

Business Overview and Results

Shimadzu is committed to achieving sustainable development and growth for both Shimadzu and society by continuing corporate activities that meet the expectations and demands of our stakeholders.

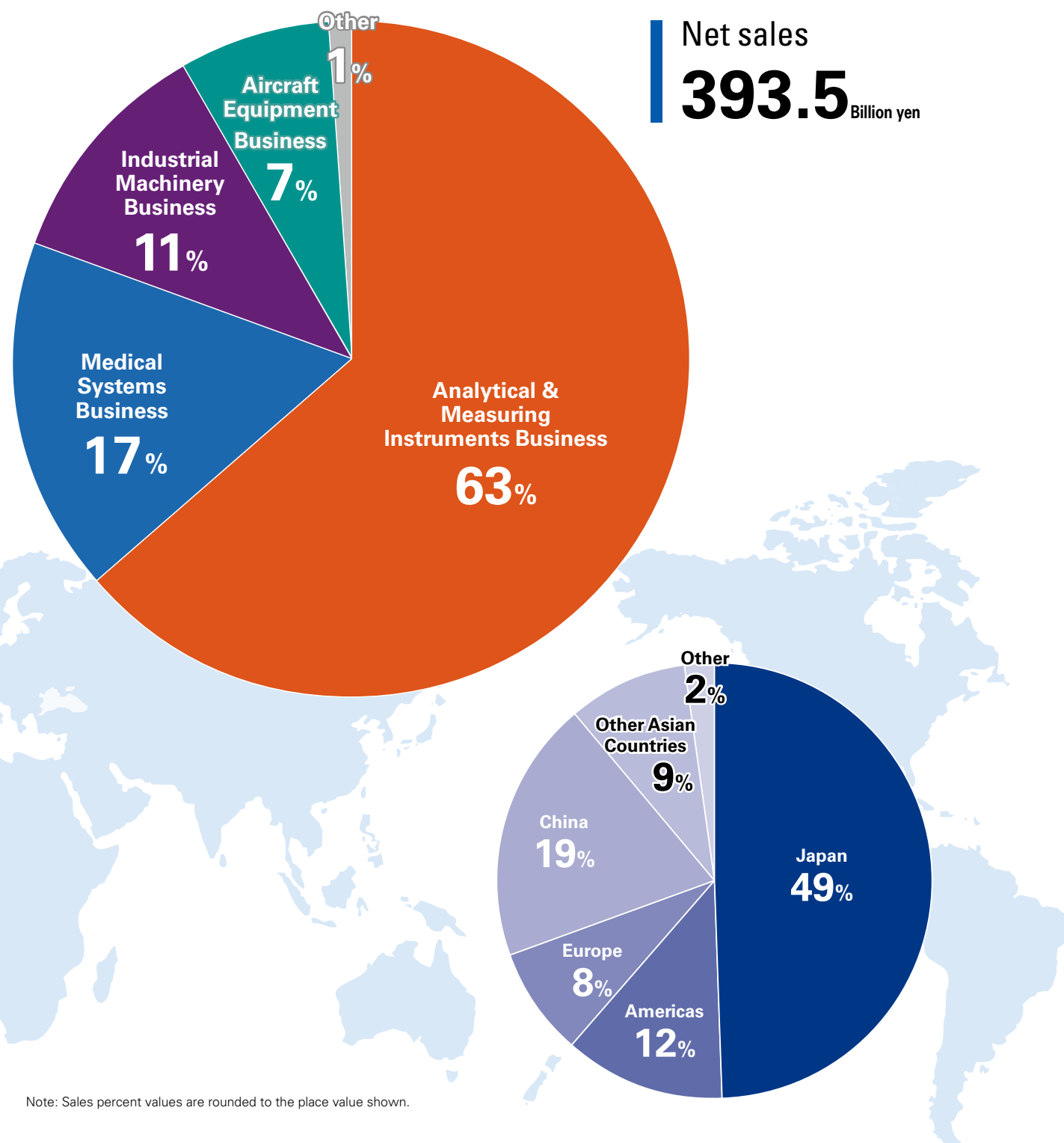
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Business Overview

The Shimadzu Group creates innovative products and services with partners throughout the world, particularly in businesses related to human health, safety and security of society, and industrial progress.

We strive to build a more prosperous society by using exceptional science and technology to contribute to progress in a wide range of industries, such as pharmaceuticals, healthcare, environmental, energy, semiconductors, and materials.



Analytical & Measuring Instruments Business

Supports research, technology development, and quality control in a variety of fields, including pharmaceuticals, foods, and materials by offering high-performance analytical instruments.

Key Products	<ul style="list-style-type: none">• Liquid chromatographs• Mass spectrometers• Spectrometers• Environmental monitoring instruments
Main Applications	<ul style="list-style-type: none">• Quality control in foods or pharmaceutical industries• Early disease detection or drug development• Environmental analysis, such as for water quality or air pollution• Evaluating strength of various materials and non-destructive observation of industrial products
Users	Manufacturers of pharmaceuticals, foods, materials, energy, automobiles, industrial machinery, etc., and government/academic institutions

FY 2020

Net sales	Operating income	Overseas Sales ratio
248.6 Billion yen	42.5 Billion yen	58%

LCMS-8060NX Liquid Chromatograph Mass Spectrometer



Medical Systems Business

Contributes to maintaining and improving the health of people by offering medical systems for supporting accurate diagnoses.

Key Products	<ul style="list-style-type: none">• Fluoroscopy systems• Mobile X-ray systems• Angiography systems
Main Applications	<ul style="list-style-type: none">• Diagnostic X-ray imaging for pneumonia, bone fractures, etc.• Catheterization support for cardiovascular or cerebrovascular diseases
Users	Hospitals and clinics

Trinias Angiography System



FY 2020

Net sales	Operating income	Overseas sales ratio
66.9 Billion yen	4.4 Billion yen	45%

Industrial Machinery Business

Supports cutting-edge manufacturing by offering high-performance key components to contribute to industrial development.

Key Products	<ul style="list-style-type: none">• Turbomolecular pumps• Hydraulic equipment• Industrial furnaces
Main Applications	<ul style="list-style-type: none">• Generating vacuum environments for semiconductor manufacturing processes• Motive power sources for industrial vehicles, etc.
Users	Semiconductor manufacturing equipment manufacturers, industrial vehicle manufacturers, etc.

FY 2020

Net sales	Operating income	Overseas sales ratio
45.1 Billion yen	4.1 Billion yen	49%



Aircraft Equipment Business

Contributes to safety, comfort, and reducing stress on passengers by offering cutting-edge aircraft equipment.

Key Products	<ul style="list-style-type: none">• Flight control systems
Main Applications	<ul style="list-style-type: none">• Controlling the aircraft attitude, etc.
Users	Japan Self-Defense Forces, aircraft manufacturers, etc.

FY 2020

Net sales	Operating income	Overseas sales ratio
28.6 Billion yen	0.1 Billion yen	13%

Analytical & Measuring Instruments Business



We contribute to solving challenges in society by using analytical and measuring technologies to support manufacturing in food, pharmaceutical, and industrial fields, by using cutting-edge life science research applications, such as for COVID-19 virus detection and testing technologies, to screen for cancer or dementia using mass spectrometer systems, and by analyzing water quality, air pollution, and other environmental samples.

The following web page includes information about the topics listed below.
<https://www.shimadzu.com/an/index.html>



Analytical & Measuring Instruments



Yoshiaki Mase

General Manager, Analytical & Measuring Instruments Division

Business Environment

Today, we are expected to help achieve a sustainable society by implementing infectious disease countermeasures, establishing a safer and more secure society, reducing our global environmental impact, developing environmentally friendly new materials, improving food safety and other public health conditions, and so on.

Given such business conditions, the Shimadzu Group contributes to solving challenges in society by offering analytical and measuring instruments and services.

Challenges in Society

- Declining birthrates and aging populations are resulting in higher costs for healthcare, social welfare, and other services. Due to growing interest in health, there is also increasing demand for ultra-early or preventive diagnosis capabilities, and countermeasures, prevention, and rapid diagnosis of infectious diseases.
- With increasing global warming, there will be increasing water shortages, expanding use of renewable energies for achieving carbon-neutrality, and a shift to electric, hydrogen, or biofuel power sources that reduce CO₂ emissions.
- As structural materials for automobiles and other transport equipment become more sophisticated, lighter weight, more fuel efficient, and easier to process, customers are involved in complying with safety regulations for functionally engineered materials and improving reliability.

Value Provided

Healthcare Field

- We contribute to preventing the spread of infections by developing infection testing technologies, such as the novel coronavirus detection kits, and developing data management, virus monitoring, and other solutions.
- We contribute to maintaining people's health by developing technologies for the early diagnosis of diseases, such as dementia, cancer, and lifestyle diseases, and by developing a health management system for managing all stages of healthcare, from medical intervention to prognosis management and nursing care.
- We contribute to new drug development and productivity improvements by providing technologies to pharmaceutical companies, not only for advanced separation analysis, mass spectrometry, and cellular analysis technologies, but also by supplying AI/IoT-based data analysis technologies.
- In the food field, we help ensure the safety and security of food by testing for residual pesticides and water quality, evaluating the presence of regulated substances contained in packaging, and ensuring regulatory compliance.

Data Integrity

- We offer systems for centralized control of analytical instruments, testing information, and so on, that improves the efficiency of testing and analysis processes and prevents altering, replacing, or otherwise changing data.

Environment and Energy Fields

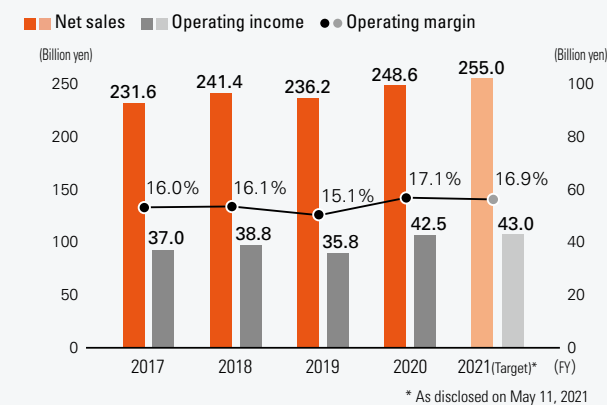
- We contribute to achieving a carbon-free society by supplying systems and application software that are useful for developing clean energy technologies.
- We contribute to global environmental conservation by supplying instruments for measuring microplastics and various environmental pollutants.
- We contribute to reducing customer energy usage by making Shimadzu products more energy efficient, making consumables last longer, and so on.

Materials Field

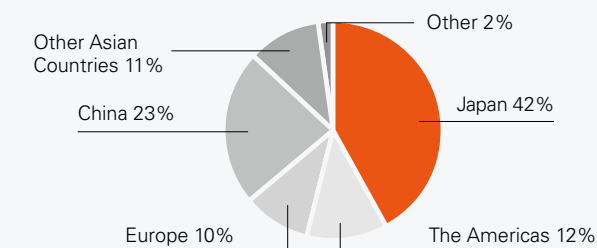
- In the transport equipment field, where there are increasing needs for inspection, analysis, and evaluation testing, we contribute to developing new materials that improve fuel efficiency and safety, by offering an extensive variety of solutions based on a wide range of analytical and measuring technologies for satisfying the needs in the field.

LabSolutions DB/CS
Analytical Data Processing System

Net Sales/Operating Income/Operating Margin



Ratio of Net Sales by Region



FY 2020 Results

Business Environment

- Healthcare:** Because of the COVID-19 pandemic, healthcare markets have been expanding due to a trend by various countries to shift from importing pharmaceutical ingredients to producing them domestically and due to new pharmaceutical quality control and other requirements specified in the 2020 edition of the Chinese Pharmacopoeia.
- Government/Academia:** Although business conditions were severe during the first half, demand started recovering in the second half, due to government expenditures in various countries.
- Manufacturers:** Business conditions were severe for transport equipment and other manufacturers due to impacts from reluctance to invest in capital equipment.

Key Measures and Results

- Record net sales and operating income results achieved.
- Strong sales for healthcare applications, such as in pharmaceutical, clinical, and food safety fields.
- Activities for helping to prevent spreading COVID-19 infections were prioritized, resulting in novel coronavirus detection kits and a fully automatic PCR testing system that contributed to infectious disease countermeasures.
- Joint research projects with universities and research institutions were accelerated, such as the collaboration with Tohoku University for using breath samples to test for COVID-19 infections, the collaboration with Kumamoto University for predicting the severity of COVID-19 symptoms from blood or urine, and the collaboration with the Changi General Hospital (in Singapore) for establishing a joint research laboratory for clinical testing and individualized treatment using a mass spectrometer system.
- We released the LCMS-8060NX ultra-fast liquid chromatograph mass spectrometer system, which offers improved operability and durability while also achieving among the world's highest sensitivity and measuring speed levels, and the Advanced i-Series integrated high-performance liquid chromatograph system, which offers improved pressure resistance performance and enhanced functionality for supporting working from home or remotely.
- The aftermarket sales ratio was increased to 34% (+2 point year on year increase) by expanding/improving the novel coronavirus detection kit and consumables product lines.

Novel Coronavirus-Related Products

AutoAmp
Fully Automatic PCR Testing System

Novel Coronavirus Detection Kit

Key Model New Products

Advanced i-Series
Integrated Liquid ChromatographLCMS-8060NX
Liquid Chromatograph Mass Spectrometer System

Business Overview and Results

Analytical & Measuring Instruments Business

Key Measures for FY 2021

- We will strive to expand business by acquiring advanced technologies through partnerships within and outside the Shimadzu Group and creating new truly unique and number-one products and businesses for solving challenges in society in a timely manner. We will also work with strategic partners and business partners to create systems for using Shimadzu Group products and services to help solve challenges in society.

Contributing to Society and Expanding Business through Infectious Disease Countermeasures

Preventing the COVID-19 pandemic from spreading has become a global challenge. Therefore, the Shimadzu Group will develop and offer quick and accurate tests for infectious diseases in general and provide support for developing corresponding therapeutic drugs.

We will also engage in measures to establish new testing methods, such as testing for viruses in breath samples or predicting and preventing more severe symptoms based on urine or blood tests.

In addition to establishing testing capabilities for verifying negative test results, we will also promote partnering with governments and local authorities to create systems for fighting infectious diseases.

In June 2021, the Shimadzu Group signed a letter of understanding with Shionogi & Co., Ltd. regarding a partnership intended to achieve the early adoption of systems in society for monitoring COVID-19 and other infectious diseases in sewer water.

By utilizing the respective strengths of both partners, the partnership intends to establish monitoring systems in society that enable automatic detection of viruses in sewer water and early determination of infection rates or variant strain trends based on monitoring data.

Strengthening Key Models

We will offer high-resolution and high-sensitivity liquid chromatograph and mass spectrometer systems for expanding healthcare applications, such as pharmaceuticals, clinical testing, and food safety.

We will also expand/improve the product lines with products that reduce the work involved in analytical operations, such as fully automatic pretreatment systems based on AI, IoT, robotics, or other technologies.

Strengthening Businesses in the EU and U.S.

We will contribute to developing new drugs by promoting joint development of analytical instruments with strong partners in the EU and the U.S. pharmaceuticals markets and contract development/testing markets.

We will also increase market share by expanding sales of the new Nexera series liquid chromatographs, Nexera UC series supercritical fluid chromatographs, and the newly released LCMS-8060NX mass spectrometer systems.

Deploying the Amyloid-Beta Testing Business

In June 2021, Shimadzu released the Amyloid MS CL system for measuring amyloid peptides in blood. Approved as a “controlled medical device” (Class II), the Amyloid MS CL system indicates biomarker values associated with amyloid-beta levels, which are considered a possible cause of Alzheimer’s dementia. In Japan and North America, Shimadzu has been deploying an amyloid MS contract analysis service intended for R&D. By participating in cohort studies with outside companies and research institutions, Shimadzu will contribute to developing therapeutic drugs and early prevention methods.

Foods and Chemicals

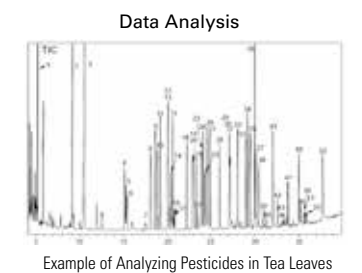
- These instruments help ensure food safety by accurately measuring trace amounts of components contained in samples. They are used in a wide range of fields, including food, environmental, chemical, electronic/semiconductor, and pharmaceutical fields.



ICPMS-2030
ICP Mass Spectrometer System



GCMS-TQ8050 NX
Gas Chromatograph Mass Spectrometer System



Materials

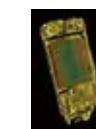
- These instruments are used to test the strength of a wide variety of items, such as rubber, plastic, or metal materials, or objects such as foods, mobile phones, or automotive parts.



SPM-Nanoa
Scanning Probe Microscope



AGX-V Series
Precision Universal Testing Machine



Example of Observation
inside a Smartphone



inspeXio
SMX-225CT FPD HR Plus
Nondestructive Inspection Machine



KRATOS ULTRA2
Imaging X-Ray Photoelectron Spectrometer

Life Sciences and Pharmaceuticals

- By investigating the metabolites, active ingredients, and other components contained in blood or urine, these instruments can be used for applications such as cancer or dementia screening or for verifying the efficacy of drugs.
- These instruments can measure the content of active ingredients and impurities in samples and can be used for quality control in a wide range of fields, such as in pharmaceutical, biochemical, food, and environmental fields.



LCMS-9030
Liquid Chromatograph Mass Spectrometer System



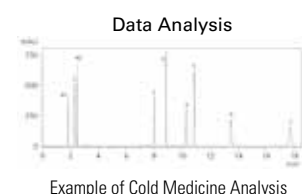
Nexera Series
Ultra High Performance Liquid Chromatograph



TOC-100e
TOC Analyzer for Purified Water



LC-2030C NT Integrated Liquid Chromatograph
Compatible with Slide-In Columns



Environmental and Energy

- We provide instruments and services that help ensure compliance with environmental regulations as well as support for alternative energies.



TNP-4200
Online Total Nitrogen and Total Phosphorus Analyzer



Microplastics Collected along
the Seashore



IRSpirit
Infrared Spectrophotometer



EDX-7000
Energy Dispersive X-Ray Fluorescence Spectrometer

Business Overview and Results

Analytical & Measuring Instruments Business

This section describes how liquid chromatographs and mass spectrometer systems, which are considered key models and the strongest product lines of the analytical and measuring instruments business, contribute to pharmaceuticals and food safety.



Measures in the Pharmaceuticals Field

Pharmaceutical products require a very long development period and must satisfy strict quality control standards. Shimadzu Group products provide support for a wide range of associated phases, from basic research and clinical testing to quality control during drug discovery.

The Shimadzu Group supplies high-performance liquid chromatograph (HPLC) systems to pharmaceutical manufacturers throughout the world for an extremely wide range of applications, from identifying candidate compounds before starting drug research to researching metabolic processes after drug administration and for quality control of the final product.

i-Series integrated high-performance liquid chromatograph systems from the Shimadzu Group are used for quality control by pharmaceutical manufacturers around the world,

not only because of the high reproducibility and robustness they offer, but also because customers appreciate their user-friendly operability. Furthermore, they offer intelligent functionality for processing large amounts of data with high accuracy, which can help save labor for customers working in quality control.

Thus, by offering HPLC systems, the Shimadzu Group contributes to achieving a society where safe and worry-free pharmaceuticals are available throughout the world.

Topics

Nexera UC Prep System Developed in Collaboration with a Major U.S. Pharmaceutical Consortium

The Shimadzu Group collaborated with Enabling Technologies Consortium (ETC), a major consortium of pharmaceutical companies in the United States, to jointly develop the Nexera UC Prep semi-preparative supercritical fluid chromatograph system.

Preparative systems are used to separate specific substances from samples and purify them, which has become an essential process step for extracting impurities from target compounds during the drug discovery phase or for extracting functionally beneficial components from chemical or food products. Improvements to the Nexera UC Prep system enable recovering 95% or more of target compounds using between about one-half to one-fifth of the labor hours normally required for preparative purification using conventional LC systems.



Measures for Food Safety

Food safety needs are diverse and require high accuracy. The Shimadzu Group offers products for supporting all aspects of food safety, such as for food ingredient labeling, regulatory compliance, and voluntary testing to verify safety.

By offering mass spectrometer (MS) systems, the Shimadzu Group contributes to ensuring safe food distribution and maintaining healthy water environments in order to protect the safe and secure day-to-day life of people around the world.

To ensure the safety of food and water, national and international regulatory bodies or other institutions have specified official measurement methods and criteria values.

Given that MS systems are able to measure trace quantities of hundreds of compounds simultaneously, they are perfect for identifying or quantifying trace pesticide residues in foods or trace pollutants in drinking water, for

example. Consequently, they are used by public agencies and contract analysis companies throughout the world.

Shimadzu also offers various software packages that can be used for rapid and accurate screening measurements, such as the database for residual pesticide analysis.

Nothing is more relevant to our daily lives than food and water. Therefore, to protect the safety of food and water, the Shimadzu Group is constantly developing and supplying new MS products that can measure substances more accurately and easily than before.

Topics

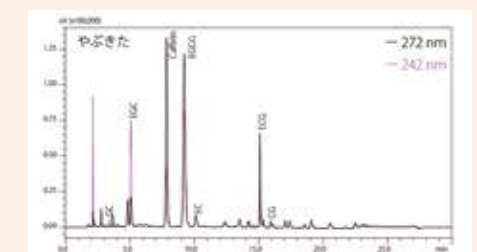
Establishment of NARO Shimadzu Kyoto Laboratory for Food Innovation

The Shimadzu Group helps improve health by analyzing the functionally beneficial components in food. In August 2019, Shimadzu signed a joint research agreement with the National Agriculture and Food Research Organization (NARO) and established the NARO Shimadzu Kyoto Laboratory for Food Innovation within Shimadzu's Healthcare R&D Center for the purpose of analyzing the functionally beneficial components in foods.

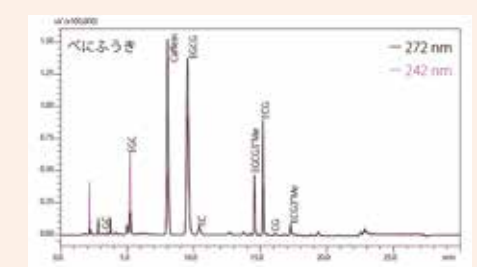
The laboratory aims at developing new methods that can quickly, easily, and accurately analyze components with functional benefits (such as food fiber, polyphenols, and carotenoids) in about 20 types of green teas, vegetables, fruits, and other foods or agricultural products developed by NARO in various regions of Japan.

The laboratory is also engaged in searching for new functionally beneficial components by building a component database.

The Shimadzu Group intends to normalize and standardize the results achieved by the laboratory and deploy them throughout the world in an effort to develop agricultural products with higher added value and to contribute to promoting better health in society.



Yabukita tea



Benifuki tea

Business Overview and Results

Analytical & Measuring Instruments Business

Shimadzu Network-Compatible Analytical Data Systems

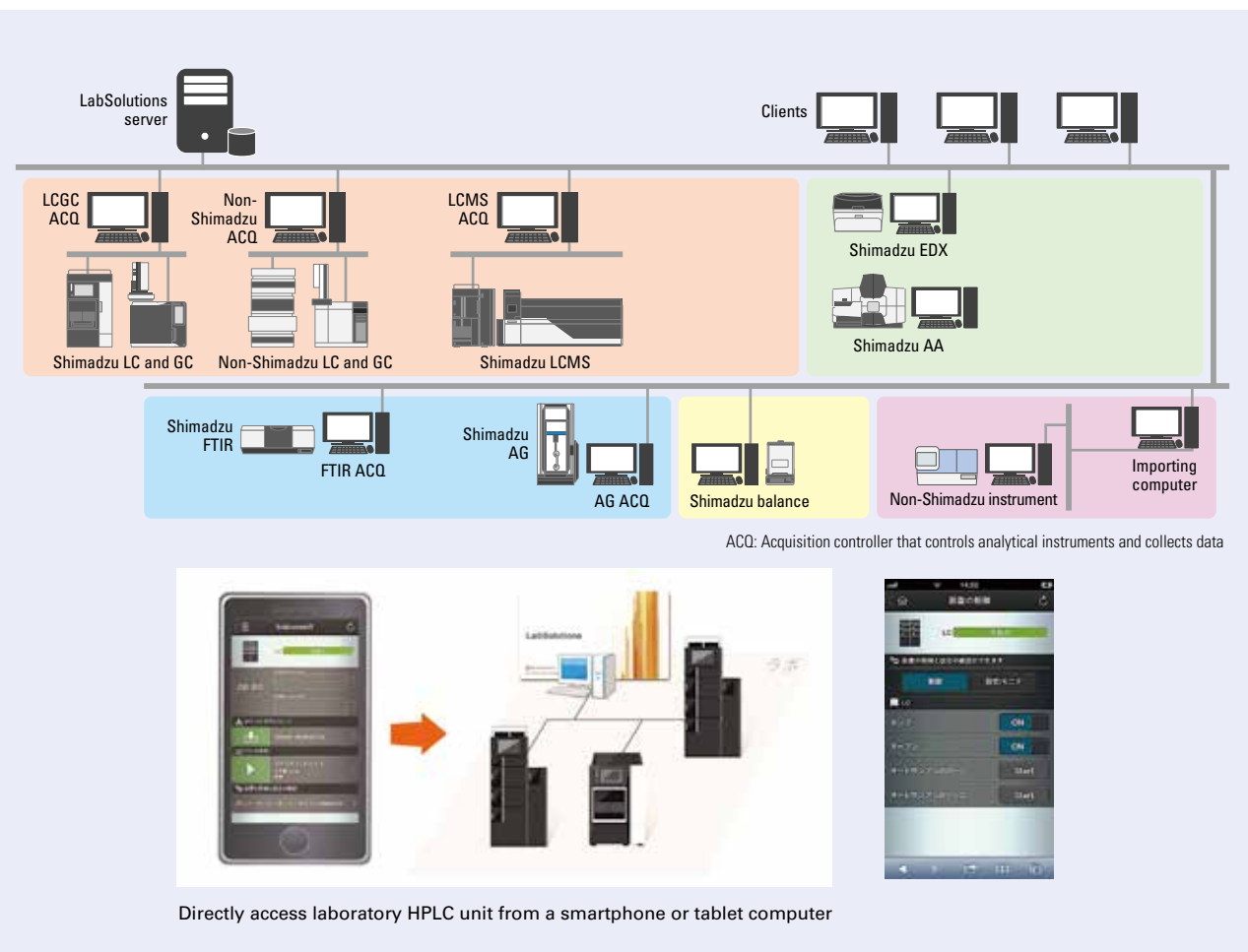
The global COVID-19 pandemic has significantly changed our daily lives. Due to the dizzying advancements in digital and network technologies, we are expected to respond quickly to changes in business conditions and use data and digital technologies to achieve digital transformations (DX). Meanwhile, to achieve a safe and secure society, we are also expected to comply with data integrity requirements not only for pharmaceuticals, but also in various other fields, such as foods, environmental, and steel fields.

Therefore, the Shimadzu Group offers network-compatible LabSolutions analytical data systems that generate new value by helping customers implement business process reforms or solve challenges.

1 Connectivity to a Wide Variety of Instruments

Liquid chromatographs, gas chromatographs, mass spectrometer systems, and various other analytical instruments are widely used for quality control and R&D applications in pharmaceutical, chemical, food, and other fields. Consequently, demand for analysis and measurement in food safety and environmental conservation fields has been increasing in recent years, with customers trying to achieve even higher efficiency through business process reforms. Shimadzu network-compatible LabSolutions

analytical data systems can improve business process efficiency by managing analytical instruments used in customer laboratories and data more appropriately. In addition to Shimadzu analytical instruments, they can even connect instruments and manage data for non-Shimadzu instruments. Some models can be monitored from a smartphone or other smart device, so that analysis can be performed while checking the instrument status remotely from a location away from the laboratory.



2 Implementing DX Measures to Reform Analytical Processes

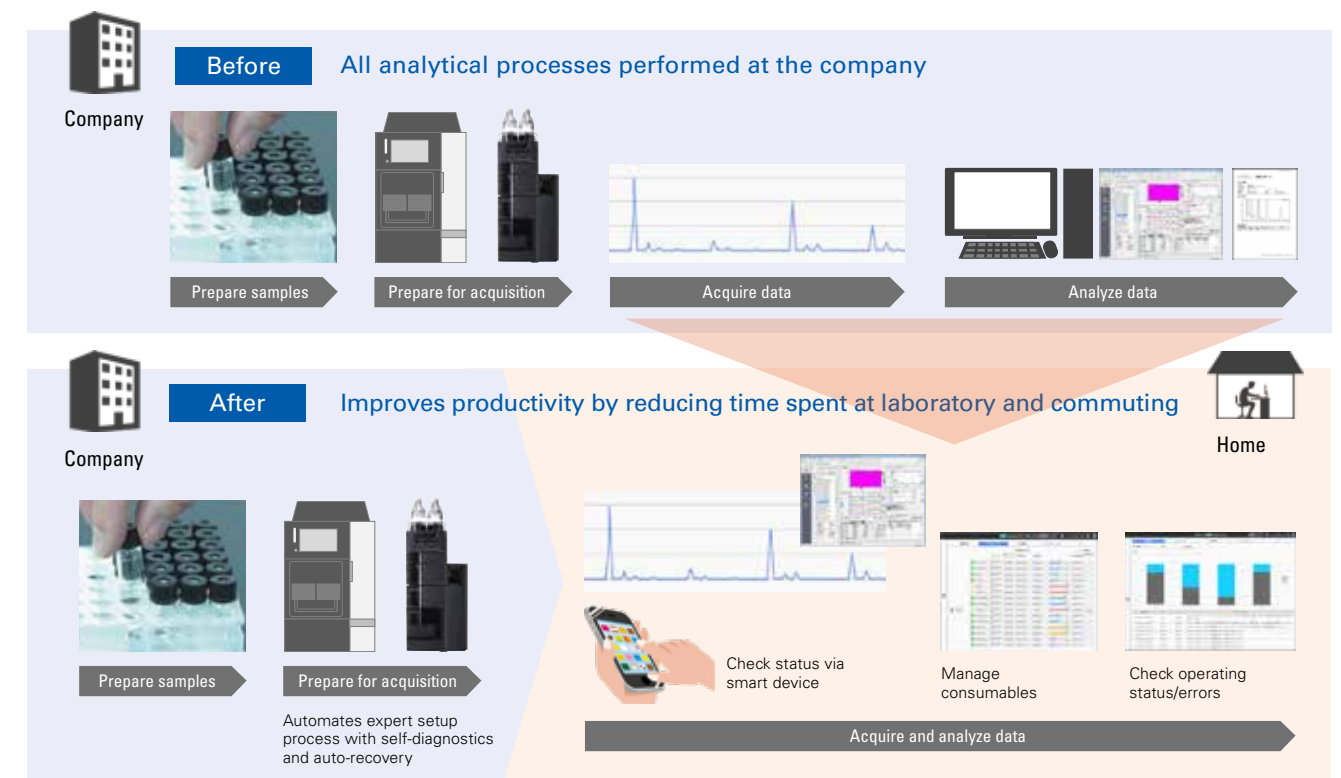
As people increasingly work from home or remotely, improving the efficiency of work processes through digital transformations (DX) has become an urgent challenge.

Shimadzu LabSolutions software enables remote access for configuring instrument settings, starting data acquisition, or performing post-run analysis on the acquired data. Some models, such as Nexera series ultra-high-performance liquid chromatographs, include "Analytical Intelligence" functionality that can be used to remotely perform a wide variety of operations that were previously

performed in-person, such as starting up and stabilizing the system.

That functionality can significantly improve the efficiency of analytical work by minimizing the number of laboratory tasks that must be performed by a human, enabling automatic execution of analytical processes, and allowing remote operability via a computer or smart device.

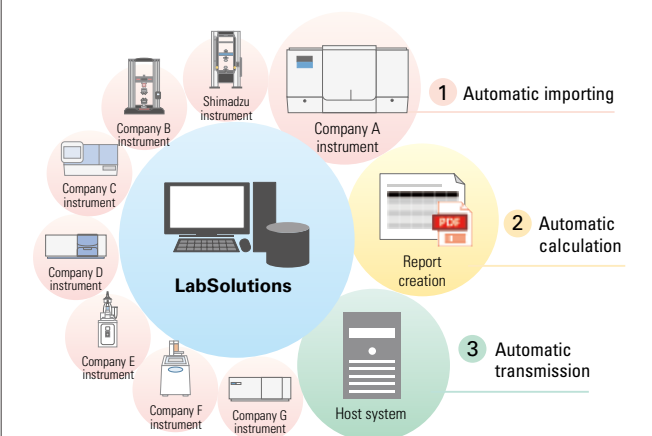
New functionality and solutions will continue to be added in the future to achieve even more analytical efficiency improvements or reforms.



3 Ensuring Data Integrity and Reforming Analytical Processes

Due to data tampering or other problems, there is growing interest in ensuring the reliability of analytical data in a variety of industries. Analytical laboratories need to ensure not only the accuracy of data obtained from analysis, but also that there were no errors or tampering involved in any of the steps taken to obtain analytical results from data. That requires checking the test results and a reliable analysis log (record of operations).

LabSolutions DB/CS supports compliance with such data integrity requirements. In addition to providing connectivity with a wide variety of analytical laboratory equipment, LabSolutions DB/CS can also be used to configure networked or cloud systems optimized for the given laboratory scale or form of operation, from small systems that consist of only a computer and an instrument to large systems configured from a large number of analytical or measuring instruments.



Business Overview and Results

Medical Systems Business



We contribute to early detection and early treatment of a variety of diseases, such as infectious diseases, cerebrovascular/cardiovascular diseases, and cancers, at medical facilities around the world by offering easy-to-use medical systems that reduce the stress on patients, based on our state-of-the-art image processing technology.

The following web page includes information about the topics listed below.
<https://www.shimadzu.com/med/index.html>



Diagnostic Imaging Systems



Koki Aoyama

General Manager, Medical Systems Division

Business Environment

In developed economies, society demands medical care that mitigates the risks of injury and illness associated with aging populations, while minimizing the burden on patients. Even many developing countries are facing challenges with population aging, with health levels expected to approach the level of developed economies by 2035. Consequently, they are demanding more sophisticated healthcare technologies and diagnostic imaging systems.

Challenges in Society

- Achieve longer healthy life expectancies, so people can be healthy in their daily life.
- Provide more advanced examination technologies that can detect physical disorders as early as possible and identify the causes of diseases in more detail.

Value Provided

Diagnosis

- Fluoroscopy systems help maintain bone health by diagnosing osteoporosis or by using tomosynthesis software for follow-up examinations after artificial joint surgery.
- Dedicated head and breast PET systems can display high-definition images of brain tumors, epilepsy, breast cancer, and other disorders, and even contribute to Alzheimer's or other dementia research.
- For psychiatric disorders, we offer supplemental support for differential diagnosis of depression using near-infrared light.

Treatment

- We offer angiography systems equipped with a video imaging application for supporting cutting-edge minimally invasive procedures. We also offer near-infrared camera systems for supporting surgical techniques used in breast surgery, plastic surgery, gastrointestinal, and dermatology departments.

- To support efficient radiation therapy, we offer a tumor-tracking system that, used in combination with a radiation therapy system, can significantly reduce the radiation dose to normal tissue by efficiently radiating only cancer tissue.

Other

- To promote clinical applications for analytical technology, we are improving the practicality of techniques that can be used in the future to predict the risks of a wide variety of diseases from a single drop of blood.
- We provide support for improving the efficiency of healthcare administration, such as by offering returning patient reception systems and electronic medical records systems to clinics.
- We improve the efficiency of radiological processes by including power-assist technologies in products.

Diagnostic X-Ray Systems

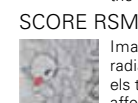
- Equipped with advanced image processing technology, these easy-to-use medical systems reduce the stress on patients.



Angiography System

SCORE PRO Advance

Improving the visibility of medical devices and reducing the radiation dose



Imaging with low radiation dose levels that is minimally affected by movement



Mobile X-Ray System



Fluoroscopy System



Bone Mineral Density Measurement



General Radiography System

Solutions for Supporting Healthcare and Improving Healthcare Operating Efficiency

- PET systems are offered for producing high-definition imaging of brain tumors, epilepsy, and breast cancer.



Dedicated Head and Breast PET System

- We offer patient reception systems and electronic medical record systems.



Returning Patient Reception System

FY 2020 Results

Business Environment

Sales of mobile X-ray systems for pneumonia diagnosis increased due to the COVID-19 pandemic, but sales struggled for other models due to postponement or freezing of capital equipment investments as healthcare institutions focused on COVID-19 countermeasures or their profitability suffered.

Key Measures and Results

- Sales decreased, but record operating income was achieved due to cost and expense reduction measures.
- In Japan, sales decreased due to hospitals, clinics, and other healthcare institutions postponing or freezing capital equipment investments due to the COVID-19 pandemic.
- Outside Japan, sales increased due to increased sales of mobile X-ray systems.
- By diligently strengthening the aftermarket business, which resulted in service contracts increasing along with increased product deliveries, the aftermarket business sales ratio was 33% (3-point year on year improvement).

Key Measures for FY 2021

Expanding Sales of Fluoroscopy and Angiography Systems

We will expand/improve our offering of new products and software to increase market share for fluoroscopy and angiography systems.

Improving Healthcare Operating Efficiency

We will expand sales of products for improving the operating efficiency of healthcare institutions based on working practice reforms, such as patient reception systems and automatic payment systems.

Strengthening Measures in North America

We will expand sales of new fluoroscopy system products that can be operated according to clinical needs in the U.S. market and provide high-quality digital images using low radiation dose levels.



Table-Side Operable R/F System Offered in the United States

Expanding Businesses with Recurring Revenues

We will expand the aftermarket business by expanding service areas and applicable products, by adding IoT-based failure prediction functionality, and by offering remote inspection/operation services. We will also engage in promoting sales methods, such as subscription-based billing methods that generate recurring revenues for application software.

Industrial Machinery Business



We contribute to industrial development by supplying high-quality and high-performance key components, such as turbomolecular pumps and equipment and parts equipped with sophisticated hydraulic technology.

The following web page includes information about the topics listed below.
<https://www.shimadzu.com/industry/index.html>



Vacuum Equipment/Industrial Machinery



Akira Watanabe

General Manager, Industrial Machinery Division and Fluidics Systems Division

Business Environment

As the demand for semiconductors continues to increase in response to increasingly widespread adoption of IoT and 5G technologies underlying the trend toward more extensive use of information in society, the market for turbomolecular pumps used in semiconductor manufacturing equipment is expected to expand as well. Due to recovering demand for logistics equipment, construction machinery, and agricultural equipment, demand for hydraulic equipment is expected to expand. To contribute to industrial development, we will release new products based on innovative technologies and develop new market fields.

Challenges in Society

- Develop sustainable and resilient infrastructure.
- Implement global measures to achieve a carbon-free society.

Value Provided

- We will promote sustainable infrastructure development by offering key products and manufacturing equipment that contribute to a broad range of advanced manufacturing industries, such as by offering turbomolecular pumps used as key components in semiconductor manufacturing equipment, gear pumps used as hydraulic power sources in forklifts and construction/agricultural machinery, and industrial furnaces for ceramics, expected to be increasingly demanded for use as electric vehicle circuitry heat sink or insulation materials.
- We contribute to the expansion of renewable energies by supplying glass winders for winding glass fiber used to reinforce wind turbine blades.



Turbomolecular Pump

Industrial Machinery

- Turbomolecular pumps are vacuum pumps used to create the ultra-high vacuum environment essential for manufacturing semiconductors and panels.



Turbomolecular Pump

- These furnaces are used to harden metals, ceramics, or other materials by heat-treating them in a vacuum or pressurized environment.



Industrial Furnace

- Balancers are used to eliminate eccentricity in various rotating parts by providing basic data for precision balancing (determining how uniformly mass is distributed throughout rotating bodies and shafts).



Balancer

- These hydraulic power sources are used for a wide range of applications, such as forklifts and other industrial vehicles, construction machinery, special-purpose vehicles, and agricultural equipment.



Hydraulic Gear Pump



Power Package



Forklift

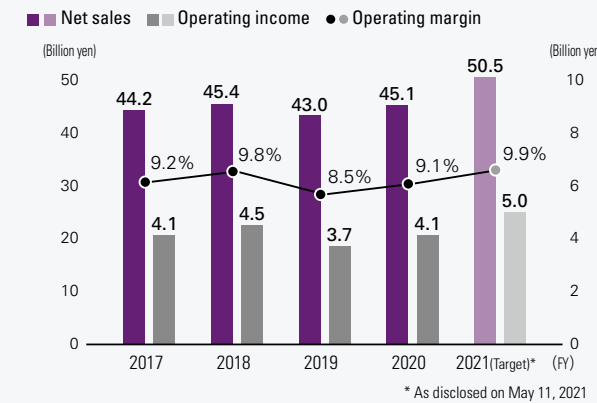
Hydraulic Gear Pump

The following web page includes information about the topics listed below.
<https://www.shimadzu.com/hydraulic/index.html>

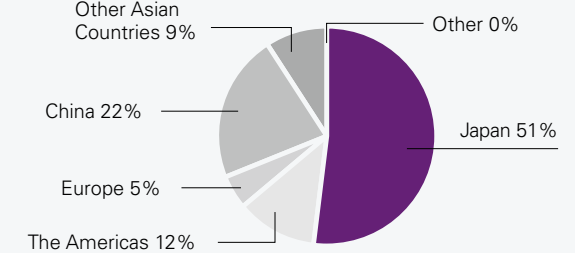


Hydraulic Equipment

Net Sales/Operating Income/Operating Margin



Ratio of Net Sales by Region



FY 2020 Results

Business Environment

Sales of turbomolecular pumps, the division's strongest product line, were strong for use in semiconductor manufacturing equipment, due to increased semiconductor demand for 5G and data center applications. Hydraulic equipment and industrial furnace sales struggled due to the COVID-19 pandemic and lower capital equipment investment levels, despite increased sales in China.

Key Measures and Results

- Turbomolecular pump demand was strong for use in semiconductor manufacturing equipment, resulting in record sales.
- Hydraulic equipment sales were strong in China due to a recovery in capital equipment investment levels, but decreased in Japan, Europe, and the United States, due to lower demand for forklifts, construction machinery, and agricultural equipment.
- Industrial furnace sales decreased due to a slowdown in the machine tool and automotive industries.
- Turbomolecular pump aftermarket sales increased 8% (year on year) due to expansion/improvement of operating locations.

Key Measures for FY 2021

• Expanding the Turbomolecular Pump Business Again

By introducing new products with superior technology compared to competitor products, we will expand our market share of major semiconductor manufacturing equipment manufacturers in Japan, Europe, and the United States. We will also continue focusing efforts on expanding the aftermarket service business globally.

• Expanding Market Share for Hydraulic Equipment

In the United States, Europe, and China, which are major markets for hydraulic equipment, we will focus efforts on increasing market share by offering low-noise and high-efficiency models.

• Strengthening Measures for Automotive Industry

Due to the expanding adoption of electric vehicles, demand is expected to increase for products such as industrial furnaces used to manufacture ceramics for electric circuitry heat sink materials or balancing machines used to measure eccentricity between the center of gravity and center of rotation in motor rotors. We will expand/improve products and services for electric vehicles and strengthen measures for automotive applications.



EV Motor Measurement Example

Business Overview and Results

Aircraft Equipment Business



We contribute to ensuring a safe and secure society by offering components, parts, and systems that integrate advanced technologies with sophisticated precision machining technologies.

The following web page includes information about the topics listed below.
<https://www.shimadzu.com/aircraft/index.html>



Aircraft Equipment/Marine Devices/Magnetometers



Susumu Yamamoto

General Manager, Aircraft Equipment Division

Business Environment

The global COVID-19 pandemic has changed the way people live their lives. In the aircraft industry, the previous strong sales fueled by expanding global markets have turned a corner and are now expected to undergo market changes that will be difficult to predict for some time to come. Nevertheless, there will be even greater demand for safely and securely transporting people and goods globally. Therefore, we believe there will be increasing needs for Shimadzu Group's advanced manufacturing technologies and cutting-edge technologies for ensuring security.

Challenges in Society

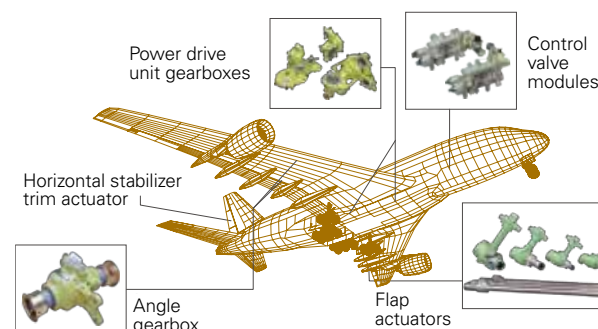
- Improve the resilience of social infrastructure and improve safety, environment-friendliness, and comfort in the mobility field.

Value Provided

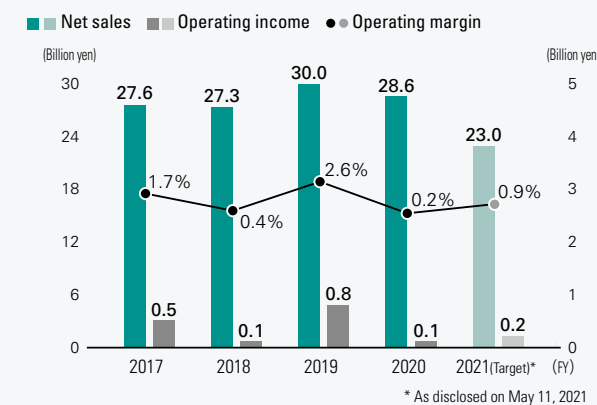
- Technologies for developing smaller, lighter, and electrically powered flight control systems contribute to reducing the environmental impact of aircraft.
- Cockpit display technology contributes to improving the safety and reliability of flying.
- Air management technology used for air conditioning contributes to providing a more comfortable cabin atmosphere.
- Underwater magnetic technologies contribute to improving marine and shipping safety.
- Quality control throughout the entire manufacturing and service value chain serves as a key means of ensuring the safety of aircraft.

Products for Commercial Aircraft and Defense Businesses

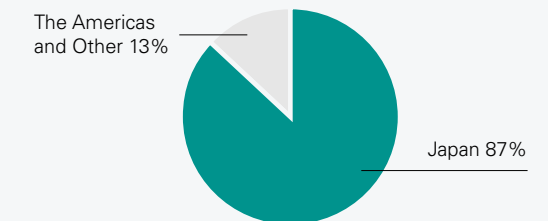
- The flight control system controls the lift, attitude, and other aspects of aircraft during flight. Its high-quality mechanical technology and highly reliable electronic control technology help ensure flight safety.



Net Sales/Operating Income/Operating Margin



Ratio of Net Sales by Region



FY 2020 Results

Business Environment

The major impact by the COVID-19 pandemic on the commercial aircraft industry has resulted in a severe business environment.

Key Measures and Results

• Defense Business

Sales increased due to large projects that compensated for decreased service projects.

• Commercial Aircraft Equipment Business

Sales decreased due to significantly lower demand in the commercial aircraft equipment field.

• Structural Reforms

The breakeven point was reduced by improving the cost structure based on improved efficiency and given business conditions and by selecting/consolidating areas of focus.



Illustration of Face Shield with Diagnostic-Assist Functionality

Key Measures for FY 2021

• Selecting and Focusing on Target Fields

To ensure profitability given the severe business conditions that are predicted to continue, designate whether to expand, cultivate, or withdraw from each product category, to select and focus on specific target products, regardless of whether they are for the defense or commercial aircraft equipment business.

• Promoting New Business

For over half a century, the Shimadzu Group has been supplying a variety of products and technologies to the Japanese Ministry of Defense and commercial aircraft manufacturers throughout the world since 1957.

All of those products have involved world-class technical capabilities and truly unique features. Therefore, we are considering launching a new business based on applying products and technologies from aircraft fields in the social infrastructure market, in an effort to achieve a safer and more secure society in an era living with or after COVID-19, and in the renewable energy market for achieving a carbon-free society.

One example is the development of face shields with diagnostic-assist functionality based on information display technologies used for helmet-mounted displays (HMD) worn by aircraft pilots. These shields could be used to successively display the body temperature, symptoms, test results, or treatment histories of hospital patients, and represents futuristic technology for hands-free information processing to assist front-line medical personnel working with infectious diseases.

Products for the Defense Business

Air Management System

Air management systems are used to adjust the air temperature and pressure levels inside aircraft. They contribute to ensuring a comfortable environment based on analysis and evaluation technology that continuously optimizes the onboard environment.



Cockpit Display

Shimadzu display systems use sophisticated electronic and optical technologies to display various flight information overlaid on the external view in head-up (HUD) or head-down (HDD) projection-type display systems. These systems contribute to reducing the burden on pilots and increasing safety.

