



Energies

an Open Access Journal by MDPI

CiteScore: 8.3

Impact Factor: 3.9

Special Issue Reprint

Advances in Fuel Energy

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Ongoing climate change, the depletion of natural resources, and growing energy demands have rendered the production of new types of fuels for energy systems, including combustion engines and boilers, very crucial. Using alternative fuels, either as direct propellants or as additives to classic fossil fuels, may have both positive and negative consequences for energy machines and the environment. The most popular alternative fuels are biofuels, recycled fuels, synthetic fuels, ammonia, ethanol, methanol, ethylene, and hydrogen. Their mixtures with common fuels such as kerosene, gasoline, diesel oil, heating oil, LNG, CNG, LPG, etc., are also often employed. This SI aims to present the latest research results related to the use of various types of fuels to power combustion engines, boilers, and other thermal machines in maritime, road, railway, and air transport applications. Additionally, we are interested in the combination of these fuels in stationary power and heating plants. We intend for the studies published in this SI to highlight the impact of alternative fuels and their combinations with other fuels (classic and/or alternative) on the level of exhaust gases emissions (NO_x, SO_x, PMs, aldehydes, etc.), energy performance (power, torque, speed, and energy efficiency), component wear, reliability and safety of operation, cost effectiveness, as well as the functionalities (maintainability, noise, and vibrations) of machines and devices powered by these fuels.



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