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Air Taxi Market Assessment, By Service Provided [Product, Service], By Degree of Automation [Piloted, Semi-Autonomous, Autonomous], By Fuel Type [Gasoline, Electric, Hybrid], By Propulsion Type [Turboprop, Turboshaft, Others], By Rotor Arrangement [Side-by-Side Rotor, Quadcopter, Multicopper], By Wing Type [Fixed wing, Tilt-rotor, Tilt-wing, Others], By Passenger Capacity [2 Seater, 4 Seater, 6 Seater, More than 6], By Speed [Up to 200 kmph, 200-300 kmph, More than 300 kmph], By Range [Up to 200 km, 200-400 km, More than 400 km], By Region, Opportunities and Forecast, 2022-2030F

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Abstracts

Global Air Taxi Market size was valued at USD 867 million in 2022 which is expected to reach USD 2774.5 million in 2030 with a CAGR of 15.65% for the forecast period between 2023 and 2030. An air taxi is a specialized aircraft designed for efficient short-distance urban and regional passenger transportation. These aircraft are typically compact and capable of vertical takeoff and landing (VTOL), eliminating the need for conventional runways. Air taxis play a crucial role in the emerging Urban Air Mobility (UAM) field, which aims to provide convenient and effective aerial transportation solutions in densely populated urban areas. Air taxis emerged from NASA's Small Aircraft Transportation System (SATS) concept in the early 2000s, evolving into reality with advances in light-jet aircraft manufacturing.

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Air taxis represent a promising answer to urban mobility challenges, offering a range of benefits. They can potentially ease urban traffic congestion significantly and offer efficient transportation alternatives. Thanks to technological advancements, seamless internet connectivity, and the integration of artificial intelligence, air taxis can operate autonomously or with minimal pilot intervention. This enhances safety and widens accessibility, making them a compelling option for urban transit. What sets air taxis apart is their compact design and the capability for vertical takeoff and landing, eliminating the need for traditional runways. This feature provides a significant advantage in crowded urban environments. Moreover, many air taxis are equipped with electric propulsion systems, reducing emissions and mitigating noise pollution, thus contributing to environmental sustainability. They can serve various purposes, including daily commuting, airport transfers, enhancing tourism experiences, and providing rapid emergency response during crises. The development of air taxis is a collaborative effort, with industry leaders in aviation and transportation working together to introduce these groundbreaking solutions globally. This collective commitment underscores the drive to revolutionize urban mobility and redefine the future of transportation. The development of air taxis is a collaborative endeavor, with industry leaders in aviation and transportation working together to roll out these pioneering solutions globally. This collective commitment underscores the drive to revolutionize urban mobility and redefine the future of transportation.

Air Taxis Set to Soar with Battery and EV Breakthroughs

Air taxis designed for vertical takeoff and landing (VTOL) utilize various fuel sources, including batteries, fuel cells, or internal combustion engines, to power their rotors. Among these options, electric motor-driven rotors and battery systems offer exceptional design flexibility and a cost-effective solution for VTOLs designed for intra-city and short-range inter-city travel. The energy density of batteries is a critical factor influencing their suitability for air taxis. As battery technology advances, costs are expected to decrease, and achieving a battery energy density of 600 Wh/kg in the future will firmly establish battery electric propulsion as the most economically advantageous choice for VTOLs across all travel distances, offering significant business advantages.

In July 2022, Hyundai subsidiary Supernal partnered with Electric Power Systems (EP Systems), known for its high-power batteries used in aviation, including NASA's X-57 and Boeing's Cargo Air Vehicle (CAV). Supernal is integrating EP Systems' energy storage solutions into its five-seat eVTOL air taxi, SA-1, with commercial service planned for 2028. The partnership aims to expedite lightweight eVTOL battery development, enabling extended, cost-effective air taxi flights. They aim to enhance

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vehicle performance as the urban air mobility market advances.

Innovative Manufacturing Methods Propel the Rise of Urban Air Mobility (UAM)

In the domain of air taxis, technological progress in 3D printing and additive manufacturing has ushered in a significant transformation in the development of vital components such as engines, rotors, and fuselage parts. These advancements enable precise and tailored designs, leading to remarkable enhancements in performance and reliability. The technology offers a wide range of materials, including advanced alloys, ensuring durability and efficiency. Moreover, 3D printing and additive manufacturing have streamlined the manufacturing processes for these components, reducing waste and promoting overall sustainability. This innovation accelerates production timelines, making it efficient and adaptable for various applications within the air taxi industry. Its rapid prototyping and customization capabilities are particularly advantageous in meeting the sector's unique requirements.

In March 2023, during the Southstart innovation festival, Alauda Aeronautics introduced the Airspeeder Mk4, the world's first crewed flying racing car. This eVTOL aircraft, with the world's highest speed, features a cutting-edge 'Thunderstrike' engine equipped with a 3D-printed combustor originally designed for space rocket engines. Currently undergoing intensive flight testing in South Australia, it is slated for its inaugural crewed races in 2024, exemplifying the potential of 3D printing in advancing air taxi technology.

Governments Regulations for Air Taxi

Government regulations play a crucial role in facilitating the seamless integration of air taxis into conventional aviation systems. These regulations are instrumental in reducing potential conflicts and optimizing airspace utilization. They are also essential for enforcing stringent safety standards to ensure the safety of passengers and the public by preventing accidents and hazards. Moreover, government oversight extends to managing air taxi routes addressing congestion and conflicts within urban airspace while enhancing traffic flow. Governments invest in critical infrastructure, such as vertiports and vertistops, to streamline air taxi operations and integrate them into urban transportation networks. Additionally, regulations are put in place to protect passenger rights, covering aspects like transparent pricing and effective dispute resolution mechanisms to ensure a fair and secure air taxi experience. Air taxi operations in Canada fall under Transport Canada's jurisdiction, governed by Canadian Aviation Regulation 703. This category encompasses various types of commercial aircraft.

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Air taxi and charter operations in the United States are regulated by 14 CFR Part 135 and 14 CFR Part 298 of the Federal Aviation Regulations (FAR). Notably, the FAA updated the air carrier definition in July 2023 to include 'powered lift' operations, and in August 2022, the FAA achieved its initial milestone for rule establishment, with manufacturers expecting timely certification under this framework.

Internet Connectivity and AI Propel the Air Taxi Industry

The rapid advancement of technology and widespread 5G connectivity usher in autonomous aerial transportation. Air taxis capitalize on the fact that they require fewer personnel for operation and maintenance than traditional airlines. The advent of 5G lets integration of AI, which can enhance safety through real-time data analysis, obstacle detection, and collision avoidance. AI-driven algorithms also optimize routes based on dynamic factors like weather, air traffic, and demand, ensuring efficient journeys. Evolving 5G networks and software and hardware advancements prompt numerous OEMs to embrace AI for full air taxi autonomy. This transformative blend of technology, AI, and 5G reshapes urban air mobility, making autonomous and efficient air taxi services a near reality.

In October 2022, Wisk Aero unveiled its groundbreaking Generation 6 electric air taxi, designed for autonomous flight with a capacity of four passengers. This innovative eVTOL leverages proven technology from commercial aviation, featuring improved detect-and-avoid capabilities and advanced sensors. Combining autonomous systems, human oversight, and a simplified design ensures safe passenger transport in commercial aviation. Importantly, it's the first autonomous, all-electric, passenger-carrying VTOL aircraft seeking FAA certification.

Air Taxis are a Cost-Efficient Solution for Rapid Emergency Services and Urban Air Tourism

Air taxis serve multiple critical purposes beyond short-distance commercial travel. They offer a compelling solution for rapid emergency response, replacing costly conventional medical evacuations. Commercializing air taxis with frequent flights and swift response times significantly enhances emergency services. Furthermore, air taxis have great potential in flight tourism, especially in bustling urban landscapes with iconic skylines like New York and London. These globally renowned cities attract tourists eager to witness their grandeur from the sky. This emerging sector holds promise for the future, offering exciting opportunities for aerial tourism experiences.

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Various countries are making substantial investments in air taxis to stimulate tourism. For instance, in February 2022, Saudi Arabia outlined its ambitious goal of introducing commercial urban air travel by 2026. Additionally, Falcon Aviation Services in Abu Dhabi intends to procure 35 Eve eVTOLs for tourist flights. Meanwhile, in September, Jeju Island in South Korea unveiled plans to launch eVTOL air taxi routes catering to tourists by 2025. These routes will connect Jeju International Airport with popular tourist destinations along the island's coastlines, marking South Korea's first municipality to embrace urban air mobility.

Impact of COVID-19

The COVID-19 pandemic profoundly impacted the global urban air mobility (UAM) and air taxi market. Initially, it caused disruptions, leading to delays in the development and deployment plans of various UAM projects. Travel restrictions and lockdowns, aimed at containing the virus, significantly reduced passenger demand for urban air mobility services. This resulted in a sharp decline in bookings and revenues, particularly affecting the tourism sector, which is a significant market for air taxis. Despite these challenges, UAM found applications in remote healthcare delivery during the pandemic, albeit it was still in a developmental phase. Many UAM startups faced financial strain as they encountered reduced investment and lower passenger numbers. Several air taxi projects had to postpone their deployment schedules due to the uncertainties created by the pandemic. In September 2022, Kitty Hawk, a well-known flying taxi startup with support from Google co-founder Larry Page, made the decision to close its operations after a decade of successful development.

However, as the pandemic gradually recedes, there is renewed interest and investment in urban air mobility solutions. The recovery of the UAM and air taxi market is underway, with a positive outlook for the future as the world adapts to the new normal and embraces innovative transportation solutions.

Impact of Russia-Ukraine War

The Russia-Ukraine conflict introduced considerable uncertainty into the global air taxi market, generating geopolitical tensions and economic sanctions that rattled investor confidence. Furthermore, the conflict exacerbated shortages in critical resources like oil and metals, driving up manufacturing costs for air taxi components. These disruptions reverberated through the supply chain, affecting the timely production and delivery of essential air taxi parts. Several air taxi projects faced delays due to these uncertainties, complicating the strategic planning of operators in the sector.

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This turmoil also affected the crucial infrastructure for air taxis, particularly airports. Airports, essential for air taxi operations, especially those located in conflict-affected regions, witnessed reduced traffic and declining revenues. Consequently, companies in the air taxi industry had to diversify their offerings to mitigate geopolitical risks and address concerns regarding the long-term stability of routes and markets. Some urban air mobility (UAM) firms redirected their focus towards cargo delivery services, adapting to the evolving market demands and ushering in a new era of strategic planning.

Key Players Landscape and Outlook

The air taxi market is undergoing rapid growth and innovation, with numerous new startups entering the scene and forming partnerships with established and dominant players in the aerospace technology sector. Key industry participants prioritize fleet expansion and actively pursue regulatory clearances and certifications to expedite operational readiness. Several have already received approval to operate on designated routes, marking a significant milestone in the industry's development. This collective effort signifies a strong commitment to advancing urban air mobility and realizing the vision of accessible and efficient air taxi services.

For instance Joby Aviation Inc., a California-based firm specializing in electric aircraft for commercial passenger service, secured FAA Special Airworthiness Certification and U.S. Air Force Airworthiness Approval for its second pre-production prototype in December 2021. The company plans to commence flight operations with this prototype in partnership with the U.S. Air Force under Joby's Agility Prime contract.

On the other hand, Archer Aviation attracted a substantial USD 215 million equity investment from prominent industry players like Stellantis, Boeing, United Airlines, and other financial institutions. Additionally, Archer obtained FAA approval for its Midnight eVTOL aircraft and formed an autonomous flight collaboration with Boeing and Wisk, resolving previous litigation matters between the parties.

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