

Battling the extreme a study on the power system resilience





Overview

What is power system resilience?

Power system resilience characterizes the ability to resist, adapt to, and timely recover from disruptions. The resilient power system is intended to cope with low probability, high risk extreme events including extreme natural disasters and man-made attacks.

How resilient is the power system against high-impact low-probability events?

Resilience of the power system against high-impact low-probability events is of particular importance to ensure the stability and reliability of the system planning and operation. The challenges and opportunities towards both the evaluation and improvement of resilience of the power system are explicitly reviewed in this paper.

What are the challenges to power system resilience?

The proposed method is applied on two test systems to validate its effectiveness. In the end, challenges to the power system resilience are discussed, including extreme event modeling, practical barriers, interdependence with other critical infrastructures, etc. Content may be subject to copyright.



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State-of-the-art review on power system resilience and assessment

This study presents a comprehensive review of the literature on power system resilience from various perspectives. Bie Z., Lin Y., Li G., et al: 'Battling the extreme: a study on the power system resilience', Proc. IEEE, 2017, 105, (7), pp. 1253-1266 16.

Battling the Extreme: A Study on the Power System Resilience

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[\(PDF\) Resilience in Electric Power Systems](#)

has been a rise in the number of extreme events affecting electric power systems. Power system resilience is and F. Li, "Battling the extreme: a study on the power system resilience

Three-module Power System Resilience Assessment Framework ...

The new framework can measure the robustness and power restoration ability of power system under various disasters, making up the shortcomings of existing resilience assessment methodologies. With the frequent occurrence of



natural disasters and the increasing of terrorism, the study of power system resilience has attracted extensive attention. Based on ...



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The electricity infrastructure is a critical lifeline system and of utmost importance to our daily lives. Power system resilience characterizes the ability to resist, adapt to, and timely recover from disruptions. The resilient power system is intended to cope with low probability, high risk extreme events including extreme natural disasters and man-made attacks. With an increasing ...



A detailed review of power system resilience enhancement pillars

With reference to the power system resilience study, the U.S. has developed key technologies and frameworks to combat extreme events. For instance, the U.S. Department of Energy (DOE) has created a resilient framework for a multi-hazard approach.

Illustrative process of a resilient power system through disruption

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Power system comprehensive resilience framework.

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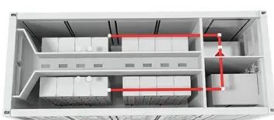


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Battling the Extreme: A Study on the Power System Resilience

Battling the Extreme: A Study on the Power System Resilience. This paper presents a load restoration framework based on distribution automation technologies. By Zhaohong Bie, ...



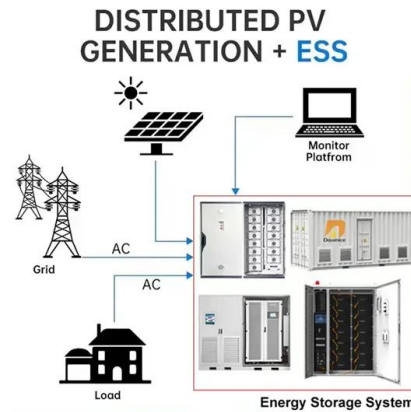
Battling the Extreme: A Study on the Power System Resilience

It summarizes practices taken by governments, utilities, and researchers to increase power system resilience. Based on a thorough review on the existing metrics system ...



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system resilience are discussed, with an emphasis on the new technologies such as topology reconfiguration, microgrids, and distribution automation; to illustrate how to increase system

Battling the Extreme: A Study on the Power System Resilience

Battling the Extreme: A Study on the Power System Resilience. Author / Creator. Bie, Zhaohong; Lin, Yanling; Li, Gengfeng; Li, Furong. Part of. Proceedings of the IEEE, 2017-07, Vol.105 (7), ...



State-of-the-art review on power system resilience ...

In this sense, a comprehensive study of power system resilience should serve as a basis to ensure a resilient power grid in the future against extreme events. This paper discusses power system safety concepts and ...





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A systematic review on power system resilience from the ...

Extreme weather events, e.g., typhoons, wind/ice storms, hurricanes, extreme precipitation, heat waves, and drought, occur with higher frequency compared to the past. A power system has a wide geographical area, and many of devices in the power system are



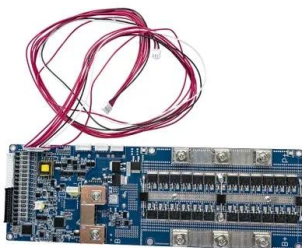
Power Systems' Resilience: A Comprehensive Literature Review

Several natural hazards have caused unexpected problems to power systems due to climate change, emphasizing the position that power systems are not prepared for extremely large-scale events. As a result, the need to study resilience in the context of power systems has been increased. A comprehensive review of the literature on power system ...



Battling the Extreme: A Study on the Power System Resilience

The resilient power system is intended to cope with low probability, high risk extreme events including extreme natural disasters and man-made attacks. With an increasing awareness of ...





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