

How Air Taxi Certification Will Enable Commercial Ops

DOA

Design Organisation Approval (DOA)

What is it? The approval for designing and receiving a Type Certificate for aircraft, which may then also be used in commercial operations.

Where do we stand? Volocopter obtained the [DOA](#) in December 2019. Essentially, this permits us to develop our eVTOL (electric vertical takeoff and landing) aircraft and to obtain and maintain the accompanying type certificate (TC).

POA

Production Organisation Approval (POA)

What is it? The approval for producing type-certificated aircraft, which can then also be used in commercial operations.

Where do we stand? Since July 2021, Volocopter had held a POA. This ensures that we produce aircraft that is fit for purpose. The POA is linked to specific aircraft. Therefore, the VoloCity and any other future aircraft will be added to said POA once they become type-certified. This allows us to proceed with series production of these and any other future aircraft.

TC

Type Certification (TC)

What is it? This is the main prerequisite that demonstrates the technical compliance of the aircraft design with the relevant design requirements and regulations. Only once an aircraft has been type-certified can it be manufactured in line with the POA, and the POA can then, in turn, issue a Certificate of Airworthiness (CoA) for the aircraft in question. Only once it has this CoA can an aircraft be brought into operation, and thus be used to offer commercial passenger transportation.

Where do we stand? We have been working closely with [EASA \(European Union Aviation Safety Agency\)](#) for years to obtain the official certification requirements and define the approach and tests required for eVOTLs, and specifically for our VoloCity air taxi. Currently, we are testing our remote-controlled prototype in order to gather additional data. We have now entered the stage where formal documents are being delivered to demonstrate compliance with EASA's design requirements. This will be supplemented by crewed flight tests with the next aircraft.

AOC & OL

Air Operator's Certificate (AOC) & Operating License (OL)

What is it? The air operator's certificate (AOC) is the approval granted by the civil aviation authority of the respective state or of a whole region (for example: compliance with European requirements allows to operate in all EASA member states) to an air operator to allow it to use an aircraft for commercial passenger or cargo transportation.

A type-certified aircraft is needed to apply for an AOC. Additionally, in all EASA countries an Operating License (OL) is also required: this allows the air operator to commence commercial activities as an air carrier.

Applications for the AOC and the OL are submitted to a competent national authority in an EASA member state (e.g., the LBA in Germany).

The new rules for eVTOL operations are being agreed upon at the European level (EASA) and will be issued to all member states, who will in turn be required to comply with them. This ensures a level playing field for all AOC licenses obtained at the national level.

In non-EASA member states, the AOC and OL comprise ONE certificate (AOC), which needs to be obtained from the competent national authority.

Where do we stand? Volocopter is in the privileged position of being able to simultaneously apply for both AOC and OL, alongside its TC application. Our VoloCity air taxi is set to be the first aircraft to enter Urban Air Mobility operations using EASA's novel regulations. The competent authorities agreed to evaluate and enable this parallel process as we aim to launch commercial operations in 2024.

As eVTOLs comprise a new aircraft type, new technical and operational regulations are essential. Volocopter is delighted to be serving as a test case for regulators as they define the new regulations.

PL

Pilot's License (PL)

What is it? The pilot's license (PL) has been used almost since aviation was born, with the first licenses issued in 1909 and the first international standards set ten years later. Flight crew licensing is normally handled by a state's national aviation authority (NAA). In Europe, today's Part-FCL (Flight Crew Licensing) requirements have created an international flight crew licensing system for participating NAAs to implement.

The FCL directly impacts these regulatory activities:

- Approval of flight crew training
- Approval of flight simulators & other synthetic training devices
- Approval of arrangements for certifying the flight crews' medical fitness

Source (edited): [SKYbrary](#)

The [ICAO \(International Civil Aviation Organization\)](#) licensing system provides the internationally harmonized framework that enables qualification for and issuing of licenses and ratings for airplane, helicopter, glider, and free balloon pilots. It also includes a provision to cover flight engineer and flight navigator licenses. Regulations issued by EASA comply with ICAO regulations. We will take Part Cat (H) and transform it into the new regulation required to pilot eVTOL aircraft.

Where do we stand? At the time of writing, we are preparing to submit an application for our first pilot license to EASA. We've discussed all open

topics with the Agency, and are finding a mutually acceptable way to move forward. During the pilot training that our VoloCity pilots completed, we already made our goals clear, and are looking to the future, incl. the simulators that will be supplied by [CAE](#).

In Europe, we plan to open the first ATO (aircraft training organization) in cooperation with [ADAC Hems Academy](#), the first international training center for helicopter pilots and medical crews. We will determine the need to open further ATOs to enable training for pilot licenses in other parts of the world based on how our business develops and the future routes we will fly.

Meanwhile, we are liaising with EASA and the LBA to ensure we comply with the established regulations of Part-FCL.

We have already put together our future training program and are working on establishing a general framework for conducting it. In fact, we aim to be the first to offer UAM pilot training in line with the highest safety standards, which are the same as the ones that conventional airline pilots are bound by.

Continuing Airworthiness Management Organization (CAMO)

CAMO

What is it? The CAMO attests to the airworthiness of an aircraft in operation, for which it enables continuing airworthiness management. The CAMO ensures that any maintenance and other mandatory or scheduled activity that must be conducted on an aircraft is executed, documented, and signed off before the aircraft is released for flight. The work is performed by an approved maintenance organization, as per the CAMO. Any AOC must cooperate with an approved CAMO in order to obtain its approval.

Where do we stand? The challenge Volocopter faces is to have knowledge ahead of time about how to maintain and operate our game-changing aircraft and to develop procedures based on preliminary data. Another aim is to align the approval process with the aviation authorities before achieving TC, to make the process more streamlined once TC has been granted. To overcome this challenge, Volocopter has implemented all key functionalities of the subsequent CAMO, and those capabilities are already in use for aircraft type certification purposes.

Part 145 Maintenance Organisation Approval (MOA)

MOA

What is it? In Germany, this is an approval from the LBA ([Luftfahrt Bundesamt – Federal Aviation Office](#)) that permits an organization to perform and certify maintenance work on aircraft and aircraft components registered in EASA member states. To qualify for MOA, the organization must employ Certifying Staff that hold dedicated licenses obtained in compliance with EASA Part-66 requirements. These are specific to the technologies used on the aircraft that will be maintained.

Where do we stand? Volocopter has implemented the key setup and staffing for the later MOA and is using this setup to execute maintenance work for its fleet of test aircraft. This enables the subsequent commercial

maintenance team to share its experience early on with the engineering team, which in turn ensures that the aircraft can be maintained once it is certified. Together with TC, the Instructions for Continued Airworthiness (ICA) must be approved. Only then will it be possible to achieve Maintenance Organisation Approval for a new aircraft type. Formal application for MOA shall be submitted in mid-2023, This will give us enough time to receive the final approval for the “A” & “C” ratings immediately after the aircraft TC has been obtained.

The “A” rating relates to aircraft maintenance, while the “C” rating refers to component maintenance.

VERTI PORTS

Landing Infrastructure (“Vertiports”)

What is it? Before a UAM aircraft operator can soar into the commercial skies, they need to ensure that their takeoff and landing sites (“vertiports”) are approved for eVTOL operations.

Where do we stand? Volocopter has been working closely with EASA and industry partners to develop the [Prototype Technical Design Specification](#), which provides guidance on vertiport design in Europe and beyond. We are continuing to work on rulemaking and standardization activities to develop and harmonize the design and operations of vertiport infrastructure worldwide.

As an OEM and future air operator, Volocopter has also amassed in-house expertise in vertiport design and operations to optimize its aircraft and passenger ground handling processes. One of the ways we’ve done this is by creating a Volocopter vertiport concept design handbook, which is highly valued in the industry.

Meanwhile, we are building and operating a Volocopter test vertiport close to our headquarters in Bruchsal, Germany, to verify and improve all our aircraft and passenger ground handling processes. One of our first commercial vertiport projects is in Singapore, where we are building [our first VoloPort.](#)



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