

Abstract

From Advanced Air Mobility to Regional Electric Aviation: European Lessons and an Airport-Based Implementation Roadmap

Olaf C. Bünck¹

¹ *airsight GmbH, Berlin, Germany, info@airsight.de*

Advanced Air Mobility in Europe is moving from a phase dominated by prototypes and optimistic market expectations toward a more selective implementation phase. Regulation, safety logic and infrastructure planning are advancing, while aircraft certification, production readiness and commercial operations are developing more slowly than early forecasts assumed.

The key planning question has therefore changed from "can it fly?" to "can it be permitted, funded and operated?" This contribution presents a practical roadmap derived from recent European vertiport, corridor and airport planning work and argues that electrification must be understood as an airport-system challenge rather than only as an aircraft-development challenge.

Experience from German Advanced Air Mobility projects shows that a city vertiport is simultaneously an aviation facility, an urban planning object, a building-law and fire-safety case, an energy consumer, a noise source, a public-transport interface and a visible element of the city.

Aircraft requirements alone cannot define a workable site. Public communication must also be treated as part of the planning brief because citizens primarily ask about noise, safety, privacy and daily-life impacts rather than technical aviation terminology.

Technology choice changes the approval and acceptance case. Battery-electric vertical take-off and landing aircraft support the urban proposition through local zero-emission operation, lower expected noise and the absence of conventional fuel handling. Hybrid or fuel-based concepts can provide additional range or reserve but create a more difficult urban safety and acceptance narrative. This suggests separating dense urban passenger vertiports from regional bridge missions rather than treating both as the same planning case.

Cargo and mission-oriented operations may provide an earlier and more understandable pathway than premium passenger services. Medical logistics, emergency supply, remote-area transport and industrial spare parts create visible public or economic value while generating operational evidence on routes, weather limits, charging, reliability and command-and-control. Cargo is not a shortcut around aviation safety, but it can become an early learning environment with lower passenger exposure. Passenger electric vertical take-off and landing services face a higher proof threshold because they add human-life certification, urban rescue concepts, noise sensitivity and public acceptance. Cargo can open a route; passenger service must earn trust through evidence.

The research translates this logic into test corridors and infrastructure prototypes. A regional airport-to-airport corridor such as Manching-Ingolstadt to Augsburg offers a manageable first step for testing airspace, operations and approval logic before addressing the complexity of major hubs. In parallel, the AMI FlyingIN2Air

research project demonstrates how a modular parking structure can serve as a realistic urban vertiport prototype, integrating rooftop flight areas, terminal functions, charging and photovoltaic options within familiar urban infrastructure.

The next phase extends beyond urban Advanced Air Mobility alone toward integrated Regional Electric Aviation. Electric regional aircraft can use existing runways and airport infrastructure and may therefore avoid part of the complexity associated with new urban vertiport networks. The presentation identifies approximately 150 to 400 kilometres as a relevant mission band and positions regional airports as future electric mobility and energy hubs. This changes airport masterplanning: runway, apron, hangars, vertiport, terminal, charging, grid connection, transformers, photovoltaic generation, battery storage and load management must be planned as one system. Energy becomes a new category of airside infrastructure, not an accessory added after the aviation concept is fixed.

The resulting roadmap progresses from prototypes and feasibility studies through urban planning and operational corridors to integrated Electric Regional Airport systems. The central conclusion is that European Advanced Air Mobility is not disappearing; it is becoming more regulated, selective and infrastructure-led. The strongest near-term pathway may be the gradual transformation of existing regional airports into platforms that combine electric flight, energy infrastructure, compact passenger processing and regional connectivity.

Biography

Olaf C. Bünck



Olaf C. Bünck is an airport masterplanner and aviation consultant specialising in Advanced Air Mobility, Regional Air Mobility, vertiport planning, airport-city development and electric aviation.

His work combines aviation infrastructure, urban planning, energy systems and real-estate strategy, with a focus on translating emerging mobility concepts into implementable airport solutions.