

## Analisis Kinerja Multi-Application Energy Harvesting pada IoT Aquaponic

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### Abstract

One of the techniques in agriculture is aquaponics, a technique that applies plant growth without using soil growing media. A technique that can reduce the land requirement in urban areas is that agriculture requires more energy to run. This energy is in the form of electricity to run the aquaponic system. The solution for this problem is applying energy harvesting tools obtained from renewable sources to supply it. By combining this system, it will reduce or even replace electricity from non-renewable resources. The proposed method is using wind turbine and solar panel to supply energy. The evaluation was carried out to calculate energy from harvesting tools in the aquaponic system. The test results, system can be applied and found that the wind turbine produced 196.58 Wh, and the solar panel produced 120.07 Wh during the three days of testing using IoT sensor. However, from the result, electricity requirement is still lacking to run an aquaponic system that requires 712 Wh. So, from this test, it can be concluded that the energy from the energy harvesting equipment cannot run the aquaponic system entirely and run side by side or hybrid with PLN electricity to supply its electricity needs. In the future could use a larger solar panel wattpeak in order to fulfill the electricity needs.

**Keywords:** aquaponic, energy harvesting, IoT, solar panel, wind turbine

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