



# SolarTech Power Solutions

# **Cascade River Basin Energy Storage Power Station**



## Overview

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Can pumped storage power stations be built among Cascade reservoirs?

The construction of pumped storage power stations among cascade reservoirs is a feasible way to expand the flexible resources of the multi-energy complementary clean energy base. However, this way makes the hydraulic and electrical connections of the upper and lower reservoirs more complicated, which brings more uncertainty to the power generation.

What is the load distribution of Cascade hydropower stations?

The load distribution of cascade hydropower stations is associated with the safe operation of the hydropower stations and power grids. The conventional load distribution of cascade hydropower stations does not consider the synchronous operation of the water level.

Does equal reservoir full storage rate guide the load distribution of Cascade hydropower stations?

The inconsistent water level variation process of cascade hydropower stations is not conducive to the safe operation of hydropower stations and power grids. Therefore, the main purpose of this paper is to introduce the concept of equal reservoir full storage rate (ERFSR) to guide the load distribution of cascade hydropower stations.

Where are Cascade hydropower stations located?

Cascade hydropower stations in the upper reaches of the Yellow River. The hydrological data mainly include the day-ahead prediction of the inflow to the first reservoir and the initial water level of each hydropower station.

Are Cascade hydropower stations safe?

The conventional load distribution of cascade hydropower stations does not consider the synchronous operation of the water level. The inconsistent water level variation process of cascade hydropower stations is not conducive to the

safe operation of hydropower stations and power grids.

What is the average water consumption rate of Cascade hydropower stations?

Therefore, the average water consumption rate of cascade hydropower stations in case 2 is 823.42 m<sup>3</sup> /MW. Compared with case 2, when considering the consumption of new energy (case 3), the average water discharge volume of cascade hydropower stations can be reduced by 593,000 m<sup>3</sup>, while the consumption of new energy can be increased by 779.89 MW.

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