Consumer Load Profile Determination with Entropy-Based K-Means Algorithm

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Abstract : With the continuous increment of smart meter installations across the globe, the need for processing of the load data is evident. Clustering-based load profiling is built upon the utilization of unsupervised machine learning tools for the purpose of formulating the typical load curves or load profiles. The most commonly used algorithm in the load profiling literature is the K-means. While the algorithm has been successfully tested in a variety of applications, its drawback is the strong dependence in the initialization phase. This paper proposes a novel modified form of the K-means that addresses the aforementioned problem. Simulation results indicate the superiority of the proposed algorithm compared to the K-means.

Keywords : clustering, load profiling, load modeling, machine learning, energy efficiency and quality