DOI: 10.1021/acs.energyfuels.3c02661 Corpus ID: 264051441; Coal Chemistry Industry: From Production of Liquid Fuels to Fine Chemicals to Carbon Materials @article{Zhang2023CoalCI, title={Coal Chemistry Industry: From Production of Liquid Fuels to Fine Chemicals to Carbon Materials}, author={Yuanyuan Zhang and Haitao Li and Tomas ...

Five key technological innovation directions in mining were proposed, including green coal development, intelligent and efficient mining, low-carbon utilization and conversion ...

Early Opportunities of CO2 Geological Storage Deployment in Coal Chemical Industry in China. December 2014; Energy Procedia 63:7307-7314; ... The chemical industry is a key energy-consuming sector ...

wind-photohydrogen energy storage/coal multienergy coupled system has been proposed. Wang [6] reported that hydrogen energy coupled with the coal chemical industry boosts the properties of coal raw materials, realizing carbon neutrality [6]. Therefore, an entry point for developing the hydrogen energy-coal-based energy industry has been ...

Coal, as one of China"s main energy resources, has been prevalently used for a long time. In view of the complex components and high carbon content in coal, and the impact on the environment and climate caused by coal burning, the clean utilization of coal must be promoted (Xie, 2017) addition to capturing the pollutants in the exhaust gases produced by ...

China"s energy structure is dominated by fossil fuels, especially coal consumption, which accounts for a relatively high share. In January 2020, the COVID-19 outbreak affected the global coal market, and many countries experienced negative economic growth. Economic development requires energy consumption. In 2021, China set a target of peaking ...

coal-based energy industry should make full use of emerging low-carbon clean technologies such as carbon capture, utilization, and storage to achieve low-carbon ...

Zhu et al. (2020) further think it can be extended to the "coal mining--thermal power generation--high load energy industry chain" and "coal mining--coal chemical industry--building materials industry chain," with coal as the upstream, and "coal mining--thermal power generation--building materials industry chain" .

Chemistry theory and chemical engineering technology are indispensable for energy conversion, energy storage and energy transportation to realize the clean and effective ...

China"s coal chemical industry is based on the integration strategy of local devel-opment, and the industry is mainly distributed in the northwestern regions, such as Shaanxi, Xinjiang and Ningxia, which are rich in coal resources. ... midstream hydrogen energy storage enterprises and down-stream operators such as hydrogen

refueling stations ...

Some assessments, for example, focus solely on electrical energy storage systems, with no mention of thermal or chemical energy storage systems. There are only a few reviews in the literature that cover all the major ESSs. ... Because of the high demand for molten salt in the concentrated solar plant industry, the research for suitable molten ...

Despite the traditional coal industries having made considerable contributions to chemical production and energy storage, the accompanying environmental pollution and high energy consumption have ...

Energy storage basics. Four basic types of energy storage (electro-chemical, chemical, thermal, and mechanical) are currently available at various levels of technological ...

Coal utilization mainly refers to the energy consumption domains of power generation, heating, industrial production, civil use, and chemical industry. Coal conversion refers to both the traditional coal chemical industry, such as coke, semi-coke, calcium carbide, coal-to-synthetic ammonia, and coal-to-methanol production, as well as modern ...

Energy storage is the capture of energy produced at one time for use at a later time [1] ... Fossil fuels such as coal and gasoline store ancient energy derived from sunlight by organisms that later died, ... Thermal energy storage (general) Chemical Biofuels; Hydrated salts; ...

The energy structure of China is dominated by fossil energy. In 2020, coal accounted for 57% of primary power generation, and coal consumption accounted for about 75% of CO 2 emissions in China [1]; [2]; [3]).Under carbon neutralization and carbon peak targets in China, coal-based energy and industrial sectors, including coal-fired power and coal ...

There are two main technological solutions being implemented for operational flexibility: flexible coal generation and energy storage. Flexible coal power generation is a technological solution where, through retrofits and equipment upgrades, coal plants can start up quickly, operate at lower minimum stable loads, and improve ramp rates. Given ...

Coal. Principal Energy Uses: Electricity, Heat Form of Energy: Chemical. Coal is the most carbon-intensive fossil fuel and a huge contributor to climate change, air pollution, and land disruption. It is a chemically complex, rock-like hydrocarbon that contains heavy metals (e.g., mercury and lead), sulfur, and radioactive material.

3.3 Pumped-storage hydropower plants using abandoned coal-mine sites. Pumped-storage hydropower plants are the most reliable, economic, long-lasting, high-capacity and mature energy-storage forms in the power system. In Europe and the USA, pumped storage accounts for >95% of energy storage [17, 18]. However, the construction of traditional ...

Coal-to-oil (CTL) combined with carbon capture, utilization and storage (CCUS) can significantly reduce the CO2 emissions generated in the production process to achieve clean coal utilization. Taking CTL enterprises as sources and deep saline aquifers and oil fields as sinks, this paper establishes a source-sink matching model, which is combined with a ...

The energy chemical industry represented by the coal chemical industry is of great significance to human life, social development and energy security. ... Coal chemical industry can improve element utilization ratio and reduce carbon emission through the complementation of carbon and ... The energy storage scale can be adjusted to 30%-40% ...

Automated machinery in operation at the Baodian Coal Mine in Jining, Shandong. [Photo provided to China Daily] The coal chemical industry should be transformed and upgraded to tap its unleashed potential in China, as the country is rich in coal resources that are vital for domestic energy security, industry experts said.

In 2020, coal accounted for about 56.8% of China"s primary energy consumption, which is still the leading energy in China [2]. As a necessary form of vital energy in China and an important organic ...

The depletion of nonrenewable resources, such as coal and oil [1, 2], has given rise to energy issues and is a major societal concern worldwide this context, the construction industry has emerged as a primary contributor to energy consumption [3].Statistics reveal [4] that energy consumption in the construction industry accounts for approximately 30-40 % of ...

Among these high-purity CO2 sources, certain coal chemical industry processes are very important, especially in China. In this paper, the basic characteristics of coal chemical industries in China is investigated and analyzed. As of 2013 there were more than 100 coal chemical plants in operation or in late planning stages.

Li, J. & Hu, S. History and future of the coal and coal chemical industry in China. Resour., Conserv. Recycling 124, 13-24 (2017). Article Google Scholar Chen, Q. et al. Hybrid energy system for ...

Overview. Purely electrical energy storage technologies are very efficient, however they are also very expensive and have the smallest capacities.Electrochemical-energy storage reaches higher capacities at smaller costs, but at the expense of efficiency.This pattern continues in a similar way for chemical-energy storage terms of capacities, the limits of ...

Other than traditional CO2 geological storage, a novel geoengineering approach of CO2 geological utilization and storage, named CO2 geological storage combining with deep saline water/brine recovery (CO2-EWR), is put forward to solve the dilemma between the increasing carbon emissions from coal chemical industry and national energy and water ...

Through EFCG and syngas production, new chemical industries can carry out the processes of coal to oil, coal

to natural gas, coal to olefin (CTO), coal to ethylene glycol, ...

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