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IMPROVING THE EFFICIENCY OF SMART GRIDS OF ENERGY CONSUMPTION WITH APPLICATION OF SYSTEMS OF ARTIFICIAL INTELLECT

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Clustering is a well-known machine learning algorithm which enables the determination of underlying groups in datasets. In electric power systems it has been traditionally utilized for different purposes like defining consumer individual profiles, tariff designs and improving load forecasting.A new age in power systems structure such as smart grids determined the wide investigations of applications and benefits of clustering methods for smart meter data analysis. This paper presents an improvement of energy consumption forecasting methods by performing cluster analysis. For clustering the centroid based method K-means with K-means++ centroids was used. Various forecasting methods were applied to find the most effective ones with clustering procedure application. Used smart meter data have an hourly measurements of energy consumption time series of russian central region customers. In our computer modeling investigations we have obtained significant improvement due to carrying out the cluster analysis for consumption forecasting.

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