



ORIX Rentec Commences Offering of One-Stop Wind Tunnel Test Solution Service for Designing and Modelling of Mock-Ups and Aerodynamic Analyses

TOKYO, Japan - October 4, 2022 - ORIX Rentec Corporation (“ORIX Rentec”) announced today that it would offer a new Wind Tunnel Test Solution Services using 3D printers jointly with Persol Research & Development Co., Ltd. (“Persol R&D”).

Wind tunnel tests are generally conducted in the course of developing new models of automobiles or railroad cars to improve their aerodynamic characteristics. The concept is that identifying various effects of the flow of surrounding air on a moving vehicle will help optimize its shape and structure and thereby improve its fuel efficiency and operating performance.

The Wind Tunnel Test Solution Service covers three steps. First, Persol R&D designs the 3D data of a mock-up*¹ required for wind tunnel tests. ORIX Rentec then fabricates the mock-up with a 3D printer. Finally, Persol R&D carries out wind tunnel tests and aerodynamic analyses of the mock-up. As the wind tunnel test is contracted as a one-stop service, customers do not have to find other outsourcing companies or subcontracting firms for the respective processes. This allows them to hold fewer meetings and seek fewer quotations. Changing the shape of the mock-up and conducting retests can also be handled quickly.

Transportation equipment, including automobiles and railroad cars, are required to contribute toward achieving targets of carbon neutrality by 2050 with reduced environmental loads. The automobile sector accounts for about 15% of the domestic CO₂ emissions in Japan*². Heavy vehicles such as buses and trucks must meet the fuel efficiency standards by 2025 (target fiscal year) and passenger vehicles including electric vehicles and plug-in hybrid cars must meet similar standards by 2030 (target fiscal year) as stipulated in the Act on the Rational Use of Energy (“Energy Saving Law”)*³. Besides fuel shift such as to electric vehicles (EV), other pressing issues include improvement of fuel efficiency performance such as through aerodynamic improvement.

ORIX Rentec will contribute to the reduction of CO₂ emissions in a wide range of fields—including automobiles and ultrasmall mobility, railroad, ships, aerospace, and drones—by improving the precision of wind tunnel tests.

*1 A mock-up is a model that is fabricated in the design stage of an industrial product and whose appearance is close to that of the finished product.

*2 Data from the document [“CO₂ Emissions from Transport Industries” \(Ministry of Land, Infrastructure, Transport and Tourism\)](#) (in Japanese)

*3 See the documents [“Fuel efficiency standards have been formulated for heavy vehicles that are to be met by fiscal 2025” \(Ministry of Land, Infrastructure, Transport and Tourism\)](#) and [“Fuel efficiency standards for passenger vehicles have been formulated for fiscal 2030” \(Ministry of Land, Infrastructure, Transport and Tourism\)](#) (in Japanese)

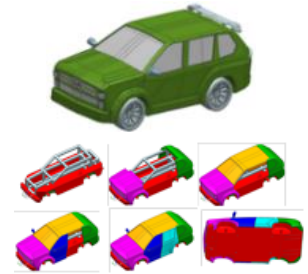
■ Overview of Wind Tunnel Test Solution Service

Mock-ups used in wind tunnel tests are designed and modelled using 3D technologies such as 3D CAD, 3D printers and 3D scanners. Tests, measurements, and analyses are conducted as a one-stop service for customers.

(1) 3D CAD data creation

Using data represented on drawings, precise and detailed 3D CAD data are created for the body, bumper, hood, and other parts of an automobile.

Structural design considering strength for wind tunnel experiments and proposals for special layouts of venturi tubes for air pressure measurement can also be provided.



(2) 3D mock-up fabrication

The mock-up is fabricated using a 3D printer. Metals, resins, and a variety of other materials can be used. Full-scale and reduced-scale models can be fabricated according to customer's needs.

*Photo on the right: 1/8 scale model of an RV with original design

The mock-up model is made up of many panels. Any part can be replaced with a different one to get multiple model versions as desired. Wind tunnel tests can be conducted using various design patterns. Coating can be applied, and partial models of auxiliary devices can be added to the model.



(3) High-precision 3D scanning measurement

The completed mock-up will be measured using a high-precision 3D scanner to acquire 3D data.

In this way, it is possible to know the errors between the reference 3D CAD data and the actual mock-up's measurements.



(4) Wind tunnel tests

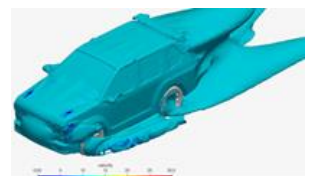
Wind tunnel test will be conducted on behalf of the customer. This is not limited to the use of the facilities owned by the customer; arrangements for a wind tunnel test facility can also be made. Tests can be conducted using an entire vehicle or individual parts.



(5) Aerodynamic analysis

Aerodynamic analysis is conducted using 3D data acquired through 3D CAD data and a high-precision 3D scanner.

By reimporting the actual measurements into the aerodynamic analysis software, it is possible to carry out analyses such as analyzing the reasons for deviations between the results of aerodynamic analysis and the results of wind tunnel tests. Air flow velocity, air flow rate, pressure distribution, and temperature distribution can be analyzed.



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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 28 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, 2022)

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, 2021 – March 31, 2022" furnished on Form 6-K.