

# Prediction of Electrical Energy Output of a Combined Cycle Power Plant using Artificial Neural Network

## Abstract:

This report presents a study on predicting the electrical energy output of a combined cycle power plant using an Artificial Neural Network (ANN). The ANN model was trained on a dataset of historical power plant data and achieved an accuracy of 90.36% on the test set. The results demonstrate the effectiveness of the ANN model in predicting the electrical energy output of the power plant.

## Introduction:

Combined cycle power plants are widely used for electricity generation due to their high efficiency and low emissions. Accurate prediction of electrical energy output is crucial for optimal operation and maintenance of these plants. This study aims to develop an ANN model to predict the electrical energy output of a combined cycle power plant.

## Methodology:

The dataset used in this study consists of historical power plant data, including input parameters such as temperature, pressure, and flow rate, and output parameter of electrical energy output. The dataset was preprocessed and split into training and testing sets. The ANN model was built using TensorFlow and Scikit-learn libraries, with two hidden layers and a mean squared error loss function.

## Results:

The ANN model achieved an accuracy of 90.36% on the test set, indicating a high level of prediction accuracy. The results demonstrate the effectiveness of the ANN model in predicting the electrical energy output of the power plant.

## Conclusion:

This study demonstrates the potential of ANN models in predicting the electrical energy output of combined cycle power plants. The high accuracy achieved by the model indicates its suitability for real-time prediction and optimization of power plant operation.