

Power Management in Islanded Microgrids Using Multi-Agent Systems

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Abstract

This paper presents a power management strategy for islanded microgrids. The proposed strategy utilizes the MultiAgent System (MAS) to perform the required tasks. The strategy is divided into two stages. The first stage is an operational planning stage which aims to optimize the operation of the microgrid in the islanded mode. This is achieved by performing Optimal Power Flow (OPF) periodically in the grid connected mode using a central agent. Once the islanded mode is detected, the results of the OPF are used to balance the operation of the microgrid. Several distributed agents along with the central agent aim to further fine tune the set points obtained from the OPF based on the actual operating conditions of the microgrid. To demonstrate the effectiveness of the proposed strategy, four scenarios are simulated and presented.

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