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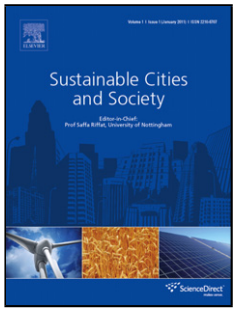

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Authors: Fatima Zahra Harmouch, Nissrine Krami, Nabil Hmina

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ACCEPTED MANUSCRIPT

A Multiagent based Decentralized Energy Management System for Power Exchange Minimization in Microgrid Cluster

Short title: Energy management for Microgrids

Fatima Zahra Harmouch, Nissrine Krami, Nabil Hmina

Affiliations of author(s)
ENSA, Ibn Tofail University, Kenitra, Morocco

Corresponding author:
Fatima Zahra Harmouch
Salmia 2 Street17 Building 55 n7 Casablanca Morocco
+212649124064
fz.harmouch@gmail.com

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Highlights

- A decentralized energy management system is developed for power dispatch for a single Microgrid and Microgrid cluster
- The energy management system was developed through a multiagent platform in order to minimize power exchange with the grid
- The decentralized energy management system has proven its reliability and effectiveness in normal operation as well as in an event of failure through JADE and Simulink simulations

Abstract
Energy management system (EMS) is one of the pillars of next generation of power system called Smart Grid. More distributed generation (DG) produced from renewable energy (RE) will be injected into the distribution power system. EMS has the responsibility to manage this RE generation and conventional one to keep the power balance between generation and consumption. Different architectures of EMS could be found in literature: the centralized, decentralized and distributed. As the centralized architecture is becoming outdated, the decentralized one is the most promising step before implementing a fully distributed system. In this context, development of multiagent systems (MAS) and their tested proprieties increase researchers' interest in applying them in Microgrid (MG) context.

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