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More Electric Aircraft - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The More Electric Aircraft Market size is estimated at USD 3.89 billion in 2024, and is expected to reach USD 7.24 billion by 2029, growing at a CAGR of 13.22% during the forecast period (2024-2029).

Recent technological advances in power electronics, fault-tolerant architecture, electro-hydrostatic actuators, flight control systems, high-density electric motors, and power generation and conversion systems have boosted the growth of the more electric aircraft market.

With increasing focus on eco-friendly aircraft, many regulations have been imposed on aircraft emissions. Due to the stringency of emission regulations, manufacturers are shifting toward more electric aircraft. The demand for more electric aircraft is growing as original equipment manufacturers (OEMs) for aircraft realize the architecture's potential advantages, like improved fuel efficiency, reduced maintenance costs, and enhanced reliability using modern power electronics.

In addition, engine installation has fewer hydraulic and pneumatic components. In the coming years, more electric aircraft with short ranges are expected to become viable for regional transportation. On the other hand, the lack of suitable infrastructure, the high cost associated with propulsion systems, and investment risks may hamper the market's growth.

More Electric Aircraft Market Trends

The Commercial Segment is Expected to Dominate the Market During the Forecast

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Period

The aviation industry generates 2-3% of the world's human-generated carbon dioxide emissions and around 12% of the CO2 emissions from all transportation sources. Thus, to lower its impact on the environment and improve the sustainability of operations, the commercial aviation sector has committed to achieving net-zero air transport emissions by 2050.

The aviation industry is focused on improving aircraft performance, reducing gas emissions, increasing dispatch reliability, and reducing maintenance costs. The key original equipment manufacturers (OEMs) are working on introducing advanced technologies through research and development (R&D) and adopting hybrid electric-powered or more electric aircraft. The more electric aircraft (MEA) concept utilizes electric power for non-propulsive systems. Traditionally, the systems were driven by various secondary power sources such as mechanical, pneumatic, hydraulics, and electrical.

Technological advancements in fault-tolerant architecture, power electronics, flight control systems, electro-hydrostatic actuators, high-density electric motors, and power generation and conversion systems lead to the growing adoption of more electric aircraft, driving the market's growth. More electric aircraft in the commercial aviation segment include the Boeing 787 and Airbus A350 XWB. Over the years, major aircraft manufacturing companies like Airbus SE and The Boeing Company have introduced more electric architecture to their commercial aircraft. Thus, growing expenditure on research and development and introducing advanced electric aircraft are driving the market's growth.

North America is Expected to Dominate the Market During the Forecast Period

North America is a large market for more electric aircraft due to the huge amount of aircraft deliveries that incorporate more electric architecture into the US. The necessary infrastructure and a strong emphasis on research and development in the electrification of aircraft subsystems are expected to aid the growth of the more electric aircraft market in North America. For instance, in 2021, Lockheed Martin Corporation delivered 142 F-35 fighter jets to the US and its allies. The power-by-wire system of the F-35 represents an essential advancement in more electric aircraft technology. It integrates self-contained electro-hydrostatic actuators (EHAs) to control the primary flight surfaces.

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The increasing environmental concerns and stringent regulations for aircraft emissions are the major factors responsible for the dominance of the more electric aircraft market in the region. Though the deliveries of wide-body aircraft like the Boeing B787 Dreamliner and Airbus A350 XWB have slowed down in the region, airlines still have several aircraft on order due for delivery. For instance, in October 2023, BETA Technologies, a Vermont-based electric aircraft startup company, deployed its ALIA, a fully electric aircraft, to Eglin Air Force Base in Florida. The ALIA has flown 336 nautical miles in a single charge. Such demand for new models of more electric aircraft from the commercial and military segments is expected to drive the market in North America during the forecast period.

More Electric Aircraft Industry Overview

The more electric aircraft market is semi-consolidated due to a few global players holding significant shares in the market. Some key players in the market are RTX Corporation, General Electric Company, Safran, Honeywell International Inc., and Eaton Corporation PLC. Major players are currently focused on developing advanced electric architecture platforms to keep up with the increasing demand for more electric components. However, due to the complexity of aerospace testing, players need help validating these systems and components.

Players are investing in infrastructure to develop more electric architecture systems to address this issue. For example, Collins Aerospace (RTX Corporation) is building a specialized lab, The Grid, which will be the most advanced electric power systems laboratory. The lab will enable the design and evaluation of systems like high-power generators for the next generation of more electric aircraft, including commercial, military, business aviation, UAV, and urban air mobility platforms. Similarly, in April 2021, Airbus announced its plans to replace the mechanical rudder controls on A320 Neo-family aircraft with an entire electric rudder system, expected to be completed by early 2024. Such developments from OEMs will drive market growth in the coming years.

Additional Benefits:

The market estimate (ME) sheet in Excel format

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