Solar power generation and electrolytic aluminum production

Overview

To address these issues, this paper analyzes the production process characteristics of electrolytic aluminum loads and establishes a power control model for these loads. Research on Interactive Control of Electrolytic Aluminum Load and Wind Power Output Ge Simin 1, Yu Kun 1, 2 1Hohai University, College of Energy and Electrical Engineering. In many regions, apart from energy efficiency measures, solar energy utilization will be the way to reconcile future environmental and economic requirements of aluminum production. In the paper we present, analyze and compare options for solar energy utilization, namely concentrating solar-thermal. This is what is happening in the solar PV industry, and aluminium's role in it: In 2023, more than twice as much new electricity generation from solar was added around the world as from coal, according to the global energy think tank Ember. The maturity of this industry could therefore be leveraged to store electricity. To convert aluminum back to power, it can be fully oxidized with high-temperature liquid water.

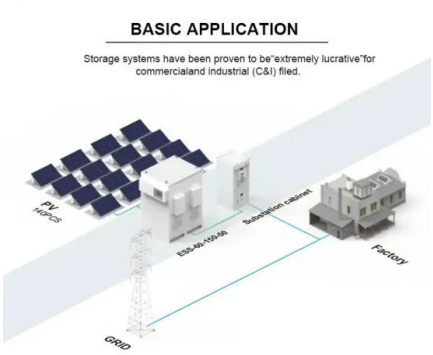
Solar power generation and electrolytic aluminum production

[Solar power generation in aluminum smelters]

In order to solve the problem of high proportion of new energy access to electrolytic aluminum, wind power generation, photovoltaic (PV) power generation and energy storage are combined

[How aluminium is supporting historic growth in solar power]

The International Energy Agency estimates that recycled materials such as aluminium could meet 21% of solar PV demand by 2040. Recycling reduces waste and contributes to a ...



[Participation of electrolytic aluminum loads in grid interaction]

To address these issues, this paper analyzes the production process characteristics of electrolytic aluminum loads and establishes a power control model for these loads.

[Adaptive load control of electrolytic aluminum for power system]

By means of updating the running status of electrolytic aluminum load regularly and calculating the load damping coefficient adaptively, this strategy can realize the rapid response to the ...

[Capacity Optimization of Grid-Connected Solar-Wind-Storage ...]

The objective is to optimize the configuration of photovoltaic (PV), wind turbines (WT), and energy storage systems in order to maximize the utilization of renewable energy sources in aluminum ...

[Solar power generation and electrolytic aluminum production]

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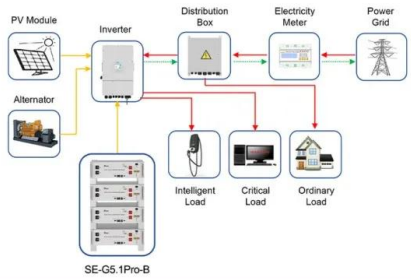
[Energy Flexibility in Aluminium Smelting: A Long-Term]

This paper investigates the economic feasibility of utilising energy flexibility in aluminium production as a viable solution to leverage electricity surpluses arising from the increasing number of ...

Travaux 52 paper

In many regions, apart from energy efficiency measures, solar energy utilization will be the way to reconcile future environmental and economic requirements of aluminum production.



Application scenarios of energy storage battery products

[Techno-economic assessment of aluminum as a clean energy carrier ...]

To contextualize the findings, a remote mine case study integrates transportation, storage and power generation costs for aluminum, compared to liquefied hydrogen and ammonia.

[Participation of electrolytic aluminum loads in grid interaction]

This section mainly introduces the process flow and power regulation characteristics of electrolytic aluminum industrial loads, analyzes the feasibility of power regulation for these loads, and ...

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