Biomass Gasification Market- Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028F

Segmented By Source (Agriculture Waste, Forest Waste, Animal Waste, and Municipal Waste), By Gasifier Technology, (Fixed Bed Gasifier, Fluidized Bed Gasifier, Entrained Flow Gasifier and Others), By Application (Power Generation, Chemicals, Transportation Fuels, Hydrogen Generation, Ethanol, Biochar), By Region, By Competition

Market Report (3 business days) | 2023-09-05 | 185 pages | TechSci Research

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Report description:

Global Biomass Gasification market is anticipated to develop rapidly in the forecast period, 2024-2028.
Biomass gasification is a process that converts biomass materials such as wood, crop residues, and municipal solid waste into a gas called synthesis gas or syngas. The process involves heating the biomass in an oxygen-limited environment to produce a combustible gas composed primarily of carbon monoxide, hydrogen, and methane.
The gasification process typically involves several steps, including drying and preheating the biomass, followed by a combustion stage where a small amount of air or oxygen is introduced to ignite the biomass and initiate the gasification reactions. Once the biomass is ignited, the oxygen is restricted to prevent complete combustion, which would produce carbon dioxide instead of syngas. Instead, the biomass breaks down into volatile compounds, which are then converted into syngas through a series of

chemical reactions.

Syngas produced through biomass gasification can be used as a fuel for power generation, heating, or as a feedstock for chemical production. It is considered a renewable and sustainable energy source because the biomass used to produce it can be replenished through reforestation or other agricultural practices. Additionally, the process of gasification can produce valuable byproducts such as biochar, which can be used as a soil amendment or carbon sequestration tool.

Rise in Interest Towards Environmental Sustainability

The increased concentration of Green House Gases (GHGs) is causing dramatic climatic changes such as temperature rise, changes in rainfall distribution, intensity, and pattern, rising sea levels, floods, droughts, and increased occurrence of extreme climatic phenomena, all of which cause warming. Biofuels, biopower, and bioproducts are replacements for fossil fuels and can help in lowering greenhouse gas emissions and create economic opportunities among consumers and industries.

To meet human energy consumption, there is an ever-growing demand for energy sources. Biomass was the main source of energy for heat prior to the use of fossil fuels through combustion. Fossil fuels are currently the world's primary energy source. Additionally, there has been an increase in the use of plastics and other chemicals made from these fossil fuels. Many people are concerned because of these massive increases. The interest in biomass gasification has risen in recent years due to an increased focus on environmental sustainability. Biomass gasification is seen to reduce dependence on fossil fuels and reduce greenhouse gas emissions. Compared to fossil fuels, biomass is considered a renewable resource that can be sustainably harvested and managed.

Biomass gasification can also help to reduce waste and pollution by converting organic waste materials into useful energy. For example, municipal solid waste can be used as a feedstock for gasification, reducing the amount of waste that goes to landfills and producing renewable energy at the same time. Additionally, the byproducts of gasification can be used in a variety of applications, such as biochar production, which can improve soil health and sequester carbon.

The use of biomass gasification also aligns with the goals of many countries and organizations to reduce their carbon footprint and transition to more sustainable energy sources. Many governments are implementing policies and incentives to promote the use of renewable energy sources, including biomass gasification.

Overall, the rise in interest towards environmental sustainability has led to a growing demand for clean and renewable energy sources, including biomass gasification. This technology has the potential to provide a sustainable, reliable, and cost-effective source of energy while reducing the impact of human activities on the environment.

Increasing Government Investment in Biomass Gasification Market

The government's support in the form of various laws and regulations, the abundance of biomass that can be harvested, growing environmental concern, and rising greenhouse gas emissions are all factors that have prompted businesses to adopt environment friendly energy strategies. There are several variables that will influence how the market for biomass gasification develops. Additionally, various governments are promoting flexible biomass gasifier-based power plants to generate electricity from locally available biomass resources like wood chips, rice husks, and cotton stalks.

- Around 150 MW of biomass gasifier structures have been planned for grid and off-grid projects in India. In addition, 300 rice mills and other industries use gasifier systems to assemble their confined power and thermal implementations.

Tar Removal Is a Major Challenge

Tar is a significant inherent problem in biomass gasification that can cause several issues, such as equipment blockages, decreased system efficiency, poor gas quality output, and more frequent maintenance. In a series of extremely complex mixtures, tar is made up of more than 200 different ingredients. Important constituents include benzene, toluene, naphthalene, and single-ring aromatic hydrocarbons. The formation of tar is caused by the lower gasification temperature. It was confirmed that raising the gasification temperature could reduce the amount of tar in the outflow, and higher temperatures were thought to promote tar cracking.

Market Segmentation

The Global Biomass Gasification Market is divided into Source, Gasifier Technology, and Application, By Region, By Competition. Based on Source, the market is divided into Agriculture Waste, Forest Waste, Animal Waste, and Municipal Waste. By Gasifier Technology, the market is divided into Fixed Bed Gasifier, Fluidized Bed Gasifier, Entrained Flow Gasifier and Others, By Application, the market is divided into Power Generation, Chemicals, Transportation Fuels, Hydrogen Generation, Ethanol, Biochar.

The demand for bioenergy and depletion of fossil fuels are fueling the market for Biomass Gasification Market and exhibiting a rapid growth of compound annual growth rate (CAGR) during the forecast period.

Market Players

Air Liquide SA, Synthesis Energy Systems Inc., Siemens AG, Sedin Engineering Company Limited, Royal Dutch Shell Plc., Mitsubishi Heavy Industries Ltd., General Electric Company, CB&I, Flex Technologies Limited, Bellwether Gasification Technologies Limited.

Report Scope:

In this report, the Global Biomass Gasification Market has been segmented into the following categories, in addition to the Application trends, which have also been detailed below:

-Global Biomass Gasification Market, By Source:
oAgriculture Waste
oForest Waste
oAnimal Waste
oMunicipal Waste
-Global Biomass Gasification Market, By Gasifier Technology:
oFixed Bed Gasifier
oFluidized Bed Gasifier
oEntrained Flow Gasifier
oOthers
-Global Biomass Gasification Market, By Application:
oPower Generation
oChemicals
oTransportation Fuels
oHydrogen Generation
oEthanol
oBiochar
-Global Biomass Gasification Market, By Region:
oNorth America
-United States
-Mexico
-Canada
oAsia-Pacific
-India
-Japan
-South Korea
-Australia
-China
oEurope
-Germany
-United Kingdom
-France
-Italy
-Spain
oSouth America
-Brazil
-Argentina
-Colombia
oMiddle East & Africa

-Saudi Arabia
-South Africa
-UAE

Competitive Landscape
Company Profiles: Detailed analysis of the major companies present in the Global Biomass Gasification Market.
Available Customizations:
Global Biomass Gasification Market report with the given market data, Tech Sci Research, offers customizations according to a company's specific needs. The following customization options are available for the report:
Company Information
-Detailed analysis and profiling of additional market players (up to ten).

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