

## ABSTRACT

The increasing use of renewable energy is driven by several factors, including the worsening environmental emission conditions. However, the use of renewable energy has several challenges and possible obstacles, such as weather factors, technological readiness, environmental carrying capacity, competent human resources, and even policies that currently do not fully encourage the growth of renewable energy use. The technology readiness factor is the main part that will be used as the focus of the study in this research, more specifically the problem of distributing solar panel power to batteries as electricity storage and consumption loads. Battery and Load Consumption when requiring electrical power supply at the same time has a limit on the distribution of electricity that changes every time interval so it tends to be more dynamic and erratic. This research is proposed to study and design an optimal electricity distribution algorithm scheme when dealing with the above problems. The optimization issue is intended to answer the distribution problem with constraints both from the battery side and consumption load. The research approach is carried out by simulation, namely by making a power distribution scheme for the solar panel system that involves batteries and consumption loads. Then the method that can accommodate the formulation of the scheme is game theory. By using Python 3.8 programming to complete the scheme, the optimum strategy for distribution of electric power is obtained, namely the distribution of power distribution to the battery is around 0.56% and the Consumption Load is around 92.57 % with both game values of -85.

**Keywords:** *Optimization, Electrical power distribution, solar panels, game theory, Python 3.8.*