Microgrid decision-making and dispatch

How to solve economic load dispatch problem in a microgrid?
The main aim is to minimise the overall cost of the microgrid,and a scenario-based method is modelled for the uncertain nature of RESs (PV and wind) and load. The economic load dispatch problem has been solved using two popular metaheuristic algorithms,the Grey-Wolf algorithm and Jaya. Jaya and PSO performed equally well compared to GWO.

What is the optimal scheduling methodology for Microgrid?
An optimal scheduling methodology for MG considering uncertain parameters is proposed along with the existence of an energy storage system. The remaining paper is organised as follows: In Sect. "Optimal operation of microgrid", the optimal operation of MG is discussed.

What are the deterministic algorithms used in microgrids?
Deterministic algorithms like linear programming,mixed-integer linear programming,and dynamic programminghave been used in articles 9,10,11,12,13,14,15 for unit commitment and economic load dispatch (ELD) of microgrids with or without the energy storage system.

Why are microgrids important?
Nowadays,a growing proportion of the generated renewable energy,such as wind and solar power,is employed to power loads via microgrids (MGs) rather than the traditional distribution grids [2-4]. Therefore,optimal dispatch of the MGs is critical for promoting the application and accommodation of renewable energies.

What is a multiobjective optimal dispatch model?
In this study, a multiobjective optimal dispatch model is developed for a standalone MG composed of wind turbines, photovoltaics, diesel engine unit, load, and battery energy storage system. The economic cost, environmental concerns, and power supply consistency are expressed via subobjectives with varying priorities.

What is a penalty function in a microgrid?
A penalty function is also incorporated in the cost function for violations of any constraints. Multiple scenarios are generated using Monte Carlo simulation to model uncertain parameters of Microgrid (MG). These scenarios consist of the worst as well as the best possible cases,reflecting the microgrid's real-time operation.

to address the operational dispatch problem of the shared energy storage system. A double-layer decision game model is proposed to solve the capacity configuration and optimization ...

A microgrid controller is essentially the brain of a microgrid. It makes important decisions such as how the daily demand for energy is met, how and when the battery is used, and if that back up generator needs to be turned ...

6 ???· Economic Dispatch of Microgrid Generation-Load-Storage Based on Dynamic bi-level Game of Multiple Stakeholders. Author links open overlay panel Y.A.N.G. Mao 1, ... while a ...

Dispatch in electric microgrids Apart from the reasons mentioned in the previous section, the dispatch in microgrids is also challenging due to difference in contribution to the objectives to ...

The integration of renewable energy resources into the smart grids improves the system resilience, provide sustainable demand-generation balance, and produces clean electricity with minimal ...

To cope with these different forms of operation uncertainties, an imitation learning based real-time decision-making solution for microgrid economic dispatch is proposed. In this solution, the ...