

Design of power supply scheme for hydrogen energy base station





Overview

What is a hydrogen power station (h2pem)?

Pursuing this progression, this article presents dynamic modeling and simulations of a hydrogen Power Station (H2PEM), within an interconnected grid. The system integrates PEM fuel cells, electrolysis units, and a dual-mode hydrogen storage solution using both compression and metal hydride technologies.

How does a hydrogen storage system work?

The system integrates PEM fuel cells, electrolysis units, and a dual-mode hydrogen storage solution using both compression and metal hydride technologies. Designed for both energy supply and absorption, the system operates with a nominal power capacity of 1 kW and a hydrogen storage capacity of 5 Nm³.

What is h2pem energy system layout?

H2PEM energy system layout. DC/DC converters are essential for voltage stabilization, enabling efficient energy exchange with the external grid. A Power Supply node is used when additional grid energy is necessary for hydrogen generation.

What is the strategy governing hydrogen storage management?

The strategy governing hydrogen storage management favors the utilization of the MHD hydride tank, relegating the H2C compression tank to standby mode, poised to intervene as needed or if the MHD encounters limitations. The initial computational assessment revolves around the total state of charge (SOC) of the H2 storage.



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