Southern Power Grid Micro-learning

Can deep reinforcement learning be used in a microgrid with shared energy storage?

For the microgrid with shared energy storage,a new frequency regulation method based on deep reinforcement learning (DRL) is proposedto cope with the uncertainty of source load,which considers both frequency performance and the operational economy of the microgrid.

Is a multi-timescale coordinated operation method for microgrids based on deep reinforcement learning?

This paper develops a multi-timescale coordinated operation method for microgrids based on modern deep reinforcement learning. Considering the complementary characteristics of different storage devices, the proposed approach achieves multi-timescale coordination of battery and supercapacitor by introducing a hierarchical two-stage dispatch model.

How do energy storage systems work in a microgrid?

In an energy management strategy,the energy storage system plays a key role in compensating for power mismatch. Many kinds of storage devices can be used as an ESS in a microgrid,such as supercapacitors,batteries,and fuel cells. Power density and energy density are the two main metrics for selecting the proper devices.

What is microgrid energy management?

It is defined as a small cluster of distributed generators (DGs) and energy storage systems (ESS). These can operate in grid-connected or isolated modes [1]. Energy management is usually designed for microgrid operation to improve energy efficiency and minimize the operational cost [2].

How much power does a microgrid use?

PES for both microgrid area 2 and sES is 250kW/500kWh. The reference power is 4MW. The sES consists of VES and PES. The sES only provides frequency support for the microgrid area 1 to verify the impact of sES on frequency regulation. Fig. 4. The multi-microgrid structure with sES.

What is a microgrid?

The microgrid is considered a promising self-sufficient energy system to incorporate renewable energy sources (RES) into the main grid. It is defined as a small cluster of distributed generators (DGs) and energy storage systems (ESS). These can operate in grid-connected or isolated modes [1].

To address the issues of instability and inefficiency that the fluctuating and uncertain characteristics of renewable energy sources impose on low-carbon microgrids, this research introduces a novel Knowledge-Data ...

The microgrid plays a role of "peak cutting and valley filling" in participating in the overall power generation and distribution process of the power grid [], which can coordinate the ...

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Project:Urban micro-renewal of Nanshan Smart Exhibition Hall(China Southern Power Grid) Owner:China Southern Power Grid Shenzhen Power Supply Bureau Co.,LTD ...

accuracy, and efficiency to improve power grid decision-making. Based on the icing moni-toring data from China Southern Power Grid, this paper first proposes rules for insulator image data ...

reconfiguration controllers for power system operators in control centers. This not only optimizes the transfer capability of the power grid, but it also ensures the safety of the operation of the ...

Reinforcement Learning . LIANG Hong. 1, LI Hongxin. 2, ZHANG Huaying. 2, Hu Ziheng. 2,QIN Zhaoming. 1 ... micro-grids can be divided into two categories: grid-connected ... Project ...

This paper took the grid-connected microgrid as the object, applied Simulink simulation technology to build a microgrid system including external power supply, photovoltaic power ...

Average time for urban power restoration(h) 4 1.78 1.77 Average time for rural power restoration(h) 5 2.49 2.49 o107 projects for 110kV, 35kV, 10kV and below oInvestment 17.02 M ...

Therefore, based on the on-line monitoring images of overhead lines in China Southern Power Grid from 2014 to 2018, combined with the construction requirements of insulator and wire icing ...

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