

Lilium 02/07/2020

Could you build a vertiport?

We've been working on a lean, modular design that will help make vertiports accessible to developers large and small. Whether they are placing a vertiport at an existing transport terminal, next to a shopping center, on top of a busy car park or alongside a suburban residential development, we wanted to make it easy and affordable for them to design and build a suitable vertiport.

Our design is based around a limited set of modules which are standardized as much as possible, making it simpler and more affordable for developers to plan a vertiport for their specific site. The modules can also be prefabricated off-site, reducing costs and allowing for rapid on-site construction.

Each module consists of a set of functional components that are optimized for regulatory compliance and reliable operations. Recognizing the critical importance of safety to our customers and to local communities, we have followed existing regulations where applicable, for example in the design of the safety areas, in the guidance relating to obstacle clearance, and in the design of the Landing and Take-off Area, which has a diameter of 1.5x the 'critical dimension', which in our case is the wingspan of the Lilium Jet. Where new rules are proposed, we are working actively with other companies in our sector, and the relevant regulators, to develop these.

In the case that a vertiport is retrofitted to an existing building, an underlying load-transfer structure may be required. For these opportunities, the structure is set out independently from the functional modularity of the vertiport, enabling us to work with the same modular approach as we would with an at-grade location.

Three key ingredients

Whether a vertiport is designed to facilitate 20 flights per day or 20 flights per hour, it will have three common ingredients: a take-off area, parking stands and a terminal.

(It'll also need high-power charging equipment, air traffic control technology for high throughput operations and digital check-in tools, but we're working with system suppliers and industry committees to bundle this equipment into standardized 'plug-and-play' solutions allowing the sector to scale more rapidly).

A - Take-off Area

Much like today's heliports, future vertiports will have an area specifically dedicated to take-off and landing. Sometimes referred to as a FATO (Final Approach and Take-Off) or a TLOF (Touchdown and Lift-OFF area), this will be a focal point for operations and will be surrounded by a safety zone.

The design of the safety zone has been driven, in the first instance, by established guidance for [heliports](#), as have many other operational elements, such as approach slopes and obstacle clearance guidelines. We continue to work closely with regulators and other industry players to tailor this guidance more directly to eVTOL operations in the future.

On the ground, the Lilium Jet will travel under its own power using electric motors (only making the noise of a slow-moving electric vehicle) along defined taxiways to and from the parking stands.

B - Parking Stand

Passengers will board and disembark the Lilium Jet at a parking stand where the aircraft will also be cleaned, checked and charged for its next journey. Luggage will be loaded here and the aircraft will transfer flight data.

The parking stands are sized to ensure there is no danger to passengers or colleagues while moving around the aircraft, while also maximizing the efficiency of the vertiport.

C - Terminal

Above all, passengers will travel with Lilium because they want to save time. We've therefore designed a terminal that focuses on delivering a seamless and frictionless experience for our customers.

With a focus on reducing processing and waiting to a minimum, we've taken the traditional concept of a terminal apart, modularized it with value for use in mind and reconstructed it.

And while we want our customers to love the time they spend in the terminal, we know that it will be purposefully limited, so we don't envision retail, duty-free shops or hospitality offerings playing a too-significant role.

The design of the terminal building is simple but adaptable - the roof and enclosure both give us ways to connect the vertiport to its local context, whether that's a rural village or a megacity.

Adaptable and Scalable

Keeping our design lean and modular will allow our network to grow rapidly, helping us to deliver high-speed connectivity in a fraction of the time it typically takes to build roads or railways.

It also allows us to tailor our standardized layouts, depending on the location, the passenger demand and available space. Vertiports, in their smallest configuration, can be built for as little as €1-2 million. These basic versions of a vertiport are typically ground-based, with small waiting areas and a limited set of gates for charging. Larger, elevated structures require a higher investment of between €7-15 million, depending on their situation and size