Photovoltaic energy storage algorithm research

Overview

In this study, the combination of crossover algorithm and particle swarm optimization—crossover algorithm-particle swarm optimization (CS-PSO) algorithm—to optimize photovoltaic hybrid energy storage scheduling, improving global search and convergence speed, is discussed. By modeling the control task as a Markov Decision Process and employing the Soft Actor-Critic (SAC) algorithm, the system learns adaptive charge/discharge. To address the issues of high electricity costs for industrial loads in enterprise parks, significant peak-valley price differences, and insufficient utilization of renewable energy, a multi-objective capacity optimization method for photovoltaic and energy storage systems has been proposed. To optimize the capacities and locations of newly installed photovoltaic (PV) and battery energy storage (BES) into power systems, a JAYA algorithm-based planning optimization methodology is investigated in this article.

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