

## ABSTRACT

Water is the main source of life for all living creatures, both animal, plant or human. The human need for water increases with agricultural activities, industrial, mining, expansion of settlements, and others. Water, especially clean water is an everyday item used by all human beings, water for consumption, bathing, and worship. The water that we usually encounter everyday looks clear is not necessarily safe to use. To know the water is unsuitable or not scientifically testing tool is necessary.

Under these conditions has been designed and implemented a measure pH and turbidity of the water pond or lake, based on minimum system microcontroller AT MEGA 8535. This instrument was built in a ship robot to measure each corner of the pool, river or lake easily. Robot ship is controlled manually by the user from one side of the lake or pond via bluetooth communication and driven by two DC motor. Visual basic application is used as a GUI (Graphical User Interface) on the implementation of this ship robot.

Results of tests performed on the robot proves that the ship's robot vessel functioning properly in accordance with the design. Each command in the GUI goes well with bluetooth initialization time 2.24 seconds with a maximum distance of communication in LoS conditions 28 meters and Non-LoS conditions 27 meters, while the sensor readings 1.24 seconds and 0.65 seconds for motion command. The pH level and turbidity testing in Telkom University's lake, The measured pH value is variated between 6.4 to 8 with an average value 7.4, measured turbidity values between 5 to 49 with an average value 27. The output voltage of the battery is 11.24 volts with a maximum continuous usage time 8 hours.

Keyword : Ship robot, measurement, water, microcontroller, bluetooth, visual basic