

DR. BRR GOVT DEGREE COLLEGE, JADCHERLA
MAHABUBNAGAR, Dist TELANAGANA

Dept of Sciences



STUDENT STUDY PROJECT

“TITLE”

“A STUDY ON WATER LEVEL INDICATOR
CONSTRUCTED WITH DIFFERENT MATERIALS AS
ELECTRODES”

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DEPARTMENT OF PHYSICS

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A STUDY ON WATER LEVEL INDICATOR CONSTRUCTED WITH DIFFERENT MATERIALS AS ELECTRODES

**Dr.BRR GOVERNMENT DEGREE COLLEGE - JADCHERLA
MAHABUBNAGAR - 509301**

ACADEMIC YEAR 2022-2023



**Accredited by NAAC with "B++" Grade // An ISO 9001-2015 Institution
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❖ CERTIFICATE

This is to certify that the project work entitled "**A STUDY ON WATER LEVEL INDICATOR CONSTRUCTED WITH DIFFERENT MATERIALS AS ELECTRODES**", Dr. BRR Government Degree College , Jadcherla, Mahabubnagar District, Telangana." is a bonafide work done by the students of III MPCs (EM). K. Karunakar, , G.Balraj, , D. Sharath Chandra, Kavali Shiva, B. Gopichand, under my supervision for the award of Project Work in Physics, Department of Physics, Dr. BRR Government College, Jadcherla and the work hasn't been submitted to any other College/University either in part nor in full, for the award of any degree.s

Professor



Dr.K. Manjula
Assistant professor

Dept of physics

DECLARATION

We hereby declare that the project work entitled with ""**A STUDY ON WATER LEVEL INDICATOR CONSTRUCTED WITH DIFFERENT MATERIALS AS ELECTRODES**"" is a genuine work done by us under the supervision of **Uday Kumar (HOD)**, for the Department of Physics, Dr. BRR Government College, and it has not been under the submission to any other Institute/University either in part nor in full, for the award of any degree.

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➤ ACKNOWLEDGEMENT:

We express my heartfelt gratitude, respect and indebtedness to **Dr.K.Manjula**, Assistant Professor, and Department of physics, Dr.BRR Government Degree College, Jadcherla for their valuable guidance, encouragement, timely suggestions and immense patience throughout the period of work, without which it would not have been possible to complete the work.

We convey my gratitude and thanks to **B.Uday Kumar** Assistant Professor, and Department of physics, for providing the necessary facilities. We profusely thank **M.RamaKrishna** lecturer in computerscience **S.Madhavi latha**lecturer in Mathematics of their encouragement and valuable suggestions during the work.

We express deep sense of gratitude to **Dr. CH.Appiyachinnamma** principal, Dr.BRR Government t Degree College, Jadcherla for his moral and technical support for the Project

..... **K. Karunakar, G.Balraj, D. Sharath Chandra, Kavali Shiva, B. Gopichand,**

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➤ **INTRODUCTION:**

A water level indicator is an essential device used to detect and prevent water overflows in various settings. Whether it's a residential, commercial, or industrial environment, managing water levels is crucial to prevent damage and ensure safety.

The purpose of a water overflow indicator is to monitor the water level in a container or system and provide a timely alert when it exceeds a predetermined threshold. By detecting rising water levels, it helps users take immediate action to mitigate the situation and avoid potential hazards.

Water overflow indicators employ different sensing mechanisms, such as float switches, conductivity probes, or ultrasonic sensors. These sensors are strategically placed at critical points where water levels need to be monitored. When the water level reaches or surpasses the set limit, the indicator triggers an alarm or signal to alert the users.

The alarms or signals generated by water overflow indicators can take various forms, including audible alerts, flashing lights, or even remote notifications sent to connected devices. This flexibility allows users to choose the most suitable method for their specific requirements.

Water overflow indicators find applications in a wide range of scenarios. They are commonly used in basements, sump pumps, water tanks, aquariums, swimming pools, and other water containment systems. By promptly notifying users of rising water levels, they help prevent potential flooding, property damage, and electrical hazards.

In addition to their primary safety function, water overflow indicators also promote water conservation. By preventing unnecessary water :

Water level indicators are essential tools used to measure and monitor the depth of water in various applications, such as water tanks, wells, reservoirs, and other water storage systems. They provide valuable information for efficient water management, preventing overflow or underutilization of water resources. The following review of literature highlights key studies and advancements in water level indicator technology.

"Design and Implementation of a Microcontroller-Based Water Level Indicator"

This study presents the design and implementation of a microcontroller-based water level indicator using ultrasonic sensors. The system utilizes an Arduino microcontroller to measure water levels accurately and display them on an LCD screen. The authors demonstrate the effectiveness and reliability of their system in monitoring water levels in real-time.

"Development of a Wired Water Level Monitoring System for Aquaculture Ponds"

This research focuses on developing a wireless water level monitoring system specifically designed for aquaculture ponds. The study utilizes water level sensors, a microcontroller, and a ZigBee wireless module to transmit real-time water level data to a base station. The authors discuss the

➤ REVIEW OF LITERATURE ;

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1. "Design and Implementation of a Microcontroller-Based Water Level Indicator" by S.B. Akande and O.T. Osuolale (2015): This study presents the design and implementation of a microcontroller-based water level indicator using ultrasonic sensors. The system utilizes an Arduino microcontroller to measure water levels accurately and display them on an LCD screen. The authors demonstrate the effectiveness and reliability of their system in monitoring water levels in real-time.
2. "Development of a Wireless Water Level Monitoring System for Aquaculture Ponds" by A.M. Malapit et al. (2016): This research focuses on developing a wireless water level monitoring system specifically designed for aquaculture ponds. The study utilizes water level sensors, a microcontroller, and a ZigBee wireless module to transmit real-time water level data to a base station. The authors discuss the implementation of the system and its potential for improving water management in aquaculture operations.
3. "Internet of Things-Based Water Level Monitoring and Pumping System for Efficient Water Resource Management" by M. Ali et al. (2018): In this paper, the authors propose an Internet of Things (IoT)-based water level monitoring and pumping system. The system employs ultrasonic sensors, Arduino boards, and a

➤ **OBJECTIVES:**

WE CONSTRUCTED WATER LEVEL INDICATOR WITH FOLLOWING OBJECTIVES;

IN THIS PROJECT THE FOLLOWING ARE OUR OBJECTS.

- 1.To construct a water level indicator using blades as electrodes.
- 2.To construct a water level indicator using pencil lid as electrodes.
- 3.To construct a water level indicator using nails as electrodes.

➤ MATERIALS & METHODOLOGY:

1. AMAZON. it is an online shopping. We have ordered some of the materials which are required.
2. JANASENA ELECTRONICS.
 3. RR ELECTRONICS.

THESE FOLLOWING MATERIALS WE USED TO CONSTRUCT WATER LEVEL INDICATOR;

1. BLADES
2. COINS
3. PENCIL LED
4. NAILS

•Plastic: Water level indicators often feature plastic enclosures or mounting brackets due to their durability, corrosion resistance, and cost-effectiveness

•Stainless Steel: Stainless steel is commonly used for enclosures or mounting brackets when higher strength and resistance to corrosion are required.

•PVC: In certain applications, PVC (Polyvinyl Chloride) materials are used for enclosures and mounting components due to their chemical resistance and affordability.

STAND INSTRUCTOR :



BLADES & LED LIGHT :



BATTERY:

A Battery is used to supply power to the circuit in the connection .



9V BATTERY

BATTERY CONNECTOR : The battery connector is used to connect to a battery as a power source



WIRES

WIRES: Wires are an essential component of electrical projects because they are used to connect various components of the circuit together. Electrical wires are made of a conductive material, usually copper or aluminum that allows electricity to flow through them.

BUZZER: A buzzer is commonly used as an alarm to alert people of the presence of a water level in tank . When the water level sensor detects a water in tank above a certain level, the microcontroller triggers the buzzer to emit a loud, audible alarm.



METHODOLOGY:

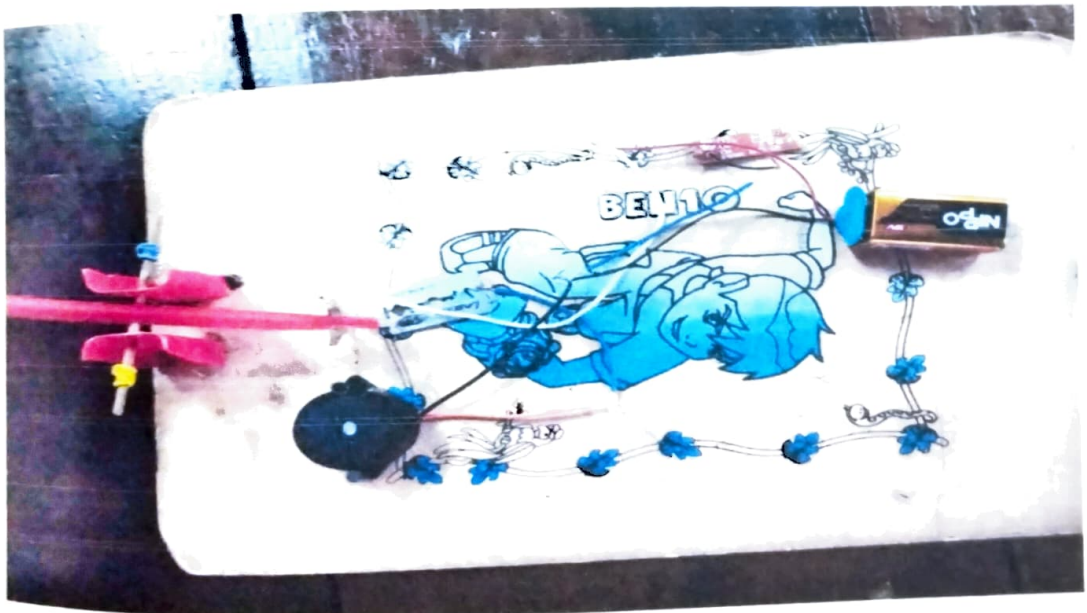
- ❖ First we purchased the materials from the Janasena electronic shop and took the all needed materials to water level indicator project.
- ❖ First we taken the plain sheet and placed the buzzer in a specific space later we placed the battery beside the buzzer for easy wire connection .
- ❖ Later we placed a LED light beside the buzzer and battery for required as shown in the below diagram and the negative terminal of LED is connected to blades and nails and pencil lids and nails.circuit and later we geve the conection from positive of battery to buzzer and negative of battery to positive of LED light
- ❖ In this project we gave the circuit connection in parallel.
- ❖ When water over flows in a limit of water tank or any is the balloon is gets up and touches the another blade and then LED light and buzzer are triggering until we checked the water flow and stop the buzzer it works

MAKING PROCESS:









➤ CONCLUSION:

The water level indicator constructed with three types of electrodes was checked for its worthy. It showed good indicator for water flow.

In conclusion, water level indicators play a crucial role in monitoring and managing water resources effectively. Through the reviewed literature, it is evident that advancements in technology, such as microcontrollers, IoT, wireless communication, and sensor networks, have significantly enhanced the accuracy, efficiency, and convenience of water level indicators.

The implementation of microcontroller-based systems has allowed for real-time monitoring of water levels, providing accurate and reliable data. IoT-based water level indicators have enabled remote monitoring and control, allowing users to access water level information and receive notifications through mobile applications or web interfaces. Wireless sensor networks have facilitated the collection of data from multiple points, enabling comprehensive water level monitoring in large-scale applications.

These advancements in water level indicator technology have proven beneficial across various sectors, including domestic water storage, agriculture, aquaculture, and industrial water management. They contribute to improved water resource management, preventing wastage and optimizing water utilization. By providing timely and accurate information about water levels, these indicators help prevent overflow or depletion, ensure efficient water distribution, and support decision-making processes related to water conservation.

Overall, water level indicators are essential tools that aid in the sustainable management of water resources, promoting conservation and enhancing operational efficiency in a wide range of applications. Continued research and development in this field are expected to lead to further innovations, improving the functionality and accessibility of water level indicators in the future.

➤ FUTURE SCOPE :

THE Water level indicator constructed with the three types of electrodes with three types of electrodes was checked for its working it showed good indication for water flow.

1. **Integration with IoT and Smart Systems:** Water level indicators can leverage the power of the Internet of Things (IoT) to enable seamless connectivity and remote monitoring. Integration with smart systems can facilitate real-time data transmission, automated control of water flow, and intelligent decision-making based on predictive analytics.

2. **Enhanced Accuracy and Precision:** Improving the accuracy and precision of water level measurements will continue to be a focus area. This can involve the development of advanced sensor technologies, such as high-resolution ultrasonic or optical sensors, to provide more precise and reliable readings.

3. **Energy Efficiency and Sustainability:** Future water level indicators may incorporate energy-efficient designs and power management techniques to reduce power consumption and increase battery life. Additionally, exploring sustainable power sources like solar energy or kinetic energy harvesting can enhance the longevity and environmental friendliness of these devices.

4. **Data Analytics and Predictive Modeling:** With the increasing availability of large-scale water level data, there is potential for advanced data analytics and predictive modeling. Analyzing historical data patterns can provide insights into water usage trends, facilitate predictive maintenance, and enable proactive decision-making for water resource planning and conservation.

5. Integration with Water Management Systems: Water level indicators can be integrated into broader water management systems to optimize water distribution, prevent wastage, and improve overall efficiency. Integration with supervisory control and data acquisition (SCADA) systems, water distribution networks, and automated irrigation systems can streamline water management processes.

6. Mobile and Cloud-based Applications: Mobile applications and cloud-based platforms can enhance the accessibility and usability of water level indicators. Users can monitor water levels, receive real-time notifications, and access historical data from their smartphones or web interfaces, enabling effective water management even from remote locations.

7. Environmental Monitoring and Flood Management: Water level indicators can play a crucial role in environmental monitoring and flood management. Integrating additional environmental sensors like rainfall sensors, weather sensors, or river flow sensors can enable comprehensive monitoring of water resources and early detection of flood risks.

➤ REFERENCES;

1. "Water Resources Engineering" by Larry W. Mays
2. "Handbook of Water and Wastewater Treatment Plant Operations" by Frank R. Spellman

<https://www.dwyer-inst.com/>.