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Load forecasting of supermarket refrigeration - DTU Orbit (08/11/2017)

Load forecasting of supermarket refrigeration

This paper presents a novel study of models for forecasting the electrical load for supermarket refrigeration. The data used for building the models consists of load measurements, local climate measurements and weather forecasts. The load measurements are from a supermarket located in a village in Denmark. Every hour the hourly electrical load for refrigeration is forecasted for the following 42 h. The forecast models are adaptive linear time series models. The model has two regimes; one for opening hours and one for closing hours, this is modeled by a regime switching model and two different methods for predicting the regimes are tested. The dynamic relation between the weather and the load is modeled by simple transfer functions and the non-linearities are described using spline functions. The results are thoroughly evaluated and it is shown that the spline functions are suitable for handling the non-linear relations and that after applying an auto-regressive noise model the one-step ahead residuals do not contain further significant information.

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