

ABSTRACT

Photovoltaic (PV) is a system in solar power plants that is used as a source of energy for generating electricity in the form of solar radiation. Predicting the power output from PV is an activity that is used to determine the power output of PV in the future. The importance of this activity is so that it can be a reference for scheduling equipment maintenance in solar power plant (PLTS).

In this final project, a system is designed that is used to predict the medium-term power output of PV. This system uses solar irradiation data and 42 days of power output in off-grid PV mini-grid as the dataset. The dataset obtained from the PV output is processed using an artificial neural network method with backpropagation algorithm.

Based on the dataset used, this study succeeded in predicting the PV power output for the next 11 days. Using an artificial neural network model architecture, 2 hidden layers, 3 first layer neurons, 7 second layer neurons, and 190 epochs. This model has an error value of Mean Absolute Percentage Error (MAPE) of 25.837%, Mean Absolute Error (MAE) of 0.166, Mean Square Error (MSE) of 0.044, and Root Mean Square Error (RMSE) of 0.209. Therefore, this model can be categorized as feasible to predict the medium-term power output of the next 11 days.

Keywords: *Forecasting, Off-grid, Artificial Neural Network, Medium Term*