SolarInnovate Energy Solutions

Germany Hamburg Energy Storage System

Overview

Although the conceptualisation of the ETES system is traced back to 2011, the models were developed and validated from 2012 onwards. A pilot ETES system with 700kW charging power and 5MWh storage capacity was successfully implemented at a test site in 2014. The proven success of.

The ETES pilot project is funded by the German Federal Ministry of Economics and Energy, under its 6th Energy Research.

The ETES prototype uses 1,000 tonnes (t) of volcanic rocks as the medium for energy storage. The facility is charged using hot air produced with the help of a resistance heater and a blower. The thermal energy converted from electricity is stored in the volcanic rocks at a.

The ETES technology is based on 80% off-the shelf components and provides a flexible solution for storing surplus power and discharging the same during hours of peak electricity demand. It will thus help maintain the grid stability and complement the renewable power.

The ETES system’s energy efficiency for storing direct heat or heat converted from electricity is expected to be 99%. The energy efficiency for producing electricity from the stored.

What can Tu Hamburg do with energy storage technology?

TU Hamburg researches the thermodynamic fundamentals of the energy storage technology used. Simens Gamesa says, that by using standard components, it can convert decommissioned conventional power plants into green storage facilities (as a second-life option). Hamburg Energie will market the stored energy on the electricity market.

How does a heat storage facility in Hamburg-Altenwerder work?

The heat storage facility, which was held a grand opening ceremony in Hamburg-Altenwerder, holds about 1,000 tonnes of volcanic rock that it employs as an energy storage medium. To store the energy, a resistance heater converts electrical energy converted into hot air, and with the aid of a blower, it heats the rock to 750°C.

What is electric thermal energy storage (ETEs)?

The 130MWh Electric Thermal Energy Storage (ETES) demonstration project, commissioned in Hamburg-Altenwerder, Germany, in June 2019, is the precursor of future energy storage solutions with gigawatt-scale charging and discharging capacities. Siemens Gamesa, Hamburg University of Technology, and Hamburg Energie.

What does Hamburg energy do?

Hamburg Energie is responsible for marketing the stored energy on the electricity market. The energy provider is developing highly flexible digital control system platforms for virtual power plants. Connected to such an IT platform, ETES can optimally store renewable energy at maximum yield.

What is a heat storage facility?

The innovative storage technology makes it possible to store large quantities of energy cost-effectively and thus decouple electricity generation and use. The heat storage facility, which was ceremonially opened today in Hamburg-Altenwerder, contains around 1,000 tonnes of volcanic rock as an energy storage medium.

How much energy can a thermal energy storage system store?

The Electric Thermal Energy Storage system can store up to 130MWh of thermal energy for a week, which can be converted back into electrical energy using a 1.4MW steam turbine generator that can produce electricity for up to 24 hours.

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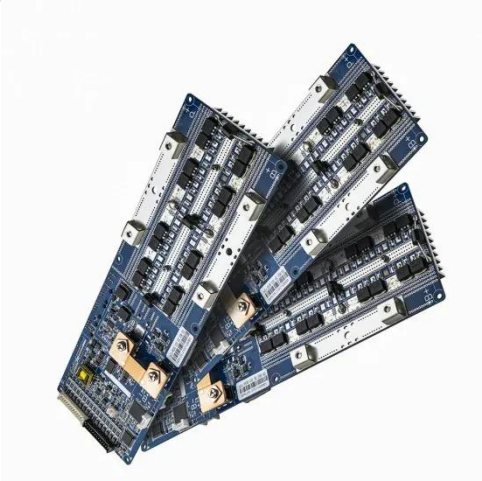

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