Development of Lora P2P Network for Autonomous Seawater Quality Monitor for Green Powered Desalination Project

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Journal of Caribbean Environmental Sciences and Renewable Energy
Vol. 3, Issue 2, 2020 doi.org/10.33277/cesare/003.002/01

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The scarcity of freshwater resources is felt deeply across the world, with increased populations expected to further exacerbate shortages [1]. Desalination of seawater provides an alternate source of fresh water, with the only drawback being the high energy usage. Renewable sources can serve as a cheaper source of energy for desalination. Using renewables requires an extensive understanding of the energy needs of the desalination process, which is in turn dictated by the raw material and seawater quality. The use of Internet of Things (IoT) components to monitor water quality has shown good results in prior studies [2]. The collected data can be conveyed using equipment that allows long-range transmission over radio frequency such as LoRa.

Williams et al investigate the applicability of LoRa technology to transmit monitoring data on seawater salinity and temperature. The researchers built prototype marine probes for this study which were lab tested and calibrated, then implemented in the field. Both the results of the seawater monitoring as well as the technology's performance were evaluated and discussed.

What's Next

The LoRa protocol was found to be effective in monitoring water quality in remote locations. The results indicate that this setup can be implemented in populated environments and maintain signal stability. There is ample room for further work in this area to improve accuracy for potential implementation in seawater quality testing.

REFERENCES

OPEN SOURCE CLOSED SOURCE

[1] Hanjra, M. A., & Qureshi, M. E. (2010). Global water crisis and future food security in an era of climate change. Food Policy, 35(5), 365–377

[2]Geetha, S., & Gouthami, S. (2017). Internet of things enabled real time water quality monitoring system. Smart Water, 2(1), 1