

Wind power generation and automatic control system





Overview

What is automatic generation control (AGC)?

This work proposes real-time optimized dispatch strategies for automatic generation control (AGC) to utilize wind power and the storage capacity of electric vehicles for the active power balancing services of the grid.

Can wind power and electric vehicles reduce real-time power imbalances?

The results reveal that integration of wind power and electric vehicles alongside thermal power plants can effectively reduce real-time power imbalances acquainted in power systems due to massive penetration of wind power that subsequently improves the power system security.

Can wind power plants and EVs help in reducing real-time power imbalances?

The performance analysis shows that wind power plants and EVs along with THPP can effectively help in reducing real-time power imbalances acquainted in the power system due to the large-scale integration of wind power and subsequently improve the power system security.

Can AGC support grid operation in a large-scale wind-based power system?

In , the presented approach for AGC to support the grid operation in a large-scale wind-based power system is based on the fact that regulation from wind power is fixed at several specific values. Moreover, the power curtailment issue in the utilization of wind power for regulation purpose has not been addressed.



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[Wind power generation system and its wind alignment ...](#)

Jun 1, 2025 · This study aimed to improve wind resource utilization efficiency and overcome the effects of wind fluctuation on wind power generation systems (WPGSs). A novel WPGS and a ...

[\(PDF\) Control System of Wind Power Generation Based on ...](#)

Jan 1, 2022 · The main features of wind power generation 2.3. Automatic Control System The automatic control system, to be frank, includes PLC system design, the design and installment ...



Adaptive optimal secure wind power generation control for ...

Jan 1, 2024 · The performance of a wind turbine (WT) relies heavily on the control systems implemented on both the turbine side and the generator side. These systems deal with highly ...



[Automatic control system of wind power generation in ...](#)

Aug 21, 2022 · Wind power generation technology, as one of the methods of utilizing wind energy, has become increasingly mature, and its economic benefits have approached



those of ...



Power control of an autonomous wind energy conversion system ...

Nov 30, 2024 · This makes the system a feasible solution for isolated, off-grid applications, contributing to advancements in renewable energy technologies and autonomous power ...



Automatic Generation Control in Modern Power Systems with Wind Power

Feb 26, 2022 · The results reveal that integration of wind power and electric vehicles alongside thermal power plants can effectively reduce real-time power imbalances acquainted in power ...



[\(PDF\) Control System of Wind Power ...](#)

Jan 1, 2022 · The main features of wind power generation 2.3. Automatic Control System The automatic control system, to be frank, includes PLC ...





Wind power integration into the automatic generation ...

Oct 15, 2025 · Abstract: Transmission system operators have an increased interest in the active participation of wind power plants (WPP) in the power balance control of power systems with ...



Wind power integration into the automatic generation control of power

Aug 20, 2014 · Transmission system operators have an increased interest in the active participation of wind power plants (WPP) in the power balance control of power systems with ...

Automatic Generation Control in Modern Power Systems ...

Mar 1, 2022 · Automatic Generation Control in Modern Power Systems with Wind Power and Electric Vehicles Kaleem Ullah 1, Abdul Basit 1, Zahid Ullah 2, Fahad R. Albogamy 3 and ...



Design of Automatic Control System for VSCF Wind ...

Mar 10, 2020 · This design briefly introduces the automatic control of VSCF wind power generation system. According to the introduction of relevant literature, first of all, it describes ...



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