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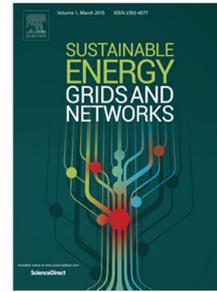
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An optimization procedure for Microgrid day-ahead operation in the presence of CHP facilities

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Abstract

Microgrids are more and more called to satisfy, through the management of distributed generation sources and the electricity network, the demand for energy by local users. The simultaneous production of electrical and thermal energy by means of Combined Heat and Power (CHP) systems represents one of the features of a Microgrid and can contribute to improve system reliability, efficiency and economic performance. In this paper, an optimization procedure for day-ahead scheduling of a CHP-based Microgrid is developed, aiming to minimize operation and emission costs of Microgrid components in the presence of electric and thermal loads and renewable forecasts. To this purpose, four different operating strategies for CHP are accounted in Microgrid framework. The proposed methodology is based on a non-linear optimization technique and it is applied to the determination of day ahead operation program, with 15-minutes time step, for realistic model of an experimental Microgrid.

Keywords

Microgrid

Combined Heat and Power

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