



Cutting-edge analytical technologies are used for research and development or quality control in a wide variety of fields, including pharmaceuticals, environmental measurement, and the life sciences.



## Early Detection of Disease and Drug Development

LCMS systems can measure the types and quantities of components contained in extremely tiny amounts of liquids.



LCMS  
(Liquid Chromatograph  
Mass Spectrometer)



## Analysis for Environmental Conservation and Water Quality Control for Water and Sewer Services

GCMS systems can accurately measure trace components contained in samples.



GCMS  
(Gas Chromatograph  
Mass Spectrometer)



## Functional Components and Safety of Foods

UHPLC systems are used in a wide range of fields from foods to pharmaceutical development for applications ranging from research and development to quality control.



UHPLC  
(Ultra High Performance Liquid  
Chromatograph)

## Strength Evaluation of Various Materials

They are used to test the strength of a wide variety of objects, from materials such as rubber, plastic, or metal to foods, pharmaceuticals, mobile phones, or automobile parts.



Tests on Real Automobile Seats

Precision Universal Testing Machine

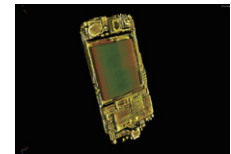


## Non-Destructive X-Ray Inspection of Industrial Products

X-rays are used to non-destructively analyze or inspect the interior of objects. This instrument can be used to inspect various industrial products, from electronic components and rechargeable batteries to CFRP/CFRTP and other functionally engineered materials.



Microfocus X-Ray CT Inspection System



3D Image of a Smartphone

## Screening Test for Elements Regulated by RoHS

EDXRF can non-destructively measure the types and quantities of elements contained in solids, powders, and liquids.



EDXRF (Energy Dispersive X-Ray Fluorescence Spectrometer)



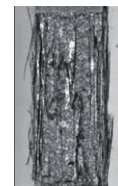
Example of Analysis of Electronic Components (Connectors)

## Observation of Industrial Materials

Ultrahigh-speed videos can be recorded at speeds up to ten million frames per second.



High-Speed Video Camera



Example of a Still Image of a High-Speed Tensile Test of Carbon Fiber Reinforced Plastic (CFRP);  
Frame Rate: ten million frames/second

## Controlling the Concentration of Nitrogen and Phosphorus in Effluent Water

These analyzers can measure nitrogen and phosphorus concentrations contained in effluents discharged into rivers, for example.



Online Total Nitrogen and Total Phosphorus Analyzer

## Cleaning Validation in the Pharmaceutical Manufacturing Process

TOC analyzers can measure the total quantity of organic carbon in water, gases, or solids.



TOC (Total Organic Carbon) Analyzer

## Confirmation Testing for Pharmaceuticals and Materials

UV-VIS spectrophotometers are used for the acceptance inspection of raw materials, confirmation testing of synthesized substances, and so on. They can also be used for quantitative analysis of water quality.



UV-VIS Spectrophotometer

## Analysis of Microcontaminants

Microplastics and trace contaminants of foods, pharmaceuticals, and electronic components can be analyzed using infrared light.



FTIR Spectrophotometer



Microplastics Collected from Coastline



We provide easy-to-operate medical systems equipped with state-of-the-art image-processing technology that reduces patient stress.

These systems contribute to the early detection and treatment of infection, brain/heart disease, cancer, and other diseases in medical facilities worldwide.

## The Standard X-Ray Diagnostic Systems

Radiography systems are used for X-ray imaging examinations of the chest, bones, and other parts of the body. In recent years, Shimadzu has expanded and improved the functionality available in combination with other application software to help ensure examinations are performed smoothly.



General Radiography System

## Achieving a Healthy and Long Life

Not only gastrointestinal contrast radiography and endoscopic examinations, our latest multi-functional fluoroscopy systems can also be used for orthopedic examinations, such as long-view imaging or Tomosynthesis studies.



Tomosynthesis (multi-slice tomography) technology



Fluoroscopy System

## Mobile Diagnostic Imaging Anywhere in the Hospital

The digital mobile X-ray system can be moved to the patient's bedside to take X-ray images and immediately display reference images on the built-in monitor. This system supports a wide variety of situations, such as infectious diseases, disaster response, operating rooms, and emergency care.



Mobile X-Ray System

AI-Based Support for Checking for Objects Left in Patients after Surgery



## Supporting Surgical Procedures

This system supports surgery, such as plastic, vascular or breast surgery, by clearly visualizing lymph and blood flow under the tissue surface in real time using near-infrared light.



Near-Infrared Fluorescence Imaging System

## Support for Cardiac, Brain, and Whole-Body Vascular Catheterization Procedures

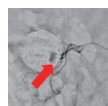
This system provides proprietary image processing technology that helps minimize the burden on patients during catheterization procedures performed to expand arteries constricted by arteriosclerosis or to block arterial aneurysms.



Angiography System



Image of Cardiac Blood Vessels  
Improving Catheter Visibility and Reducing Radiation Dose Levels

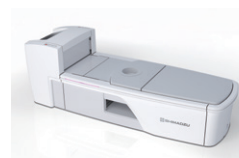


Abdominal Angiography Images  
Visualizing Blood Vessels of Interest Using Minimal Radiation without being influenced by Patient or Equipment Movement

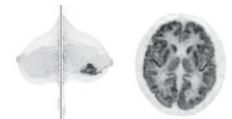
## Support for Breast Cancer Diagnosis and Dementia Research

Breast cancer, has a high probability of being cured nowadays if it is discovered early.

With no breast compression, this scanner gently supports breast cancer examination by minimizing pain or anxiety. The new TOF-PET system can also perform brain scans, thereby contributing to dementia research.



Dedicated Head and Breast TOF-PET System



Images of Breast and Head  
Data provided by: Division of Positron Emission Tomography, Institute of Advanced Clinical Medicine, Kindai University

\*Available in Japan only

# Industrial Machinery and Equipment

## Manufacturing Semiconductors and Displays

Turbomolecular pumps are vacuum pumps used to create the vacuum environment essential for manufacturing semiconductors and other high-tech products.



Turbomolecular Pump

## Manufacturing Ceramics Used in the Automotive and Semiconductor Fields

This furnace is used to harden metals, ceramics, or other materials to increase their strength or ensure a given shape by heat-treating them in a vacuum or pressurized environment.



Vacuum and Pressurized Sintering Furnace

## Hydraulic Motive Power Source

Hydraulic gear pumps are widely used as a hydraulic power source for industrial vehicles (forklifts), construction machinery, special-purpose vehicles, and agricultural equipment.



Hydraulic Gear Pump

## Motive Power System for Industrial Vehicles

This system controls the direction, pressure, and flowrate of hydraulic oil output from hydraulic gear pumps. Shimadzu products are used in industrial vehicles (forklifts).

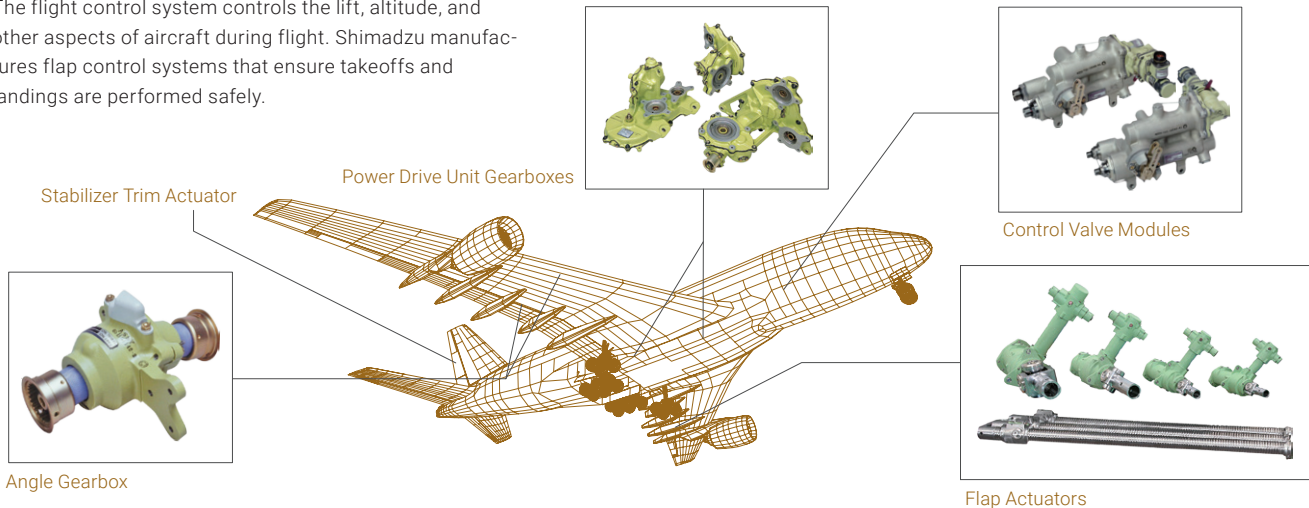


Hydraulic Control Valve

# Aircraft Equipment

## Ensuring Safe Aircraft Flight and a Comfortable Passenger Environment

The flight control system controls the lift, altitude, and other aspects of aircraft during flight. Shimadzu manufactures flap control systems that ensure takeoffs and landings are performed safely.

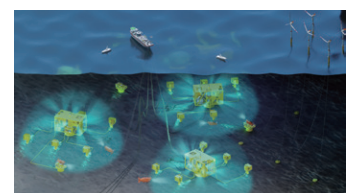


## Safe and Efficient Marine Development

Shimadzu is developing an underwater optical wireless communication modem and other marine devices based on laser diode (LD) technology. Previous wireless technology only permitted transmitting small amounts of communication data acoustically through water, but this modem enables 4G-level high-speed communication using laser diodes. For marine applications, such as offshore wind power generation and seafloor resource development, which have attracted significant attention, Shimadzu contributes to improving safety and efficiency by enabling remote control of underwater operations and reducing CO<sub>2</sub> emissions.



Underwater Optical Wireless Communication Modem



Illustration