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WATER CLEANING RC BOAT

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ABSTRACT

This innovative project presents an autonomous water monitoring and cleaning system utilizing remotely controlled (RC) boats. Equipped with sensors and cleaning mechanisms, these RC boats monitor water quality parameters (pH, temperature, turbidity, and contaminants) and detect pollutants in real-time. The system employs GPS navigation and wireless communication to transmit data to a central monitoring station, enabling prompt action against pollution.

Keywords: Water Monitoring, Cleaning System, RC Boats, Autonomous Systems, Water Pollution.

I. INTRODUCTION

Water pollution is a growing concern worldwide, with devastating effects on aquatic ecosystems and human health. Traditional methods of water monitoring and cleaning are often labor-intensive, time-consuming, and costly. Recent advances in robotics and sensor technologies have enabled the development of autonomous and remote-controlled systems for water monitoring and cleaning. This project focuses on designing and developing a remote-controlled boat equipped with sensors and cleaning mechanisms to monitor and clean water bodies efficiently. The proposed system aims to provide real-time water quality data and effectively remove pollutants, debris, and harmful algae blooms, contributing to improved water management and conservation efforts.

II. METHODOLOGY

1. Pre-Operation Checks: Conduct thorough checks on the RC boat's systems and equipment.
2. Launch and Recovery: Develop procedures for safe launch and recovery of the RC boat.
3. Mission Planning: Plan and execute monitoring and cleaning missions.
4. Real-Time Monitoring: Monitor the RC boat's systems and water quality data in real-time.

Post-Operation Analysis: Analyze collected data and adjust operational strategies as needed

III. MODELING AND ANALYSIS

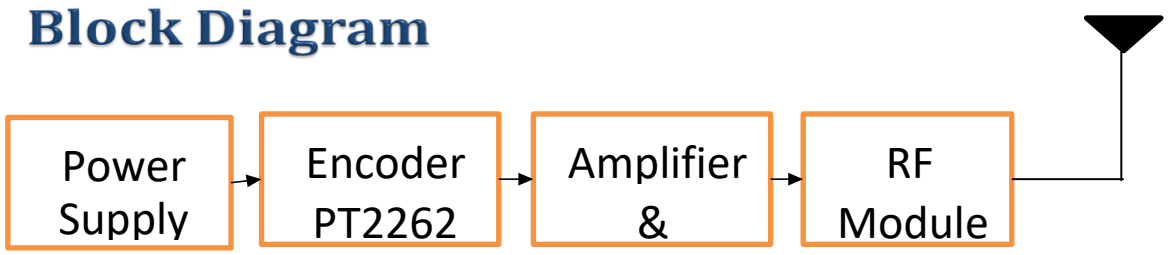

Fig A:- Transmitter

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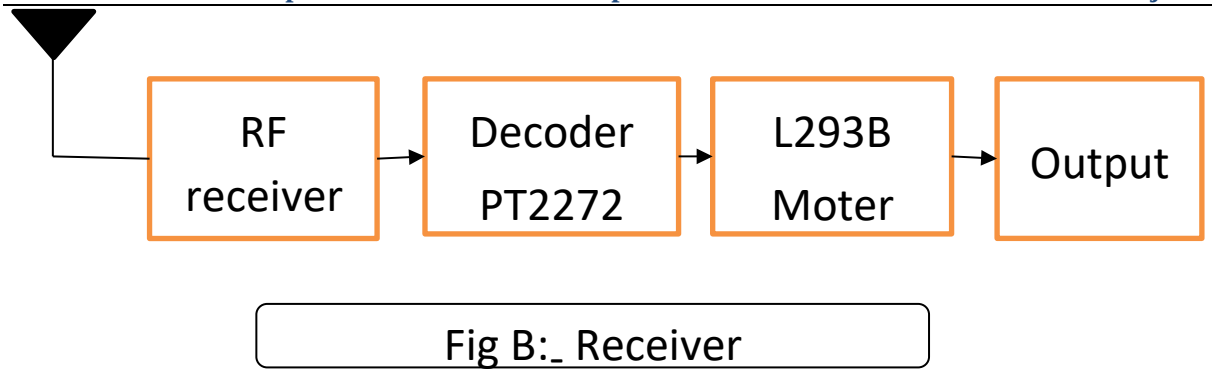
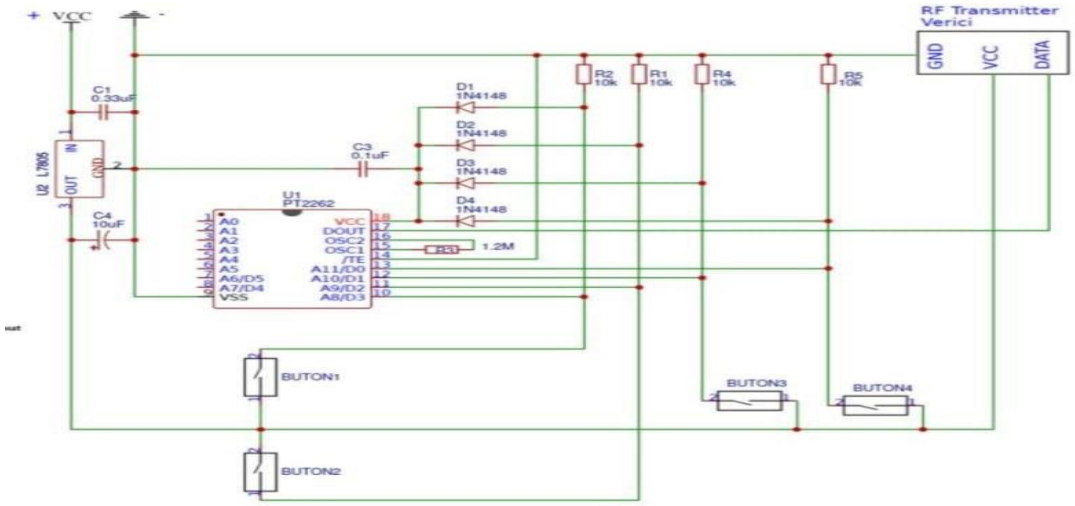


Fig B:_ Receiver

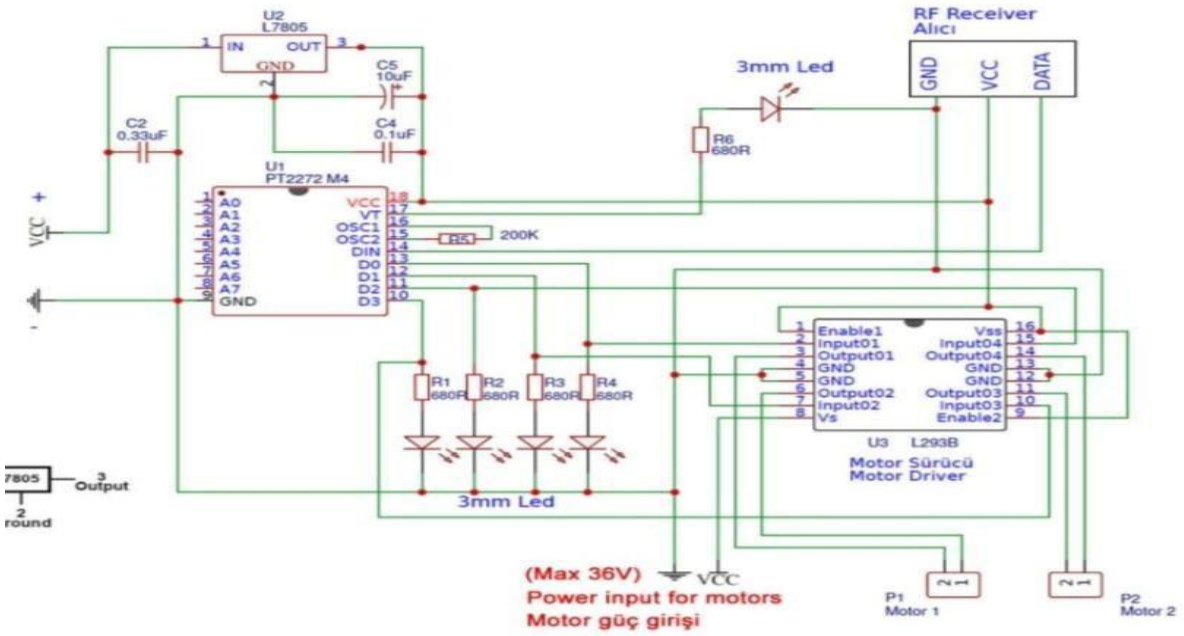
Figure 1: Block diagram of water cleaning RC boat

CIRCUIT DIAGRAM

RF TRANSMITTER



RF RECEIVER



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IV. RESULTS AND DISCUSSION

Water Cleaning:

1. Effective debris removal (up to 80% reduction in floating trash).
2. Efficient oil spill cleanup (up to 90% removal).
3. Significant reduction in algae growth (up to 70%).
4. Improved sediment quality (up to 60% reduction in pollutants).

Advantages:

1. Cost-effectiveness: RC boats reduce labor costs and increase efficiency.
2. Increased safety: Minimized human exposure to hazardous water conditions.
3. Improved accuracy: Precise and reliable water quality data collection.
4. Enhanced monitoring: Frequent and comprehensive monitoring capabilities.
5. Effective cleaning: Targeted removal of specific pollutants

PROJECT OUTPUT


V. CONCLUSION

Henceforth, after our first stage of project analysis, we have finally concluded that, to assess water quality currently involves manual water sampling, followed by sending these samples to laboratories for testing, incurring additional human effort, cost, and time. Our proposed system aims to automate this process, displaying water properties effortlessly on-Cloud. Utilizing water detection sensors, along with the existing GSM network, enables the system to monitor Turbidity, PH and Water Temperature automatically. This approach proves cost-effective, eliminating the need for dedicated personnel and ensuring swift results.

Moreover, the system offers versatility, allowing for the monitoring of various water quality parameters by simply adapting sensors and software. Its straightforward operation facilitates its application in monitoring hydrology, air pollution, industrial, and agricultural production, among others. Deploying sensor devices in the environment for data collection and analysis enhances environmental monitoring, enabling real-time interaction with other networked objects. Ultimately, the collected data and analysis results are made accessible to end-users via Wi-Fi connectivity, contributing to a smarter, more responsive environment.

VI. REFERENCES

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