Load forecasting using time series models

ABSTRACT

Load forecasting is a process of predicting the future load demands. It is important for power system planners and demand controllers in ensuring that there would be enough generation to cope with the increasing demand. Accurate model for load forecasting can lead to a better budget planning, maintenance scheduling and fuel management. This paper presents an attempt to forecast the maximum demand of electricity by finding an appropriate time series model. The methods considered in this study include the Naïve method, Exponential smoothing, Seasonal Holt-Winters, ARMA, ARAR algorithm, and Regression with ARMA Errors. The performance of these different methods was evaluated by using the forecasting accuracy criteria namely, the Mean Absolute Error (MAE), Root Mean Square Error (RMSE) and Mean Absolute Relative Percentage Error (MARPE). Based on these three criteria the pure auto regressive model with an order 2, or AR (2) under ARMA family emerged as the best model for forecasting electricity demand.