

## ABSTRACT

Drinking water is one of the most essential sources of life for humans, approximately 60% of the water content needed so that water needs are very crucial to maintain health and body function to remain optimal. Alkaline water is water that has a pH level above 7 which is rich in OH<sup>-</sup>. Alkaline water can be produced from mineral water which is processed by machine or electrolysis device (Portable Water Ionizer). This PWI tool was created in previous research using a pH meter in measurement. However, using a pH meter is impractical and inconvenient if you have to take the pH value many times and you don't know exactly when alkaline water is ready for consumption (using a sign that if the water becomes cloudy means alkaline water is ready for consumption). The capstone project that was carried out was to innovate, namely an Automatic Contact Stop for PWI by using a relay as an electric current controller equipped with an ESP32 as a control center and a DS18B20 temperature sensor for temperature readings. The system that will be developed will also be integrated into the Telegram bot for PWI control and also notifications that will enter Telegram.

A temperature sensor will be installed in the system, this was chosen because the system will be made using the principle that if the temperature increases, the reaction speed will also increase. Temperature has a close relationship with pH in chemical reactions, an increase in temperature in solution has a significant impact on the pH of the solution. This is related to a chemical reaction called water ionization. At normal temperatures, water tends to ionize. As the temperature of the solution increases, the activity of the water molecules increases due to the higher kinetic energy. This speeds up the water ionization reaction and results in an increase in the concentration of H ions in the solution.

Based on the test results, the product can increase the pH by an average of 22%, increase the temperature by an average of 8%, and increase the TDS value by an average of 12%. The data obtained from the results of the electrolysis process have fulfilled the parameters where the parameters to be achieved are water that has a pH level of 8.5 – 9.5 and a TDS value  $\leq 200$ . This product can turn off/on the relay only with a telegram bot and can realtime water temperature. After the electrolysis process is complete, the user gets a notification on Telegram that the alkaline water is ready to be consumed because the desired state has been reached.

**Keywords: Portable Water Ionizer, Automatic Outlet, Temperature Monitoring, Telegram Bot Notifications.**