Aircraft Electrical System Market Size Expected to Reach $30.7 Billion by 2032

Aircraft electrical system market was valued at $16.9 billion in 2022, and is estimated to reach $30.7 billion by 2032, growing at a CAGR of 6.2%

WILMINGTON, DE, UNITED STATES, July 16, 2025 /EINPresswire.com/ -- By component, the generator segment dominated the global market in 2022, in terms of revenue. The battery segment is expected to lead the market throughout the forecast period. By system, the power generation segment accounted for a major share in 2022. Based on end use, the defense segment is anticipated to witness lucrative growth over the forecast timeframe. At present, North America is the highest revenue contributor, followed by Asia-Pacific.

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Continuous progress in electronics and computer technologies facilitates the creation of advanced avionic systems. Growing passenger and operator preference for aircraft equipped with modern avionics, enhancing travel comfort and efficiency, serves as a catalyst for manufacturers to incorporate the latest technologies into their aircraft. The appeal of these technologies lies in their improved features, precision, and reliability, making them a compelling choice for seamless integration into aircraft systems.

Moreover, companies focus on the development of avionics advanced upgrades to enhance the capabilities and safety of existing aircraft. For instance, in August 2023, Bombardier unveiled the Advanced Avionics Upgrade (AAU) for its Vision flight deck, a new enhancement powered by Collins Aerospace. This software and hardware upgrade, available for in-service Global 5000, Global 6000, Global 5500, and Global 6500 aircraft with the Bombardier Vision flight deck, aims to elevate the capabilities of existing global aircraft by incorporating avionics features found in newer models.

The aircraft electrical system market is influenced by the integration of advanced avionics systems. The adoption of sophisticated avionic technologies necessitates advanced electrical components and systems. As aircraft embrace more advanced features for navigation, communication, and situational awareness, there is a rising need for state-of-the-art electrical systems, including power distribution units, wiring harnesses, and high-voltage systems. Therefore, the incorporation of advanced avionics systems plays a crucial role in the expansion

and progression of the aircraft electrical system market.

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Europe comprises the UK, Germany, France, Russia, and the rest of Europe. Europe hosts numerous prominent aerospace and defense firms actively involved in the creation and production of both commercial and military aircraft. As airlines seek to update their fleets and governments allocate resources to enhance defense capabilities, there is a rising demand for sophisticated and efficient electrical systems.

The aviation industry is actively exploring electric and hybrid-electric propulsion systems to address environmental considerations and enhance fuel efficiency. European nations, known for their strong commitment to sustainability, are anticipated to play a pivotal role in fostering the expansion of the market for cutting-edge electrical systems designed to support these innovative propulsion technologies.

Moreover, companies focus on the development of more streamlined, reliable, and efficient flight control systems for the evolving electric vertical takeoff and landing industry. For instance, in June 2023, Supernal, an advanced air mobility company based in Washington, D.C., and the aerospace manufacturer UMBRAGROUP in Foligna, Italy, announced a strategic partnership at the Paris Air Show

Specifically, UMBRAGROUP is expected to provide the necessary actuators and motor control electronics to establish a secure system architecture for Supernal's upcoming eVTOL vehicles, slated for commercial flights starting in 2028. In addition, governments in Europe consistently demonstrate their support for research and development within the aerospace sector through a variety of initiatives and funding programs. These investments serve as catalysts for innovation in the realm of aircraft electrical systems, thereby contributing substantially to overall aircraft electrical system industry growth.

The commercial aviation aircraft electrical system is a sophisticated network created to generate, distribute, and control electrical power for diverse systems and components on the aircraft. Its pivotal role is to ensure the safe and efficient functioning of the aircraft. The continuous rise in global passenger demand for air travel, driven by factors such as business travel, tourism, and globalization, fuels the need for more commercial aircraft. Commercial aircraft are equipped with generators or alternators that are usually driven by the aircraft's engines.

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These devices convert mechanical energy from the engines into electrical power. Moreover, airlines often replace older aircraft with newer, more fuel-efficient models to enhance

operational efficiency, reduce maintenance costs, and comply with environmental regulations. Moreover, various companies aim to provide high performance components of power distribution systems. For instance, Amphenol offers circular connectors, power connectors, coaxial connectors for commercial aircraft according to the specific application and the electrical requirements of the systems and equipment being connected.

Defense includes aircraft electrical system to generate, transmit, distribute, utilize, and store electrical energy. It includes aircraft electrical system integrated in the aircraft used for various defense arms such as army, navy, and Airforce. The rise of integrated and network-centric warfare systems is expected to foster the expansion of sophisticated electrical systems capable of seamless communication and data sharing among different platforms.

Moreover, defense aircraft manufacturers collaborate with aircraft electrical system providers to support modernization efforts, including upgrades to various electrical systems. For instance, in January 2022, Boeing selected Collins Aerospace, a Raytheon Technologies company, to upgrade the U.S. Air Force's B-52 bomber with a new electric power generation system (EPGS) as part of the ongoing modernization efforts to extend the aircraft's operational life into the 2050s.

The upgraded EPGS is expected to feature eight generators per aircraft, providing increased redundancy in onboard electrical power. In addition, governments of various nations across the globe actively invest in the enhancement of existing defense aircraft to bolster their capabilities, with a specific focus on modernizing electrical systems. Such factors are anticipated to propel the growth of the aircraft electrical system market during the forecast period.

Impact of Russia-Ukraine war

On February 24, 2022, Russia invaded Ukraine, escalating the ongoing conflict since 2014. This affects the production and supply of key aircraft components in the region, causing potential delays and increased costs. Geopolitical tensions may lead to global economic uncertainty, affecting investment decisions in the aviation sector and reducing demand for new aircraft and electrical systems. However, nations in or near the conflict zone may accelerate military fleet modernization, increasing the demand for advanced aircraft technologies, including cutting-edge electrical systems. The urgency for a technological edge in warfare is expected to drive innovation in aircraft electrical systems.

KEY FINDINGS OF THE STUDY

By component, the battery segment is anticipated to exhibit significant growth in the near future.
By system, the energy storage segment is anticipated to exhibit significant growth in the near future.
By end use, the defense segment is anticipated to exhibit significant growth in the near future.
By region, Europe is anticipated to register the highest CAGR during the forecast period.

Key players operating in the global aircraft electrical system market include Safran Group, Amphenol Corporation, General Electric, Collins Aersopace, Astronics Corporation, Crane Aerospace & Electronics, AMETEK.Inc, PARKER HANNIFIN CORP, Thales Group, and Honeywell International Inc. The companies are adopting strategies such as contract, collaboration, partnership, investment, new product development, expansion, partnership, and others to improve their market positioning.

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