عنوان مقاله:

Multipurpose optimization of a smart grid in the electricity market environment

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خلاصه مقاله:

In this article, a multi-objective intelligent energy management system is presented in order to optimize the micro grid performance in the short term. Micro grid is a concept in which renewable energy sources are connected with conventional production sources and this connection is extended to other larger networks in the distribution category. The topic of exploiting these networks is one of the latest topics that has attracted the attention of researches. Various technologies such as wind turbine, micro turbine, solar cell, fuel cell and battery have been used in the micro grid modeling studied in this article. Due to the complexity of the nature of the problem and its governing constrains, a linear multi objective optimization method based on weighting coefficients has been used. In this algorithm, according to the production units and load response, a proper planning has been done for the optimal distribution of energy resources in the sample micro grid, taking into account the economic and environmental goals. The problem of optimal utilization of renewable energy and energy storage in the electricity market environment in order to minimize the cost of operation and pollution has not been fully realized yet. New resources have the nature of uncertainly of production, which disrupts the current exploitation process. On the other hand, due to the expansion of the electrical network, it is no longer possible to control the network with traditional methods. The smart grid eventually led to the development of all components of the all power grid. The simulation results show that the proposed optimization model not only has a simple structure but also has a high power in reaching optimal solutions. Studies have done by .simulation in MATLAB program

کلمات کلیدی:

smart grid, micro grid, economic exploitation, management of smart energy resources