

Securities ID code:6859

Results Briefing for the Second Quarter of Fiscal 2020 Ending March 2021

ESPEC CORP.
November 26, 2020

Financial Result for the Second Quarter of Fiscal Ending March 2021

Sales and profits both decreased year on year, reflecting the impact of curtailed investment due to the COVID-19 pandemic

	Year on Year	Forecast Ratio
■ Orders-Received	× Decreased due to declines in all businesses	○ Increased due to Equipment Business (environmental test chambers)
■ Net sales	× Decreased due to declines in the Equipment Business (environmental test chambers and energy device equipment) and Service Business	○ Sales were in line with forecast, despite a slight decrease in Equipment Business
■ Operating income	× Decreased due to the decline in sales and deteriorating cost of sales ratio	○ Increased due to the decline in fixed costs
■ Ordinary income, Net income*	× Decreased due to the decline in operating income	○ Increased due to the reduced decline in operating income

*Profit attributable to owners of parent

From fiscal 2020, ESPEC EUROPE GmbH (Germany) and ESPEC ENGINEERING (THAILAND) CO., LTD. have been included in the scope of consolidation.

Summary of Profits and Losses

(millions of yen)

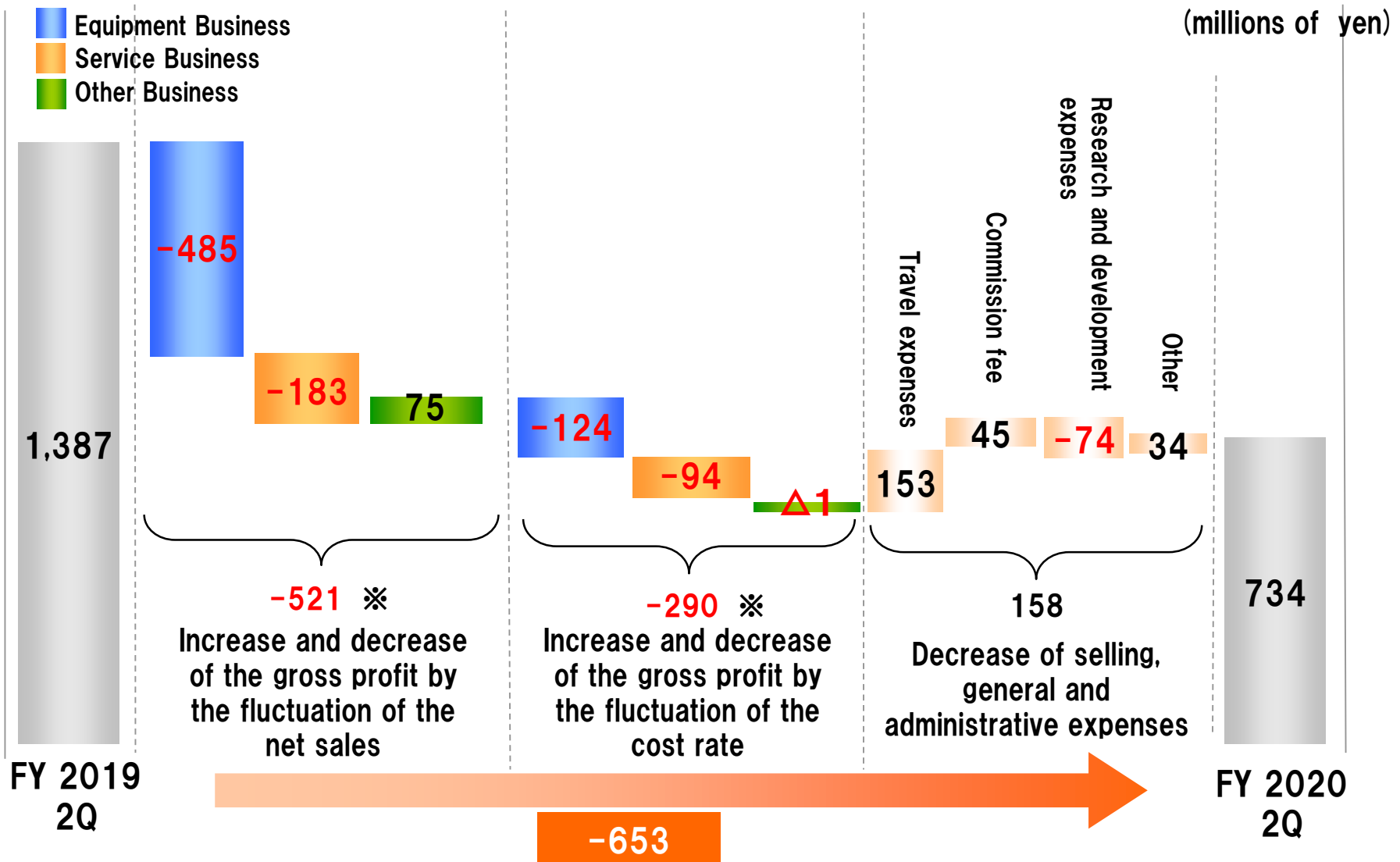
	FY 2019 2Q Results	FY 2020 2Q Forecasts	FY 2020 2Q Results	Year on Year	Forecast Ratio
Orders–Received	23,463	16,500	16,957	–27.7%	2.8%
Net sales	18,776	17,500	17,294	–7.9%	–1.2%
Cost of Net Sales (Cost of sales ratio)	12,172 (64.8%)	11,870 (67.8%)	11,502 (66.5%)	–5.5% (1.7pt deterioration)	–3.1% (1.3pt amelioration)
Gross profit	6,604	5,630	5,792	–12.3%	2.9%
SG&A	5,216	5,230	5,058	–3.0%	–3.3%
Operating income	1,387	400	734	–47.1%	83.5%
Ordinary income	1,494	450	834	–44.2%	85.3%
Profit attributable to owners of parent	1,046	250	494	–52.8%	97.6%

Performance by Segment

(millions of yen)

Segment		FY 2019 2Q Results	FY 2020 2Q Forecasts	FY 2020 2Q Results	Year on Year	Forecast Ratio
Equipment Business	Orders-Received	18,476	13,100	13,699	-25.9%	4.6%
	Net Sales	15,131	14,000	13,745	-9.2%	-1.8%
	Operating Income	1,171	450	658	-43.8%	46.2%
Service Business	Orders-Received	3,242	2,900	2,879	-11.2%	-0.7%
	Net Sales	3,075	2,600	2,592	-15.7%	-0.3%
	Operating Income	280	-50	58	-79.3%	—
Other Business	Orders-Received	1,865	600	502	-73.1%	-16.3%
	Net Sales	675	1,000	1,073	58.9%	7.3%
	Operating Income	-65	0	16	—	—
Elimination	Orders-Received	-120	-100	-124	—	—
	Net Sales	-106	-100	-116	—	—
	Operating Income	1	0	1	—	—
Total	Orders-Received	23,463	16,500	16,957	-27.7%	2.8%
	Net Sales	18,776	17,500	17,294	-7.9%	-1.2%
	Operating Income	1,387	400	734	-47.1%	83.5%

Analysis of Operating Income Increase and Decrease Factor



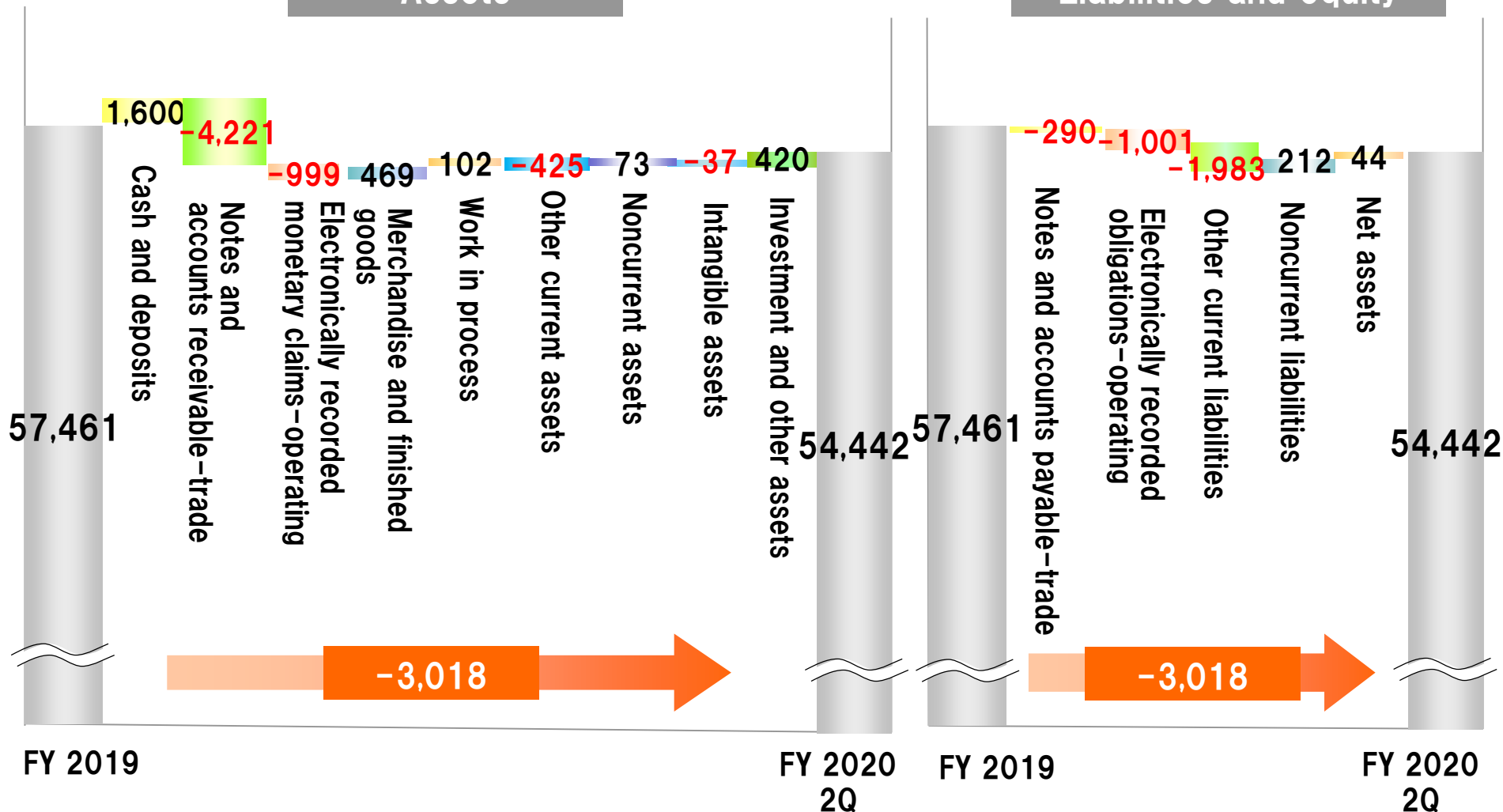
※ Totals have been calculated using the gross profit per net sales ratio.

Statement of Assets and Liabilities

(millions of yen)

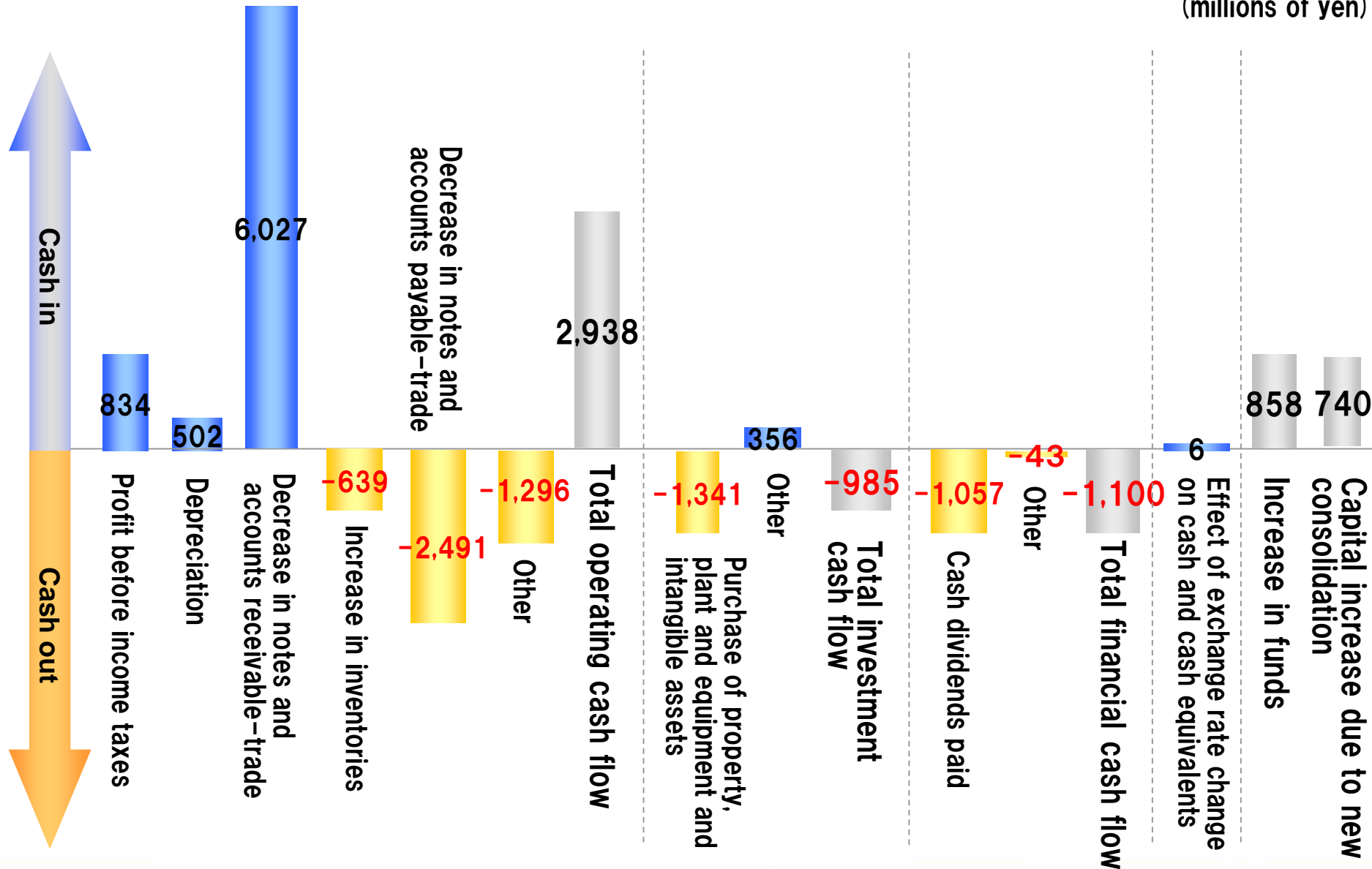
Assets

Liabilities and equity



Statement of Cash Flow

(millions of yen)



Equipment Business

(millions of yen)

	FY 2019 2Q Results	FY 2020 2Q Forecasts	FY 2020 2Q Results	Year on Year	Forecast Ratio
Orders-Received	18,476	13,100	13,699	-25.9%	4.6%
Net Sales	15,131	14,000	13,745	-9.2%	-1.8%
Operating Income [Profit ratio (%)]	1,171 [7.7%]	450 [3.2%]	658 [4.8%]	-43.8%	46.2%

Environmental test chambers

- In Japan, versatile standardized products and customized products both declined year on year across the automobile and electronics sectors, as the trend of curtailed investment by customers continued
- Overseas, net sales in China, Southeast Asia and Taiwan increased year on year, while net sales in Europe and America decreased

Energy Device Equipment

- Orders-received and net sales both substantial decreased year on year for evaluation systems for secondary batteries and fuel cells as the market was sluggish

Semiconductor Equipment

- Orders-received decreased year on year, but net sales increased as sales of burn-in system and chambers from the previous fiscal year were recorded

Service Business

(millions of yen)

	FY 2019 2Q Results	FY 2020 2Q Forecasts	FY 2020 2Q Results	Year on Year	Forecast Ratio
Orders-Received	3,242	2,900	2,879	-11.2%	-0.7%
Net Sales	3,075	2,600	2,592	-15.7%	-0.3%
Operating Income [Profit ratio (%)]	280 [9.1%]	-50 [-1.9%]	58 [2.2%]	-79.3%	—

After-sales Service and Engineering

- Orders-received remained level year on year but net sales decreased due to activity constraints.

Commissioned Tests and Facility Rentals

- Orders-received and net sales both decreased year on year mainly due to sluggish market conditions of commissioned tests

Other Business

(millions of yen)

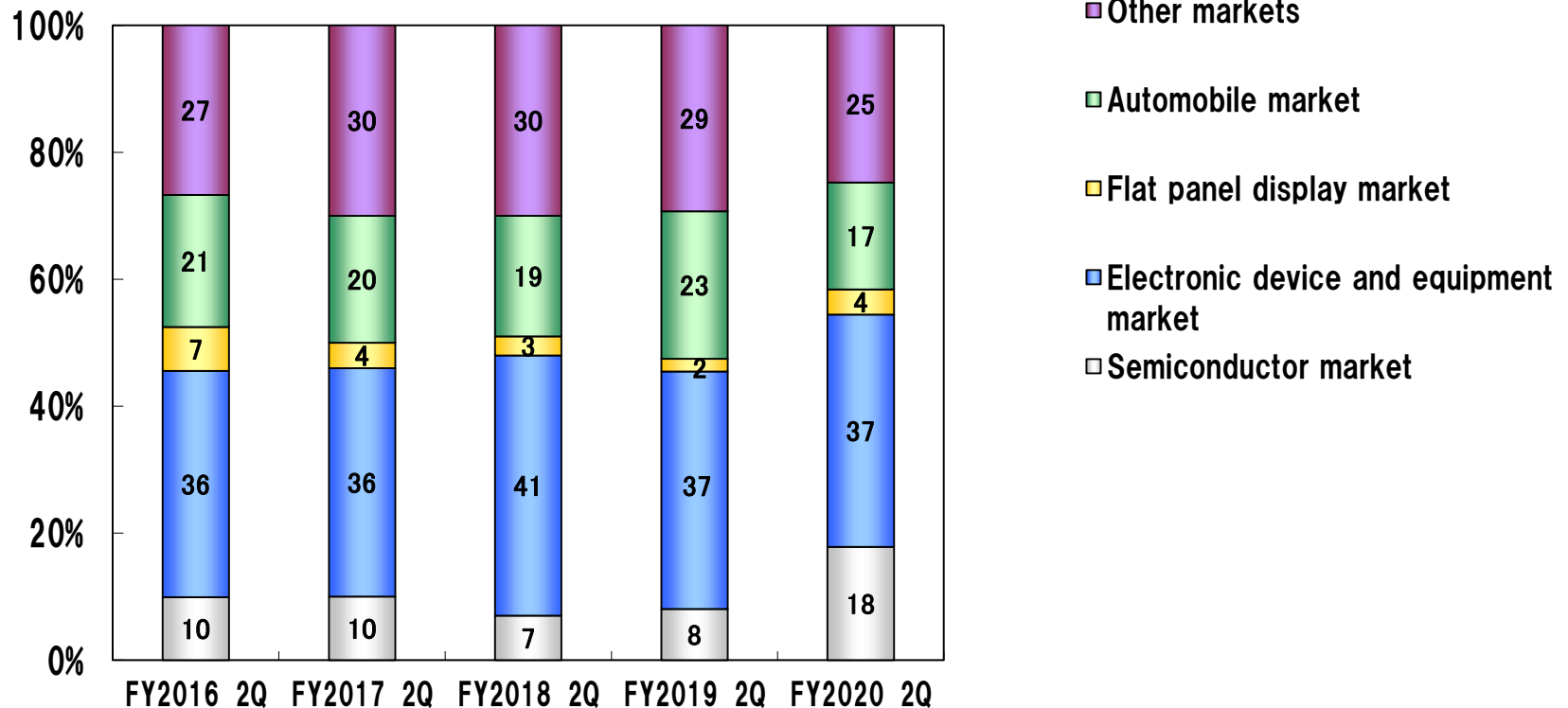
	FY 2019 2Q Results	FY 2020 2Q Forecasts	FY 2020 2Q Results	Year on Year	Forecast Ratio
Orders-Received	1,865	600	502	-73.1%	-16.3%
Net Sales	675	1,000	1,073	58.9%	7.3%
Operating Income [Profit ratio (%)]	-65 [-9.7%]	0	16 [1.5%]	—	—

Environmental Preservation, Plant Production Systems

- Orders-received decreased compared to the previous year which included large-scale orders for plant factory business, while net sales increased due to recording the aforementioned large-scale projects

Breakdown of Sales by Market

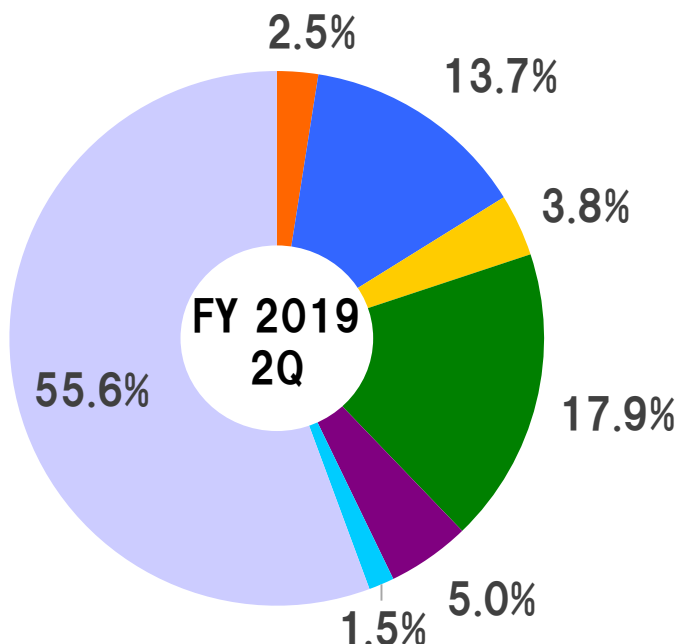
Non-consolidated (Equipment business)



Sales by Region

FY 2019 2Q

Overseas sales ratio: 44.4%

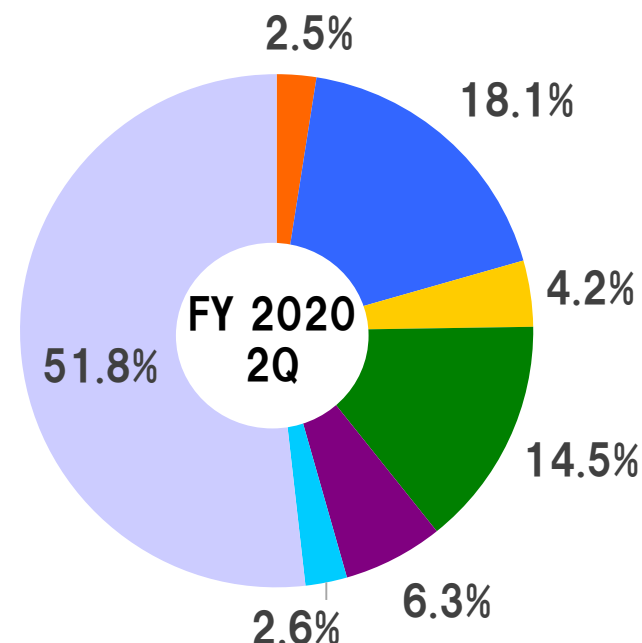


Total: 18,776 million yen

(Overseas sales: 8,331 million yen)

FY 2020 2Q

Overseas sales ratio: 48.2%



Total: 17,294 million yen

(Overseas sales: 8,343 million yen)

Full-Year Forecasts for Fiscal 2020

While we see challenging conditions continuing, we will make it our top priority to win orders

	FY 2019	FY 2020 (millions of yen)			
	Full year Results	First half Results	Revised forecast		
			Second half	Full year	Year on Year
Orders-received	43,571	16,957	18,043	35,000	-19.7%
Net Sales	42,443	17,294	19,706	37,000	-12.8%
Gross profit [Profit ratio (%)]	14,719 [34.7%]	5,792 [33.5%]	6,308 [32.0%]	12,100 [32.7%]	-17.8% [-2.0pt]
SG&A [SG&A ratio (%)]	10,976 [25.9%]	5,058 [29.2%]	5,342 [27.1%]	10,400 [28.1%]	-5.2% [2.2pt]
Operating income [Profit ratio (%)]	3,742 [8.8%]	734 [4.2%]	966 [4.9%]	1,700 [4.6%]	-54.6%
Ordinary income [Profit ratio (%)]	3,933 [9.3%]	834 [4.8%]	966 [4.9%]	1,800 [4.9%]	-54.2%
Profit attributable to owners of parent [Profit ratio (%)]	2,818 [6.6%]	494 [2.9%]	706 [3.6%]	1,200 [3.2%]	-57.4%
Capital expenditures	2,671	559	541	1,100	-58.8%
Depreciation expenses	891	493	507	1,000	12.2%
R&D expenditures	1,169	612	488	1,100	-5.9%
Net Income Per Share (yen)	123.26	21.63	22.10	43.73	-64.5%

Second half Outlook for the Business Environment

- Recovery expected in China, Taiwan, and Korea despite continuing challenging conditions
- Cutting-edge technology fields (5G, IoT, automated and electric vehicles) are expected to recover, although the economic slowdown will continue to have an impact

Equipment Business	Environmental Test Chambers	<p>Japan : 5G and IoT will continue to perform well as in the first half, and automated and electric vehicles will also recover, although recovery in other fields expected to take time</p> <p>China : Expect 5G and IoT will perform well as in the first half, the automobile sector will also recover, and conditions will return to previous year's level, despite strong uncertainties including impact of US-China tensions and recovery in external demand</p> <p>Taiwan : Expect move toward recovery, primarily in 5G and IoT-related fields, and return to previous year's level</p> <p>Korea : Expect move toward recovery, but level of orders-received will decrease year on year</p> <p>ASEAN : Conditions remain challenging, but gradual recovery expected in some markets such as semiconductors</p> <p>America : Although conditions remain challenging, a gradual recovery is expected from the fourth quarter.</p> <p>Europe : Economic activities stagnated again, but gradual recovery expected in cutting-edge technology fields</p>
	Energy Device Equipment	Evaluation systems for secondary batteries and fuel cells are both expected to recover from fiscal 2021.
	Semiconductor Equipment	Recovery expected primarily in 5G and IoT-related fields
Service Business	After-sales Service and Engineering, Commissioned Tests and Facility Rentals	<p>After-sales Service and Engineering : Expected to return to previous year's level</p> <p>Commissioned Tests : Cutting-edge technology fields expected to move toward recovery</p>
Other Business	Environmental Preservation, Plant Production Systems	No major changes in the business environment from the previous year are expected.

Segment Financial Forecasts

		FY 2019	FY 2020 (millions of yen)			
		Full year Results	First half Results	Forecast		
				Second half	Full year	Year on Year
Equipment Business	Orders-Received	34,682	13,699	14,001	27,700	-20.1%
	Net Sales	34,361	13,745	15,455	29,200	-15.0%
	Operating Income	3,041	658	570	1,228	-59.6%
Service Business	Orders-Received	6,378	2,879	3,121	6,000	-5.9%
	Net Sales	6,459	2,592	3,408	6,000	-7.1%
	Operating Income	646	58	398	456	-29.4%
Other Business	Orders-Received	2,715	502	998	1,500	-44.8%
	Net Sales	1,831	1,073	927	2,000	9.2%
	Operating Income	49	16	0	16	-67.3%
Elimination	Orders-Received	-203	-124	-76	-200	—
	Net Sales	-208	-116	-84	-200	—
	Operating Income	4	1	-1	0	—
Total	Orders-Received	43,571	16,957	18,043	35,000	-19.7%
	Net Sales	42,443	17,294	19,706	37,000	-12.8%
	Operating Income	3,742	734	966	1,700	-54.6%

Efforts to Win Orders in the Second Half and Onward (1)

Equipment Business

<Cutting-edge technology fields> 5G, IoT, automated and electric vehicles

Focus areas: Japan, China, Korea, Taiwan

Initiatives: Win orders by strengthening customization

Sales expansion through global marketing

Area	Initiatives
Japan	<ul style="list-style-type: none">•Quick response through online business meetings with participation by engineers•Invest in specialized equipment for each market
China	<ul style="list-style-type: none">•Strengthen response to R&D fields related to NEVs (new energy vehicles)•Strengthen cooperation between Japan and local sales subsidiaries in marketing organization
Europe	<ul style="list-style-type: none">•Strengthen online sales and quick response•Strengthen design functions and product capabilities for European markets
ASEAN	<ul style="list-style-type: none">•Strengthen activities aimed at Japanese and Korean customers

Efforts to Win Orders in the Second Half and Onward (2)

Commissioned testing business

- Strengthen customer contacts (web conferences, seminars, etc.) in cutting-edge technology fields
- Strengthen proposals for home-based online services where increased demand is expected

New business

- Pharmaceutical field Strengthen sales of new pharmaceutical products at transportation stage
- Materials field Strengthen sales primarily for 5G-related materials
- Food machinery field Expand sales of model-changed products



Transportation Evaluation System
(Released in March 2020)



Thermal Air Test System
(Released in December 2019)



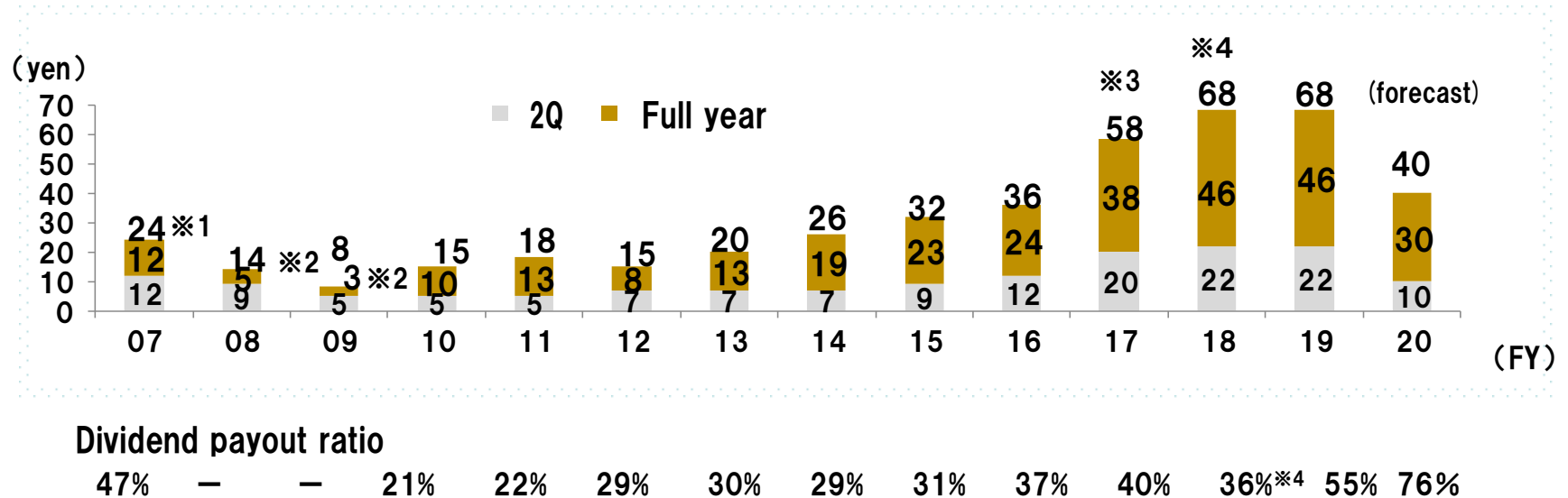
Vacuum low temperature
heating cooker
(Model-changed in December 2020)

FY 2020 Dividend Forecast

Basic policy on profit distribution

We recognize 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)

Strengthen Management Foundation and Promote ESG

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

E (Environmental)

- (1) 7th Mid-term Plan on the Environment
- (2) Contribute to reducing the environmental load through products
- (3) Promote biodiversity and natural environment preservation activities

S (Social)

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

G (Governance)

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

TOPICS (1)

(November, 2020)

Rated 3 stars in Nikkei's 4th Smart Work Management Survey

A management survey comprised of three categories—Human Resources, Innovation and Marketing

<ESPEC's Ratings>

- Human Resources **A+**
- Innovation **A+**
- Marketing **A**

NIKKEI
Smart Work



2021

(November, 2020)

Rated 3.5 stars in the Nikkei SDGs Management Survey 2020

Management survey comprised of four categories—SDGs Strategy and Economic Value, Societal Value, Environmental Value and Governance

<ESPEC's Ratings>

- SDGs Strategy and Economic Value **A++**
- Societal Value **A++**
- Environmental Value **S**
- Governance **B++**

NIKKEI
SDGs

経営調査 2020



TOPICS (2)

(November, 2020)

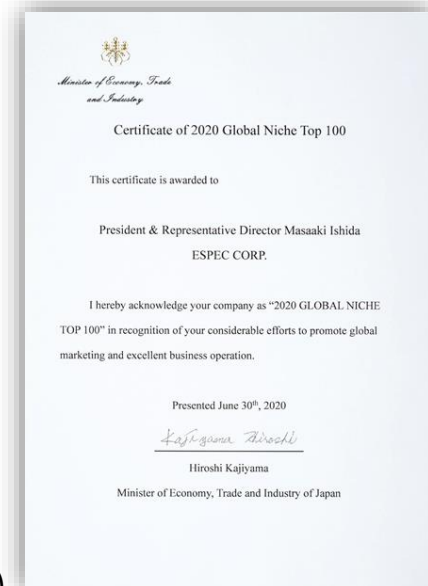
**Ranked 163rd in the Nikkan Kogyo Shimbun's
COVID-19 Response Ranking**
(sponsored by the Ministry of Economy, Trade and Industry)

- Survey to comprehensively visualize corporations' stability and swift adaptation to the new normal
- Scoring combines the previous True Corporate Power Survey and a survey about COVID-19 response
- Conducted among 1,300 companies

(June, 2020)

**Ministry of Economy, Trade and Industry (METI)
Global Niche Top Companies Selection 100
for Fiscal 2020**
ESPEC was selected as a winner for the second time

- In the second program held in fiscal 2020, METI selected 113 companies that have prevailed in niche sectors amid a challenging business environment
- ESPEC was once again selected as a winner, following on from its selection in FY2013
(There were a total of 13 companies selected as consecutive winners.)



TOPICS (3)

(August, 2020)

Expanded Environmental Stress Chamber AR Series Lineup

Launched four new models as rapid-rate temperature cycle type products, bringing the total lineup to 32 models across the series

- Supports the need for rapid temperature change testing in the automotive market
- Compliant with IEC International Standards and German Automotive industry test standard
- Can perform temperature (humidity) cycle testing with samples



Environmental Stress Chamber AR Series
Rapid-Rate Temperature Cycle Type

(Left: 10K/min (1100L), Right: 15K/min (680L))

(June, 2020)

Installed large-scale testing equipment in the Battery Safety Certification Center

Installed one of Japan's largest temperature cycle testing equipment units on site

Supports testing needs for large-vehicle batteries

- Can perform temperature cycle testing of 2 m-plus large-scale battery pack systems
- Supports testing prescribed by United Nations regulations and international standards such as ISO 12405
- Added a medium-sized constant temperature and constant humidity chamber to strengthen support for China's GB standards



Large temperature cycle testing equipment units

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.

INQUIRIES:

ESPEC CORP.

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E-mail: ir-div@espec.jp

Jyunko Nishitani (General Manager) ,

Yasutoshi Nakagawa and Natsuko Okawa

Corporate Communication Department

Reference

Company Profile

Industry-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 ¥6,895 Million

Shares Issued 23,781,394 Shares

Employees 1,512 (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 March 31, 2020)

Global Network

Consolidated Subsidiaries 12 companies

(Global 9 companies,
Domestic 3 companies)

Global Network
46 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

ESPEC CORP.

- ESPEC TEST SYSTEM CORP.
- ESPEC KYUSHU CORP.
- ESPEC MIC CORP.
- MIC FARM OHGUCHI CORP.

JAPAN

ASIA

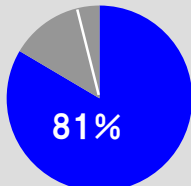
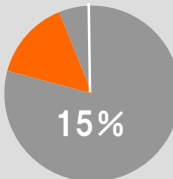
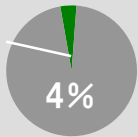
- SHANGHAI ESPEC ENVIRONMENTAL EQUIPMENT CORP.
- ESPEC ENVIRONMENTAL EQUIPMENT (SHANGHAI) CO., LTD.
- ESPEC TEST EQUIPMENT (GUANGDONG) CO., LTD.
- ESPEC TEST TECHNOLOGY (SHANGHAI) CO., LTD.
- ESPEC (CHINA) LIMITED
- ESPEC KOREA CORP.
- ESPEC ENGINEERING (THAILAND) CO., LTD
- ESPEC ENGINEERING VIETNAM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

U.S.A.

- ESPEC NORTH AMERICA, INC

●: Consolidated Subsidiaries
–: Non-consolidated Subsidiaries

Summary of ESPEC Business (Per Market / Use)

		Main Products	Market	Use	Sales composition (FY2019)
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	 81 %
	Energy Device Equipment	•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 •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	—	 15 %
	Commissioned Tests and Facility Rentals	•Commissioned test •Resale •Equipment rental •Calibration		•For R & D •For credibility and evaluation	
Other Business	Environmental Preservation	Reforestation (Tree planting) , Waterfront biotope restoration, Urban greening			 4 %
	Plant Production Systems	Plant factory, Equipment for growing plants			

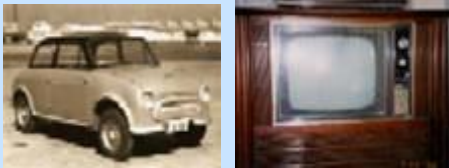
History of Environmental Test

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 5G and IoT field, also 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

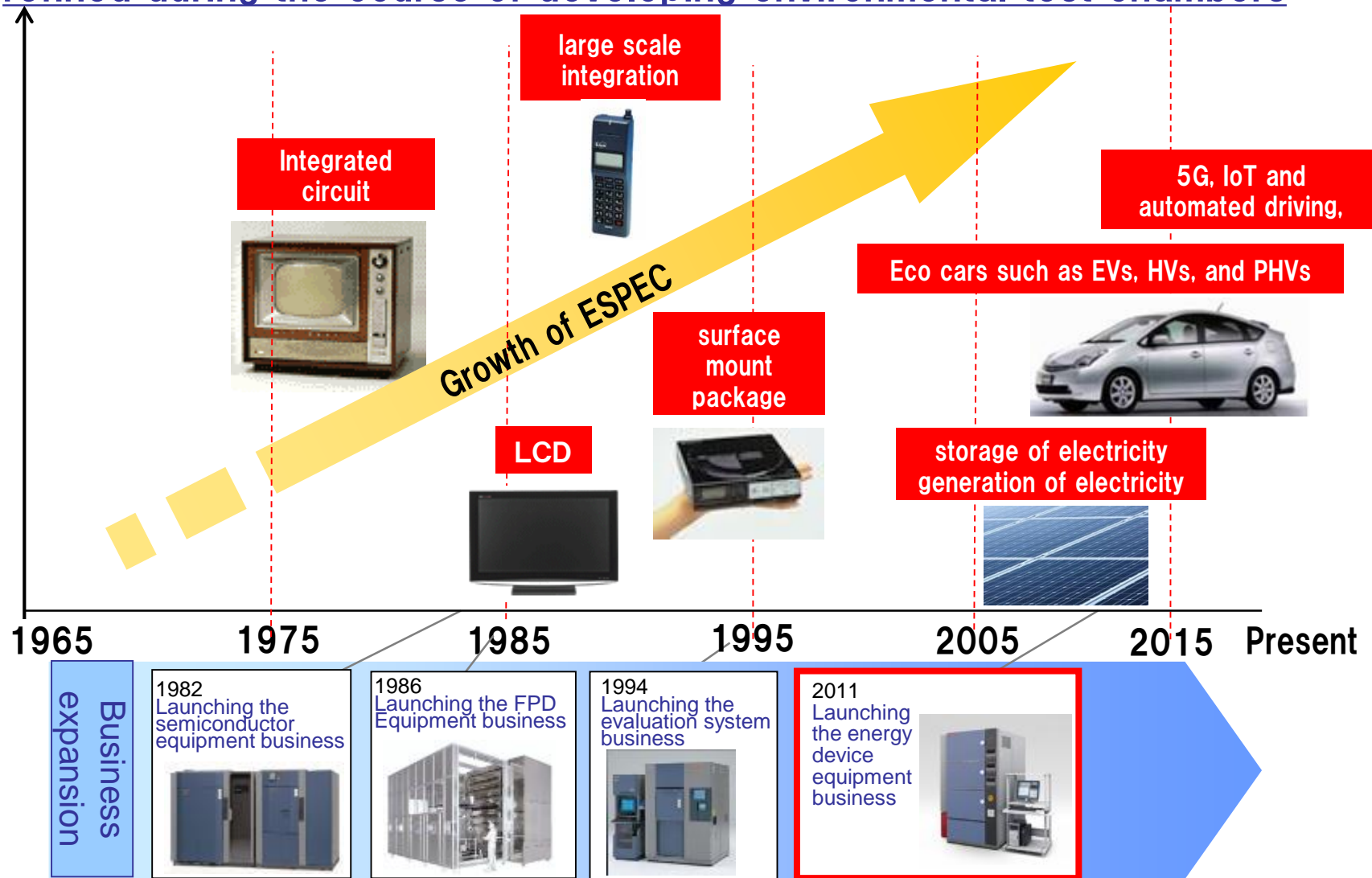
To Worldwide Market Share No.1



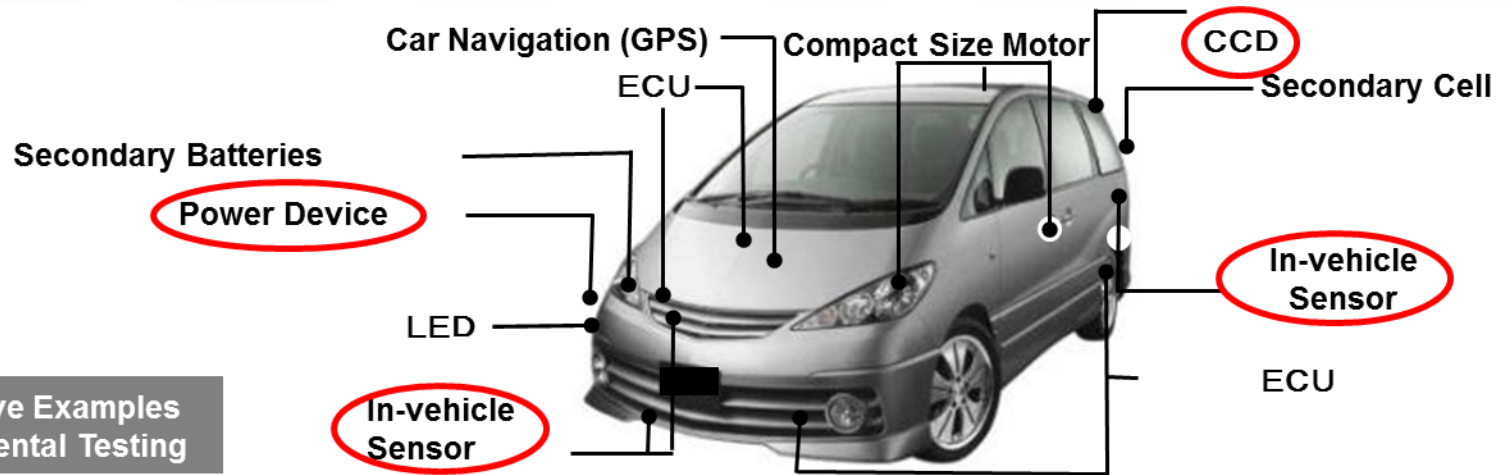
【 Temperature & Humidity Chamber 】
“Platinous J series”

Transition in Business




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




[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: $-40^{\circ}\text{C} \Leftrightarrow +125^{\circ}\text{C}$	Thermal shock chamber
		■ High temperature exposure: $+175^{\circ}\text{C}$, $+85^{\circ}\text{C}$	(Compact size) Oven
		■ Burn-in test	Burn-in chamber
【In-vehicle Sensor】 	Inspection	■ Temperature cycle test of printed circuit board: $-40^{\circ}\text{C} \Leftrightarrow +110^{\circ}\text{C}$	Temperature & humidity chamber (Platinous) / Oven
		■ Temperature characteristic test after soldering: Linear change between -30°C and $+85^{\circ}\text{C}$	Burn-in chamber, Rapid-rate thermal cycle chamber
	Evaluation	■ Thermal shock test : $-30^{\circ}\text{C} \Leftrightarrow \text{RT} \Leftrightarrow +80^{\circ}\text{C}$, $-55^{\circ}\text{C} \Leftrightarrow +155^{\circ}\text{C}$	Thermal shock chamber
【CCD/CMOS】 	Production	■ Diffusion Test: $+150^{\circ}\text{C}$	Compact size Oven
		■ Drying after cleaning: $+85^{\circ}\text{C}$	Clean Oven
	Evaluation	■ Screening: $+85^{\circ}\text{C}$	Temperature chamber (Platinous) / Burn-in chamber
	Inspection	■ Temperature and humidity test: $+85^{\circ}\text{C} / +85\%\text{rh}$, $+60^{\circ}\text{C} / 90\%\text{rh}$	Temperature & humidity chamber (Platinous)
		■ Acceleration test: $+120^{\circ}\text{C} / 100\%\text{rh}$	HAST chamber
		■ Thermal shock test : $-40^{\circ}\text{C} \Leftrightarrow +125^{\circ}\text{C}$, $-20^{\circ}\text{C} \Leftrightarrow +85^{\circ}\text{C}$	Thermal shock chamber

[Equipment Business] Main New Products

Release Date	Name of product	Features
Aug. 2020	Expanded Environmental Stress Chamber AR Series Lineup	<ul style="list-style-type: none"> • Launched four new models as rapid-rate temperature cycle type products, bringing the total lineup to 32 models across the series
Mar. 2020	Transportation Evaluation System	<ul style="list-style-type: none"> • Recreates transport environments for pharmaceuticals and medical devices Applications in biopharmaceutical R&D and medical equipment quality control
Feb. 2020	Walk-In Type Temperature (&Humidity) Chamber for Drive-In Series	<ul style="list-style-type: none"> • Recreates various weather environments in a large space accommodating two vehicles
Feb. 2020	Walk-In Type Temperature (&Humidity) Chamber for High-Power Series	<ul style="list-style-type: none"> • Complies with international IEC standards and German automobile industrial standard
Dec. 2019	Thermal Air Test System	<ul style="list-style-type: none"> • Materials testing is possible under actual use conditions such as in vehicles through combinations of various types of material testing equipment
Dec. 2018	Aging Cabinet	<ul style="list-style-type: none"> • There is no temperature rise due to defrosting, and long-term continuous operation of high humidity environment is possible while maintaining below 5°C • Equipped with sterilization mode
Nov. 2018	Standard type secondary battery charge-discharge tester for automobiles	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Second F-gas Regulation-compliant low-GWP refrigerant (R449) environmental testing chamber

[Equipment Business] New Product Introduction (1)

(Released in Feb. 2020)

■ Walk-In Type Temperature (&Humidity) Chamber for High-Power Series

<Features>

- Compliant with IEC International Standards and German Automotive industry standard LV124
(Can perform rapid temperature change testing of samples at 3K/minute)
- Low GWP coolant (R-449A) as standard equipment



Walk-In Type Temperature (&Humidity)
Chamber for High-Power Series

(Released in Dec. 2019)

■ Walk-In Type Temperature (&Humidity) Chamber for Drive-In Series

<Features>

- Closely recreates various weather environments in a large space of approximately 500 m³ accommodating two vehicles to perform actual vehicle testing
- Multiple environmental factors can be recreated simultaneously, including humidity, sunlight, rain, snow, fog, and wind

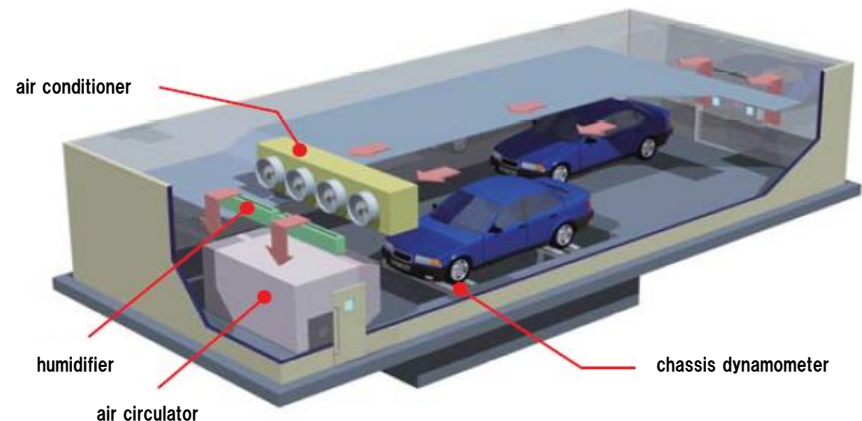


Image of vehicle test

Walk-In Type Temperature (&Humidity)
Chamber for Drive-In Series

[Equipment Business] New Product Introduction (2)

For the medical field

(Released in Feb. 2020)

■ Transportation Evaluation System

<Features>

- Enables simultaneous recreation of temperature and vibration environment during transport to test medicine, etc. in actual transportation environment
- Two types of equipment for biopharmaceutical and reagent R&D application and medical equipment quality control application



2 models of Transportation Evaluation System

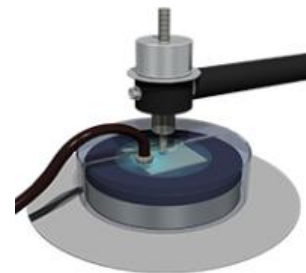
For material field

(Released in Dec. 2019)

■ Thermal Air Test System

<Features>

- Can be combined with various materials testing instruments to perform materials testing in actual usage environment with given temperature
- Uses ESPEC's proprietary new method for cooling and heating test pieces efficiently



Example of set up with friction and wear testing machines and hardness meter (Left)
Thermal Air Test System (Right)

[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

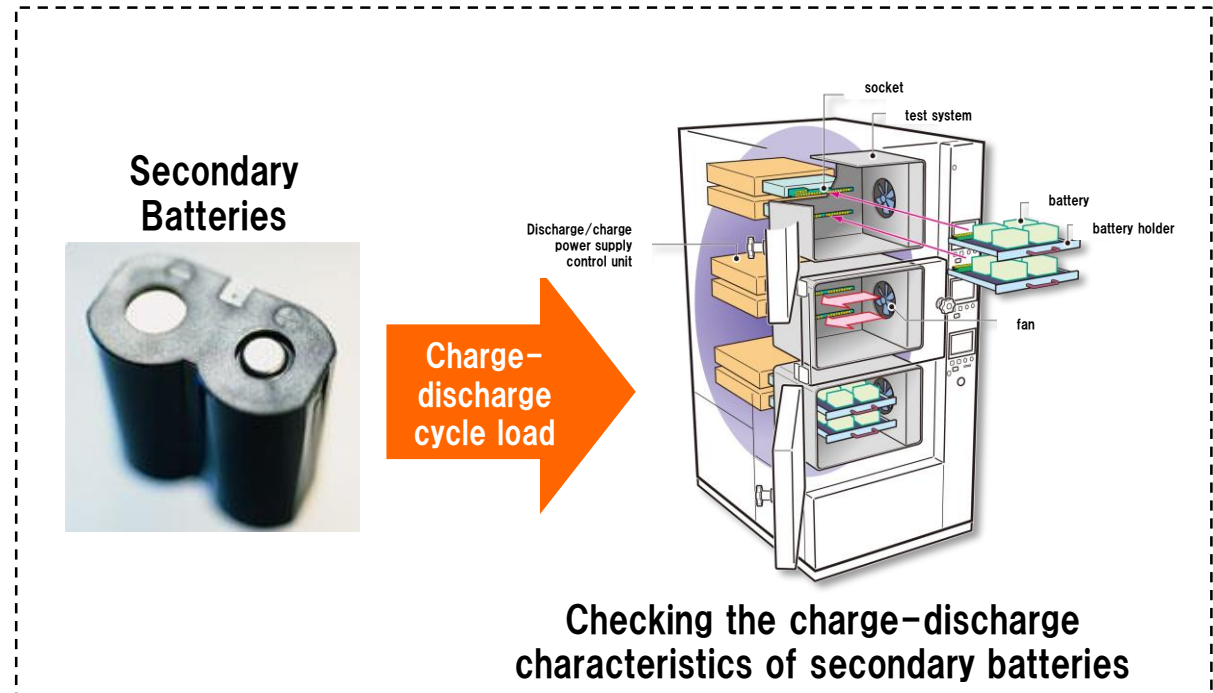
[Equipment Business] Usage Case with Energy Device Equipment

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



Evaluating the performance and life of secondary batteries

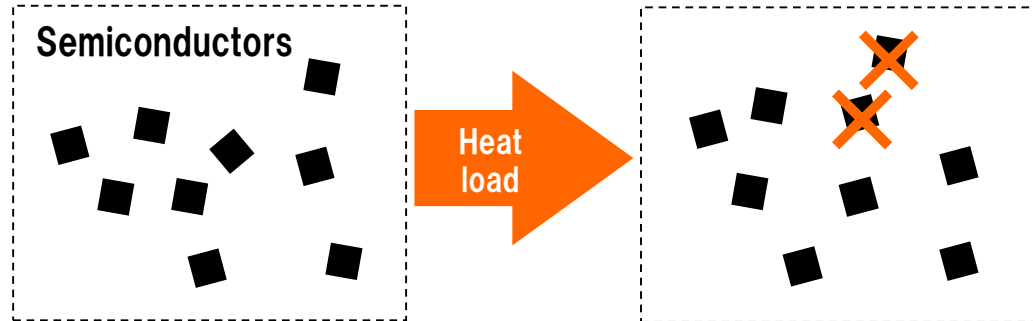
[Equipment Business] Usage Case with Semiconductor Equipment

Screening

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



Burn-in chamber



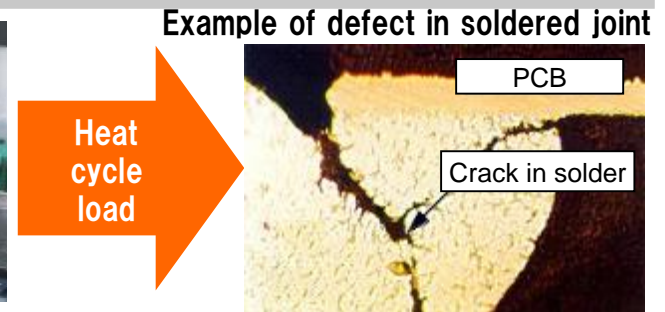
Elimination of latent early failures

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
- Launching new services by utilizing the network function mounted in the equipment

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 four commissioned test centers in Japan, one in Thailand, two in China.
(Japan: Utsunomiya, Toyota, Kariya and Kobe, Thailand, China: Shanghai, Suzhou)
- The centers are also recognized as official calibration facilities under the Japan Calibration Service System (JCSS).
- [First in world] Opened 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.
 - 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 provides one-stop services for testing LV 124, the German Automotive Manufacturer Testing Standards



Battery Safety Certification Center

* 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]

May 2020 start of “Home-based online service”
Support continuity of customers’ development operations

When using ESPEC products

Operate equipment and monitor samples from home

- Centralized management
(monitoring and data analysis)
- Receive operating status by email
- Monitor samples using in-chamber monitoring camera (launched in March 2020)

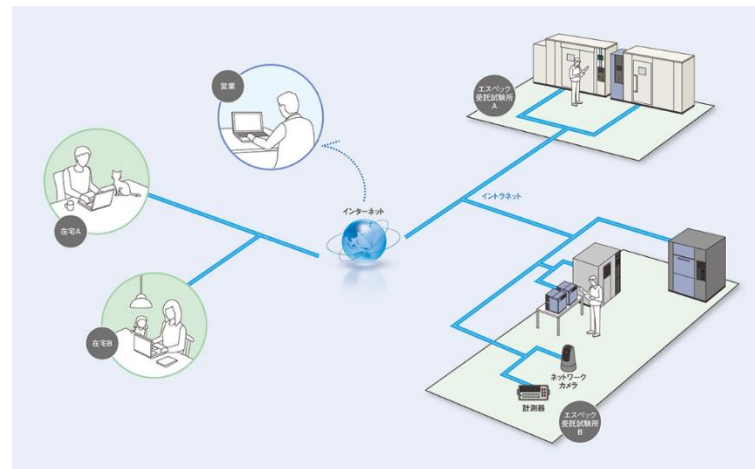


Image of in-chamber monitoring camera

When using commissioned testing center

All testing operations performed on behalf of customer, from start to finish, including transportation

- Remote consultation
- No need to attend in person
- Remote instruction



Realization of 100% green electricity for commissioned testing services at Kariya Test Center

In January 2020, we became the first commissioned testing facility to convert to green electricity using a green electricity certificate.*

We expect to reduce annual CO₂ emissions by approximately 768 t.

*A certificate issuer receives certification from a third-party certifying organization (JAPAN QUALITY ASSURANCE ORGANIZATION) for environmental added value of electricity generated from renewable energy. The certificate can be traded as a system.



Kariya Test Center

[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

Supporting 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

Environmental Preservation

■ 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

Provision of various cultivation environments employing advanced environmental control technologies to control light, temperature, humidity, carbon dioxide, etc.



Plant factory



Phyto-toron

[Other Business]

Produced a high value-added vegetables using deep-seawater

**At a plant factory near Haneda Airport,
production and sales of vegetables high in minerals
with the use of deep sea water.**



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

[Other Business] 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

Strengthen Technology Development Capability

(New technology development building introduction)

Objective : Strengthen technology development capabilities
and promote preservation of biodiversity
by encouraging open innovation

Concepts : “Open innovation,”
“Open communication,”
“Coexistence with the natural environment”

Location : Kanokodai, Kita-ku, Kobe, Hyogo
(in Kobe R&D Center)

Start of operation : May 2020
(Construction started in June 2019)

Building area : 1,580m²

Gross floor area : 4,557m² (Three story building)



Rooftop green space using only native species



New technological development building

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



Environmental Preservation

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
- Ensure compliance
- Promote risk management



Initiatives tackling environmental problems

● Environmental management in line with the Mid-term Plan on the Environment

Aim to contribute to the realization of a sustainable society through business activities

Currently we are implementing the 7th Mid-term Plan on the Environment

(planned implementation period: FY2018–FY2021)

● 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



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.)

Quality is more than a word

ESPEC