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ABSTRACT BOOKLET

RECENT TECHNOLOGICAL ADVANCEMENTS IN WING STRUCTURES FOR IMPROVED AIRCRAFT PERFORMANCE AND SAFETY

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Abstract: Aircraft wings play a crucial role in the performance and safety of an airplane, and their design and optimization have been the subject of extensive research. This paper demonstrates a comprehensive overview of the recent advances in aircraft wing design, optimization, and control. The results highlight the importance of considering new materials, advanced modeling techniques, and innovative control methods for improving the performance and safety of aircraft wings. Some papers were selected for review, each describing different approaches for enhancing the structural integrity, aerodynamic efficiency, and vibration suppression of airplane wings. The papers selected for review demonstrate the potential of advanced technologies such as linear parameter-varying (LPV) control strategies, composite materials, and nanomaterials (like boron nitride nanotubes), which could all contribute to more efficient, lighter, and robust wing designs.

Keywords: Aircraft wing, Linear parameter-varying control, Composite materials, Boron nitride nanotubes.

STUDY OF ADDITIVES-DIESEL FUEL BLEND

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Abstract: Diesel fuel is one of the most commonly used fuels for transportation and industry, but it is not without its challenges. One of the major drawbacks of diesel fuel is its tendency to produce harmful emissions, such as particulate matter, carbon monoxide, smoke and nitrogen oxides, which contribute to air pollution and can have negative impacts on human health and the environment. To address these issues, researchers have been investigating the use of additives in diesel fuel blends to improve their performance and reduce emissions.

Additives are chemical compounds that are added to a base fuel to improve its properties. For diesel fuel, additives can be used to improve its oxygen content, cetane number, reduce emissions, and enhance its stability and storage life. Studies have shown that additives can significantly reduce the amount of harmful emissions produced by diesel fuel, including particulate matter, carbon monoxide, and nitrogen oxides. The use of additives that can improve the combustion efficiency of diesel fuel. For example, oxygenates such as diethyl ether, ethanol or methanol can be added to diesel fuel blends to increase the amount of oxygen available for combustion, which can reduce emissions of carbon monoxide and particulate matter. Other additives, such as nitromethane can be used to enhance the performance of diesel fuel by reducing the formation of soot and other harmful emissions. In conclusion, the use of additives in diesel fuel blends shows promise for improving the performance and reducing the harmful emissions of this important fuel.

Keywords: Additives, CI engine, Diesel, Emission, Performance.