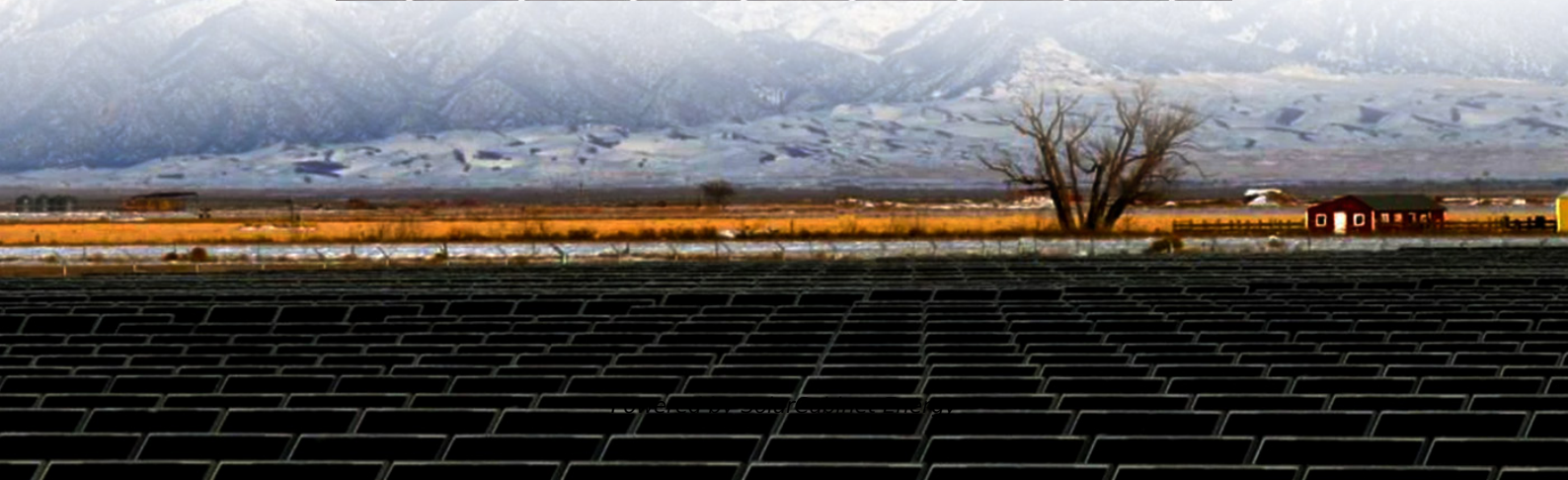
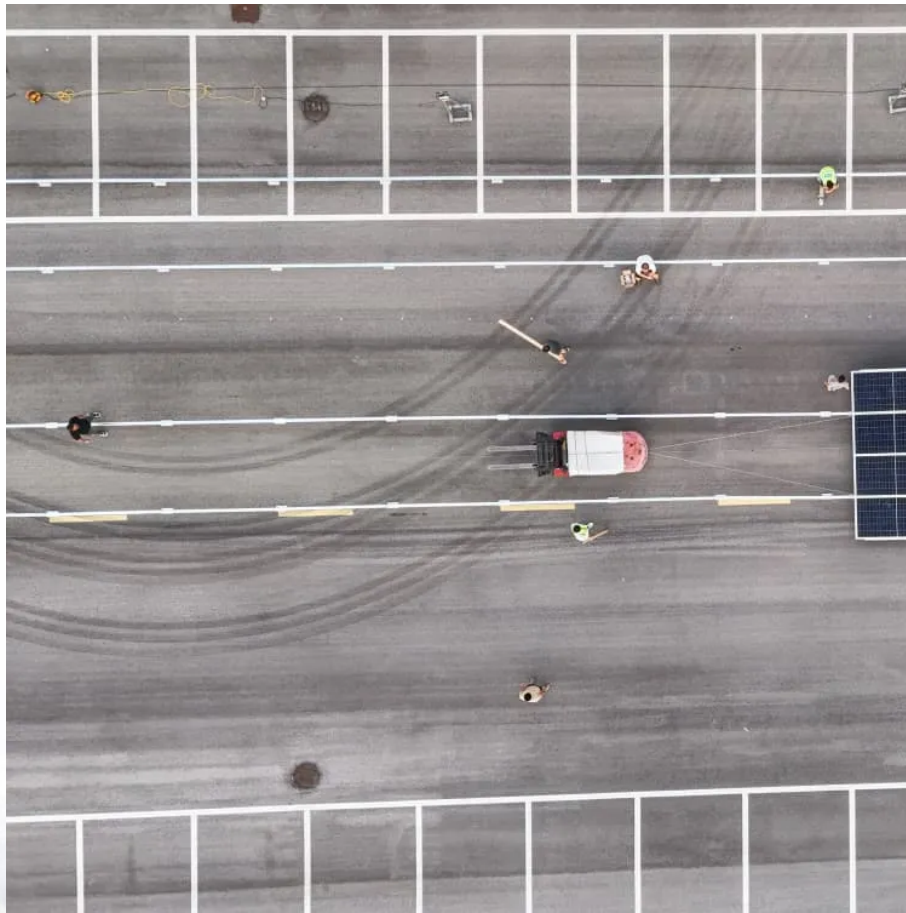


The relationship between energy storage power stations and IDC





Overview

What are the constraints of the IDC power supply & consumption balance?

The constraints of the IDC power supply and consumption balance. For each single IDC, the balance of energy supply and consumption must be met. In Section 2, the power supply and consumption of the single IDC are stated. The actual consumption of renewable energy is also constrained by the current maximum output.

What is IDC operation power consumption?

The IDC Operation Power Consumption Model The operation power consumption of the IDC mainly includes server power consumption, cooling power consumption, lighting, and other auxiliary infrastructure power consumption. Among them, server power consumption is the energy consumed by the processing workload.

What is the impact of IDCs on energy consumption?

The expansion of the number of IDCs leads to a dramatical increasement of energy consumption [2]. The power consumption of IDCs has taken up around 3% of the total global power supply in 2018 [3], and the consumption is growing at a rate of 15–20% yearly.

How does a sustainable IDC work?

For sustainable IDCs, their energy comes mainly from the photovoltaic and wind power resources they purchase, and the energy consumption is mainly used for the operation of the IDC itself, including the operation of servers, refrigeration systems, lighting infrastructure, etc. and the charging power of EVs in the charging station.

How does a single IDC affect power consumption?

From the above equations, it can be concluded that when the processing workload of a single IDC iremains the same, the shorter the average residence



time of the data load in the IDC i (i.e., shorter processing time), the greater the power consumption generated by the IDC i .

How to reduce the power consumption of IDCs?

Thus, a two-stage DRO is established for minimizing the power consumption of IDCs. Compared with the deterministic operation strategy, the workload dropping cost and operation cost of IDCs can be effectively reduced with a minor power consumption increasement.



The relationship between energy storage power stations and IDC



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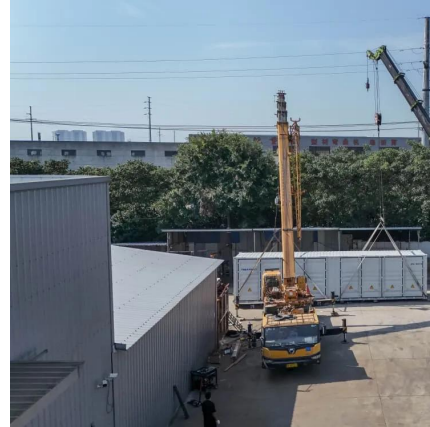


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