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Regulation of VTOL Aircraft in Mexico: Challenges and Opportunities.

By Rubén Mancilla

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PRONUNCIATION:

'che-l&m, is Latin for airspace or sky. The Romans began questioning the rights they had in the space above the land they owned and how high above them those rights would extend. They decided on, Ad coelum et ad inferos, meaning that their property rights would extend as high up as the heavens and all the way down to hell.

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Vertical Take-Off and Landing (VTOL) aircraft represent a significant innovation in the aviation industry, with different applications ranging from urban air mobility to cargo transportation and emergency rescue operations. These aircraft combine the ability to take off and land like a helicopter with the flight efficiency of a conventional airplane. This article explores the current situation of VTOL aircraft, the regulatory framework, the different applications of VTOL aircraft and the challenges they face.

Definition and Evolution of VTOL Aircraft

VTOL aircraft are designed to take off and land vertically, eliminating the need for conventional runways. This category includes aircraft with two or more rotors and fixed-wing aircraft with vertical take-off and landing capabilities. An emerging subcategory within VTOL is electric vertical take-off and landing (eVTOL) aircraft, which use electric propulsion and are designed for operations such as air taxis in urban environments, among others.¹

Regulatory Framework in Mexico

Currently, Mexico lacks specific regulations regarding VTOL aircraft. The only applicable regulation for these aircraft in Mexico would be the general provisions of the Civil Aviation Law and its regulations. However, crucial aspects such as aircraft and pilot certification, operational safety standards, and integration into controlled airspace require more precise regulation. The absence of a clear regulatory framework limits private investment and the development of the necessary infrastructure for the safe and efficient operation of VTOL aircraft in the country.

In the context of Mexico's current regulations, it is crucial to highlight Article 32 Bis of the Civil Aviation Law. This article establishes the possibility of granting a special airworthiness certificate for aircraft that do not fully comply with standard airworthiness requirements, as long as they can perform a safe flight.

This special airworthiness certificate is issued for specific purposes, such as:

- Conducting test flights.
- Performing demonstration flights for potential customers in newly produced aircraft.

Given the current stage of the emerging VTOL aircraft industry in Mexico, it is likely that most VTOL aircraft under development will only be eligible for this type of special airworthiness certificate. This is due to the lack of specific regulations addressing the unique characteristics of these aircraft.

Therefore, while the FAA and EASA are advancing in type certification and the regulation of commercial VTOL operations, Mexico remains at a stage where VTOL aircraft can only obtain a special airworthiness certificate for test and demonstration flights. This highlights the urgent need to develop a comprehensive regulatory framework that enables the certification and safe operation of these aircraft in the country.²

International Comparison: Learning from Global Leaders

At the international level, the United States Federal Aviation Administration (FAA) and the European Union Aviation Safety Agency (EASA) are at the forefront of developing specific regulatory frameworks for VTOL aircraft, demonstrating clear leadership in the field.

1.- <https://www.faa.gov/air-taxis/FAQ>

2.- Civil Aviation Law <https://www.diputados.gob.mx/LeyesBiblio/pdf/LAC.pdf>

The FAA, recognizing the transformative potential of Advanced Air Mobility (AAM), has taken a proactive approach to VTOL aircraft regulation. Its strategy focuses on ensuring safety through rigorous certification processes for aircraft and pilots, as well as the safe integration of these aircraft into the national airspace. The FAA has published regulations establishing certification requirements for “powered-lift” aircraft—a category that includes VTOLs—and the licensing requirements for pilots operating them.

Key Points of the FAA:

Powered-Lift Certification:

- The FAA has established clear rules for certifying these aircraft, recognizing their unique characteristics.
- This includes requirements for design, construction, testing, and maintenance.

Pilot Training and Licensing:

- Training and licensing requirements for VTOL pilots have been defined, including training for vertical flight and transitioning to horizontal flight.
- Instructor qualifications have also been established.

Airspace Integration:

- The FAA is working on the safe integration of VTOL operations into the existing air traffic control system.
- This includes developing procedures for managing air traffic in urban areas and creating specific air corridors.

Infrastructure Development:

- The FAA has issued a document outlining a reference framework in collaboration with NASA and industry for infrastructure development.
- Work is underway on the development of “vertiports” and their regulatory framework.³

In Europe, EASA has taken a decisive step by adopting a comprehensive regulatory package that enables the operation of VTOL aircraft and air taxis. This package covers all key aspects, from aircraft certification to air traffic management and the development of necessary infrastructure, including vertiports. EASA has placed a strong emphasis on safety and sustainability, establishing rigorous standards to ensure VTOL operations are both safe and environmentally friendly. Additionally, the European Commission has pushed for regulations that allow member states to operate in a harmonized manner.⁴

The gap between Mexico and the international leaders is significant. While the FAA and EASA are establishing standards and facilitating the integration of VTOLs into their airspaces, Mexico urgently needs to develop a specific regulatory framework. Adopting international best practices and collaborating with agencies like the FAA and EASA could accelerate the process and position Mexico as a leader in VTOL adoption in the region.

Conclusion

VTOL aircraft have the potential to transform multiple sectors, from urban transport to logistics and emergency response. However, for this technology to reach its full potential, regulatory and technical challenges must be addressed. With continuous regulatory development and technological advancements, VTOL aircraft could become an integral part of the future of aviation.

Mexico can position itself as a leader in the region in VTOL aircraft adoption by developing a flexible regulatory framework that ensures safety and promotes innovation. Collaboration between government entities, the private sector, and international organizations will be essential to establish appropriate operational and certification standards. With a well-defined strategy, VTOL aircraft could transform air mobility in Mexico, enhancing connectivity and fostering economic development.

3.- <https://www.faa.gov/air-taxis>

4.- <https://www.easa.europa.eu/en/newsroom-and-events/news/european-commission-adopts-regulatory-package-giving-go-ahead-vtol>

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