

Environmental Test Facility Operation and Utilization Expanding Project Starts in JAXA Tsukuba Space Center Through Public-Private Partnership

The Japan Aerospace Exploration Agency (JAXA), working in collaboration with Advanced Engineering Services Co., Ltd. (AES), and ORIX Rentec Corporation, launched an environmental test facility operation and utilization expanding project. This project is intended to promote the efficient maintenance and operation of the environmental test facilities at JAXA's Tsukuba Space Center as well as expanding the use of these facilities beyond space development to include other industries. This is JAXA's first facility operation and use expansion project undertaken through a public-private partnership.

Spacecraft undergo various environmental testing before launch to ensure that they can function properly under the severe conditions of outer space including vibration, vacuum, and extremely low temperatures. The Tsukuba Space Center owns Japan's largest environmental test facilities including space chambers for performing thermal vacuum testing of spacecraft and a large vibration test facility. These facilities and JAXA's technologies support development in the aerospace field.

In recent years, small satellite startups as well as companies from outside the space industry, such as automobile and construction companies, have been actively entering the space business, and demand for environmental testing is increasing. High levels of capital investment and advanced technological capabilities are needed, however, creating barriers to entry by small businesses and companies from other industries. In addition, when companies outside the space industry conduct environmental testing as a part of their product development, insufficient facility performance, competition in scheduling, and other issues have become increasingly serious with respect to in-house test facilities and sites as a result of the diversification of products, the increasing pace of development, and other factors, and there is a need for facilities with advanced testing capacity and facilities that can meet the demand for special testing.

JAXA concluded a business agreement with AES and granted operating rights to test equipment and facilities as well as the sites peripheral to the facilities. AES and ORIX Rentec formed a business tie-up, and the three parties will collaborate with the aim of expanding use of environmental test and other facilities by companies in other industries.

JAXA will provide 18 environmental test facilities, 10 buildings, and the Tsukuba Space Center site, while AES, which has technologies acquired through space development, will be responsible for the operation of the environmental test facilities and technical support for environmental testing. ORIX Rentec, Japan's first electronic measuring instrument rental company, has a nationwide sales network and will conduct sales activities in order to expand utilization and develop plans and proposals for using the site.

Going forward, JAXA, AES, and ORIX Rentec will collaborate to facilitate the use of state-of-the-art environmental test facilities by businesses in order to support the development of various products and contribute to the enhancement of Japan's technological capabilities and industrial competitiveness.

■ Overview of the Project

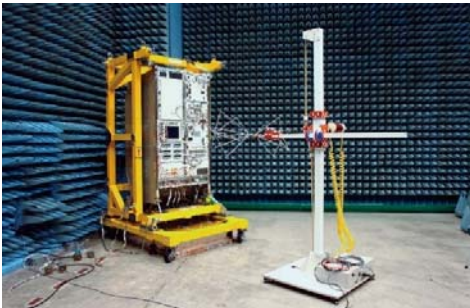
- Services provided (including planned services): operational and technical support for the environmental test facilities, test services, education/experience planning, sharing of analyzers and other equipment, and other services
- Location: Tsukuba Space Center, Japan Aerospace Exploration Agency (2-1-1 Sengen, Tsukuba City, Ibaraki Prefecture)

■ Examples of Facilities Available for Use



Vibration Test Facility

Four types of vibration machines can be selected according to the size and use of the test item. Acceleration sensors are also available for loan. The large-scale vibration test facility can be used to perform vibration tests on large items including automobiles, boats, and railway cars.



EMC and Radiowave Test Facility

Three anechoic chambers can be used for EMC assessment, antenna assessment, and other testing depending on the application. The electromagnetic compatibility test facility can be used to perform tests in accordance with United States military requirements or requests from the International Space Station.



Space Chambers

These facilities allow the creation of a vacuum and low-temperature environment inside the chambers. Five different sized chambers can be selected according to the size required. Expanded use other than space applications is under consideration including use as ultra-low-temperature thermostatic chambers or for ultra-high altitude drone flight testing.



Clean Rooms and Meeting Rooms

The site has multiple clean rooms with controlled temperature and humidity. An area with a ceiling height of 18 m can be used for large structures that require a high degree of cleanliness and use for drone flight testing and other such applications is also under consideration. Overhead cranes for heavy objects, measuring instruments, and meetings rooms of various sizes are also available.

- Environmental Test Facility Operation and Use Expansion Project through PPP (JAXA):

http://shiken.jaxa.jp/en/index_e.html

■ About the Japan Aerospace Exploration Agency:

The Japan Aerospace Exploration Agency (JAXA) is Japan's core implementing agency supporting space development and utilization with technology. It is the sole agency in Japan that performs all functions in the space development field from basic research to development and use. JAXA seeks to realize a safe and affluent society using space and the sky.

JAXA website: <https://global.jaxa.jp/>

■ About Advanced Engineering Services Co., Ltd.:

Since its establishment in 1986, Advanced Engineering Services Co., Ltd. (AES) has provided a wide range of technical services centered on the aerospace field. Recently, AES established an organization for integrated implementation of small satellite design, manufacture, environmental testing, and in-orbit operation. In 2014, AES successfully completed an in-orbit mission of AES's SOCRATES satellite. In other fields, AES performs aircraft strength testing, airship and tethered balloon design and manufacture, and development of specialized equipment (electronic, precision, and other devices). AES provides products and services that are useful to society by continuously pursuing cutting-edge technology.

AES website: <http://www.aes.co.jp/>

■ About ORIX Rentec Corporation:

ORIX Rentec Corporation was established in 1976 as Japan's first measuring instrument rental company. It currently has more than 2 million measuring instruments, ICT related devices, and other equipment available in 32,000 different models. Based on its track record of high-tech device rental services and environmental test services, ORIX Rentec has expanded into new business fields including measurement-related services as well as next-generation robots and drones and 3D printers. ORIX Rentec is contributing to the development of domestic industry by providing highly convenient manufacturing related services including increasing the efficiency of customer R&D operations.

ORIX Rentec website: <https://www.orixrentec.jp/en/index.html>

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About ORIX:

ORIX Corporation (TSE: 8591; NYSE: IX) is a financial services group which provides innovative products and services to its customers by constantly pursuing new businesses.

Established in 1964, from its start in the leasing business, ORIX has advanced into neighboring fields and at present has expanded into lending, investment, life insurance, banking, asset management, automobile related, real estate and environment and energy related businesses. Since entering Hong Kong in 1971, ORIX has spread its businesses globally by establishing locations in 37 countries and regions across the world.

Going forward, ORIX intends to utilize its strengths and expertise, which generate new value, to establish an independent ORIX business model that continues to evolve perpetually. In this way, ORIX will engage in business activities that instill vitality in its companies and workforce, and thereby contribute to society. For more details, please visit our website:

<https://www.orix.co.jp/grp/en/>

(As of March 31, 2019)

Caution Concerning Forward-Looking Statements:

These documents may contain forward-looking statements about expected future events and financial results that involve risks and uncertainties. Such statements are based on our current expectations and are subject to uncertainties and risks that could cause actual results that differ materially from those described in the forward-looking statements. Factors that could cause such a difference include, but are not limited to, those described under “Risk Factors” in the Company’s annual report on Form 20-F filed with the United States Securities and Exchange Commission and under “(4) Risk Factors” of the “1. Summary of Consolidated Financial Results” of the “Consolidated Financial Results April 1, 2018 – March 31, 2019.”