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Wireless Water Quality Monitoring System

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Asha'ari, Muhammad Ilyas ; Ibrahim, Ahmad Imran

International Islamic University Malaysia, Department of Mechatronics Engineering, Kuala Lumpur, Malaysia

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Abstract

The condition and environment of a river ecosystem could be easily altered from the outside factors such as the changing of ground structure, climate change and presence of undesired substances. Thus, a constant analysis and evaluation on the water system and its quality parameter is required to preserve the river nature. The implementation of wireless water quality monitoring system is rarely used for the river water study. Hence, a suitable design of the system with compatible mechanism needs to be developed. In this study, an untethered buoy will be constructed with the used of motor, Global Positioning System (GPS) as a mechanism to maintain its location. The idea of this mechanism is to replace the common tethered buoy design developed in most research such as the mooring buoy. Besides, design of the buoy will be able to create a low cost and power efficiency

device with high reliability for a wireless water quality monitoring system. Furthermore, the parameter used for the water quality monitoring is the dissolved oxygen in the water and the power system selected is using the solar energy with a circuit design that capable to do charging and discharging process. The 3D model of the design will be developed and some virtual simulation will be done on the model using Solidwork as the CAD software. The buoy performance to operate on a water surface and the capability to transmit the data for water quality monitoring will be tested at the pool in Kuliyah of Engineering, IIUM. © 2022 IEEE.

Author keywords

Global Positioning System (GPS); untethered buoy; Water quality monitoring; wireless)

Indexed keywords

Engineering controlled terms

3D modeling; Biochemical oxygen demand; Buoys; Climate change; Computer aided design; Computer software; Dissolved oxygen; Ecosystems; Global positioning system; Quality control; Rivers; Solar energy

Engineering uncontrolled terms

Analysis and evaluation; Condition; Global positioning system; Ground structure; River ecosystem; Untethered buoy; Water quality monitoring; Water quality monitoring systems; Water system; Wireless)

Engineering main heading

Water quality

Corresponding authors

Corresponding
author

M.I. Asha'ari

Affiliation

Internation Islamic University Malaysia, Department of Mechatronics
Engineering, Kuala Lumpur, Malaysia

Email address

ilyas.ashaari@live.iium.edu.my
