

- **SkyDrive Accelerates Research on Aerodynamic Characteristics with the Cooperation of Japan Aerospace Exploration Agency (JAXA).**
- The research accelerates the development of Japanese made “flying cars”¹ for improved quietness and safety.

SkyDrive Inc., a world-leading developer of urban air mobility solutions, is proud to announce that it has started research on aerodynamic characteristics² with the cooperation of the Japan Aerospace Exploration Agency (JAXA; headquartered in Chofu, Tokyo; Hiroshi YAMAKAWA, president) in order to accelerate the development of “flying cars.” SkyDrive is a world-leading developer of urban air mobility solutions employing flying cars and cargo and logistics drones.

Overview of Research

The rotors of a flying car are used in a different way from airplane propellers and helicopter rotors and their aerodynamic characteristics have not yet been fully determined. Understanding exactly how air affects the rotors is one of the most important points in the development of an airframe. Optimizing the shape and revolution speed of the rotors based on their aerodynamic characteristics will lead to higher efficiency in power utilization, stabler flight, quieter operation, and other improvements in performance.

JAXA has the largest wind tunnel test facility for aircraft and spacecraft in Japan and almost all aircraft developed in the country to date, including airplanes and helicopters, have undergone wind tunnel tests at this facility. Various research on aerodynamics has been conducted based on the data from this testing to identify aerodynamic characteristics and improve performance.

SkyDrive used one of JAXA's wind tunnels to collect data from wind tunnel tests³ on a large rotor that is a likely candidate for use in the company’s flying car currently under development. This was the first case in Japan of a rotor for a flying car undergoing wind tunnel tests at the facility.

Movie: SkyDrive Accelerates Research on Aerodynamic Characteristics with the Cooperation of JAXA

<https://youtu.be/qyhREvYf9PQ>



Japan's largest wind tunnel test facility for aircraft, owned by JAXA

Background of the Cooperation

Aerodynamic characteristics have a great impact on the safety of flying cars, which makes it vital to collect test data using actual aircraft. Only JAXA's wind tunnel test facility enables the company to collect test data on the large rotor that is a candidate to be installed on its flying car. SkyDrive had accumulated and studied data on flying cars on its own in the past, but JAXA's cooperation will allow the company to speed up development and contribute more quickly to the realization of an air mobility society.



SkyDrive staff checking wind tunnel test data

About the Future

In the development of flying cars, linking wind tunnel testing with analysis through computational fluid dynamics (CFD)⁴ will become increasingly necessary. SkyDrive hopes to work with JAXA to promote research and development by further refining this testing to include wind tunnel testing using the aircraft, analysis using CFD, and analysis of flight data. The company's goal is to improve the performance and safety of flying cars with the aim of realizing a society where people can use the sky as a means of daily transportation and expand their freedom of mobility.

Nobuo KISHI, Chief Technology Officer, SkyDrive Inc., commented:

JAXA's wind tunnel test facility is indispensable for the development of aircraft and most of the aircraft developed in Japan have undergone wind tunnel testing at this facility. We are certain that SkyDrive's testing at this facility brings our flying car under development one step closer to becoming a safe and reliable aircraft.

The data obtained with the cooperation of JAXA will be useful and helpful in the design and development of the rotor to deliver the aircraft specifications expected by society. The testing was conducted on the rotor itself, but we hope to expand the scope of cooperation to include aerodynamic design and analysis of the entire aircraft.

1. Flying cars are officially called "electric vertical takeoff and landing (eVTOL)" aircraft and are characterized by electrification, a fully autonomous autopilot, and vertical takeoff and landing. As a new movement in the field of mobility, the development of flying cars is being promoted in many countries around the world. In Japan, the Public-Private Council for the Air Mobility Revolution was set up in 2018 and meetings have been held since then. The project is expected to lead to taxi services in urban areas, new means of transportation for remote islands and mountainous areas, and emergency transportation in times of disaster. A roadmap has been formulated by the Ministry of Economy, Trade, and Industry (METI) and the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT) for the start of business around 2023 and full-scale deployment in 2030.

2. Aerodynamic characteristics: The dynamic properties to which an object moving in the air is subjected. In the case of a rotor, it refers to the thrust generated by the rotor and the drag force acting on the rotor.

3. Wind tunnel test: A test to measure the forces acting on a target object and the flow around it by simulating the state of movement in the air using a wind tunnel facility that can generate air flow at any speed (wind speed).

4. Computational fluid dynamics (CFD) is a method of analyzing aerodynamic characteristics by using a computer to numerically simulate the flow of a target object and its surroundings. It is used to predict the performance of aircraft, propellers, etc.

About SkyDrive Inc.

SkyDrive Inc. was founded in July 2018. Led by engineers from the aircraft, drone, and automotive industries, it develops flying cars and cargo drones to put urban air mobility into practical use and contribute to the future of an urban air mobility society. In 2019, the company started to sell heavy lift cargo drones and achieved the first-ever test flight of a manned "flying car" in Japan in August 2020. SkyDrive plans to make flying cars available for sale in the mid-2020s.

- Founded: July 2018
- CEO: Tomohiro Fukuzawa
- Head Office: Shinjuku-ku, Tokyo, JAPAN
- Osaka Office: Kitaku, Osaka city, Osaka

Press Release



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- Test field/R&D Center: Toyota-shi, Aichi Pref.
- Fukushima development base: Fukushima robot test field, Fukushima Pref.

Contact: Risa OISHI at risa.oishi@skydrive.co.jp, info@skydrive.co.jp

Website: <https://en.skydrive2020.com/>

LinkedIn: <https://www.linkedin.com/company/skydrive-inc>

Facebook: <https://www.facebook.com/SkyDriveEn/>

Twitter: @Skydrive_Global

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