

Small steps towards fully hydrogen operated flights.



Three questions asked to Sergey Kiselev, the CCO VP Europe of ZeroAvia.

ZeroAvia has recently established itself in the Netherlands, your organisation's mission is to accelerate the world's transition to sustainable aviation. With this in mind, what specifically draws you to this region?

It is clear to us that the Netherlands as a country is working hard towards sustainability. In this region, in particular with regards to sustainable flying. For us there are several reasons for establishing ourselves here. First, the region has a great ecosystem. There are many interesting companies that we like to work with on developing components for our powertrain. With TU Delft and other universities nearby there's an enormous talent pool within reach. Also, we like the mentality of not only talking, but seriously doing something about working towards a sustainable future for the aviation industry. Likewise, the need to invest public money in sustainability initiatives is well acknowledged in the Netherlands.

The first milestone is flying the aircrafts and test the different configurations going from hybrid to fully running in hydrogen electric propulsion. After this we can finish the design and finish the certification. By the end of 2024 we will finish the certification of the power plant and we aim to start commercial flights in 2024. We just started a larger program with 40-70 seater aircrafts, which will need a three times bigger power plant of about 2 MW. By 2026 we are aiming to certify it. In the longer term,

ZeroAvia has a high ambition for the coming years. Can you take us through your time line? What are the key milestones and challenges to face in the coming years?

ZeroAvia intends to convert larger airplanes, carrying up to 100 seats, to hydrogen propulsion. Such a project would require powertrains rated between 2 and 5 MW. One of our biggest challenges is certifying something new. Technical challenges include the thermal management, and weight reduction and optimization plus the integration of the powertrain into the aircraft. It is especially challenging as nobody has done this before.

What next steps will you take to realise your plans?

We work with a stage approach, we do not like to say “ten years from now we will already have a designed aircraft and that things will fit perfectly with the hydrogen propulsion system”.

We are implementing the strategy progressively in small incremental changes, which allows us to test thoroughly and see what works and what doesn't and change things accordingly.

First, we retrofitted an existing six-seater aircraft using ZeroAvia's hydrogen-electric powertrain system. Now we are working on retrofitting a 19-seater aircraft. Once that is finished, we will first fly with the 19-seater aircraft with one original engine, the second engine will be a hybrid engine with a combination of the battery and hydrogen fuel cell. Next configuration will be the stock engine and 100 percent hydrogen and after that a configuration with two hydrogen engines.

We are on a mission to make sure that 50 years from now every single aircraft will have a hydrogen fuel cell propulsion system inside. ***We take small steps, but Tesla did small steps as well, and look where they are now!***

About ZeroAvia

ZeroAvia is a British/American hydrogen-electric aircraft developer that was founded in 2017 by Valery Miftakhov, who currently serves as the company CEO. ZeroAvia is developing hydrogen-fuelled powertrain technology aiming to compete with conventional engines in propeller aircraft, with an aim of zero-emission and lower noise. ZeroAvia enables scalable, sustainable aviation by replacing conventional engines with hydrogen-electric powertrains, from 20 seat regional trips to over 100 seat long-distance flights,

Valery Miftakhov and Sergey Kiselev (CCO VP Europe) worked together in Valery's previous start-up in e-mobility. With this start-up, they created a smart charging systems, they integrated them into network and managing them remotely to optimize charging processes. They sold the company and are now on a mission to make hydrogen aviation a reality, from a small to a large aircraft.



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