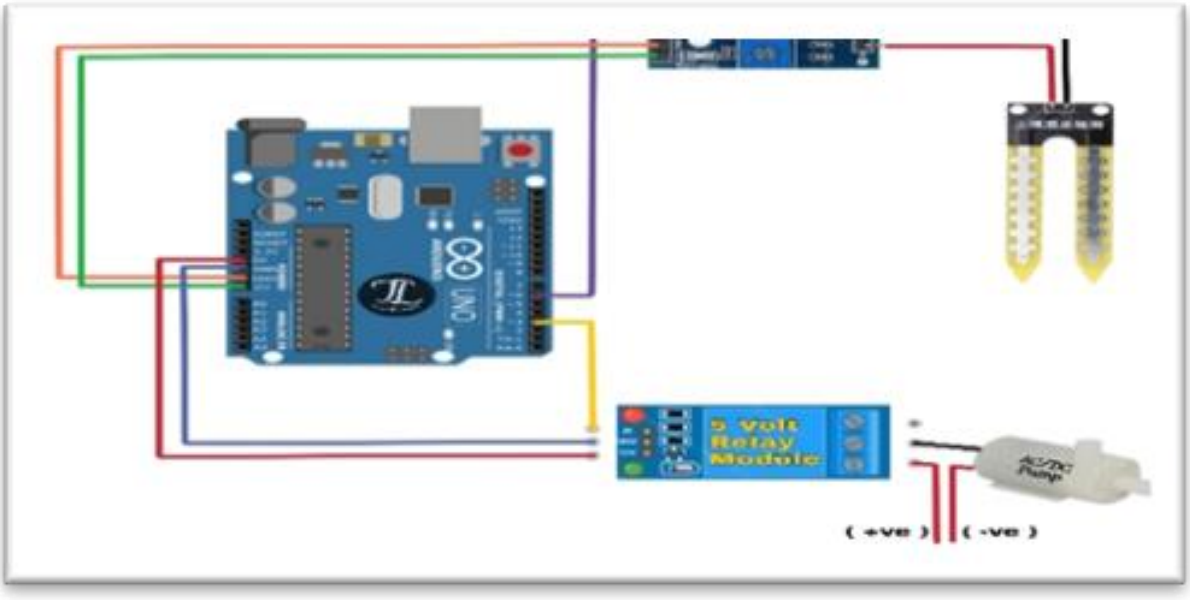

Fig. 1 : Circuit diagram of the sensor for water detection process

International Journal of Engineering Technology and Management Sciences
Website: ijetms.in Issue: 3 Volume No.7 May - June – 2023
DOI:10.46647/ijetms.2023.v07i03.083 ISSN: 2581-4621

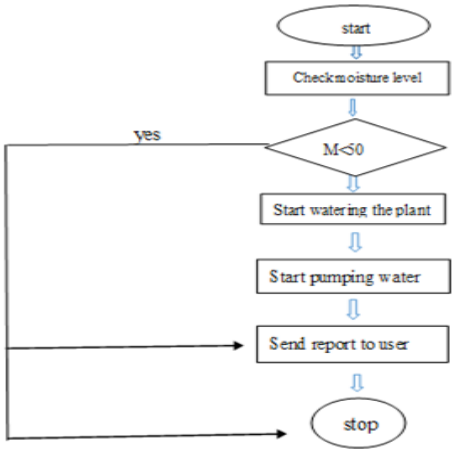

Fig. 2 : Flowchart of Automated plant watering system

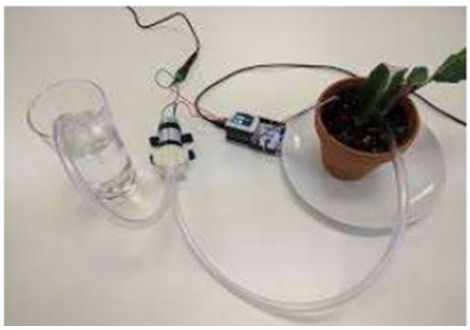

Fig. 3 : Automatic water supply system and water level monitoring development

4. Conclusions

In conclusion, the development of automatic water supply systems with water level monitoring represents a significant advancement in water resource management. By automating the water supply process and integrating real-time water level monitoring, these systems enhance efficiency, optimize water utilization, and ensure a reliable water supply. The applications of these systems range from agricultural irrigation to urban water supply networks, offering potential solutions for water scarcity and sustainable water resource management. Continued research and innovation in this field will contribute to further improvements in water level monitoring technology and its integration with automatic water supply systems, enabling more efficient and sustainable water management practices.

References

[1]Dr. T.C.Manjunath, Pavithra G., Rashmi Jagadisha, “Design of a sophisticated controller using fuzzy logic means for a soap manufacturing unit”, IRD India’s Int. Jour. of Adv. Electrical & Electronics Engg. (IJAEEE), Vol. 6, Issue 1-2, pp. 162-166, May 2017.
[2]Dr. T.C.Manjunath, Pavithra G., Rajasekar Koyyeda, “Mathematical formulation of a 2D path in work space of the robot from source to destination”, Int. Jr. of Inno. Res. Comp. & Com. Engg. (IJIRCCE), h/i-10 index-13 & 19, IF : 6.557, Vol. 5, Spl. Issue 4, pp. 309-312, Jun. 2017.
[3]T.V. Vidya, Dr. T.C. Manjunath, Pavithra G., “Recent Advances in the Concept of Field Programmable Gate Array (FPGA)”, Int. Jour.l of Science and Research (IJSR), Impact Factor: 6.391, pp. 18-24, 2017.
[4]Dr. T.C.Manjunath, Pavithra G., R. Jagadisha, “Design & development of an efficient path planning mechanism for a Micro-Robot”, IEAE’s Int. Jour. of Emer. Res. & Mgmt. (IJERMT), Vol. 6, Issue 5, pp. 727-733, IF : 3.969, UGC Approved Journal, May 2017.
[5]Pavithra G., Pratheeksha Shetty M., Dr. T.C.Manjunath, “A brief review of wireless LANs for how to prevent the intrusions in the networking protocols”, Int. Jr. of Adv. Res. in Sci. & Engg. (IJARSE), IF : 2.83, Sl. No. 147, Vol. 6, Issue 8, pp. 1282-1284, Aug. 2017.

DOI:10.46647/ijetms.2023.v07i03.083 ISSN: 2581-4621

[6]Dr. T.C.Manjunath, Pavithra G., "Design of algorithms for diagnosis of primary glaucoma through estimation of CDR in different types of fundus images using IP techniques", Int. Jour. of Innov. Res. in Info. Secur. (IJIRIS), Vol. 4, Spl. Issue 5, IF : 4.346, pp. 12-19, May 2017.
[7]Dr. T.C.Manjunath, Pavithra G., Rashmi J., "Design of a controller for a dynamical system by developing a transfer function", Int. Jour. of Engg. Res. (IJOER), Vol. 5, Issue S1, pp. 464- 468, Jun. 2017.
[8]Dr. T.C.Manjunath, Pavithra G., R. Jagadisha, "A brief review of the advances in molecular nano technology for the bio-medical engineering applications", Int. Jour. of Engg. Res. (IJOER), Impact Factor 5.8701, Vol. 5, Issue S1, pp. 424-429, Jun. 2017.
[9]Shashikanth Patil, Dr. T.C.Manjunath, Pavithra G., "Guidance Control and Tracking of a Missile", IFERP's Int. Jour. of Engg. Res. in Mech. & Civil Engg. (IJERMCE), Impact Factor 3.8, Vol. 2, Issue 5, pp. 967-970, May 2017.
[10] Dr. T.C.Manjunath, Pavithra G., "Design & Development of Algorithms to Diagnose Secondary Diabetic Retinopathy Glaucoma through the Analysis of Fundus Images Using IP Techniques", Int. Jour. of Innov. Res. in Comp. & Comm. Engg. (IJIRCCE), IF 7.194, Vol. 5, Special Issue 6, pp. 40-43, Jul 2017.