

Is basalt suitable for hydrogen storage?

The complex in situ geochemical reaction of basalt-hydrogen is a key factor in evaluating the suitability of basalt for hydrogen storage. This paper investigates the geochemical interactions of hydrogen-basalt-water and evaluates the impact on basalt's physical properties.

What is the final heat capacity of basalt?

The final full potential heat capacity for temperatures of 300 °C to 750 °C after 30 min of heating varies less than 13% for the basalt product and less than 7% for the natural basalt . The heat capacity is influenced by the mass of the patterns, the inhomogeneity and humidity of the rock, and the number of cycles. Fig. 3.

What is the difference between basalt and natural basalt?

The basalt product has a higher maximum speed of reaching the full potential heat capacity than the natural basalt. The final full potential heat capacity for temperatures of 300 °C to 750 °C after 30 min of heating varies less than 13% for the basalt product and less than 7% for the natural basalt .



Hydrogen geo-storage is a promising technology to achieve net-zero carbon emissions. Basaltic rocks have attracted limited attention, and only limited knowledge of the suitability of the basaltic formations for large-scale hydrogen storage is available. The complex in situ geochemical reaction of basalt-hydrogen is a key factor in evaluating the suitability of ???



Basalt offers a promising method for safe and permanent CO₂ storage on a large scale. Currently, most experiments focus on the reactivity and mineralization kinetics of basalt and CO₂, often without accurately quantifying the reactions or considering the influence of carbonate rocks present in basalt, leading to inaccurate and complex results.



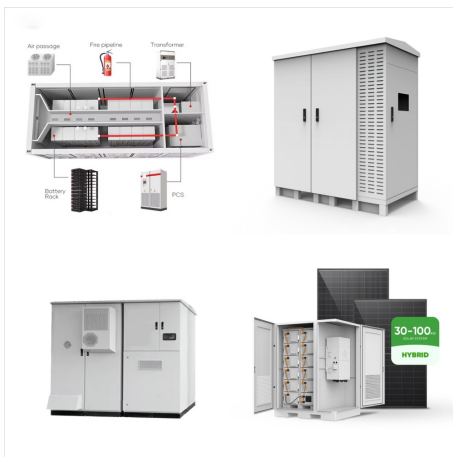
alkali olivine basalt in the world, covering almost 90,000 km² [17,18]. The principal mechanism of CO₂ storage in reactive rocks such as basalt has been identified as carbon mineralization, and studies have demon-strated that basalt may be suitable for CO₂ storage via this mechanism,



In this study, a novel molten salt energy storage-solar thermophotovoltaic integrated system was proposed for the application in small-scale distributed energy utilization. To adjust the radiation spectrum in the operating temperature of 800???1000 K to better match with InAs cell, a Ta-based stacked-cross pyramid broadband emitter was designed



This research provides crucial fundamental data with significant implications for underground hydrogen storage and carbon dioxide geological storage. The findings contribute to the understanding of lateral imbibition in carbonate and basaltic rocks, offering valuable insights for enhancing gas retention within pore spaces, thereby influencing



A Carnot battery works in the way that electricity is stored in heat during times of overproduction and reconverted back to electricity when needed. This work focuses on the charging model of natural and cast basalt for packed bed thermal energy storage used in ???



This study investigates secondary imbibition dynamics in hydrogen and carbon dioxide systems for calcite (representing carbonates) and basalt, considering pressure and temperature effects. Utilizing the modified Lucas-Washburn equation, the results reveal that lateral distance and secondary imbibition rates of water for all gas and rock systems



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Among all gas geo-storage sites, basaltic formations have attracted limited attentions in recent years, specially for large-scale storage of CO2. However, the suitability of the basaltic formations for large-scale H2 storage is completely unknown. Wettability of these geological formations is an important parameter for gas geo-storage process as it determines the capacity of gas to ???



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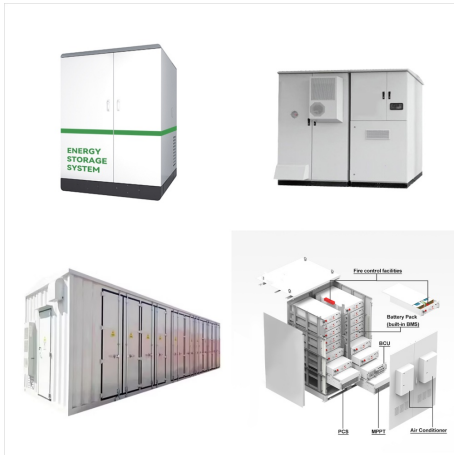
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The modification of hydrophobic rock surfaces to the water-wet state via nanofluid treatment has shown promise in enhancing their geological storage capabilities and the efficiency of carbon dioxide (CO₂) and hydrogen (H₂) containment. Despite this, the specific influence of silica (SiO₂) nanoparticles on the interactions between H₂, brine, and rock within basaltic formations ???



volcanic rocks (such as basalt, which can be used as a heat storage material for affluent solar energy of the accompanying concentrated solar heat storage system) formed at ultra-high temperatures during volcanic eruption as heat storage materials can increase the solar energy utilization rate in CSP plants and reduce their operating costs[20]



Energy storage in carbonate and basalt reservoirs: Investigating secondary imbibition in H₂ and CO₂ systems. Gas injection into geological storage sites displaces existing water in rock pore spaces, triggering lateral secondary imbibition. south of Iran. Journal of Applied Geophysics, 2014, 109: 80-87. Iglauder, S., Al-Yaseri, A. Z., Wolff



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In this paper, a new thermal energy storage (TES) scheme of basalt fiber bundles is proposed. This basalt fiber bundle TES tank adopts two-stage runner arrangement to increase the specific surface



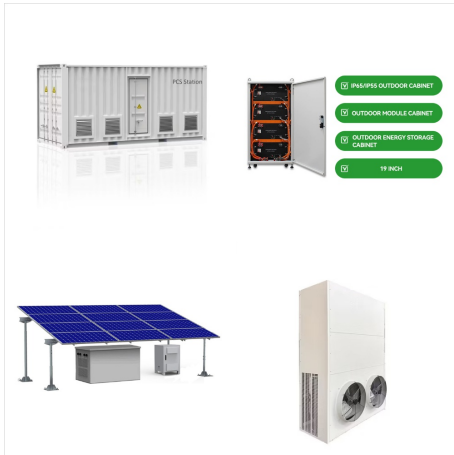
This study investigates secondary imbibition dynamics in hydrogen and carbon dioxide systems for calcite (representing carbonates) and basalt, considering pressure and temperature effects. ???



This research provides crucial fundamental data with significant implications for underground hydrogen storage and carbon dioxide geological storage. The findings contribute to the ???



Thermodynamic Properties of Basalt and a Basalt Product for the Use in Energy Storage Karin Edel??? 1, Luk??? Pila???r, Franti???ek Hrdlicka?? 1 1 CTU in Prague, Faculty of Mechanical Engineering, Department of Energy Engineering, Technick? 4, 166 07 Prague 6, Czech Republic Abstract



RoyPow Marine Energy Storage System provides stable DC/AC power to run on-board loads, and allowing the generator to be shut off for silent, emission -free cruising. Air conditioner 1200W . Laptop 56 W. LCD TV 75 W. Microwave ???



These results can help to optimum usage of energy storage devices in order to improve sustainability and network security, losses decreasing, and pollution decreasing in the electricity industry.



@misc{etde_20824350, title = {Utilization of basalt stone as a sensible heat storage material} author = {Gunerhan, H, and Hepbasli, A} abstractNote = {Thermal energy storage plays an important role in the conservation of thermal energy in many processes, such as waste heat recovery and load leveling at power plants, including those utilizing alternative ???