

# **Abstract**

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## **Micro grid energy management using multi-agent systems**

This paper presents a Multi Agent System (MAS) framework applied to achieve energy management in a multiple micro grids systems. Each micro grid consists of photovoltaic arrays (PVs), batteries as a storage units and different types of loads. The PV output power and the various load power consumption patterns change in hourly basis. The micro grid can be operated in grid connected mode in normal mode it can be islanded from the grid to be self-sustained using the PVs output power and the storage power in its batteries. The simulation of each micro grid is performed using Matlab/Simulink, while the MAS control algorithm is developed on Java Agent Developing Environment (JADE). The integration between Matlab/Simulink and JADE is performed using MACSimJX, which provides MATLAB models developed in Simulink with access to JADE.