



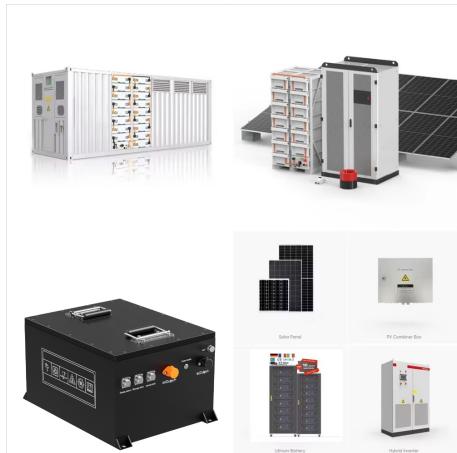
Renewable Supply and Demand. Renewable energy is the fastest-growing energy source globally and in the United States. Globally: About 11.2 percent of the energy consumed globally for heating, power, and transportation came from modern renewables in 2019 (i.e., biomass, geothermal, solar, hydro, wind, and biofuels), up from 8.7 percent a decade prior (see figure a?)



The renewable energy needs in the global energy supply must stabilize surface temperature rise to 1.5 °C compared to pre-industrial values. To address the global climate issue and higher energy demand without depleting fossil reserves, growing bioenergy feedstock as the potential resource for biodiesel production could be a viable alternative



Its renewable nature, combined with a lower environmental impact, underscores biodiesel's role in fostering a sustainable energy future. Furthermore, advancements in technology and increased agricultural yields might further enhance the viability and efficiency of biodiesel production, making it a compelling option for energy needs worldwide.



Renewable energy can play an important role in U.S. energy security and in reducing greenhouse gas emissions. Using renewable energy can help to reduce energy imports and fossil fuel use, the largest source of U.S. carbon dioxide emissions. According to projections in the Annual Energy Outlook 2023 Reference case, U.S. renewable energy consumption will a?|



Outlook for renewable diesel and other biofuels increases. Production and consumption of renewable diesel, SAF, renewable heating oil, and other non-ethanol biofuels (excluding biodiesel) in the United States is likely to increase as announced and developing projects are completed. Much of the planned capacity could be used to produce renewable



1. Introduction. Greenhouse gas (GHG) emissions from transport have been increasing at a faster rate than from any other sector [1]. The sector relies heavily on fossil fuels, which accounted for 96.3% of all transportation fuels in 2018 [2]. Transport is also responsible for 15% of the world's GHG emissions and 23% of total energy-related CO₂ emissions [3].



Therefore, using renewable energy for fossil fuel substitutes is one of the best options to meet the high energy demand. Among different renewable energy resources, biodiesel or fatty acid methyl ester (FAME) is preferred as a petroleum-based diesel fuel substitute since it is easy to generate via transesterification of triglycerides using alcohol.



Biofuels are liquid fuels produced from renewable biological sources, including plants and algae. Biofuels offer a solution to one of the challenges of solar, wind, and other alternative energy sources. These energy sources have incredible potential to reduce our dependence on fossil fuels and yield environmental and economic benefits.



Renewable energy sources are growing quickly and will play a vital role in tackling climate change. However, modern biofuels are included in this energy data. Bioethanol and biodiesel are fuel made from crops such as corn, sugarcane, hemp, and cassava are now a key transport fuel in many countries.

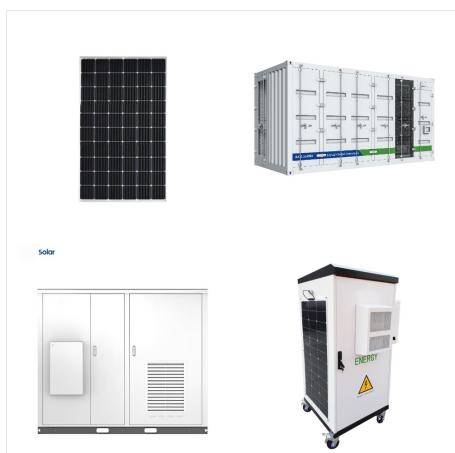


However, while biofuels offered energy security benefits, their prices climbed more quickly than those of gasoline and diesel in many countries. To mitigate increases in transport fuel costs, our Renewable Energy Market Update forecasts new global renewable power capacity additions and biofuel demand for 2023 and 2024. It also discusses key



Biodesel Benefits and Considerations. Biodesel is a domestically produced, clean-burning, renewable substitute for petroleum diesel. Using biodesel as a vehicle fuel improves public health and the environment, provides safety benefits, and contributes to a resilient transportation system.

Public Health and the Environment



Biodesel is booming, thanks to environmental incentives. Big oil companies are converting refineries to make "renewable diesel" from soybean oil or beef tallow. It's driven by policies intended to



Bioenergy is renewable energy produced from organic matter (called "biomass") such as plants, which contain energy from sunlight stored as chemical energy. Bioenergy producers can convert this energy into liquid transportation fuela??called "biofuel" a??through a chemical conversion process at a biorefinery.



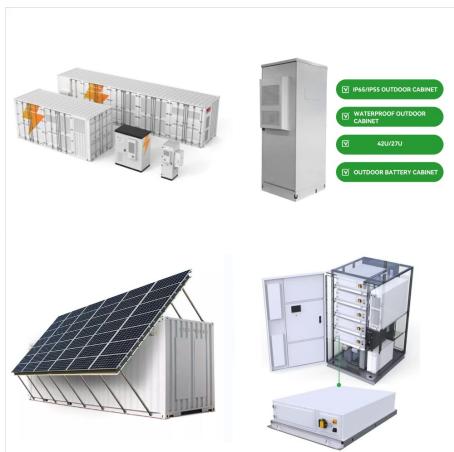
This fact sheet (updated for 2017) provides a brief introduction to biodiesel, including a discussion of biodiesel blends, which blends are best for which vehicles, where to buy biodiesel, how a?|



Renewable diesel can be used as a replacement fuel or blended with any amount of petroleum diesel. Nearly all domestically produced and imported renewable diesel is used in California due to economic benefits under the Low Carbon Fuel Standard. Renewable diesel and biodiesel are not the same fuel. Renewable diesel, previously known as green



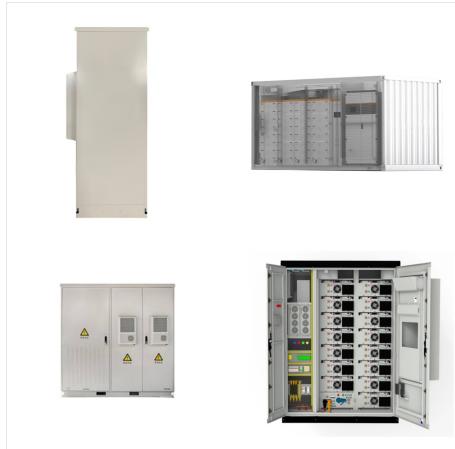
Unlike ethanol and biodiesel, where states in the Midwest hold most of the national capacity, more than 60% of U.S. renewable diesel and other biofuels production capacity is on the Gulf Coast. Biodiesel now accounts for the smallest share of U.S. biofuels capacity, 2.1 billion gal/y in January 2023, among the three categories we track.



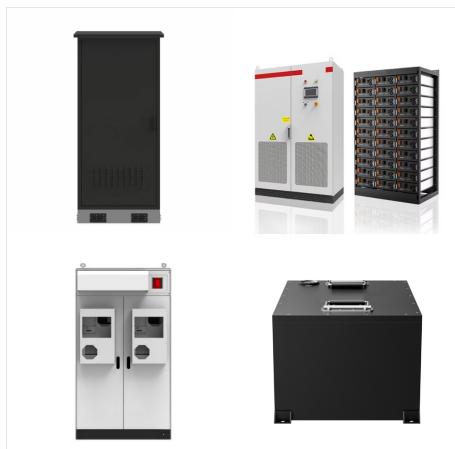
BIOFUELS: ENERGY FOR TRANSPORTATION.
 Biomass is one type of renewable resource that can be converted into liquid fuels, known as biofuels for transportation. Biofuels include cellulosic ethanol, biodiesel, and renewable hydrocarbon "drop-in" fuels. The two most common types of biofuels in use today are ethanol and biodiesel.



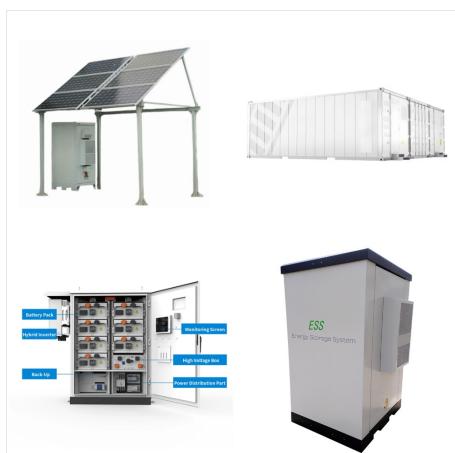
The revised Renewable Energy Directive (EU/2023/2413) provides an overarching policy for the promotion and use of energy from renewable sources in the EU. It also reinforces the sustainability criteria of bioenergy through different provisions, including the negative direct impact that the production of biofuels may have due to indirect land



Renewable diesel (RD) is a term used to describe biodiesel that is produced from renewable sources. In addition to the term "second-generation biodiesel" stated earlier, the names "green diesel" and "RD" have also been used to refer to biofuels that resemble petrodiesel because it indicates that the final fuel is "greener" than petrodiesel, the term "green diesel" is vague. The phrase "RD" seems to make no other inferences about the fuel's



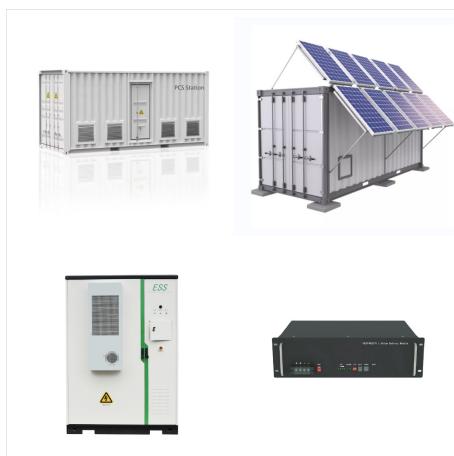
Biomass provided about 5% of U.S. energy in 2023. In 2023, biomass accounted for about 5% of U.S. energy consumption, or about 4,978 trillion British thermal units (TBtu). The types, amounts, and the percentage shares of total biomass energy consumption in 2023 were: Biofuels 2,662 TBtu (53%); Wood and wood waste 1,918 TBtu (39%)



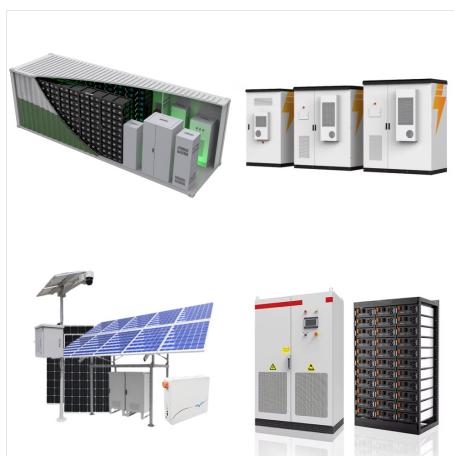
Biomass has significant potential to boost energy supplies in populous nations with rising demand, such as Brazil, India and China. It can be directly burned for heating or power generation, or it can be converted into oil or gas substitutes. Liquid biofuels, a convenient renewable substitute for gasoline, are mostly used in the transport sector.



The invention of the vegetable oil fuelled engine by Sir Rudolf Diesel dated back in the 1900s. However, full exploration of biodiesel only came into light in the 1980s as a result of renewed interest in renewable energy sources for reducing greenhouse gas (GHG) emissions, and alleviating the depletion of fossil fuel reserves.



It is the largest source of renewable energy globally, accounting for 55% of renewable energy and over 6% of global energy supply. Liquid biofuel consumption more than doubles from 2.2 million barrels of oil equivalent per day (mboe/d) (4.3 EJ) in 2022 to over 5 mboe/d (10 EJ) in 2030, mainly for road transport.



Biodiesel Blends Biodiesel can be blended and used in many different concentrations. B20 (20% biodiesel, 80% petroleum diesel) is a common biodiesel blend in the United States for most applications. But there is also B100 (pure biodiesel), B5 (5% biodiesel, 95% petroleum diesel), and B2 (2% biodiesel, 98% petroleum diesel). You may have heard



Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. Sunlight and wind, for example, are such sources that are constantly