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Aerospace DC-DC Converter Market By Type (Boost Type, Buck Type) , By Application (Airplane, Satllite) : Global Opportunity Analysis and Industry Forecast, 2024-2033

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Abstracts

The aerospace DC-DC converter market was valued at $3.2 billion in 2023, and is projected to reach $20.5 billion by 2033, growing at a CAGR of 20.4% from 2024 to 2033.

Aerospace DC-DC converter is a specialized power conversion device designed to transform direct current (DC) from one voltage level to another while meeting the stringent requirements of aerospace applications. These converters play a crucial role in ensuring reliable power delivery to various onboard systems, such as avionics, communication equipment, navigation systems, and electronic sensors. Operating in harsh environments, aerospace DC-DC converters are built to endure extreme temperatures, vibration, and electromagnetic interference while maintaining high efficiency and compact designs.

The global aerospace DC-DC converter market is witnessing rapid growth due to increase in adoption of advanced avionics in commercial and military aircraft. These avionics require reliable power systems such as DC-DC converters, as they are essential for powering sensitive electronic components and ensuring uninterrupted functionality. In addition, rise in number of satellite launches and space exploration missions drives the demand for robust and efficient DC-DC converters capable of withstanding the challenges of space environments. Moreover, shift toward electric and hybrid-electric aircraft increases the need for DC-DC converters to support various subsystems, including propulsion, navigation, and communication. According to a study, by 2022, approximately 100 electric aircraft designs were being developed globally. By

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2023, the number of sustainable aircraft concepts under development, including but not limited to electric designs, had risen to an estimated 700. Furthermore, with the global focus on reducing carbon emissions, the adoption of energy-efficient DC-DC converters aligns with the sustainability goals of the aerospace industry, which significantly contributes toward the market growth. A 2024 study published in Elsevier—the world's leading source for scientific, technical, and medical research—revealed that transitioning to hybrid-electric propulsion aircraft could reduce annual emissions by up to 93%. The emissions could decrease from 6,787 g of carbon dioxide equivalent per passenger kilometer to 449 g. This shift requires advanced DC-DC converters for power distribution, thereby augmenting the market growth. However, high development and production costs of DC-DC converters limit their widespread adoption, thus hampering the market growth. In addition, DC-DC converters used in aerospace applications are required to withstand extreme environments, including radiation and vibration. Ensuring long-term reliability under such conditions without failure is a significant technical challenge, which restrains the market growth. On the contrary, innovations in materials, thermal management, and power electronics, such as gallium nitride and silicon carbide technologies, have improved the performance and efficiency of aerospace DC-DC converters, boosting their adoption. Such developments are expected to offer remunerative opportunities for the expansion of the global market.

The global aerospace DC-DC converter market is segmented into type, application, and region. By type, the market is bifurcated into boost type and buck type. On the basis of application, it is divided into airplane and satellite. Region wise, the market is analyzed across North America, Europe, Asia-Pacific, Latin America, and Middle East & Africa.

Key Findings

By type, the boost type segment dominated the global aerospace DC-DC converter market in 2023.

On the basis of application, the airplane segment garnered the largest share in 2023.

Region wise, North America emerged as the most lucrative market for aerospace DC-DC converters in 2023.

Competition Analysis

Competitive analysis and profiles of the major players in the global aerospace DC-DC converter market include Vicor Corporation (U.S.), TDK Corporation (Japan), XP Power

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(UK), Crane Aerospace & Electronics (U.S.), Infineon Technologies AG (Germany), Murata Manufacturing Co., Ltd. (Japan), Texas Instruments Incorporated (U.S.), Advanced Energy Industries, Inc. (U.S.), SynQor, Inc. (U.S.), and Gaia Converter (France). These major players have adopted various key development strategies such as business expansion, new product launches, and partnerships to sustain the intense competition and gain a strong foothold in the global market.

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New Product Development/ Product Matrix of Key Players

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Additional company profiles with specific to client's interest

Key player details (including location, contact details, supplier/vendor network etc. in excel format)

SWOT Analysis

Key Market Segments

By Type

Boost Type

Buck Type

By Application

Airplane

Satllite

By Region

North America

U.S.

Canada

Mexico

Europe

France

Germany

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Italy

Spain

UK

Russia

Rest of Europe

Asia-Pacific

China

Japan

India

South Korea

Australia

Thailand

Malaysia

Indonesia

Rest of Asia-Pacific

LAMEA

Brazil

South Africa

Saudi Arabia

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UAE

Argentina

Rest of LAMEA

Key Market Players

Vicor Corporation (U.S.)

TDK Corporation (Japan)

XP Power (UK)

Crane Aerospace & Electronics (U.S.)

Infineon Technologies AG (Germany)

Murata Manufacturing Co., Ltd. (Japan)

Texas Instruments Incorporated (U.S.)

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SynQor, Inc. (U.S.)

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CHAPTER 7: COMPETITIVE LANDSCAPE

CHAPTER 8: COMPANY PROFILES

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