

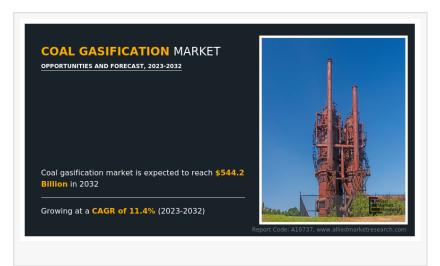
Coal Gasification Market: Innovations in Energy Conversion

Global Coal Gasification Market projected to grow at a CAGR of 11.4% from 2023 to 2032

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According to a new report published by Allied Market Research, the <u>coal</u> gasification market size was valued at \$186.9 billion in 2022, and is estimated to reach \$544.2 billion by 2032,

growing at a CAGR of 11.4% from 2023 to 2032.



The coal gasification process is used for converting coal into a gaseous mixture called synthesis gas or syngas. The syngas is used for breaking down coal into its constituent elements under



Coal gasification reduces the dependence on fossil fuels & natural gas by offering clean energy sources such as hydrogen."

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high-pressure and high-temperature conditions. The syngas comprises of hydrogen and carbon monoxide. Also, syngas includes the presence of some other gases such as methane or carbon dioxide to a certain extent.

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Asia-Pacific registered the highest market share in 2022 and it is projected to be the fastest growing during the forecast period.

The key players profiled in the <u>global coal gasification industry</u> report include Air Liquide, Mitsubishi Heavy Industries Ltd., Air Products, Thyssenkrupp Uhde GmbH, Andritz, Dakota Gasification Company, Sedin Engineering Co Ltd., Sasol Limited, Linc Energy Ltd., and Shanxi Lu'an Mining Group Co., Ltd.

Government policies, subsidies, and incentives geared toward propelling the growth of clean

energy technologies exert a considerable influence on the adoption and expansion of coal gasification initiatives. This holds significant advantages for coal gasification enterprises and contributes to an upswing in market development.

Governments worldwide are directing investments into the realm of clean energy production to boost the adoption of coal gasification technologies for power generation and in the industrial sector.

An example of this trend is evident in India, where the government has embarked on an endeavor to gasify 100 million metric tons of coal by 2030. To achieve this, the Central Government has orchestrated an investor conference to formulate a public-private partnership (PPP) framework.

This collaborative approach seeks to attain the ambitious goal of coal gasification, recognized as a more environmentally friendly alternative to coal combustion. These factors are anticipated to drive the coal gasification market share in the coming years.

The syngas produced via coal gasification is widely used for electricity generation, in several industrial & chemical processes.

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The gasification process offers high efficiency as coal gasification can handle different coal types such as low-grade coals as well as coal wastes. Thus, coal gasification offers versatility in terms of feedstock selection.

The coal gasification process can be used to process waste materials including biomass, industrial waste, municipal solid waste (MSW), and others. Thus, coal gasification can help in reducing waste generation by converting waste into energy.

The emphasis lies on fostering private sector engagement and investment within the sector. Similarly, the United States Department of Energy's Office of Fossil Energy is actively advancing coal gasification through its Gasification Systems Program. This program is focused on developing adaptable, inventive, resilient, and transformative modular designs capable of converting diverse forms of domestic coal and coal blends, along with biomass, municipal solid waste (MSW), and waste plastics, into clean synthesis gas.

This gas serves as a versatile foundation for cost-effective electricity production, high-value chemical synthesis, hydrogen generation, transportation fuel creation, and other valuable market-oriented commodities, which encourages governments across the world to incentivize the process and increase private sector investment in this sector.

This pursuit is coupled with the integration of technologies facilitating the negative emission of

greenhouse gases. This transition underscores the economic incentives driving cleaner energy alternatives.

While coal gasification results in fewer <u>greenhouse gas emissions</u> compared to conventional coal combustion, it still discharges carbon dioxide and other harmful substances.

As environmental regulations tighten and public awareness of climate change intensifies, the coal gasification sector could encounter challenges in conforming to more stringent emission standards and gaining public approval.

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Despite utilizing Integrated Gasification Combined Cycle (IGCC) plants, substantial carbon dioxide is still produced, contributing to potential global warming.

When coal is burned, it releases particulate matter into the air and emits a substantial volume of carbon dioxide. These combined emissions can enhance the sunlight reflection effect, trapping warmth instead of allowing it to dissipate from the Earth. The particulates subsequently settle on the ground, potentially contaminating areas with high coal consumption.

Coal extraction necessitates mining, which depletes essential resources, jeopardizes groundwater, and contributes further to atmospheric emissions. These environmental challenges linked to coal gasification may prompt the imposition of rules and regulations that may not align with industry profitability, potentially restricting market expansion.

The high export potential of coal gasification technologies is estimated to generate excellent opportunities in the industry. For instance, countries with advanced coal gasification technology may find export opportunities across countries namely China, India, and others where coal remains a significant part of the energy mix.

The supportive government policies which include incentives for carbon capture and utilization, providing subsidies for clean energy projects are estimated to propel the adoption and investments in the coal gasification process in the coming years.

Retrofitting existing coal-fired power plants with gasification technology can extend the lifespan of gasification facilities and will reduce emissions.

The gasification plant upgradation, as well as modernization, is predicted to generate excellent opportunities in the market.

Governments worldwide are actively supporting coal gasification, which is anticipated to have a positive impact on the coal gasification market forecast.

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Based on gasifier, the fluidized bed gasifier sub-segment emerged as the global leader in 2022 and it is predicted to show the fastest growth in the upcoming years.

Based on application, the electricity generation sub-segment emerged as the global leader in 2022 and the hydrogen generation sub-segment is predicted to show the fastest growth in the upcoming years.

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