Securities ID code:6859

ESPEC CORP.

Results Briefing for The Second Quarter of Fiscal Ending March 2020

November 28, 2019

www.espec.co.jp

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Company Profile

World-leading manufacturer of environmental test chambers

Name	ESPEC CORP.
Head Office	3-5-6, Tenjinbashi, Kita-ku, Osaka
Represented By	Masaaki Ishida
Established	July 25,1947
Incorporated	January 13,1954
Paid-up Capital	¥6,895Million
Shares Issued	23,781,394 Shares
Employees	1,521 (consolidated)
Main Business	Manufacture and Sales of Environmental Test Chambers, Energy Device Equipment, Semiconductor Equipment and Plant Factory. After-sales Service, Commissioned Tests and others.

Head office

Share of Environmental Test Chambers: Over 30% worldwide, Over 60% domestic

(As of September 30, 2019)

Global Network

Consolidated Subsidiaries
10 companies
(Global 7 companies, Domestic 3 companies)

Global Network
45 countries
42 companies

Business Facilities in Japan : 25
Domestic Agencies in Japan : 46

EUROPE

△ESPEC EUROPE GmbH
△ESPEC IKLIM KABINLERI SATIS VE MUHENDISLIK LIMITED SIRKETI

U.S.A.

●ESPEC NORTH AMERICA, INC

ASIA

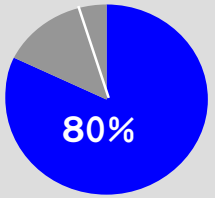
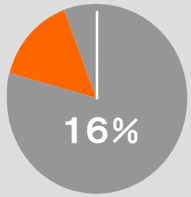
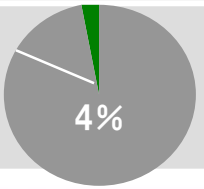
●SHANGHAI ESPEC ENVIRONMENTAL EQUIPMENT CORP.
●ESPEC ENVIRONMENTAL EQUIPMENT (SHANGHAI) CO., LTD.
●ESPEC TEST EQUIPMENT (GUANGDONG) CO., LTD.
●ESPEC TEST TECHNOLOGY (SHANGHAI) CO., LTD.
●ESPEC (CHINA) LIMITED
●ESPEC KOREA CORP.
△ESPEC ENGINEERING(THAILAND)CO.,LTD
△ESPEC ENGINEERING VIETNAM CO.,LTD.

JAPAN

ESPEC CORP.
●ESPEC TEST SYSTEM CORP.
●ESPEC KYUSHU CORP.
●ESPEC MIC CORP.
△ MIC FARM OHGUCHI CORP.

●: Consolidated Subsidiaries
△: Non-consolidated Subsidiaries

Summary of ESPEC Business (Per Market / Use)

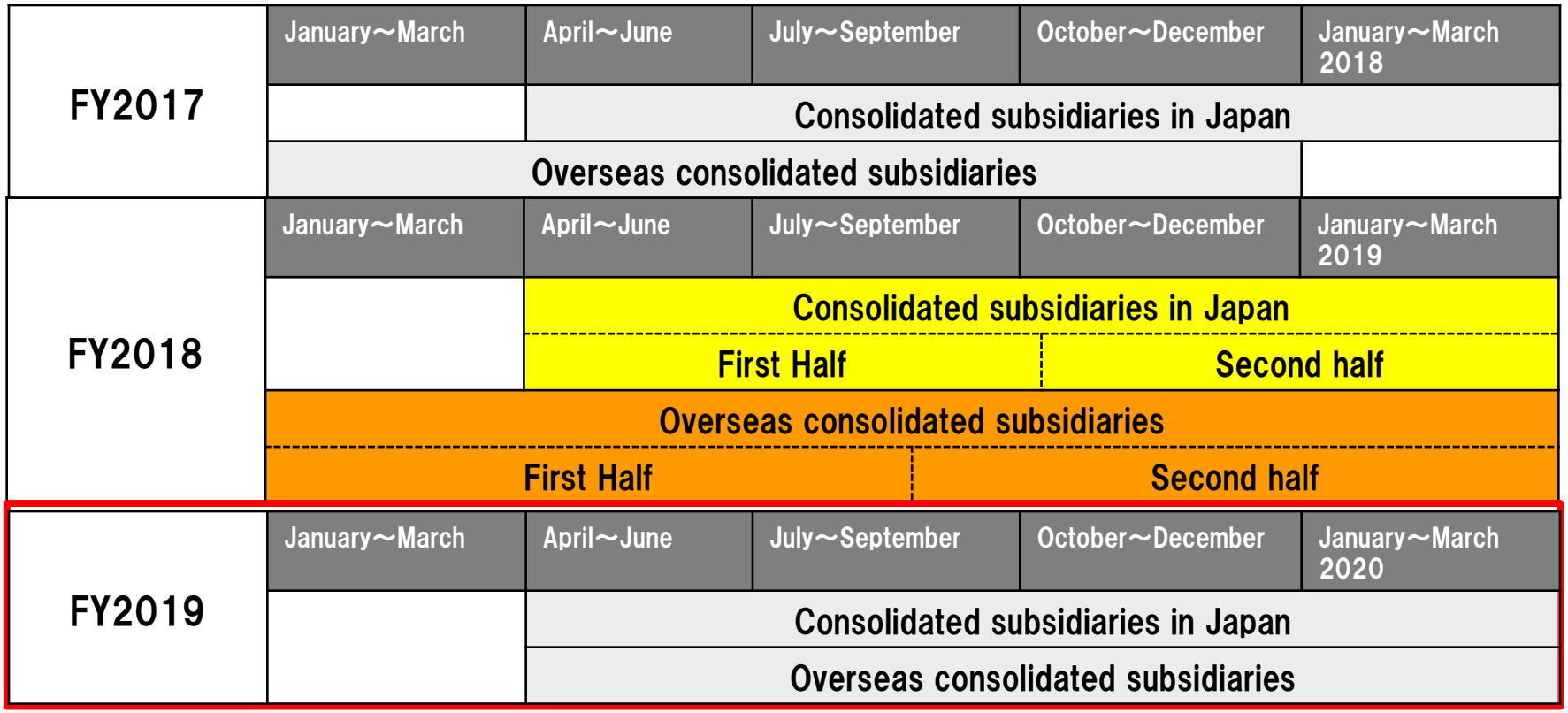
		Main Products	Market	Use	Sales composition (FY2019 2Q)
Equipment Business	Environmental Test Chambers	•Temperature & humidity chamber •Thermal shock chamber •Bench-top type temperature & humidity chamber •HAST chamber •Walk-in type temperature & humidity chamber •Combined temperature & humidity chamber •HALT & HASS test chamber •FPD equipment	•Electronic component and equipment market •Automobile market •Semiconductor market •Medicine, Cosmetics, Foods market •LCD and Organic Electro-Luminescence market	•For R & D •For credibility and evaluation •For production and inspection	
	Energy Device Equipment	•LIB Charge-discharge Cycle Evaluation Equipment •LIB safety evaluation system •Fuel cells evaluation system	•Next generation automobile market •Secondary batteries market •Fuel cells market	•For R & D •For credibility and evaluation •For Safety evaluation •For production	
	Semiconductor Equipment	•Burn-in system •Semiconductor evaluation system •Instrumentation system	•Semiconductor market •Automobile market	•For production and inspection •For development and evaluation	
Service Business	After-sales Service and Engineering	•After-sales service •Construction around equipment	•Electronic component and equipment market •Automobile market •Semiconductor market	—	
	Commissioned Tests and Facility Rentals	•Commissioned test •Resale • Equipment rental •Calibration		•For R & D •For credibility and evaluation	
Other Business	The forest wetland and greening Business	Reforestation (Tree planting), Waterfront biotope restoration, Urban greening			
	Plant Production Systems	Plant factory, Equipment for growing plants			

Financial Result for the Second Quarter of Fiscal Ending March 31, 2020

Making All Overseas Subsidiaries Share the Same Fiscal Year-End

From fiscal 2018, the fiscal years of overseas consolidated subsidiaries (previously December) have been made the same as the fiscal years for consolidated subsidiaries in Japan (March).

(For fiscal 2018, the overseas consolidated subsidiaries recorded financial results for a 15-month transitional period.)



Financial Highlights

In the first half of FY2019, orders for environmental test chambers, the mainstay product of the company were sluggish due to U.S.-China trade friction and the global economic slowdown. Consequently, on October 31, the Company announced downward revisions to its first-half and full-year financial forecasts for FY2019.

	Year on Year		Initial plan	
■Orders-Received	×	Decreased due to a decline in orders-received in the Equipment Business (primarily environmental test chambers) in Japan and overseas	△	In line with plan, based on major projects in the Other Business, which made up for a shortfall in orders-received in the Equipment Business (especially environmental test chambers) in Japan and overseas
■Net sales	△	Mostly the same as in the same period last year, as higher sales of semiconductor and energy device equipment largely offset lower sales of environmental test chambers in the Equipment Business	×	Fell short of plan as sales in the Equipment Business (primarily environmental test chambers) in Japan and overseas were below plan.
■Operating income	×	Decreased due to lower net sales and deterioration in the cost of sales ratio	×	Fell short of plan due to lower net sales and deterioration in the cost of sales ratio
■Ordinary income, Net income*	×	Decreased due to the decrease in operating income	×	Fell short of plan due to the decrease in operating income

■Looking at dividends per share, as per the initial plan, the interim dividend was set at ¥22, while the year-end dividend is forecast at ¥46; accordingly, the annual dividend is forecast at ¥68 per share.

*Profit attributable to owners of parent

Summary of Profits and Losses

(millions of yen)

	FY 2018 2Q	FY 2019 2Q (Initial plan)	FY 2019 2Q	Year on Year	Initial plan ratio
Orders-Received	24,681	23,500	23,463	-4.9%	-0.2%
Net sales	19,092	21,500	18,776	-1.7%	-12.7%
Cost of Net Sales (Cost of sales ratio)	12,062 (63.2%)	13,530 (62.9%)	12,172 (64.8%)	0.9% (1.6pt deterioration)	-10.0% (1.9pt deterioration)
Gross profit	7,030	7,970	6,604	-6.1%	-17.1%
SG & A	5,371	5,670	5,216	-2.9%	-8.0%
Operating income	1,659	2,300	1,387	-16.4%	-39.7%
Ordinary income	1,732	2,400	1,494	-13.7%	-37.8%
Profit attributable to owners of parent	1,270	1,700	1,046	-17.6%	-38.5%

Performance by Segment

(millions of yen)

Segment		FY 2018 2Q	FY 2019 2Q (Initial plan)	FY 2019 2Q	Year on Year	Initial plan ratio
Equipment Business	Orders-Received	20,874	19,800	18,476	-11.5%	-6.7%
	Net Sales	15,639	18,000	15,131	-3.2%	-15.9%
	Operating Income	1,457	2,100	1,171	-19.7%	-44.2%
Service Business	Orders-Received	3,238	3,200	3,242	0.1%	1.3%
	Net Sales	3,056	3,100	3,075	0.6%	-0.8%
	Operating Income	284	250	280	-1.4%	12.0%
Other Business	Orders-Received	679	600	1,865	174.7%	210.8%
	Net Sales	499	500	675	35.3%	35.0%
	Operating Income	-83	-50	-65	—	—
Elimination	Orders-Received	-110	-100	-120	—	—
	Net Sales	-102	-100	-106	—	—
	Operating Income	0	—	1	—	—
Total	Orders-Received	24,681	23,500	23,463	-4.9%	-0.2%
	Net Sales	19,092	21,500	18,776	-1.7%	-12.7%
	Operating Income	1,659	2,300	1,387	-16.4%	-39.7%

Review of the First Half of Fiscal 2019

External Environment

- Investment was held back more than expected in Japan and overseas due to U.S.-China trade friction and concerns about a global economic slowdown
- Automobile-related development investment continued in Japan, but was not as strong as in the previous fiscal year
- In sectors other than the automobile industry, businesses have maintained a "wait-and-see" approach to investment since the beginning of the fiscal year
- Concerns about the yen's appreciation have persisted, with foreign exchange rate movements (U.S. dollar / yen) in the range of ¥105 to ¥112 against the U.S. dollar.

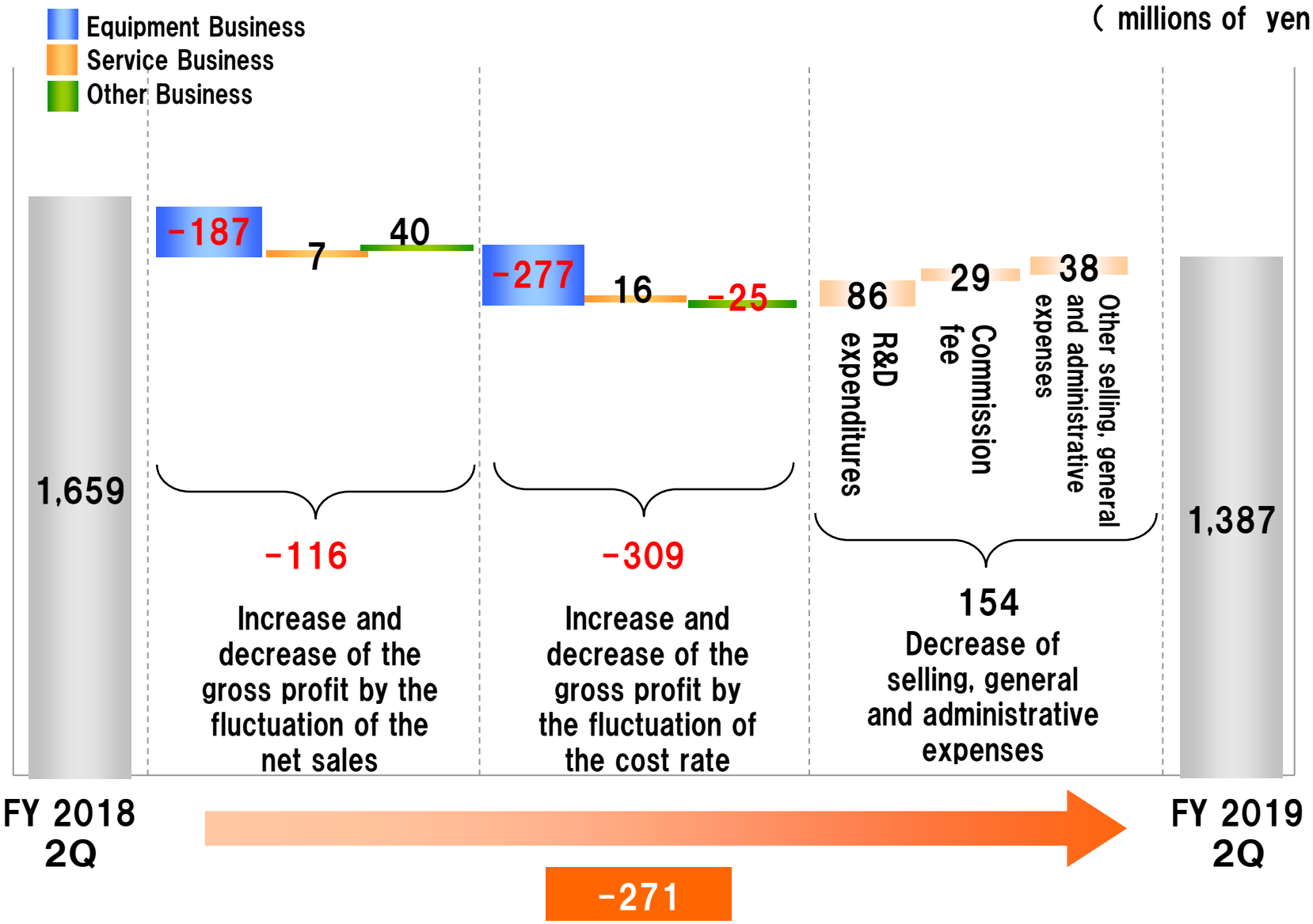
Developments within ESPEC

- Sales decreased due to sluggish orders both in Japan and overseas
- The cost of sales ratio deteriorated mainly for environmental test chambers
- The Chinese business was lackluster, due partly to a decline in major projects

Performance fell short of initial plans, partly because of the impact of bringing forward the recording of sales due to a change in the value-added tax in the previous fiscal year

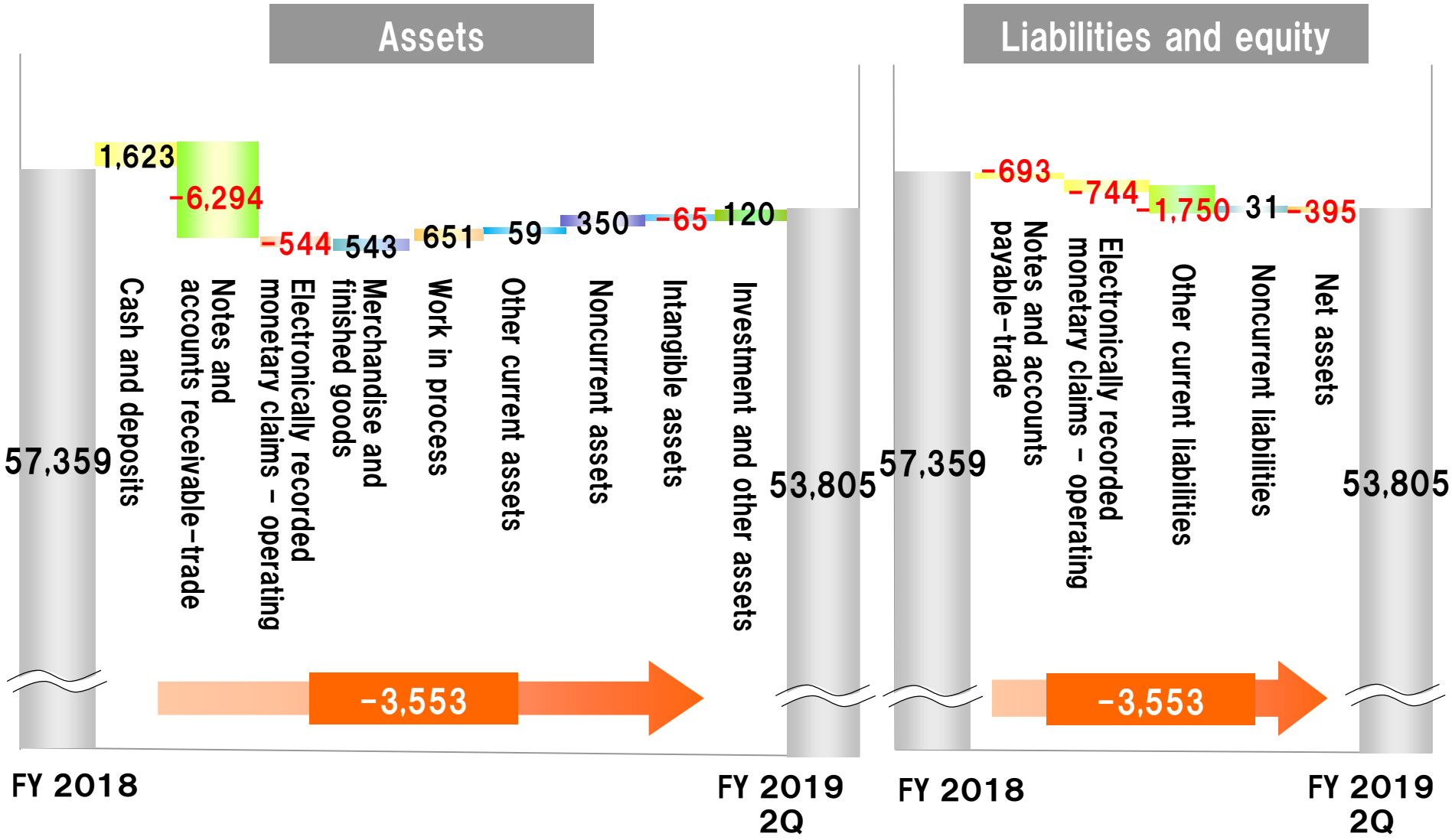
- The European business posted a solid performance, supported by higher sales results
- Step up implementation of future growth strategies

Analysis of Operating Income Increase and Decrease Factor

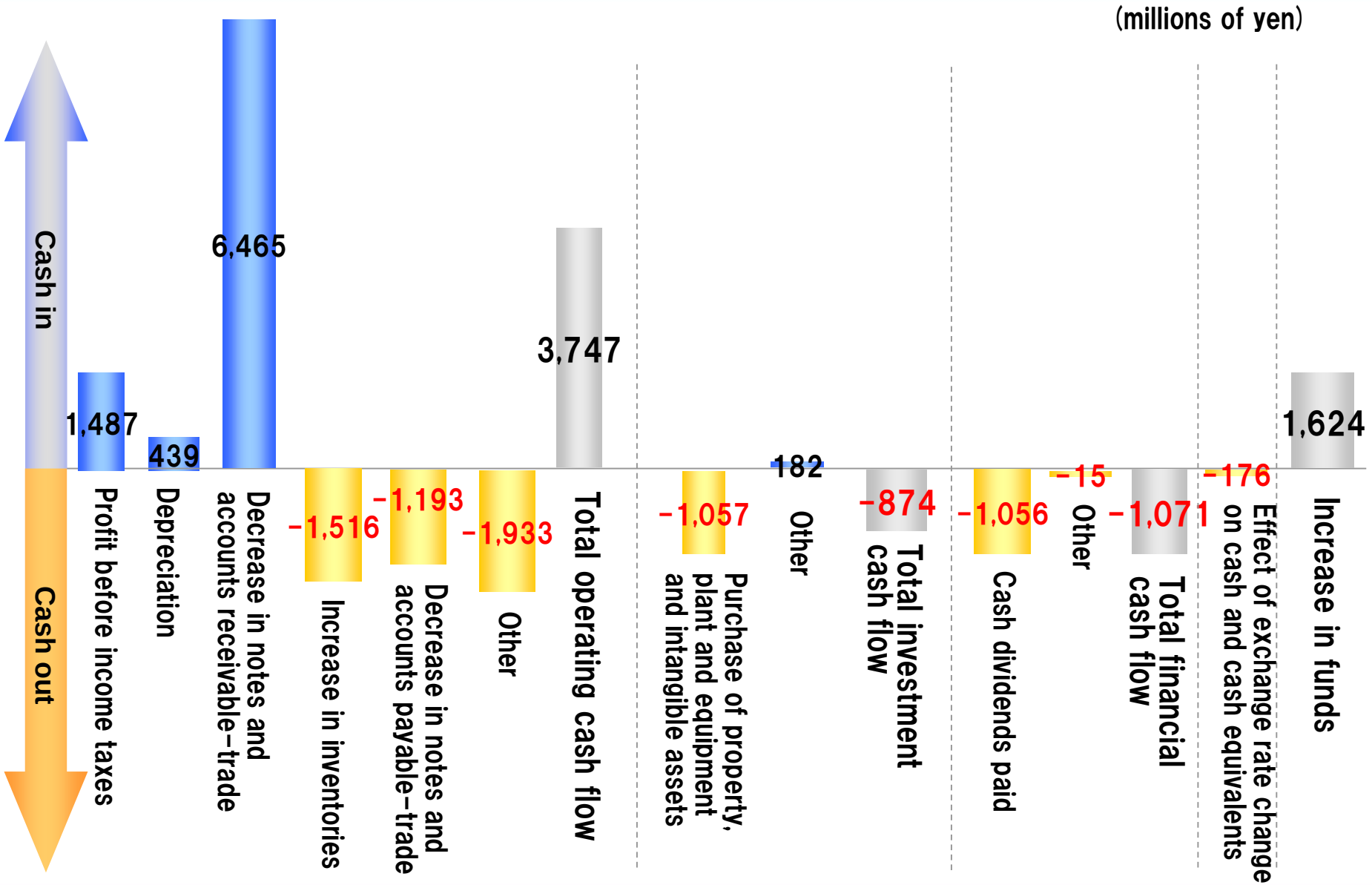


Statement of Assets and Liabilities

(millions of yen)



Statement of Cash Flow



Analysis per Segment for the Second Quarter of Fiscal Ending March 31, 2020

Equipment Business

Environmental Test Chambers

■Both orders-received and net sales decreased year on year
- In Japan, net sales decreased as sales of customized products were sluggish, while standardized products performed firmly
- Overseas, major projects declined in China, where performance was favorable in the previous year, and exports to South Korea, Taiwan and ASEAN were also lackluster
  Net sales increased in the U.S. and Europe, but decreased in China, South Korea, Taiwan, and ASEAN

■Net sales and orders-received both fell short of the initial plan

Energy Device Equipment

■Orders-received decreased year on year, but net sales increased
Orders-received decreased owing to delays in orders for evaluation systems for secondary batteries and fuel cells
Net sales increased, partly due to sales posted for fuel cell evaluation systems for which orders were received in the previous fiscal year

■Orders-received and net sales both fell short of the initial plan

Semiconductor Equipment

■Orders-received and net sales both increased year on year, as burn-in systems and chambers performed firmly

■Orders-received exceeded the initial plan, but net sales fell short

Equipment Business

(millions of yen)

	FY 2018 2Q	FY 2019 2Q (Initial plan)	FY 2019 2Q	Year on Year	Initial plan ratio
Orders-Received	20,874	19,800	18,476	-11.5%	-6.7%
Net Sales	15,639	18,000	15,131	-3.2%	-15.9%
Operating Income [Profit ratio (%)]	1,457 [9.3%]	2,100 [11.7%]	1,171 [7.7%]	-19.7%	-44.2%

Service Business

(millions of yen)

	FY 2018 2Q	FY 2019 2Q (Initial plan)	FY 2019 2Q	Year on Year	Initial plan ratio
Orders-Received	3, 238	3, 200	3, 242	0. 1%	1. 3%
Net Sales	3, 056	3, 100	3, 075	0. 6%	-0. 8%
Operating Income [Profit ratio (%)]	284 [9. 3%]	250 [8. 1%]	280 [9. 1%]	-1. 4%	12. 0%

After-sales Service and Engineering

- Orders-received and net sales both increased year on year and exceeded the initial plan

Commissioned Tests and Facility Rentals

- Orders-received were mostly unchanged year on year, but net sales decreased due to delays in the receipt of orders for commissioned tests
- Orders-received and net sales both fell short of the initial plan

Other Business

(millions of yen)

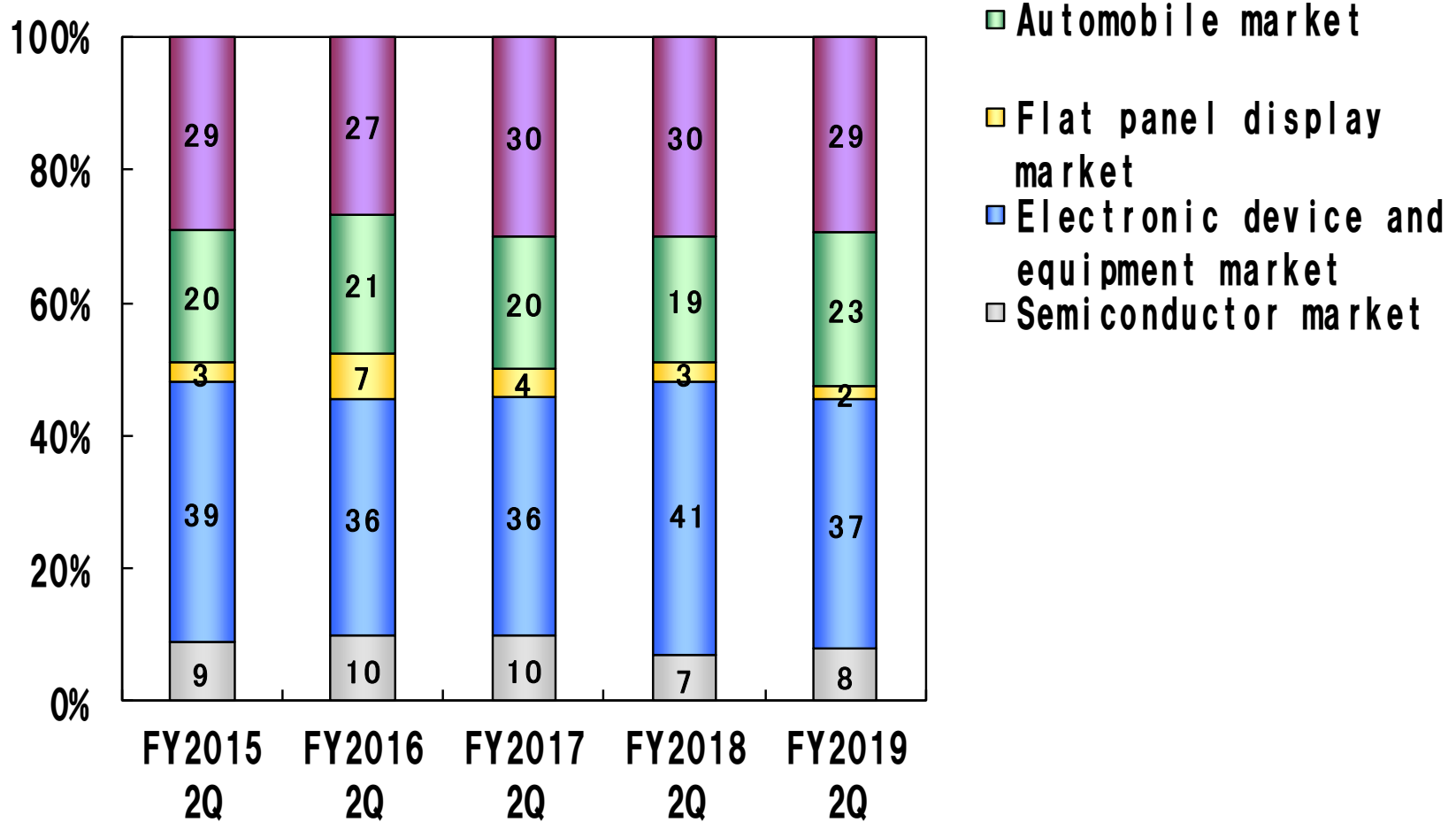
	FY 2018 2Q	FY 2019 2Q (Initial plan)	FY 2019 2Q	Year on Year	Initial plan ratio
Orders-Received	679	600	1,865	174.7%	210.8%
Net Sales	499	500	675	35.3%	35.0%
Operating Income [Profit ratio (%)]	-83 [-16.7%]	-50 [-10.0%]	-65 [-9.7%]	—	—

The Forest Wetland and Greening Business, Plant Production Systems

- Orders-received and net sales both increased year on year and exceeded the initial plan owing to the receipt of a large order for a plant factory
- An operating loss was posted due to a worsening cost of sales ratio

Breakdown of Sales by Market

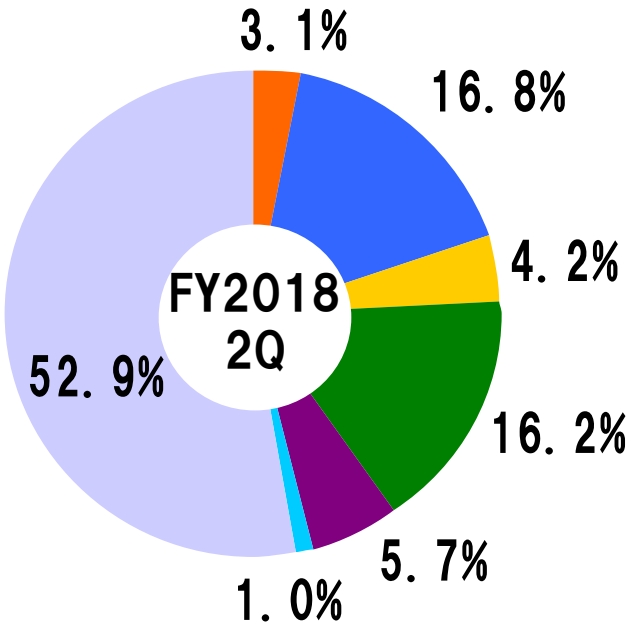
Non-consolidated (Equipment business)



Breakdown of Sales by Region

FY 2018 2Q

Overseas sales ratio: 47. 1%

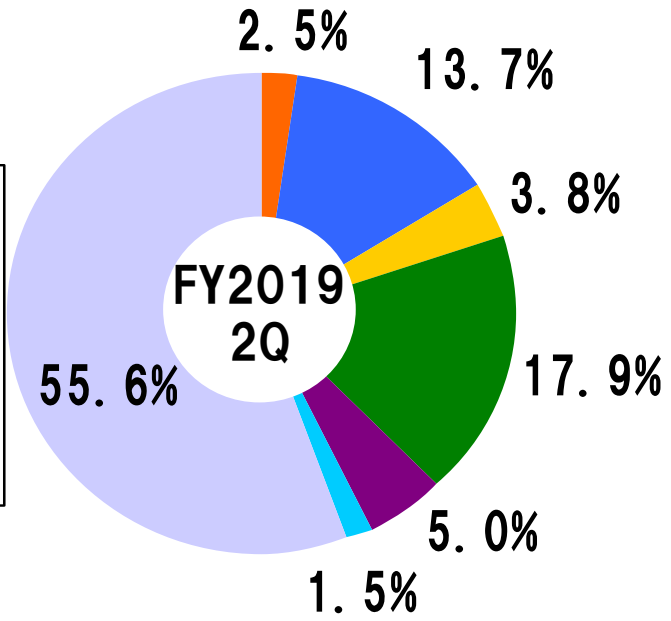


Total: 19,092million yen

（Overseas sales: 8,983million yen）

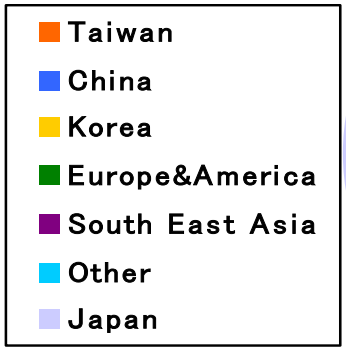
FY 2019 2Q

Overseas sales ratio: 44. 4%



Total: 18,766million yen

（Overseas sales: 8,331 million yen）



Business Plan
for the Fiscal Ending March 31, 2020

FY 2019 Second half Awareness of the Environment

Equipment Business	Environmental Test Chambers	△	Investment in the automotive market continued in the first half, but not as rapidly as in the previous year. There are concerns about a slowdown in investment in the second half.
		△	Businesses have maintained a “wait-and-see” approach to investment across the entire electronics sector due to concerns about the global economic slowdown
	Energy Device Equipment	×	The investment outlook is uncertain for on-vehicle secondary batteries in China, although the global trend toward EVs will continue
	Semiconductor Equipment	○	The semiconductor-related market continued to perform steadily as the first half
Service Business	After-sales Service and Engineering , Commissioned Tests and Facility Rentals	○	Solid demand in the after-sales service and engineering field Commissioned tests performed firmly as testing facilities were upgraded and expanded
Other Business	The forest wetland and greening Business, Plant Production Systems	△	No significant changes in the Forest Wetland and Greening Business, Plant Production Systems

FY 2019 Assumed exchange rate

■Assumed exchange rate

	FY 2017	FY 2018		FY 2019	
	Results	First half Results	Results	First half Results	Assumed
US$(yen)	112.17	108.68	110.40	108.60	108

Reference. FY 2019 Exchange rate sensitivity

(for every appreciation of ¥1 against the U.S. dollar)

Net Sales　　A decrease of ¥131 million

Operating Income　　A decrease of ¥22 million

Business Plan for the Fiscal Ending March 31,2020

(millions of yen)

	FY 2018		FY 2019			
				Revised Plan		
	Results	Reference: Results for 12-month financial results period for overseas consolidated subsidiaries	First half (Results)	Second half	Full Year	Year on Year (12-month reference value)
Orders-received	50,698	48,008	23,463	19,537	43,000	-10.4%
Net sales	50,580	47,060	18,776	23,724	42,500	-9.7%
Gross profit [Profit ratio (%)]	18,163 [35.9%]	17,084 [36.3%]	6,604 [35.2%]	8,096 [34.1%]	14,700 [34.6%]	-14.0%
Operating income (loss) [Profit ratio (%)]	5,827 [11.5%]	5,470 [11.6%]	1,387 [7.4%]	2,213 [9.3%]	3,600 [8.5%]	-34.2%
Ordinary income (loss) [Profit ratio (%)]	5,851 [11.6%]	5,493 [11.7%]	1,494 [8.0%]	2,206 [9.3%]	3,700 [8.7%]	-32.6%
Profit attributable to owners of parent [Profit ratio (%)]	4,289 [8.5%]	4,030 [8.6%]	1,046 [5.6%]	1,654 [7.0%]	2,700 [6.4%]	-33.0%
Capital expenditures	1,197	—	850	1,750	No change 2,600	YoY 117.2%
Depreciation expenses	897	—	435	565	No change 1,000	YoY 11.5%
R&D expenditures	1,290	—	538	662	No change 1,200	YoY -7.0%
Profit Per Share (yen)	187.65	176.32	45.79	72.30	118.09	-33.0%

Equipment Business

（millions of yen）

	FY 2018		FY 2019			
	Results	Reference: Results for 12-month financial results period for overseas consolidated subsidiaries	First half (Results)	Revised Plan		
				Second half	Full Year	Year on Year (12-month reference value)
Orders-received	42, 587	39, 979	18, 476	15, 924	34, 400	-14. 0%
Net sales	42, 638	39, 236	15, 131	19, 369	34, 500	-12. 1%
Operating income [Profit ratio (%)]	5, 193 [12. 2%]	4, 908 [12. 5%]	1, 171 [7. 7%]	1, 729 [8. 9%]	2, 900 [8. 4%]	-40. 9%

Service Business

(millions of yen)

	FY 2018		FY 2019			
	Results	Reference: Results for 12-month financial results period for overseas consolidated subsidiaries	First half (Results)	Revised Plan		
				Second half	Full Year	Year on Year (12-month reference value)
Orders-received	6,614	6,524	3,242	3,360	6,600	1.2%
Net sales	6,613	6,486	3,075	3,525	6,600	1.8%
Operating income [Profit ratio (%)]	620 [9.4%]	548 [8.5%]	280 [9.1%]	421 [11.9%]	700 [10.6%]	27.7%

Other Business

(millions of yen)

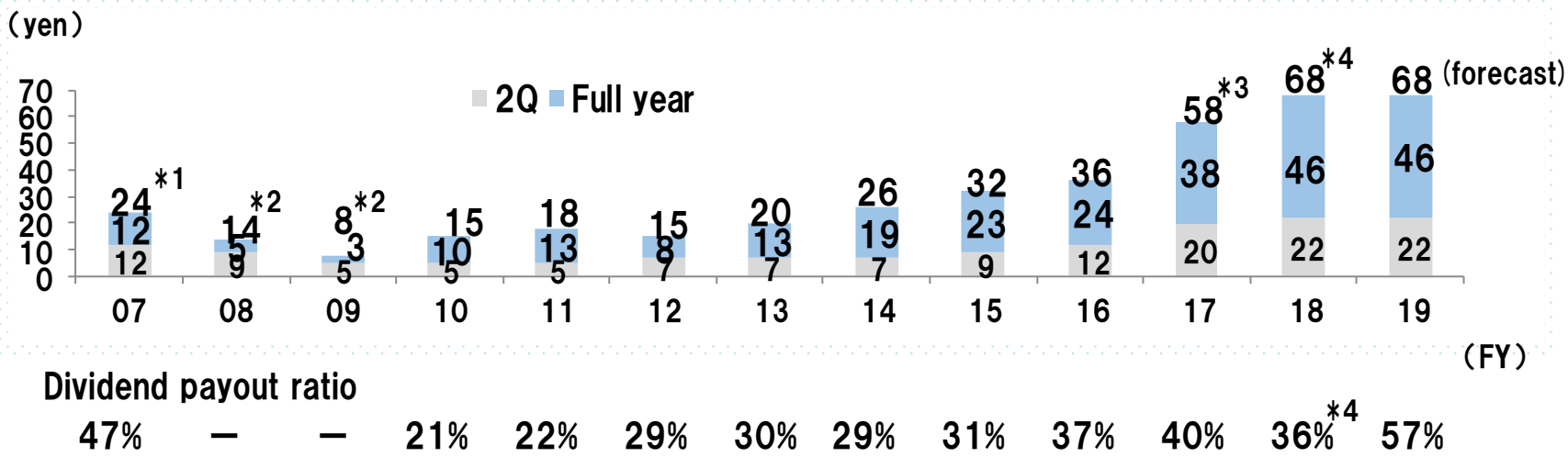
	FY 2018	FY 2019			
	Results	First half (Results)	Revised Plan		
			Second half	Full Year	Year on Year
Orders-received	1,706	1,865	335	2,200	29.0%
Net sales	1,541	675	925	1,600	3.8%
Operating income [Profit ratio (%)]	9 [0.6%]	-65 [-9.7%]	65 [7.0%]	0 [0.0%]	—

Dividends

Dividend policy

Recognizing that passing on profits to our shareholders is a key priority and that raising corporate value on a lasting basis is fundamental to raising shareholder value, dividends are decided taking into account sustainability and the dividend payout ratio.

Dividend per share and dividend payout ratio



*1.The dividend per share for FY2007 included a commemorative dividend of ¥2 per share to mark the Company's 60th founding anniversary.
*2.Dividends were implemented in FY2008 and FY2009, despite posting a net loss.
*3.The dividend per share for FY2017 includes a commemorative dividend of ¥2 per share to mark the Company's 70th founding anniversary (an interim dividend of ¥1 per share and a year-end dividend of ¥1 per share).
*4.FY2018 was an irregular 15-month fiscal period for overseas consolidated subsidiaries. The dividend payout ratio for a 12-month period is 39% (reference)

Action Items
for the Fiscal Ending March 31, 2020

Demand for environmental testing services is growing around the world

A business essential to the development of cutting-edge technology

CASE

Connected **A**utonomous **S**hared **E**lectric

5G

IoT

Equipment Business

Environmental Test Chambers

- Increase orders-received by launching new products in the automotive market
- Cultivate IoT and 5G-related needs

  Target areas: Japan, North America, China
- Measures to improve the cost of sales ratio

  Boost internal production through the utilization of new manufacturing facilities

Energy Device Equipment

- Upgrade and expand the product lineup and enhance price competitiveness

  Target markets: secondary batteries

  Target areas: Japan, Europe and China

Global Strategy：China

Target Markets

Automobiles, IoT, 5G and semiconductors

Marketing strategy according to customer needs

- Early development of test equipment that addresses larger test specimens
- Bolster price competitiveness
- Strengthen coordination on development and sales between Chinese subsidiaries and Head Office

Global Strategy：Europe

Target market

Automobiles

Strengthen the capabilities of ESPEC's German subsidiary

- Strengthen design capabilities
- Set up a quick response framework
- Expand technical services
- Bolster partnerships with local agencies

Upgrade and expand the product lineup for Europe

- Products that comply with IEC standards and German Automotive Manufacturer Testing Standards
- Products that comply with the EU F-Gas Regulation
- Sell new products that address larger test specimens

Service Business: Commissioned Tests

Promote global testing services

Address an increasingly diverse array of testing standards driven by globalization

Expand the scope of operations in collaboration with other companies

■Expand the testing capabilities of the Battery Safety Certification Center

■Renovated and reopened Toyota Test Center (September 2019)
The test center can address all testing standards set forth by the LV124 German Automotive Manufacturer Testing Standards

■Expand the operations of ESPEC TEST TECHNOLOGY (SHANGHAI) CO., LTD., a Chinese subsidiary

Toyota Test Center
renovation opening ceremony

Strengthen management foundation and promote ESG

Under the corporate philosophy, THE ESPEC MIND, the Company is aiming for sustainable growth

E(Environmental)

①7th Mid-term Plan on the Environment
②Contribute to reducing the environmental load through products
③Promote biodiversity and natural environment preservation activities

S(Social)

①Support human resource development and growth
②Promote working style reform

G(Governance)

①Maintain headquarters functions, strengthen governance
②Facilitate good communication with stakeholders

Investment plan

	Full Year Plan	First half Results	Second half Plan
Strategic investment	1.6 billion yen	0.6 billion yen	1 billion yen
Ordinary investment	1 billion yen	0.25 billion yen	0.75 billion yen
Total	2.6 billion yen	0.85 billion yen	1.75 billion yen

Main Capital Investments

- Construct new building at Kobe R&D Center
- Expand commissioned testing services
- Expand ENA Colorado business site

Image of the new building at the Kobe R&D Center

Quality is more than a word

These materials contain forward-looking statements, including the Company's present plans and forecasts of performance, that reflect the Company's plans and forecasts based on the information presently available. These forward-looking statements are not guarantees of future performance, and plans, forecasts, and performance are subject to change depending on future conditions and various other factors.

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Jyunko Nishitani (General Manager),
Yasutoshi Nakagawa and Natsuko Okawa
Corporate Communication Department

Reference

History of Environmental Test

What is Environmental Test

Test to analyze and evaluate effects of environmental factors such as temperature, humidity, pressure, and light on various industrial products like electronic components in order to ensure product quality.

<1950s>
The environmental test was JIS-standardized in Japan for consumer products.

<1970s-1990s>
"Reliability" and "quality control" became important issues in product development. Demand increased dramatically due to a rapid shift toward computerization and the use of electronic components.

<Today>
Demand is expanding in the energy field, and the development field of automobiles' electrification and automated driving functions.

1961 Japan's First Environmental Test Chamber

【 Low temperature & humidity chamber "Lucifer" 】

Over 60% domestic

Over 30% worldwide

To Worldwide Market Share No.1

【 Temperature & Humidity Chamber】 "Platinous J series"

Transition in Business

Expanding business based on the “environmental creation technology” refined during the course of developing environmental test chambers

Integrated circuit

large scale integration

LCD

surface mount package

Automated driving, IoT,5G

Eco cars such as EVs, HVs, and PHVs

storage of electricity generation of electricity

Sales of ESPEC

1965 1975 1985 1995 2005 2019

Business expansion

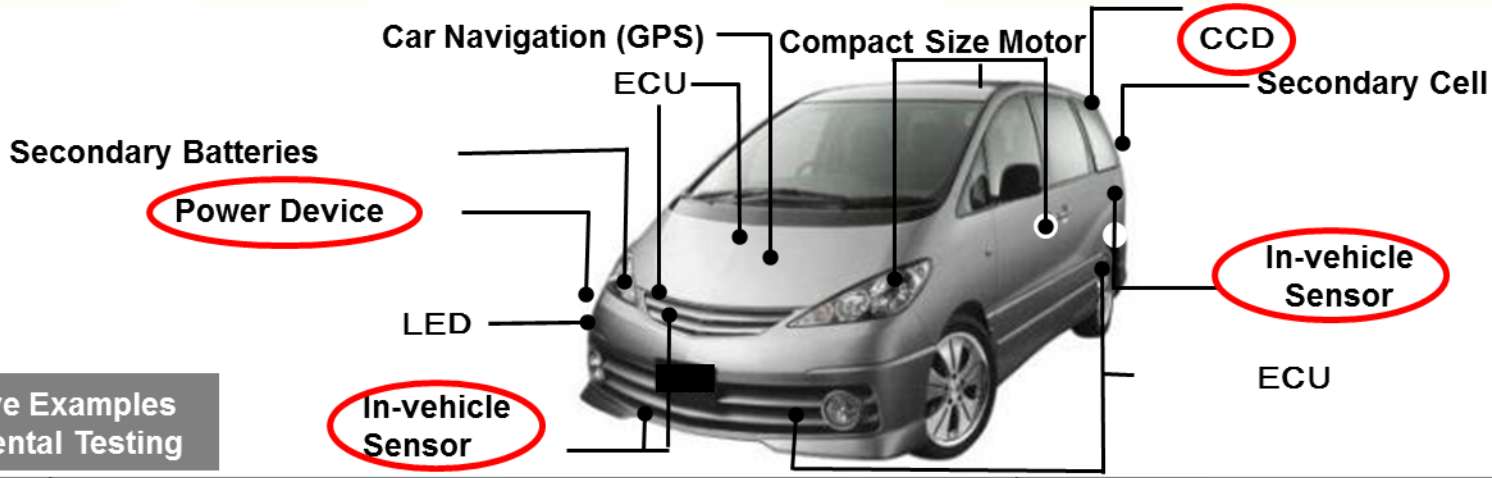
1982
Launching the semiconductor equipment business

1986
Launching the FPD Equipment business

1994
Launching the evaluation system business

2011
Launching the energy device equipment business

[Equipment Business]
Usage Case with Environmental Test Chambers



Representative Examples for Environmental Testing

Device	Process/Test Condition		Our Products
【Power Device】 	Inspection	■Thermal shock test: －40℃⇔＋125℃	Thermal shock chamber
		■High temperature exposure: ＋175℃、＋85℃	(Compact size) Oven
		■Burn-in test	Burn-in chamber
【In-vehicle Sensor】 	Inspection	■Temperature cycle test of printed circuit board: －40℃⇔＋110℃	Temperature & humidity chamber (Platinous) /Oven
		■ Temperature characteristic test after soldering: Linear change between -30℃ and +85℃	Burn-in chamber, Rapid-rate thermal cycle chamber
	Evaluation	■ Thermal shock test : －30℃⇔RT⇔＋80℃、－55℃⇔＋155℃	Thermal shock chamber
【CCD／CMOS】 	Production	■ Diffusion Test: +150℃	Compact size Oven
		■ Drying after cleaning: +85℃	Clean Oven
	Evaluation	■Screening: ＋85℃	Temperature chamber (Platinous)／Burn-in chamber
	Inspection	■Temperature and humidity test: ＋85℃／＋85%rh、＋60℃／90%rh	Temperature & humidity chamber (Platinous)
		■Acceleration test: ＋120℃／100%rh	HAST chamber
		■ Thermal shock test : －40℃⇔＋125℃、－20℃⇔＋85℃	Thermal shock chamber

[Equipment Business] Main New Products

Release Date	Name of product	Features
Dec. 2019	Cooling And Heating Temperature Air Testing System	•Enables materials tests to be performed during the actual operation of automobiles and other equipment, when used in combination with various materials testing instruments
Dec.2018	Aging Cabinet	•There is no temperature rise due to defrosting, and long-term continuous operation of high humidity environment is possible while maintaining below 5℃ •Equipped with sterilization mode
Nov.2018	Standard Type Secondary Battery Charge-discharge Tester For Automobiles GOOD DESIGN AWARD 2019	•Supports charge-discharge testing for large capacity secondary batteries in automobiles
Oct. 2018	Environmental Stress Chamber AR Series Rapid-Rate Temperature Cycle Type (5K/min)	•Conforms to IEC standards and a German automobile industry standard •Uses European F-gas Regulation-compliant low-GWP refrigerant R-449A
Mar.2018	Environmental Stress Chamber AR Series Rapid-Rate Temperature Cycle Type	•Second F-gas Regulation-compliant low-GWP refrigerant (R449) environmental testing chamber
Feb.2018	Environmental Stress Chamber AR Series Standard Type	•Added four models with new 220 L and 390 L chambers (with and without humidity control), bringing the total lineup to 12 models
Dec.2017	Faster Temperature (&Humility) Chamber SM Series	•Achieved temperature change of 5°C/min with 1,800 L capacity •Made networking functions a standard feature
Nov.2017	Highly Accelerated Stress Test System (HAST) GOOD DESIGN AWARD 2019	•Added a new controller for improved operability and visibility •Added new functions using networks
Jul.2017	Thermal Shock Chamber TSA series	•the first chambers in Japan to be compliant with European F-gas Regulation

[Equipment Business] Examples of Products Delivered 1

(Delivered in July 2018)

■Delivery examples of temperature (& humidity) chambers, test chambers for use for building materials

Uses

Reproduce the environment inside apartments (temperature and humidity) and outdoors (weather such as rain, snow, and solar radiation), conduct performance evaluations and durability tests of building materials for sash, balcony, etc.

temperature (& humidity) chambers, test chambers for use for building materials

Temperature (& humidity) chambers are movable so that building materials for testing can be easily changed

Furnished with irradiation equipment and watering (rain) equipment, to reproduce an outdoor weather environment

[Equipment Business] Examples of Products Delivered 2

(Delivered in March 2016)

■Smart System Research Facility, Fukushima Renewable Energy Institute, AIST (Koriyama city, Fukushima)

Product delivered:
Large walk-in type temperature & humidity chamber

Uses:
Performance and safety evaluation for large power conditioners for solar power generation
Supports heat generation loads of 100 kw and large weights (21 tons)

Large walk-in type temperature & humidity chamber

■National Laboratory for advanced energy storage technologies (NLAB), National Institute of Technology and Evaluation (Nanko, Osaka City)

Product delivered:
1.Walk-in type temperature & humidity chamber for charge-discharge testing
2.External short-circuit testing equipment (energy devices equipment)

Uses:
1.Evaluate the performance of storage batteries by repeatedly charging and discharging them
2.Evaluate safety by confirming that storage batteries will not catch fire or rupture if they short circuit

Walk-in type temperature & humidity chamber for charge-discharge testing

[Equipment Business]
Usage Case with Energy Device Equipment

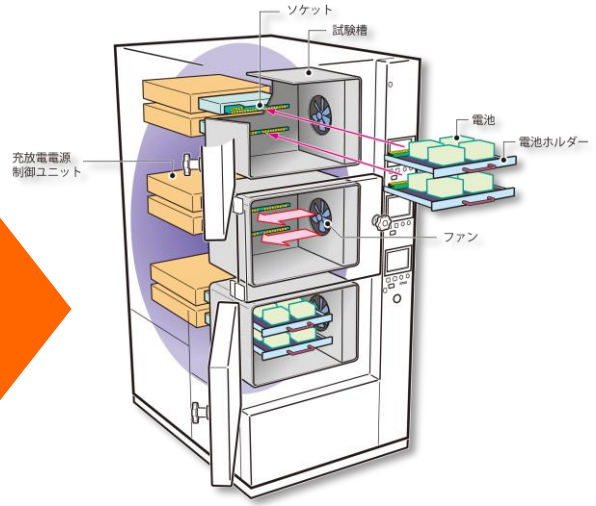
Charge-discharge Cycle Evaluation Equipment

Equipment for ensuring the reliability and safety of lithium-ion secondary batteries for next-generation vehicles (e.g., hybrid and electric vehicles)

Charge-discharge Cycle Evaluation Equipment

Secondary Batteries

Charge-discharge cycle load



Checking the charge-discharge characteristics of secondary batteries

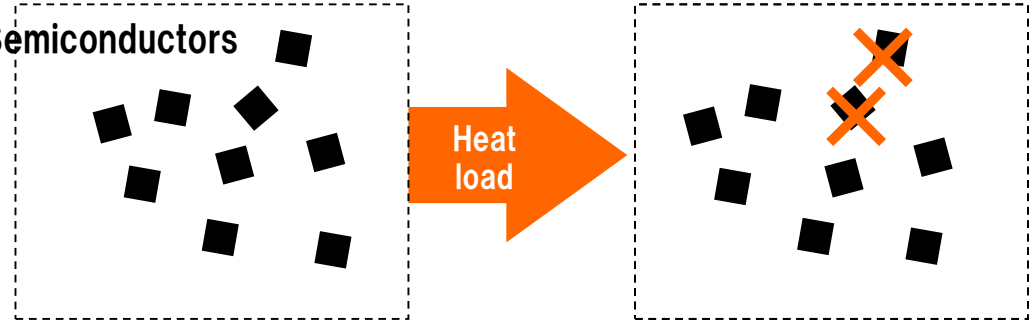
Evaluating the performance and life of secondary batteries

[Equipment Business]
Usage Case with Semiconductor Equipment

Screening

Eliminate defective products to maintain initial-period quality at the final inspection stage of semiconductor device manufacturing

Burn-in chamber

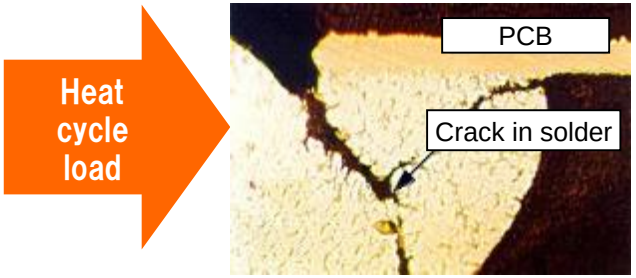


Elimination of latent early failures

Reliability Evaluation

Used to evaluate basic failure patterns to ensure reliability in the development of new technologies

Conductor resistance evaluation system



Electrical evaluation of reliability of joints in electronic parts

[Service Business]

After-sales Service and Engineering

Preventive maintenance of products, maintenance service, and the upgrading/improvement and installation/relocation of products

■ Speedy response via one of the most extensive networks in Japan

■ Industry's first new services using networks「ESPEC ONLINE SERIES」

Commissioned Tests and Facility Rentals

Commissioning of testing, analysis, and evaluation; consulting; equipment rental; sales of used products; calibration of test equipment, etc.

■ The company has five commissioned test centers in Japan,two commissioned test centers in China.
(In Japan,2 point of Utsunomiya, Toyota, Kariya and Kobe. In China , Shanghai , Suzhou)

・These centers are IECQ-approved independent testing laboratories that meet ISO/IEC17025 standards.

・The centers are also recognized as official calibration facilities under the Japan Calibration Service System (JCSS).

■ Opened the world's first Battery Safety Certification Center.
(in September 2015)

・ Providing a one-stop service for testing and certification application services compliant with United Nations regulations on the safety of automotive rechargeable batteries.

Battery Safety Certification Center
(in Utsunomiya Technocomplex)

・ Entered into business alliance with TÜV SÜD Japan Ltd., a third-party certification agency (in October 2014)

■ [First in Japan] Acquire ISO/IEC 17025 test facility certification simultaneously in the three fields of automobiles, trains and airplanes

■The Toyota Test Center is the first testing facility in Japan to address all test items set forth by the LV124 German Automotive Manufacturer Testing Standards

＊ ISO/IEC 17025: An international standard in which an authoritative third-party organization certifies whether a test facility or calibration organization is capable of producing accurate measurements or calibration results

[Service Business]

Industry’ s first new services using networks
「ESPEC ONLINE SERIES」

＊ Services started in November 2013

■ESPEC online support

Trouble notification and recovery service enabling peace of mind when using the Company’s products

■ESPEC OnlineCore

A centralized management system enabling operators to monitor the operation status of multiple networked environmental testing chambers at a glance

■ESPEC OnlineConverter

A network adapter for LAN connection of non-network ready environmental testing chambers
Enables remote monitoring and operation of networked environmental testing chambers

[Service Business]

World’ s first
Battery Safety Certification Center compliant with United Nations regulations

Providing a one-stop service to support the implementation of 9 safety tests and applications for certification by certification agencies, as stipulated by UN ECE R100-2. Part II*, a United Nations regulation.
(The facility was opened within the Utsunomiya Technocomplex in September 2015.)

Crush Testing Equipment
(No. 1 Safety Test Room)

No. 2 Safety
Test Room

Renovated the Toyota Test Center First testing facility in Japan to address the German Automotive Manufacturer Testing Standards

Support Japanese automotive equipment manufacturers seeking to develop global operations by addressing all test items set forth by the LV124 German Automotive Manufacturer Testing Standards
(Renovated the Toyota Test Center in September 2019)

Toyota Test Center

[Other Business]

The forest wetland and greening Business

■Reforestation (Tree planting)

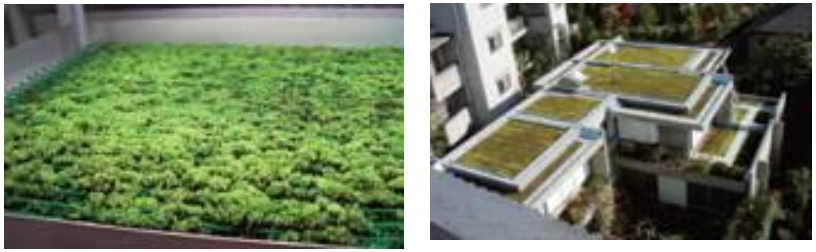
Recovery of local forest by selecting species and planting out seedlings using potential natural vegetation data.

■Waterfront biotope restoration

Reconstruction of natural environment, development of vegetative revetments, and water quality improvement using aquatic plants.

■Urban greening

Provision of roof and wall greening systems that use moss to effectively alleviate heat island effect.



Plant Production Systems

Plant factories and research cultivation equipment for growing plants with optimally controlled variables, including light, temperature, humidity, and nutrients necessary for plant growth

Container plant factory

Phyto-toron

[Other Business]

Produced a high value-added vegetables using deep-seawater

Established in March 2016 near Haneda Airport at a plant factory*,
Production and sales of vegetables high in minerals
with the use of deep sea water.

* Joint research with DHC Corporation and Kyoto University

Interior of the plant factory and Factory-produced vegetables"mineraleaf"

[Other Business] TOPICS：Examples of Products Delivered

■Arid Land Research Center, Tottori University

(Delivered in March 2016)

Products delivered:
Experimental System for Analyzing Responses of Dryland plants to Climate Changes (2 units)
(Simulates the climates of arid lands, including high temperature, low humidity, strong sunlight, and high winds)

Uses:
Plant cultivation experiments and experiments to develop efficient water-usage technologies in arid lands, research to solve issues facing arid lands

Experimental System for Analyzing Responses of Dryland plants to Climate Changes

Experiment in progress

ESPEC Identity Corporate Philosophy

Our important values that have been passed on since our inception

“THE ESPEC MIND” (Excerpt)

The Origin
To engage in a higher level of value exchange as a public institution

Mission
Provide more certain Seikankyo (living environment) via environmental creation technology

Style
Progressive, Reliable, Open, Fair

Declaration
What ESPEC promises society

“compliance,” "culture," "human rights," "the environment," “education/enlightenment.”

ESPEC Business and SDGs

Equipment Business　Service Business

Contribute to the development of cutting-edge technologies through the supply of products and services that harness "Environmental Creation Technology"

- Supply products and services that contribute to the development of cutting-edge technology, with a view to solving social and environmental issues

The forest wetland and greening Business

Contribute to biodiversity preservation

- Promote the nature restoration/revival business, which contributes to biodiversity preservation and global warming mitigation

Plant Production Systems

Contribute to the stable supply of food to address global warming and extreme weather

- Supply plant factories that can systematically grow safe vegetables
- Supply plant production systems to promote research into drought-tolerant plants

ESPEC Business and SDGs

Environmental（E）

- Contribute to global warming mitigation
- Reduce environmental impact
- Eco-site and eco-operation
- Prevent pollution
- Preserve biodiversity

Social（S）

- Improve customer satisfaction and ensure product safety
- Supply chain management
- Respect human rights and promote the success of diverse human resources in the workplace
- Provide appropriate disclosure and communication of information
- Give back to society

Governance（G）

- Enhance governance
- Promote risk management
- Ensure compliance

Initiatives tackling environmental problems

Achieved 85th place in the Nikkei Environmental Management Survey

Forest preservation activity - Kehara Forest Creation Program

In March 2018, designated as an affiliated business of the Japan Committee for United Nations Decade on Biodiversity
Since 2007, the Company's employee volunteers have increased to over 1,000 participants

ESPEC Foundation for Global Environment Research and Technology (Charitable Trust)

Provides funding support every year for research, technology development on global environmental conservation.
Established in 1997 on the 50th anniversary of ESPEC

ESPEC Midori-no-gakko schools

Human resources certification, etc. based on Act on the Promotion of Environmental Conservation Activities through Environmental Education
Seminars and events are held throughout Japan to train leaders who will think about the global environment

・Environmental Communication Award Won the Excellence Award

＊Sponsored by the Ministry of the Environment, and the Global Environmental Forum

Initiatives tackling environmental problems

(March 2018)

Designated as affiliated businesses of the Kebara Forest Creation Program: Creating a Mountain Full of Treasures—The Kyoto Model Forest Project, and The Japan Committee for the United Nations Decade on Biodiversity

- The Kebara Forest Creation Program is a project in which ESPEC and ESPEC MIC CORP. are working with the Fukuchiyama City Oecho Kebara Residents Association regarding forest conservation activities

- ESPEC formulated Creating a Mountain Full of Treasures Project which freshly reveals the attractive treasures in the forest: The variety of living creatures which live in the Kebara Forest. ESPEC conducts conservation activities such as cutting down and thinning, produces maps showing where the living creatures are, and maintains walking courses

Participants in the Kebara Forest Creation Program

This project is designated as a project recommended by the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J)

To a company where employees can be more active

Initiatives to promote women's success

From the Ministry of Health, Labor and Welfare:
The Company received the "Kurumin" certification, which is granted to companies that support child-rearing. And the highest ranking of the certification mark "Eruboshi" based on the Act on Promotion of Women's Participation and Advancement in the Workplace.

The female leadership development program

Employee Education System Enhancement

- Implement a Global Trainee Program aimed at developing human resources who are capable of working in international settings
- Enhance the education program to support management executive education and self-development
- Promote work style reforms

On-site training in the Global Trainee Program (U.S.)