

ABSTRACT

Photovoltaic is a system that can convert sunlight into electrical energy. However, photovoltaic efficiency tends to be low and its performance is influenced by several environmental parameters such as dust, wind speed, humidity, temperature and other external factors. Because there are many factors that can affect the power generated, it is necessary to have a power output prediction system that can assist in planning and management as well as increasing the efficiency of the photovoltaic system.

In this research, a system is designed that can predict the photovoltaic output power in the short term using the Artificial Neural Network method or what is often called an artificial neural network. Predictions are made based on the effect of several environmental parameters such as wind speed, dust, humidity, and temperature on a 10 Wp photovoltaic system. Performance data for 7 days was used as a dataset and then processed using ANN with 5 layers (1 input layer, 3 hidden layers and 1 output layer) and 3 sample epochs (10, 100, and 1000).

Based on this dataset, this study succeeded in predicting PV power output for the next 7 days with an error value of Mean Square Error (MSE) of 0.0010, Mean Absolute Error (MAE) of 0.0155, Root Mean Square Error (RMSE) of 0, 0229. The main effect of the temperature factor is 31.6 °C, with an increase in power reaching 0.5 to 1 watt.

Keywords: *Photovoltaic, Artificial Neural Network (ANN).*