

Energy Efficient Assessment of Energy Internet Based on Data-Driven Fuzzy Integrated Cloud Evaluation Algorithm

Authors : Chuanbo Xu, Xinying Li, Gejirifu De, Yunna Wu

Abstract : Energy Internet (EI) is a new form that deeply integrates the Internet and the entire energy process from production to consumption. The assessment of energy efficient performance is of vital importance for the long-term sustainable development of EI project. Although the newly proposed fuzzy integrated cloud evaluation algorithm considers the randomness of uncertainty, it relies too much on the experience and knowledge of experts. Fortunately, the enrichment of EI data has enabled the utilization of data-driven methods. Therefore, the main purpose of this work is to assess the energy efficient of park-level EI by using a combination of a data-driven method with the fuzzy integrated cloud evaluation algorithm. Firstly, the indicators for the energy efficient are identified through literature review. Secondly, the artificial neural network (ANN)-based data-driven method is employed to cluster the values of indicators. Thirdly, the energy efficient of EI project is calculated through the fuzzy integrated cloud evaluation algorithm. Finally, the applicability of the proposed method is demonstrated by a case study.

Keywords : energy efficient, energy internet, data-driven, fuzzy integrated evaluation, cloud model

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