

## Analysis of the cause of explosion of pumped storage power station



## Overview

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Abstract Cave excavation in the pumped storage power plant building is usually carried out by the technique of drilling and blasting. In this study, a part of the pumped storage power plant building was analyzed by the blasting simulation with the Ls-Dyna.

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In this study, the upper reservoir of Hohhot pumped storage power station was taken as a case study. Through a combination of monitoring data and numerical simulation, the deformation characteristics of the galleries on the backfill foundation were analyzed, and the causes and mechanisms of.

Cave excavation in the pumped storage power plant building is usually carried out by the technique of drilling and blasting. In this study, a part of the pumped storage power plant building was analyzed by the blasting simulation with the Ls-Dyna. Three different explosive arrangements were. What is pumped storage power station (PSPS)?

The pumped storage power station (PSPS) is a special power source that has flexible operation modes and multiple functions. With the rapid economic development in China, the energy demand and the peak-valley load difference of the power grid are continuing to increase.

What is pumped Energy Storage?

The PSPS is the best tool for energy storage. The pumped storage has the function of energy reserve, and it solves the problem of electricity production

and consumption at the same time, and not easy to store. Thus, it can effectively regulate the dynamic balance of the power systems in electricity generation and utilization.

Why is demand analysis important for pumped storage in China?

And the demand analysis on the PSPS on the basis of the regional power systems was carried out at the same time. This not only avoided the limitations of the selection planning on a single site, but also made people have a systematic understanding on the development space of the pumped storage in China.

Why is pumped storage a good tool for load regulation?

As to the pumped storage unit, it is the optimal tool for load regulation with the function of energy storage, as described above. In addition, it is the only kind of unit that can act as the load when the energy demand of the power network is low. Furthermore, in China, there are a large quantity of good PSPS sites to be exploited.

What is PSPS in energy storage?

It is a tool for power conversion and reserve. At present, the comprehensive efficiency of the PSPS is about 75% (the ratio of power generated to power consumed) in China, which is also called "using 4 degrees to produce 3 degrees". The PSPS is the best tool for energy storage.

Does Gangnan hydropower station have load regulation?

For the application of the pumped storage unit, Gangnan hydropower station owns the ability of load regulation. Erenow, it can only generate seasonal power . Although the scale of this PSPS is small, it is designed reasonably and utilized appropriately. Its construction initiates the history of the PSPS development in China.

## Analysis of the cause of explosion of pumped storage power station



### What are the causes of explosions in pumped storage power ...

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### Transient vibration control on coupled unit-plant structure of pumped

To address the recurring vibration in the integrated unit-plant structure system during the transitional phases of pumped storage power station (PSPS), the ...



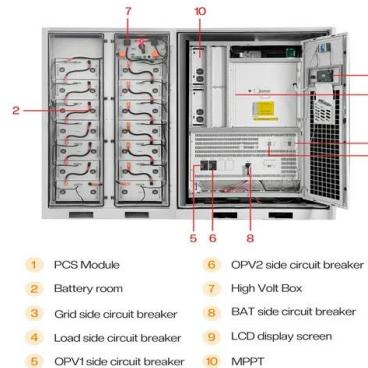
### Multi-frequency oscillation characteristics and stability of the pumped

This study aimed to propose a theoretical analysis method to comprehensively investigate the multi-frequency oscillation characteristics and their main influencing factors. ...

### Distributionally robust optimization for pumped storage power station

Finally, considering the "worst-case" distribution

within the narrowed ambiguity set, an improved multi-objective distributionally robust optimization is constructed, which ...



## Analysis on the operation mode of pumped storage power station ...

Pumped-storage power stations play an important role in the electricity market because of their flexible operation and rapid response, as well as their multiple

## Cause Analysis of Cracks in Concrete Panels during Operation ...

Abstract Cracks tend to appear on the concrete panels of pumped storage power stations during operation with frequent changes in water level in cold regions in winter. The ...



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## Cause investigation and verification of lining cracking of ...

A wide range of cracking happens in concrete lining at the crown of the lower adit and high-pressure bifurcation in the water-filled test of bifurcation tunnel at Huizhou Pumped ...

## Analysis of the galleries cracking causes in the backfill area of

Pumped storage power stations usually arrange galleries in the backfill area at the bottom of the reservoir basin. Under the influence of uneven deformation, the galleries may ...



## ?????????????????????-Analysis on the Characteristics, Causes

...

Through the data collection and the ground investigation, 10 geological hazard points are checked out. By analyzing the causes of the geological disasters, it is suggested to take out feasible ...

## Analysis of the causes of explosion accident in Energy Storage Power

[analysis of the causes of explosion accidents in energy storage power stations suggest doing a good job in on-line monitoring and detection of battery data] Lithium battery is ...



## Frontiers , Pumped storage power station using ...

Pumped storage power station (PSPS) is a clean and efficient renewable energy storage facilities, which can build new renewable energy ...

## Seepage analysis in a fractured rock mass: The upper reservoir of

A numerical simulation model of seepage in a fractured rock mass was constructed, based on the hydrogeological conditions of the upper reservoir of Pushihe ...



## Research on air-ground digital monitoring and early warning

...

During the construction of pumped storage power station, geological disasters such as landslide, debris flow and collapse often occur in mountainous areas. At the same time, engineering ...

## ????????????????????????????????????

Abstract: The Kawabaiqing Pumped Storage Power Station is a key implementation of a pumped storage power station in the integrated water and wind power base in southeastern Tibet

...



## Multi-objective optimization method and case analysis for

...

In the case of a pumped storage power station, 34 drainage schemes are optimized, all of which meet the constraint conditions.

## Simulation of Underground Reservoir Stability of Pumped Storage ...

During the operation of the pumped storage power station, the frequent filling and discharge of the underground reservoir with water may affect the local stress field, resulting in deformation and ...



## Analysis of Stability of Surrounding Rock in the Blasting ...

Abstract Cave excavation in the pumped storage power plant building is usually carried out by the technique of drilling and blasting. In this study, a part of the pumped storage power plant ...

## Stability performance of pumped-storage units

Guo et al. [18] clarified bifurcation phenomena in a pumped-storage wind power station system, determining its multi-frequency oscillation mechanism. The elastic water ...



## Risk Assessment Quantification of Pumped Storage Power Station ...

The pumped storage power plants in China have developed rapidly with policy support and have become emerging power market players, thanks to a perfect new tariff ...

## Analysis and Treatment of Shaft Current Alarms in Pumped Storage Power

This paper expounds the phenomenon of shaft current alarm fault of suspended energy storage unit, analyzes and troubleshooting according to the unit structure, and confirms ...



## Cause Analysis of Cracks in Concrete Panels during Operation ...

Cause Analysis of Cracks in Concrete Panels during Operation Period of Pumped Storage Power Station in the Cold Area and Corresponding Treatment IOP Conference Series Earth and ...

## Research on Vibration Characteristics of an ...

With the rapid development of pumped storage, the vibration problems caused by the operation of power stations have become increasingly ...



## [fenvs-2022-983319 1.](#)

Xi F, Yan R, Shi J, Zhang J and Wang R (2022), Pumped storage power station using abandoned mine in the Yellow River basin: A feasibility analysis under the perspective of carbon neutrality.

## Identification and Analysis of Deformation Areas in the ...

To meet the needs of the rapid development of new energy sources, China is currently accelerating the construction of pumped storage power stations (PSPS). Howe



## Identification of Geological hazards in pumped Storage Power ...

Aiming at the hidden danger points of geological disasters during the construction of Zhenan pumped storage power station in Shaanxi Province, 10 scenes of ALOS

## Identification and Analysis of Deformation Areas in the ...

To meet the needs of the rapid development of new energy sources, China is currently accelerating the construction of pumped storage power stations (PSPS). However, ...

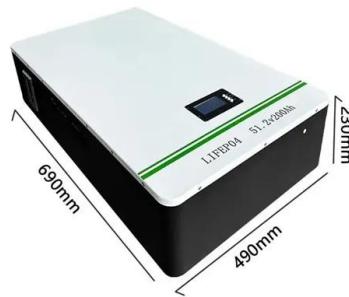


## Analysis of the galleries cracking causes in the backfill area of

Through a combination of monitoring data and numerical simulation, the deformation characteristics of the galleries on the backfill foundation were analyzed, and the causes and ...

## Influencing factors of hydrochemical characteristics in reservoir ...

Through the analysis of factors affecting the hydrochemical characteristics of various water bodies in the reservoir area of Taishan Pumped Storage Power Station in Shandong Province from ...



## The material comparison design of penstock pipe for a ...

Abstract Penstock pipe belongs to special pressure equipment, which has the risk of explosion. Therefore, it is necessary to strengthen the analysis of common accident damage forms and ...

## Propagation characteristics analysis of high-frequency vibration in

The pumped storage power station (PSPS) is still the most mature device worldwide capable of large-scale energy storage [1, 2]. Typically, hydropower plants and ...



## Numerical Simulation of Dam-Break Flood Routing in Pumped Storage Power

With the extensive construction of pumped storage power stations, understanding the evolution, propagation laws, and factors influencing downstream dam-break ...

## Optimizing pumped-storage power station operation for boosting power

Optimizing peak-shaving and valley-filling (PS-VF) operation of a pumped-storage power (PSP) station has far-reaching influences on the synergies of hydropower output, power ...



## Pumped storage power stations in China: The past, the present, ...

The pumped storage power station (PSPS) is a special power source that has flexible operation modes and multiple functions. With the rapid economic development in ...

## Analysis of Stability of Surrounding Rock in the Blasting ...

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