

How to improve power grid safety?

According to the change of power grid operation mode, carry out the troubleshooting of power grid safety risks, deeply study the characteristics of AC-DC hybrid power grid and the operation mechanism of large power grid, timely improve the stability control strategy. Improve the intelligent substation relay protection reliability level.

How to represent power transmission line tripping accidents caused by natural hazards?

In this study, a probabilistic risk analysis method for representing the power transmission line tripping accidents caused by four typical natural hazards is proposed based on fault tree analysis and Bayesian network, which is incorporated in the accident data and expertise through the Delphi method. The main conclusions are presented as follows:

Do natural hazards cause transmission line tripping accidents?

However, the quantitative assessment of transmission line tripping accidents caused by multiple natural hazards has rarely been investigated. In this study, a risk analysis method to probabilistically analyze the tripping accidents of power transmission lines caused by wildfire, lightning, strong wind and ice storm was proposed.

What causes a tripping accident in a power transmission line?

Power transmission lines are susceptible to tripping accidents by four typical natural hazards, wildfire, lightning, strong wind and ice storm. Using "or" gate of FTA, a tripping accident is divided into four subsets within a 5-level FTA structure. The first level of the FTA is shown in Fig. 5

What caused a 110 kV transmission line tripping accident?

On May 9, 2012, a 110 kV transmission line tripping accident caused by wildfire happened in Sichuan province, China. The incident site had been dry and rainless for 152 consecutive days, with a daily maximum temperature of 38 °C. The wildfire had burned for a long time causing the failure of reclosing.

What is the prevention and control of power grid blackout?

The prevention and control of power grid blackout has become an important research content of the modern power industry and government departments. This paper collects and compares 160 influential international large-area blackouts since 1960, summarizes and analyzes the main causes, common problems and developing Process.

In AC/DC hybrid power grid, DC commutation failure and AC line overload are typical failures, which may not only cause DC blocking, AC line disconnection and power reversal, but also spread to the whole power grid and cause large-scale blackout accidents by the cascading failure [10, 11]. Thus, identifying of cascading failure sequence has become an ...

The South China suffered a serious icing accident in the beginning of 2008, which caused a wide area destroyed on the power grid. In this paper we used the first-hand data collected from the field ...

By analyzing 20 emblematic cases of power grid failures caused by major natural disasters, including extreme heat, typhoons, earthquakes, heavy rainfall, ice storms, lightning, floods, ...

In addition, according to statistics of typical power grid accidents from 2011 to 2015, the accidents caused by equipment faults account for about 60% of the total accidents (State Grid Central China Power Control Sub-center, 2017). So, the economic loss caused by equipment damage accounts for a large proportion of the accident economic losses.

This design enables the U.S. power grid to quickly adapt to a generator or transmission line failure, even without a momentary loss of power. The power grid in the United States almost never loses power due to insufficient generation. We almost always have enough generation capacity to meet demand on the hottest days and coldest nights--and ...

2.2 Power Grid Regional Emergency Management The United States, Canada, and France have successfully implemented measures in emergency system construction, emergency planning, and emergency drills within their power grid regions, providing valuable lessons for China to learn from [1-2]. 1) United States

Table 1 presents information on significant power grid accidents linked to various destructive hazards, including snowstorms, heatwaves, windstorms, floods, and earthquakes. The objective is ...

This paper proposes a power grid accident early warning method considering multi-factor coupling. The conditional deep convolutional generative adversarial network is ...

This paper proposes the architecture of a power grid operational accidents information system based on CBR, designs the structure of the grid operational accident case database and studies the case retrieval strategy, which can ...

power grid enterprises, and the types of equipment are complex. The role of people in the power system cannot be completely replaced. The accidents caused by the power grid can be found. It has a great impact on the reliability of the power system. For example, when the duty officer is tired for one day, the mind is relaxed, and

On February 24, 2011, equipment fault occurred at 35kV side of Qiaoxi substation connected with the first wind farm of Gansu province, and this fault caused a serious wind turbine generators tripping accident, so that 598 wind power generators were tripped off and the lost output of the wind farm was 837.34MW during the fault period because the wind turbine generators did not ...

The same report did make a number of recommendations about how to improve the grid's functioning. But India's power grid has grown in the last decade from a disparate set of self-sufficient regional grids to a big national one with hundreds of lines, dozens of generating stations, sub-stations and thousands of people manning them.

3.1.1. Lateral Movement from the Office Network. In the attacks on Ukrainian grid operators in 2015 [], attackers gained access to the PCN through lateral movement from the office network (cf. Figure 1). Allowing communications between PCN-connected devices and the office network might be necessary, e.g., to transfer certain information, such as environment data between office ...

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Health & Safety Policy POWERGRID recognizes its statutory and moral responsibilities for ensuring safe Design, Construction, Operation and Maintenance of its Transmission Lines & Sub-stations, and provision of safe methods of work and healthy working condition, for ensuring safety of its personnel and those of its contractors as well as the general public.

With the advance of technology, the development of network communication and the extensive use of power grids, people can get to know power grid accidents around the world through the network timely. Power grid accidents occur frequently. Large-scale power system blackout and casualty accidents caused by electric shock are also fairly commonplace. All of ...

This paper introduces an innovative approach to accident analysis in power grids using Sequential Event Graph Mining. At the core of this method is the RED-GNN (Recurrent Event-Driven Graph Convolutional Network) algorithm, which leverages the power of graph-based deep learning to unravel the intricate sequences of events leading to accidents.

Table 1 lists the power grid accidents caused by internal factors of the power grid in the last five years. In this paper, the example of the accident of power transmission tower in Jiangxi and a

In recent years, power grid accidents have occurred frequently and higher requirements have been placed on their safety operation. In current safety management in the world, there is an effective practice that uses a unified ...

A similar method is used to analyze the power grid accident report obtained by collecting funds, and the causal factors and related data of the accident are summarized. This study uses the text similarity measurement method of the vector space model and adopts the business template-driven entity discovery (BT) and the business feature-based ...

power grid accidents from different fields and propose corresponding solutions. Based on the accident case,

this paper analyzes the cause of the accident and puts forward the...

nical supports for accident preventing, handling and recovering of tripping accidents of the power transmission line according to "scenario-response"-based hazard response strategy. Keywords Power grid · Tripping accident · Risk analysis · Natural hazards · Bayesian network · Fault tree analysis * Ruixue Li leerx_x@126

The safety and reliability of the power grid are related to national power security, economic development and people's daily life. The occurrence of extreme weather changes the external ...

Power Grid accidents caused by sudden natural meteorological disasters have the characteristics of suddenness, complexity and uncertainty. In order to improve the efficiency of power grid emergency repairs, a method for predicting emergency material resources under the conditions of power grid meteorological disasters combining case-based reasoning, deep belief network and ...

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