

ABSTRACT

The study of the short-term forecasting of electricity demand has played a key role in the economic optimization of the electric energy industry and is essential for power systems planning and operation. In electric energy markets, accurate short-term forecasting of electricity demand is necessary mainly for economic operations.

Our focus is directed to the question of electricity demand forecasting in the Czech Republic. Firstly, we describe the current structure and organization of the Czech, as well as the European, electricity market. Secondly, we provide a complex description of the most powerful external factors influencing electricity consumption. The choice of the most appropriate model is conditioned by these electricity demand determining factors. Thirdly, we build up several types of multivariate forecasting models, both linear and nonlinear. These models are, respectively, linear regression models and artificial neural networks. Finally, we compare the forecasting power of both kinds of models using several statistical accuracy measures. Our results suggest that although the electricity demand forecasting in the Czech Republic is for the considered years rather a nonlinear than a linear problem, for practical purposes simple linear models with nonlinear inputs can be adequate. This is confirmed by the values of the empirical loss function applied to the forecasting results.