ABSTRACT

The development of microcontroller technology has been widely utilized in various fields, including in the treatment of industrial wastewater. One type of wastewater that requires special handling is palm oil mill effluent (POME), which contains high levels of pollutants such as water turbidity, fluctuating pH values, and high total dissolved solids (TDS). This research has developed an automated wastewater quality control system based on a microcontroller integrated with Google Spreadsheet. The system is designed to read real-time data from three key water quality parameters: turbidity, pH, and TDS. The next step is for the system to automatically determine the appropriate dosage of Poly Aluminium Chloride (PAC) through an actuator in the form of a peristaltic pump. The main components of the system include an Arduino Mega 2560, turbidity sensor, pH sensor, TDS sensor, and an internet connection module for data transmission. Monitoring data is sent and recorded automatically to Google Spreadsheet, enabling remote access and analysis. System testing results show that the system has successfully met the quality standards for POME wastewater, specifically turbidity ($\leq$200 NTU), pH (6–9), and TDS ($\leq$2000 ppm).

Keywords: Microcontroller, *Poly Aluminium Chloride* (*PAC*), *Google Spreadsheet*, *Palm Oil Mill Effluent* (*POME*)