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# Optimum Energy Resource scheduling in a Microgrid Using a Distributed Algorithm Framework

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## Highlights

- A distributed energy management method for a microgrid is proposed.
- Optimal power flow problem within distributed algorithm is considered.
- Alternating Direction Method of the multiplier (ADMM) algorithm is presented.

## ABSTRACT:

Smart Energy Management System (SEMS) as the mastermind of microgrid is a robust software to manage both demands and generation units. Moreover, SEMS sets optimal regulations between different energy resources. A centralized solution for MG energy management system requires high computational capabilities due to a non-linear and discrete nature of the problem. In this paper, a distributed energy management system called Alternating Direction Method of the multiplier (ADMM) has been proposed in order to jointly schedule the central controller as well as local controllers. The algorithm considers optimal power flow equations within the distributed energy management problem. The proposed distributed algorithm has been investigated on a typical MG and the efficiency of the algorithm has been evidenced through case studies. Our findings show that the proposed method decrease the operational cost of MG.

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