ABSTRACT

Load forecasting predicts the load which is going to be required at a particular time of day or on any particular day. Load forecasting plays an important role in the smooth operation of any power system and helps reduce the generation costs and the prices of electricity in general.

The purpose of short term load forecasting (STLF) is to predict electric loads with a lead time of minutes, hours, days or weeks. It is very useful tool for electric utilites in several applications including security analysis, unit commitment, economic allocation of generation optimal energy interchange between utilities and device maintenance scheduling. The system operators use the load forecasting result as a basis of off-line network analysis to determine if the system might be vulnerable. If so, corrective actions should be prepared, such as load shedding, power purchases and bringing peaking units on line. Under prediction of STLF leads to insufficient reserve capacity preparation and, in turn, increases the operating cost by using expensive peaking units. On the other hand, over prediction of STLF leads to the unnecessarily large reserve capacity, which is also related to high operating cost.

At present application of fuzzy method for load forecasting is in the experimental stage. For the demonstration of the electrical load forecasting method we have proposed a fuzzy logic system that forecasts the hourly daily peak load. A number of factors such as day-time, historical weather sensitive data i.e. temperature and historical load data are used for forecasting the load. The accuracy of the proposed fuzzy logic approach is compared using triangular membership function. Tezpur University hourly load data is used for training and testing collected from Tezpur University Load Dispatch and Communication Centre. The results obtained are tested in MATLAB and its accuracy found by MAPE is found to be satisfactory.

Key-words: Short Term Load Forecasting, Load Demand, Fuzzy Logic, Fuzzy Inference System, Matlab Coding, MAPE.