

## **ABSTRACT**

The use of conventional batteries has caused serious negative impacts on the environment and human health. Conventional batteries, which contain hazardous materials such as lead, cadmium, and mercury, can contaminate soil and water, produce toxic gas emissions during production and waste disposal, and lead to ecosystem damage and health issues such as neurological and respiratory disorders. Furthermore, improperly managed battery waste can pollute agricultural land and water sources, resulting in food and drinking water contamination.

Therefore, environmentally friendly alternative energy sources are needed to address this problem. One solution in the search for alternative energy sources is the use of aluminum-air batteries. These batteries use aluminum metal as the anode to generate electrons during its reaction, using an electrolyte such as NaCl to facilitate the electrochemical process within the battery cell.

Aluminum-air batteries use an electrolytic solution of salt and seawater that has been electrolyzed, aiming to increase the battery's power. They have 4 battery cells connected in series to power LEDs.

Adding a solar panel module (SPM) can provide additional power to the battery, enabling it to light a 5-watt DC lamp and reduce the aluminum anode's corrosion rate. An IoT system displays the voltage, current, and battery power on the Blynk application, making it easier for users to monitor the power of the aluminum-air battery.

**Keywords:** Aluminum-Air Battery, Energy, IoT, Solar Panel Module