

What is chemical energy storage technologies (CEST)?

Development of chemical energy storage technologies (CEST). In the context of this report, CEST is defined as energy storage through the conversion of electricity to hydrogen or other chemicals and synthetic fuels. On the basis of an analysis of the H2020 project portfolio and funding distribution, the report maps re

What are chemical energy storage technologies?

As seen from Fig. 6.2, chemical energy storage technologies are mainly constituted by batteries (secondary and flow batteries) and renewable generated chemicals (hydrogen, fuel cell, SNG, and hydrocarbons). Batteries as electrochemical energy storage bring great promise in a range of small-scale to large-scale applications.

What is chemical energy storage?

Chemical energy storage is defined as the utilization of chemical species or materials to extract energy immediately or latently through processes such as physical sorption, chemical sorption, intercalation, electrochemical reactions, or chemical transformation. You might find these chapters and articles relevant to this topic.

Why is the chemical sector important?

The chemical sector is the largest industrial energy consumer and the third largest industry subsector in terms of direct CO<sub>2</sub> emissions. This is largely because around half of the chemical subsector's energy input is consumed as feedstock - fuel used as a raw material input rather than as a source of energy.

What are the different types of energy storage?

Currently, chemical fuels are the dominant form of energy storage both for electric generation and for transportation. Coal, gasoline, diesel fuel, natural gas, liquefied petroleum gas (LPG), propane, butane, ethanol, biodiesel, and hydrogen are the most common chemical fuels that are processed.

How to implement chemical energy storage systems effectively?

In order to implement chemical energy storage systems effectively, they need to address practical issues such as limited lifetime, safety concerns, scarcity of material, and environmental impact. 4.3.3. Expert opinion Research efforts need to be focused on robustness, safety, and environmental friendliness of chemical energy storage technologies.



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