CCS in Power Generation Market Expansion: A Critical Path to Meeting Climate Goals

Carbon Capture and Storage (CCS) in Power Generation Market Valuation 450.5 million by 2032

WILMINGTON, DE, UNITED STATES, February 14, 2025 /EINPresswire.com/
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According to a new report published by Allied Market Research, the carbon capture and storage (CCS) in power generation market size was valued at $131.2 million in 2022 and is projected to reach $450.5 million by 2032, growing at a CAGR of 11.7% from 2023 to 2032.

CCS, or carbon capture and storage, is a technology used in power generation to reduce carbon dioxide emissions. It involves capturing CO2 produced during the combustion of fossil fuels or biomass, transporting it to a storage site, and then securely storing it underground or in other suitable geological formations. This process helps to mitigate climate change by preventing CO2 from entering the atmosphere and contributing to the greenhouse effect. CCS is considered a key technology for achieving carbon neutrality and reducing the environmental impact of power generation.

> The growing focus on reducing CO2 emissions is the key factor boosting the global CCS in power generation market growth”
>
> *Allied Market Research*

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Canada is the dominating country with the largest share.

Canada is projected to register robust growth during the forecast period. Stringent environmental regulations and policies aimed at reducing greenhouse gas emissions have significantly contributed to the expansion of the CCS market in Canada. The government in Canada has implemented various carbon pricing mechanisms, emission reduction targets, and

other regulatory frameworks that incentivize the adoption of CCS technologies.

The major players that operate in the global CCS in power generation industry report are MITSUBISHI HEAVY INDUSTRIES, LTD., Linde plc, Shell plc, Exxon Mobil Corporation, JGC HOLDINGS CORPORATION, NRG Energy, Inc., Honeywell International Inc.., General Electric, Fluor Corporation, Siemens Energy.

The growing focus on reducing CO2 emissions is expected to drive the CCS (carbon capture and storage) in the power generation market trends. As countries globally commit to reducing their carbon footprint and meeting emissions targets, the demand for technologies that capture and store CO2 emissions from power plants is expected to increase significantly.

According to IEA, Global CO2 emissions grew by 0.9% or 321 Mt in 2022, reaching a new high of over 36.8 Gt. Focusing more on reducing CO2 emissions is vital for a sustainable environment. Carbon capture and storage (CSS) technology is used in power generation to capture CO2 emissions, preventing them from entering the atmosphere. This helps mitigate climate change and supports the transition to a low-carbon future.

CCS technology allows power generation facilities to capture CO2 emissions before they are released into the atmosphere and store them underground, preventing them from contributing to climate change. This technology is particularly relevant for power plants that rely on fossil fuels, such as coal and natural gas, as it enables them to continue operating while reducing their environmental impact.

The CCS market in power generation is expected to grow rapidly in the coming years, driven by the need to meet emissions targets, comply with regulations, and transition toward a more sustainable energy system.

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The development of CCS technology presents opportunities for job creation, economic growth, and technological innovation, further contributing to its market growth.

Limited storage capacity poses a significant challenge to the widespread adoption of carbon capture and storage (CCS) in the power generation market outlook. CCS involves capturing CO2 emissions from power plants and storing them underground to prevent their release into the atmosphere, thereby mitigating climate change.

The availability of suitable storage sites for CO2 is limited and varies geographically. This limitation stems from factors such as geological conditions, proximity to emission sources, and regulatory constraints.

There is not enough storage capacity to accommodate the large volumes of CO2 generated by power plants, especially in densely populated or environmentally sensitive areas. In addition, competition for storage space arises from other industries, such as oil and gas, further exacerbating the problem. Without sufficient storage capacity, the scalability of CCS technology is compromised, hindering its potential to significantly reduce greenhouse gas emissions from the power generation sector.

Addressing this challenge requires identifying and developing additional storage sites, improving CO2 utilization techniques, and implementing policies to incentivize CCS deployment while ensuring environmental and social safeguards.

Utilizing carbon capture and storage (CCS) technology in natural gas-fired power plants offers a promising avenue for reducing the environmental impact of these facilities.

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Natural gas is a cleaner-burning fossil fuel compared to coal; however, it still produces significant carbon dioxide (CO2) emissions when burned for electricity generation.

CCS technology capture CO2 emissions from natural gas-fired power plants, preventing them from entering the atmosphere and contributing to climate change. The captured CO2 is then transported and stored underground in geological formations, such as depleted oil and gas reservoirs or deep saline aquifers.

By capturing and storing CO2 emissions, natural gas-fired power plants significantly reduce their carbon footprint and help mitigate the effects of climate change. This presents a lucrative opportunity for the growth of the CCS in power generation market, as governments and industries around the world seek to reduce greenhouse gas emissions and transition to cleaner energy sources.

In addition to reducing CO2 emissions, CCS technology also enables the production of low-carbon hydrogen from natural gas, further contributing to the decarbonization of the energy sector.

Based on the fuel type, the CCS in the power generation market is classified into coal, natural gas, and oil. Coal is projected to be the fastest-growing segment and has garnered the highest share of the CCS in power generation market.

Based on the service, the CCS in power generation market is classified into capture, transport, and storage. Storage is projected to be the fastest-growing segment and capture has garnered the highest share of the CCS in power generation market.

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Based on the technology, the CCS in power generation market is classified into pre combustion capture, oxy-fuel combustion capture, and post combustion capture. Oxy-fuel combustion capture is projected to be the fastest-growing segment and post-combustion capture has garnered the highest share of the CCS in power generation market growth.

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