Wind farm power generation excess reward method

Overview

Novel reward strategies related to the energy deviation from the rated power are defined. They are designed to improve the efficiency of the WT. Two new categories of reward strategies are proposed: “only positive” (O-P) and “positive-negative” (P-N) rewards. The relationship of these categories. The power capture capability of wind farms is often constrained by various factors. To maximize the power output of wind farms and address the wake effects and random wind speeds, this paper proposes a control scheme for wind farms based on deep reinforcement learning, integrating both model-based. A reward regularization (RR) module is designed to estimate wind turbines' normalized power outputs under different yaw settings and uncertain wind conditions, which brings strong robustness and adaptability to the proposed control scheme.

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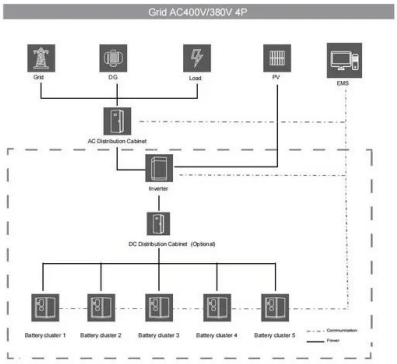
[Wind Farm Power Generation Control Via Double-Network-Based ...]

A model-free deep reinforcement learning (DRL) method is proposed in this article to maximize the total power generation of wind farms through the combination of induction control and yaw control.

[Reward adaptive wind power tracking control based on deep ...]

From the simulation, the control method proposed in this paper can effectively improve the power generation efficiency under turbulent wind speed, reduce the pitch angle variation by about ...



[Reinforcement Learning Increases Wind Farm Power Production ...]

In this work, we present the first rein-forcement learning (RL) controller integrated directly with high-fidelity large-eddy simulation (LES), enabling real-time response to atmospheric turbulence through ...

[Intelligent wind farm control via deep reinforcement learning and ...]

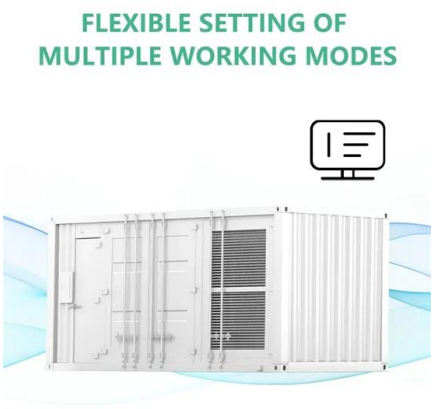
Wind farms' power-generation efficiency is constrained by the high system complexity. A novel deep reinforcement learning (RL)-based wind farm control scheme is proposed to handle this challenge ...

[Exploring Reward Strategies for Wind Turbine Pitch Control by]

Novel reward strategies related to the energy deviation from the rated power are defined. They are designed to improve the e ciency of the WT. Two new categories of reward strategies are proposed: ...

[Reward and punishment mechanism for guiding wind power plant to]

The invention discloses a reward and punishment mechanism for guiding a wind power plant to participate in source-network coordination, which is used for relieving the problem of power



[Maximizing wind farm production through pitch control using graph]

This article presents a novel methodology to maximize wind farm power generation by integrating graph neural networks, supervised learning, and reinforcement learning techniques.

[A deep reinforcement learning method for managing wind farm]

In deregulated environment, the wind power producers (WPPs) will face the challenge of how to increase their revenues under uncertainties of wind generation and electricity price. This ...

[Maximizing Wind Farm Power Capture Based on Deep]

To maximize the power output of wind farms and address the wake effects and random wind speeds, this paper proposes a control scheme for wind farms based on deep reinforcement ...

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