

# **Sodium sulfur energy storage battery cost**



## Overview

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What is a sodium-sulfur battery?

Sodium-sulfur batteries, also known as Na-S batteries, are a type of energy storage system that uses a molten mixture of sodium and sulfur as the electrolyte. A new battery has been developed that boasts four times the capacity of lithium batteries, and at a more affordable cost.

Is a sodium-sulfur battery the future of energy storage?

The group's novel sodium-sulfur battery design offers a fourfold increase on energy capacity compared to a typical lithium-ion battery, and shapes as a promising technology for future grid-scale energy storage.

How much does a sodium-sulfur battery cost?

Figure 5.1. Example input values for annualized cost calculation for a sodium-sulfur battery. Using these inputs, the total net present value (NPV) of the total cumulative cost for the 1 MW/4 MWh storage system after tax, insurance, and other factors described is calculated to be just over \$4 million, of which nearly 71 percent is CAPEX-based.

Can a sodium battery save money?

"Our sodium battery has the potential to dramatically reduce costs while providing four times as much storage capacity. This is a significant breakthrough for renewable energy development which, although it reduces costs in the long term, has had several financial barriers to entry," said lead researcher Dr. Zhao.

What is the difference between lithium ion and sodium sulfur batteries?

The battery has four times the energy capacity of lithium-ion batteries and is much cheaper to produce. The team used sodium-sulfur, a type of molten salt that can be extracted from seawater, to create the battery, making it a more cost-effective alternative to lithium-ion batteries.

## What is a sodium-sulfur battery (NaS)?

Sodium also has high natural abundance and a respectable electrochemical reduction potential (−2.71 V vs. standard hydrogen electrode). Combining these two abundant elements as raw materials in an energy storage context leads to the sodium-sulfur battery (NaS).

## Sodium sulfur energy storage battery cost

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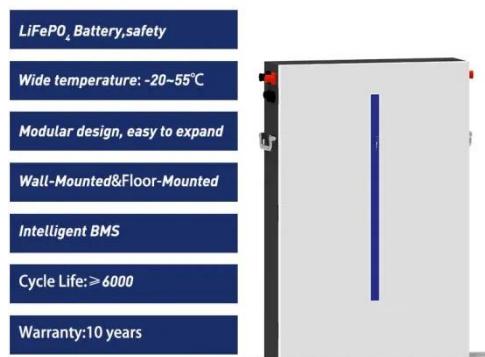


### Sodium Sulfur Battery - Zhang's Research Group

Feb 25, 2015 · By Xiao Q. Chen (Original Publication: Feb. 25, 2015, Latest Edit: Mar. 23, 2015) Overview Sodium sulfur (NaS) batteries are a type of molten salt electrical energy storage ...

### Exclusive: sodium batteries to disrupt energy ...

Jul 1, 2024 · With costs fast declining, sodium-ion batteries look set to dominate the future of long duration energy storage, finds an AI-based analysis that ...



### Sodium Sulfur (NaS) Battery Energy Storage System (BESS) ...

Oct 8, 2024 · They have combined resources to further innovate sodium-sulfur batteries, aiming at improving system efficiency and reducing costs associated with scalability, which is essential ...

## Sodium Sulfur (NaS) Battery Energy

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## Storage System (BESS) ...

Oct 8, 2024 · Cost reduction in NaS battery technology is another critical driver. Significant advancements in materials and manufacturing processes have led to reductions in production ...



## Sodium

Sodium - sulfur (Na - S) batteries have emerged as a potential solution for large - scale energy storage, but their cost is a crucial factor in determining their widespread adoption. The cost of ...

## NGK's NAS sodium sulfur grid-scale batteries in ...

Feb 6, 2017 · Japan-headquartered NGK Insulators is the manufacturer of the NAS sodium sulfur battery, used in grid-scale energy storage systems around ...



## Toward Emerging Sodium-Based Energy Storage ...

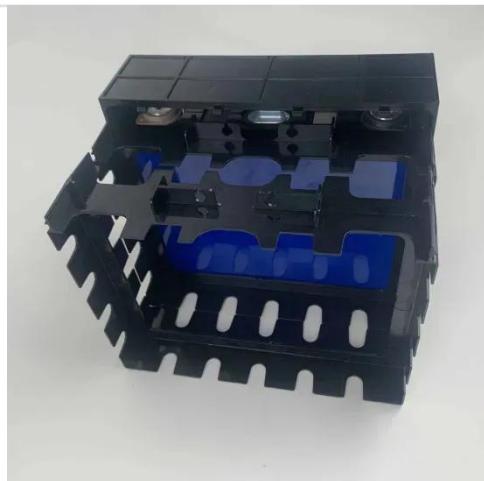
As one of the potential alternatives to current lithium-ion batteries, sodium-based energy storage technologies including sodium batteries and

capacitors are ...



### **Research on sodium sulfur battery for energy storage**

Sep 30, 2008 · Sodium sulfur battery is one of the most promising candidates for energy storage applications. This paper describes the basic features of sodium sulfur battery and summarizes ...



### **NAS batteries: long-duration energy storage ...**

Jun 8, 2023 · Sodium-sulfur (NAS) battery storage units at a 50MW/300MWh project in Buzen, Japan. Image: NGK Insulators Ltd. The time to be skeptical

...

### **Sodium sulfur battery vs lithium ion - which is better for energy storage**

Aug 18, 2025 · This article compares sodium sulfur batteries vs lithium-ion batteries, focusing on their principles, performance, pros and cons, and

applications to help users make informed ...



### **Comparative Assessment of Liquid Metal Batteries versus Sodium Sulfur**

1 day ago · Liquid Metal Battery Technology Evolution and Objectives  
Liquid metal batteries (LMBs) represent a significant evolution in energy storage technology, emerging from the need ...

### **The most complete knowledge list of sodium ...**

Aug 19, 2025 · A sodium-sulfur battery is a molten salt battery composed of liquid sodium (Na) and sulfur (S). This type of battery has high energy density, high ...



### **Cheap sodium-sulfur battery boasts 4x the ...**

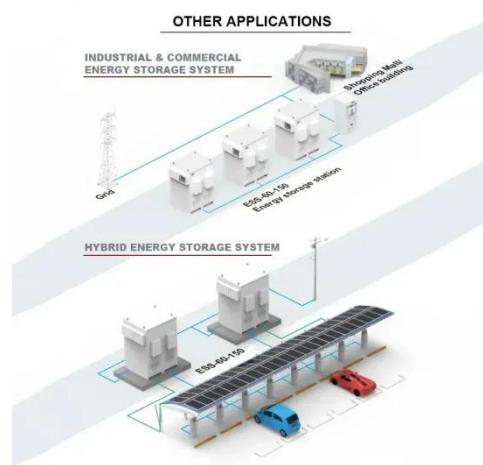
Dec 9, 2022 · "Our sodium battery has the potential to dramatically reduce costs while providing four times as much



storage capacity," said Dr Zhao. "This is a ...

## Novel sodium-sulfur battery for renewables ...

Dec 8, 2022 · Sodium-sulfur batteries have long offered high potential for grid-scale stationary energy storage, due to their low cost and high theoretical ...



## Progress and prospects of sodium-sulfur batteries: A review

Dec 1, 2017 · This paper presents a review of the state of technology of sodium-sulfur batteries suitable for application in energy storage requirements such as load leveling; emergency ...

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Apr 2, 2021 · ?: ???, ??, ?????, ???

Abstract: As an important energy storage technology, sodium sulfur battery has GWh-class installed capacity

in the global ...



### **Energy Storage Technology and Cost Characterization ...**

Jul 25, 2019 · This report defines and evaluates cost and performance parameters of six battery energy storage technologies (BESS) (lithium-ion batteries, lead-acid batteries, redox flow ...

### **SODIUM SULPHUR (NAS) BATTERY FOR LARGE-SCALE ...**

Apr 11, 2022 · SODIUM SULPHUR (NAS) BATTERY FOR LARGE-SCALE TEMPORAL - Energy Emissions

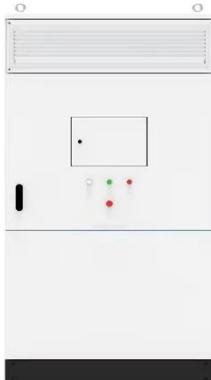


### **NGK sodium-sulfur batteries: Japan project, ...**

May 27, 2025 · Close-up of the Toho Gas NAS battery project in Mie prefecture, Japan. Image: Toho Gas. Japanese

manufacturer NGK Insulators' proprietary

...



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## **CATL Sodium-Ion Batteries Cuts Costs By 90% : \$10/kWh Energy ...**

Aug 15, 2025 · CATL's sodium-ion batteries promise \$10/kWh storage and 90% lower costs. See how they could transform EVs and grid energy worldwide fast.



## **Fresh Opportunity for the Sodium-Sulfur Battery**

Fresh Opportunity for the Sodium-Sulfur Battery Over 50 years ago, the sodium-sulfur battery was considered promising, but it failed to make its big breakthrough. Its poor performance at ...

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## **Sodium Sulfur Battery**

Sodium-sulfur batteries are rechargeable high temperature battery technologies that utilize metallic sodium and offer attractive solutions for many large scale electric utility energy storage ...



## Sodium Sulfur Battery

Sodium-sulfur (Na-S) batteries are high-temperature batteries that use liquid sodium and sulfur, characterized by their potential for grid-scale energy storage, high energy density, and low ...

## Sodium-Sulphur (NaS) Battery

May 25, 2020 · 1. Technical description  
Physical principles sodium-sulphur (NaS) battery system is an energy storage system based on electrochemical charge/discharge reactions that occur ...



**A novel sodium-sulphur battery has 4 times the ...**

Dec 9, 2022 · Room-temperature sodium-sulfur (RT-Na/S) batteries possess high potential for grid-scale stationary energy storage due to their low cost and high ...



## DOE ESHB Chapter 4: Sodium-Based Battery Technologies

Feb 2, 2022 · Abstract The growing demand for low-cost electrical energy storage is raising significant interest in battery technologies that use inexpensive sodium in large format storage ...



50kW modular power converter



## High and intermediate temperature ...

LIB technology is currently the most cost-effective solution for fast-response applications like frequency regulation and response as well as short-term ...

## Sodium-Sulfur (NaS) Battery

Jun 27, 2025 · A sodium-sulfur (NaS) battery is a high-capacity, high-temperature energy storage system that stores energy using molten sodium and

sulfur as active materials. These batteries ...



### **Cheap sodium-sulfur battery boasts 4x the ...**

Dec 9, 2022 · An international team of scientists eyeing next-generation energy storage solutions have demonstrated an eco-friendly and low-cost battery with ...

### **A room-temperature sodium-sulfur battery with high ...**

Sep 24, 2018 · High-temperature sodium-sulfur batteries operating at 300-350 °C have been commercially applied for large-scale energy storage and conversion. However, the safety ...



### **NAS Batteries , Products , NGK INSULATORS, LTD.**

The NAS battery is a megawatt-level energy storage system that uses sodium and sulfur. The NAS battery system boasts an array of superior features, ...



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### **300% More Capacity: New Battery Technology ...**

Jan 17, 2023 · Sodium-sulfur batteries, also known as Na-S batteries, are a type of energy storage system that uses a molten mixture of sodium and sulfur as

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### **Sydney Uni hails low cost, long life sodium ...**

Dec 7, 2022 · Sydney Uni researchers claim their new battery offers four times the energy capacity of lithium-ion batteries and is far cheaper to produce.

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