

ABSTRACT

One of the researchers tools is the CTD (Conductivity, Temperature, and Depth) Rosette, a tool used to take water samples and collect water condition data at depths that are difficult for humans to reach. However, operating this tool requires the assistance of a large ship and a powerful winch. Therefore, a small-sized water sampling device was developed to be used with a small boat. The CTD Rosette tool is a combination of a set of niskin bottles, typically ranging from 8 to 12 bottles, and several sensors used to detect the surrounding water conditions. To reduce the complexity of operating on a large scale, two bottles with different functions were created: the niskin bottle is used to collect water samples, and the sensor bottle is used to gather surrounding water condition data during operation. There is a difference in the design of the niskin bottle system, as this niskin bottle incorporates a microcontroller controlled through a bluetooth-connected application. This enables the niskin bottle to automatically close at the desired depth set by the user. In the sensor bottle itself, there are differences from existing tools in the type of sensors used, such as pH, dissolved oxygen (DO), total dissolved solids (TDS), temperature, and pressure sensors. The design of this device provides enhanced efficiency and accuracy in water sampling while also being portable.

Keywords: Bluetooth, Mobile Application, Niskin Bottle, Sensor Bottle, Microcontroller