Hydrogen Powered Drone Mobility

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Transportation has been an especially exciting area of change in recent years. Tesla and other companies are making great strides in developing electric vehicles that are both more advanced and affordable. Widespread use of Uber has led to a new perspective on mobility and a reconsideration of driving needs and even the practicality of car ownership by many. The desire and mandate to lower vehicle emissions has further led to other innovative urban planning practices like we covered in a previous article about the city of Barcelona's use of Superblocks.

Another trend – the growing use of drones and the development associated technologies – would seem to offer solutions that speak to all of these changes taking place in the transportation space; but, in a far more encompassing and revolutionary way.

The Dream Scenario of Drone Mobility

In retrospect, some of the greatest ideas and inventions seem obvious. Instead of autonomous cars, imagine if passengers could travel in an autonomous – or easily controlled – drone. The drone might be owned outright, due to its affordability. Or, it might operate more like Uber's service – with or without a pilot. And, what about all those roads, highways, parking decks, and other infrastructure? If we could individually fly everywhere, so much of that space could be repurposed. And, the impact on the environment would be fantastic if these drones could be hydrogen powered – with water as the only emission.

Skai and the Evolving Reality

To be sure, much of this dream scenario remains science fiction. But, Massachusetts-based Alaka'i Technologies[1] is aiming to obtain U.S. Federal Aviation Administration (FAA) approval for the world's first hydrogen fuel cell powered electric vertical takeoff and landing (eVTOL) vehicle. The name they have given the vehicle is Skai.[2]

The company is ultimately aiming to offer the solution for passenger pickup. For now, they are focusing on emergency response and freight distribution, which lower bars for FAA scrutiny.[3] But, the founding philosophy is to create "progressive air mobility solutions to offer point A-to-Anywhere transportation that are clean, simple, safe, and accessible for everyone."

The goal at Alaka'i Technologies is indeed to bring Skai to market for passenger pickup. To this end, the current focus on emergency response and freight distribution allow the company to kickstart commercial production – leading ultimately as a stepping stone to the broader market opportunity.

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[1] Website: http://www.alakai.com/

[2] Website: https://skai.co/

[3] Nichols, Greg. "Hydrogen-powered air taxi? Yup, it's real". ZDNet. May 31, 2019. Available at: https://www.zdnet.com/article/hydrogen-powered-air-taxi-yup-its-real/. Accessed on June 30, 2019

Potential competitors to Skai in this space have years-long estimates for FAA approval. But, due to the emergency response and freight distribution focus, Alaka'i Technologies is expecting to obtain FAA approval as soon as 2020.

Details of the debut mocked up version of Skai were provided in a late May 2019 article in on ZDNet. This was written following the first opportunity for reporters to view the Skai at the BMW Designworks[4] event in Los Angeles that was held at that time. Beyond the clean hydrogen powered motor, the vehicle was presented as one that could carry up to 4 passengers, able to haul 1000 pounds, travel at 118mph, and fly autonomously.[5]

The primary competition for Alaka'i Technologies is with Bell's Air-Taxi[6] and Lilium's Lilium Jet[7]. These both appear to be revolutionary products in their own right. A key differentiating factor with Skai, however, is the clean hydrogen powered aspect. The company has not provided a great deal of information on their battery and drivetrain technologies, but these appear also to provide some key advantages.

A spokesperson suggested liquid hydrogen fuel cells contain up to to 200 times more energy than conventional batteries by weight, and the Skai will have a range of about 400 miles over four hours of flying, which is significantly longer than Bell's Air-Taxi, which has a range of just 150 miles.[8]

The websites for each of these companies do not have a great deal of information at this point, but the product photos provided are really worth viewing. We have provided links to the Skai website, and for both Bell's Air-Taxi and Lilium's 'The Lilium Jet' sites in the article footnotes. Click the links. These are exciting ideas and products.

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[4] Website: https://www.bmwgroupdesignworks.com/
[5] Nichols, *op. cit.*
[6] Website: https://www.bellflight.com/company/innovation/air-taxi
[7] Website: https://lilium.com/
[8] Nichols, *op. cit.*