

## **ABSTRACT**

The increasing demand for energy and the desire to reduce dependence on fossil resources have driven the development of renewable energy sources, one of which is biogas. This final project focuses on the implementation of an Internet of Things (IoT) system to monitor and optimize biogas production. The system is designed to collect, analyze, and display real-time data from the biogas production process using various sensors connected through an IoT network.

This IoT system includes temperature, humidity, and gas pressure sensors, all integrated into a single platform. Data collected by these sensors is sent to a server for analysis and then displayed in an easily understandable format through a user-friendly interface. Data analysis is conducted to identify patterns and anomalies that could affect biogas production efficiency, as well as to provide recommendations for system management.

The results of implementing the IoT system in a biogas reactor show increased production efficiency and reduced operational disruptions. This system enables more accurate and responsive monitoring of reactor conditions and aids in making more informed decisions based on real-time data. Thus, this project demonstrates that integrating IoT technology into biogas production can be an effective solution to enhance the performance and sustainability of renewable energy systems.

**Keywords:** Biogas, Internet of Things (IoT), renewable energy, sensors, monitoring, data analysis.