

## **ABSTRACT**

A PLC is an electronic device used to control and automate various types of industrial processes, including operating machinery and complex systems such as Wastewater Treatment Plants (WWTPs). The design of a pH level detection control system for liquid waste using the Mitsubishi FX3U PLC, Haiwell Type PC HMI display, and pH Transmitter Sensor as the pH level detector for liquid waste. Citric Acid and Sodium Carbonate are used as neutralizing agents for acid and base in the liquid waste. The purpose of creating this tool is to implement and test the designed pH level control system for liquid waste. Before connecting the components of the device, a system design, control logic, and ladder diagram design are created using GX Works2 software, Haiwell Scada HMI interface, and measuring the usage of Citric Acid and Sodium Carbonate. The sensor testing demonstrates the ability to measure the pH of liquid waste with an accuracy level of 97%. The designed system provides accurate and user-friendly pH level adjustments. The utilization of citric acid and sodium carbonate effectively neutralizes the pH level.

Keywords: control, pH Transmitter, FX3U PLC, Haiwell Type PC HMI