

## **ABSTRACT**

*The increasing demand for electrical energy encourages the use of solar panels, yet the load transfer from the grid (PLN) to batteries is often inefficient. This study designs an IoT-based Automatic Transfer Switch (ATS) employing BH1750, PZEM004T, INA219 sensors, and the Thinger.io platform for monitoring and manual control. Experimental results show that daily energy consumption without ATS reaches 9.6 Wh, while with ATS it decreases to 7.8 Wh, achieving an efficiency of 15.9%. Cost savings were recorded at Rp27.69/day (subsidized) and Rp65,93/day (non-subsidized). The system is also equipped with battery protection and manual switching, making it more efficient and supportive of renewable energy utilization.*

**Keyword** : *ATS, IoT, solar panel, energy efficiency*