

Accelerating Aerospace Innovations



Reducing Aerospace Carbon Footprint

In the aerospace industry, precision measurement is essential for ensuring the safety, reliability, and performance of both aircraft and spacecraft. Yokogawa's advanced measurement solutions empower aerospace engineers to capture accurate data in areas such as system performance evaluation, energy efficiency and structural testing.

By leveraging cutting-edge technologies, we provide tools that support the development and certification of aerospace components, ensuring compliance with industry standards and driving advancements in aviation and space exploration.

Over a century ago, our founder, Tamisuke Yokogawa, advised: *"Just learn and improve our technology. You must make products that earn us the respect of our customers."* Inspired by these guiding words, Yokogawa Electric Corporation was established in 1915 with the introduction of Japan's first electric meters.

Measurement has always been at our core. Today, Yokogawa Test & Measurement delivers unparalleled solutions that touch nearly every aspect of modern life – from our homes and workplaces to the journeys in between; from energy generation and industrial processes to communication, environmental protection, and interpersonal connections. Precision measurement remains the cornerstone of progress and innovation.

Aerospace in Transition

Electrification and Sustainability

The aerospace industry is navigating the dual challenge of rapid technological innovation and increasing pressure for sustainability. It must balance the growing global demand for air travel and space operations with the urgent need to minimize environmental impact. Recent technological advancements have prioritized improved fuel efficiency, reduced emissions, and the integration of cutting-edge systems to foster a more sustainable and efficient aerospace ecosystem.

Traditionally, aircraft systems have relied heavily on fossil fuels and hydraulic control mechanisms. However, the industry is now undergoing a fundamental shift toward electrification – transitioning to electric propulsion and flight control systems. This transformation promises greater efficiency, lower emissions, and enhanced performance. Yet, it also demands extensive research and development across several critical domains:

Propulsion

Hybrid and electric propulsion systems for short and medium haul flights and VTOL require highly efficient and lightweight electric motors and drives to meet the demands for each specific flight requirement. For medium and long-haul flights more fuel-efficient jet engines are being developed, which run on Sustainable Aviation Fuel (SAF). A key to these, next generation engines is the fuel injection system and more efficient fuel pumps.

Flight Control Evolution

To increase overall efficiency hydraulic actuators need to be replaced by hybrid or electric actuators. As the number of sensors and actuators increases, so communication busses are also subject to change.

Power Electronics and Distribution

Designing efficient and reliable power management systems capable of handling complex electrical



loads is essential to ensure stable performance across all onboard systems of modern aircraft.

Vertical Take-Off and Landing (VTOL)

From small drones for observation and monitoring to air taxis autonomously transporting people – rapidly growing numbers of VTOL applications demand increased payloads and flight time, requiring more efficient flight and control systems.

Battery Technologies

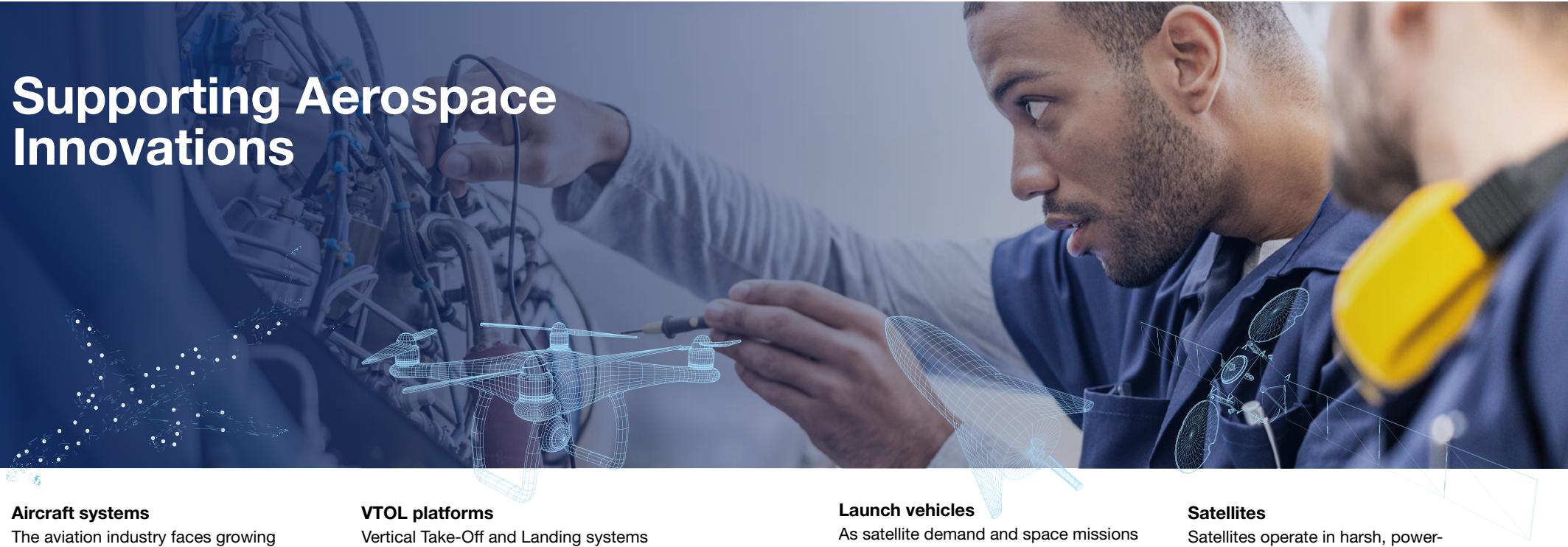
Developing lightweight batteries with high energy density, long life-cycle, and

exceptional safety characteristics are crucial for powering electric and hybrid aircrafts.

Fuel Cells and Hydrogen

To meet the growing demand for sustainable aviation, the industry is actively exploring alternative propulsion methods for short-haul flights. Hydrogen-powered aircraft are emerging as a promising solution. However, their development presents unique challenges that must be addressed before adoption, including hydrogen storage and handling and integration into aircraft systems and infrastructure.

Supporting Aerospace Innovations



Aircraft systems

The aviation industry faces growing pressure to reduce emissions and improve system efficiency through advanced electric propulsion and onboard electrification. To meet these goals, performance verification and regulatory compliance require accurate and repeatable measurements.

Yokogawa's precision instruments deliver high-accuracy power, mechanical, and optical measurements to help engineers evaluate system behavior, optimize designs, and ensure the reliability of onboard systems throughout the electrification process.

VTOL platforms

Vertical Take-Off and Landing systems must maximize limited battery capacity while ensuring reliable flight performance and data communication, especially for delivery, surveillance, and urban transport applications.

Yokogawa's advanced measurement solutions support validation of complete VTOL systems and critical subsystems including electric motors, drives, flight control, battery packs, and communication links. By enabling precise system-level insight, we help enhance operational safety and extend mission range.

Launch vehicles

As satellite demand and space missions grow, commercial launch vehicles are becoming more prevalent. These vehicles must perform reliably under extreme environmental and mechanical stress. Any failure can result in severe financial and reputational consequences.

Yokogawa instruments enable engineers to evaluate launcher systems, capturing electrical behavior, energy efficiency, vibration, thermal response, and pressure fluctuations with a high degree of precision.

Satellites

Satellites operate in harsh, power-constrained environments, demanding reliable energy generation, storage, and control. They must also be rigorously validated to perform under vacuum, radiation, and thermal extremes.

Yokogawa's high-performance measuring instruments ensure accurate analysis of satellite energy systems and control loops. Optical test solutions further support the development of space-based optical communication between satellites and ground stations.

Empowering Aerospace Engineers



Communication systems

Optical spectrum analyzers and high resolution reflectometers allow engineers to verify the performance of communications systems and connectors to guarantee their performance in flight.



Lasers

Development of lasers for guidance and navigation systems can be validated and tested with optical spectrum analyzers and wavelength meters.



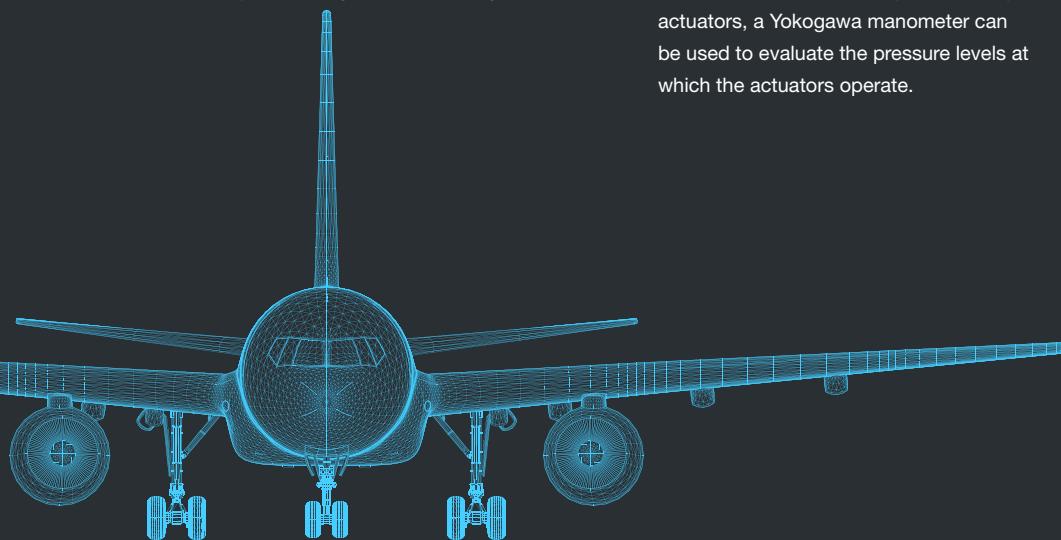
Energy generation and storage

High-speed data acquisition units enable engineers to measure the battery voltage and temperature of multiple cells, and can validate the operation of sensors. Battery cells can also be simulated by source measurement units to validate the control system, and power analyzers enable the validation of charging efficiency.



Onboard electronics

The power consumption of onboard electronic equipment can be measured with power analyzers, which are also capable of measuring harmonics against the DO-160 and MIL-704 standards. For tests at component level, oscilloscopes and a high-speed DAQ system can give detailed insight.



Propulsion system

A high-speed data acquisition unit helps engineers to validate overall system design by correlating electrical and mechanical behavior. A power analyzer offers accurate analysis of the power consumption and efficiency of fuel pumps and control electronics of jet engines, hybrid or full electric propulsion systems.



Flight control

The dynamic behavior of actuators can be analyzed by a high-speed DAQ system which can capture the electrical signals driving the actuators, as well as their position and physical parameters such as temperature, vibration and strain. In the case of hydraulic or hybrid actuators, a Yokogawa manometer can be used to evaluate the pressure levels at which the actuators operate.



Structural testing

High-speed data acquisition allows engineers to perform stress tests on materials by measuring vibration and strain. Additionally, a portable data recorder enables engineers to securely record the heat treatment process during the production of materials.

Product overview >



AQ7420 High Resolution Reflectometer



AQ6370E Optical Spectrum Analyzer



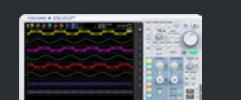
AQ6150B Optical Wavelength Meter



SL2000 High-Speed Data Acquisition Unit



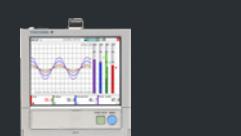
WT5000 Precision Power Analyzer



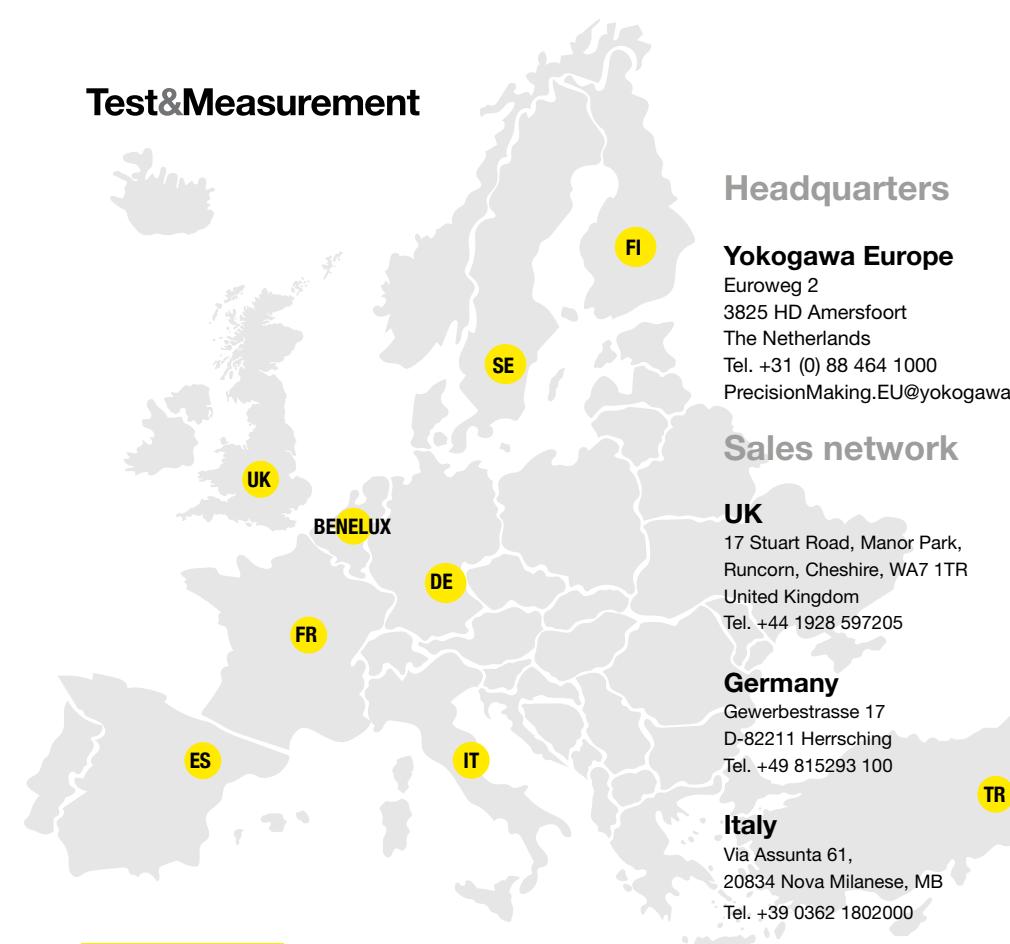
DLM5000 High-Definition Oscilloscope



GS610 Source Measurement Unit



GP20 Portable Data Recorder



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At Yokogawa, our test and measurement instrumentation are built for tomorrow's aerospace landscape – supporting electrification, sustainability, and mission-critical innovation.

Whether you're testing electric motors, validating space optics, or certifying flight systems, Yokogawa helps you move from idea to implementation – faster, safer, and with greater confidence.

YOKOGAWA

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The Netherlands

**Precision is all around us.
In everything we see,
everything we touch.**

**It means the
difference between
success and failure,
safe and unsafe,
sustainable and
unsustainable.**

**But precision
doesn't just happen.
It's made.**

We are the Precision Makers.

