## ABSTRACT

## THE ACQUISITION SYSTEM OF TEMPERATURE MONITORING DATA AND ACID LEVEL (pH) AT THE WATER ENVIRONMENT BY USING UNMANNED SURFACE VEHICLE

## By

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Water is very important natural resource that human need to consume for many necessities like house-need and electricity. But there are some negative impact that produced by human activity that could damages the water as important life resource. Yet, by analyzing the water condition, we may optimize the usage of water. Then, it is necessary to have a proper system which able to supervise the water temperature and acid content (pH) in real-time by using PC and wireless equipment. This system is called by data acquisition system include the usage of temperature sensor, an analogue modul pH meter, telemetry and USV. Arduino Mega 2560 is chosen as data processor in this research case. Wireless transmission data is accommodated by Telemetry Kit 433 MHz. While data performance media is provided by GUI (Graphical User Interface) based PC as specified software known as LabVIEW. There are some parameters to be connected to the water condition, which are physical parameter (temperature) and chemical parameter (pH). Based on method above water temperature and pH is measured. Data acquisition system is supported by DB 10S20 temperature sensor, pH meter analogue, Arduino Mega 2560 and Telemetry Kit 433 Mhz. This system is placed on USV which systemized to move forward to the waypoint spot, then it start to measure at the waypoint spot, perform and save the data by data logger. DB 10S20 sensor is calibrated by FLUKE 62 MAX IR Thermometer and the pH meter analogue is using pH universal indicator. This system can be used as long as adequate voltage source and the distance data transmission is line of sight  $\leq 50$  m and in buildings  $\leq 15$ m. Temperature monitoring and pH in water absorption area at Lampung University is known when every 1° Celcius the temperature increased then pH increase to be 0.09.

**Key Words:** Acquisition System, Arduino, DB 10S20, FLUKE 62 MAX IR Thermometer, Labview, pH, pH Meter Analogue, Telemetry, Temperature, USV, Water, Waypoint