

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

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Report description:

The Autonomous Aircraft Market size is estimated at USD 6.64 billion in 2024, and is expected to reach USD 14.61 billion by 2029, growing at a CAGR of 17.07% during the forecast period (2024-2029).

The autonomous aircraft market is going through a transformative phase, driven by the intersection of safety regulations, technological advancements, and collaborative initiatives within the aviation industry. Safety enhancement and cost efficiency emerge as primary drivers, echoing the aviation industry's quest for innovative solutions to improve operational efficiency. There is a constant target for reducing the dependence on traditional pilot-centric models and increasing air safety through automation that surpasses human performance in certain scenarios.

The autonomous aircraft market faces substantial restraint in the form of regulatory challenges and public perception about no-pilot flying. The FAA and other aviation authorities are certifying the safety of autonomous systems, but the public's trust in pilotless flights remains a significant obstacle. Moreover, concerns from pilot unions and the broader public about removing the human element persist, requiring authorities to maintain a delicate balance to integrate autonomous systems in aircraft successfully.

Despite these challenges, technological advancements, especially in machine learning and AI, are propelling the autonomous aircraft industry forward. Companies like Xwing are conducting automated test missions and planning to equip autonomous systems onboard cargo aircraft.

Autonomous Aircraft Market Trends

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Autonomous Cargo Aircraft to Witness Rapid Market Share Growth During the Forecast Period

Cargo planes are expected to be the first to adopt this autonomous aircraft technology. In passenger flights, safety and the lives of people are given paramount importance, and thus, the adoption of autonomous aircraft should start after continuous and rigorous testing is done. This is not the case with cargo aircraft, as the level of life risk is zero with the use of autonomous aircraft in cargo planes. The growth in the e-commerce industry is driving the demand for air cargo, which may increase the demand for air cargo pilots in the future.

Most of the developments in the autonomous aircraft market are aimed at bringing autonomous cargo aircraft into commercial use to fill in the gap due to the pilot shortage. For instance, in May 2023, Xwing was awarded a contract by the US Air Force to conduct pilotless cargo trials. As per the terms of the contract, Xwing will coordinate the identification of best use cases for autonomous flight operations with the Air Force and military stakeholders. Xwing will also conduct test flights that include a fusion of flight control systems, auto takeoff/landing, Detect-and-Avoid (DAA) systems, auto braking, auto taxi, and remote operations software to enable autonomous operations on the Cessna 208B platform. Many such developments are currently underway, and these are expected to help autonomous cargo aircraft be introduced into the market within the next decade.

North America is Expected to Continue its Market Share Dominance During the Forecast Period

North America currently has the highest market share in the autonomous aircraft market due to the high number of procurements of tactical autonomous UAVs in the region. Currently, the United States is increasingly focused on the development of autonomous aircraft. Though the usage of autonomous aircraft has witnessed a slight setback due to the current regulatory framework in the commercial aviation sector, persistent R&D in the military sector for autonomous aircraft has been driving the growth of the market studied.

Technological advancement, which is high in countries like the United States, has led to the development of advanced autonomous aircraft. These can adapt to changing conditions as well as handle flying situations without any human intervention. For instance, in December 2022, as a part of the Skyborg Program, the US DoD tested the autonomous F-16 jet VISTA X-62A for more than 17 hours of autonomous flight. In the test simulation, the VISTA jet operated by AI engaged in fighter maneuver skills and simulated dog fights, and AI outperformed the human pilot. The US military also tested the first flight of a Black Hawk helicopter in November 2022.

Lockheed Martin provided a model following algorithm (MFA) and a system for autonomous control of the simulation (SACS) updates for the VISTA jet before testing. In the future, autonomous aircraft are also envisioned to be adopted on a wide scale for air cargo operations. This has encouraged the initiation of several R&D projects and fostered the entry of new players in the autonomous aircraft ecosystem. For instance, in July 2023, Ribbit, a cargo airline startup developing software for autonomous flight, signed a USD 1.3 million contract with Transport Canada and Innovative Solutions Canada to begin testing self-flying aircraft in remote regions. Such developments are expected to boost the growth of the market studied in the North American region.

Autonomous Aircraft Industry Overview

The autonomous aircraft market is still incubating. Hence, it is consolidated in nature as a handful of players such as The Boeing Company, Airbus SE, Northrop Grumman Corporation, Textron Inc., and BAE Systems PLC dominate market share, especially in the defense sector. However, most of the technologies being tested in the autonomous aircraft market are already the design standards in the UAV industry. Hence, it still trails in the measure of innovative developments in passenger and cargo-carrying applications. Nevertheless, there are certain inherent capabilities exclusive to autonomous aircraft when compared to UAVs, such as endurance. The relatively new concepts are opening many opportunities for players to venture into the market.

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Additional Benefits:

- The market estimate (ME) sheet in Excel format
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