

## **ABSTRACT**

Hydrogen or alkaline water, with its alkaline nature and pH above 7, brings a variety of benefits to human health, including maintaining hydration and neutralizing excess acid in the body. The mineral content and active hydrogen ions in alkaline water produce natural antioxidants that support optimal energy and protection against free radicals. The electrolysis process is required to produce alkaline and acidic water, where the water at the anode is acidic and the water at the cathode is alkaline.

Portable water ionizer is a device created for electrolysis of mineral water, electrolysis of mineral water can produce reduced water that can prevent stress-related diseases, diabetes, and cancer and can increase body immunity. However, Portable Water Ionizers that are affordable and on the market now lack complete features.

For this reason, a system is needed to be a solution to the problem. In this case, the use of IoT sensors for portable water ionizers that can display how much pH levels are in the water, the current flowing, the level of turbidity in the water, the temperature in the water and can turn off and turn on the Portable Water Ionizer remotely. Then the data from the sensor is sent to the application on Android so that users can monitor their portable water ionizer remotely and can reduce the risk of carelessness from the user's side.

In this study, a Portable Water Ionizer tool was developed along with a monitoring tool. The results showed the percentage of sensor errors as follows: The pH sensor is 2.9%, the temperature sensor is 0.81%, the TDS sensor is 2.74%, and the current sensor is 0.03% as well as the relay can cut off the current when the temperature is at 29 ° C. As well as the mobile application can work as desired and the Portable water ionizer tool can electrolyze water correctly indicated by the increase in pH value from before electrolysis to after the electrolysis process.

**Keywords:** Portable Water Ionizer, water electrolysis, IoT sensor, remote monitoring, mobile application.