

**Securities ID code:6859**

# **ESPEC CORP.**

**Results Briefings for  
Fiscal 2014 Ended March 2015**

**May 21, 2015  
[www.espec.co.jp](http://www.espec.co.jp)**

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# Company Profile

**Industry-leading manufacturer of environmental test chambers:**  
**68th year since company was founded in Osaka**

<b>Name</b>	<b>ESPEC CORP.</b>
<b>Head Office</b>	<b>3-5-6, Tenjinbashi, Kita-ku, Osaka</b>
<b>Represented By</b>	<b>Masaaki Ishida</b>
<b>Established</b>	<b>July 25, 1947</b>
<b>Incorporated</b>	<b>January 13, 1954</b>
<b>Paid-up Capital</b>	<b>¥6,895 Million</b>
<b>Shares Issued</b>	<b>23,781,394 Shares</b>
<b>Employees</b>	<b>1,338 (consolidated)</b>
<b>Main Business</b>	<b>Manufacture and Sales of Environmental Test Chambers, Energy Device Equipment, Semiconductor Equipment, FPD Equipment and Plant Factory. After-sales Service, Commissioned Tests and others.</b>



Head office

(As of March 31, 2015)

# Global Network

Consolidated Subsidiaries  
10 companies

Global Network  
43 countries  
33 companies

Business facilities in Japan: 26  
Domestic agencies in Japan: 48

EU

△ ESPEC EUROPE GmbH

- 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 SOUTH EAST ASIA SDN. BHD
- ESPEC ENGINEERING(THAILAND)CO.,LTD※

● ESPEC NORTH AMERICA, INC.

U.S.A.

※ ESPEC ENGINEERING(THAILAND)CO.,LTD

Servicing products, inspection  
& maintenance, calibration  
& other technological support

- Established in March 2015
- Planned to become operational in July 2015



●: Consolidated Subsidiaries  
△: Non-consolidated Subsidiaries

(As of March 31, 2015)

# TOPICS

**Espec included in “Global Niche Top Companies Selection 100” of the Ministry of Economy, Trade and Industry (METI)**



**Testimonial**

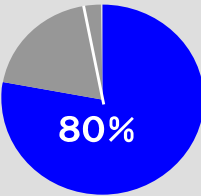
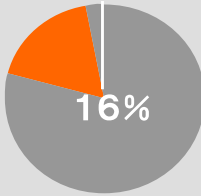
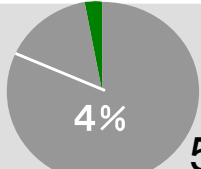
**Environmental Test Chambers  
Global market share 30% or more**



**Temperature (& Humidity) Chambers  
“Platinous J series”**

\* A METI initiative to support companies that excel in developing business overseas and are leading Japan's economy, so as to provide direction for other enterprises and contribute to improving the global competitiveness of Japanese enterprises.

# Summary of ESPEC Business (Per Market / Use)

		Main Products	Market	Use	Sales composition (FY2014 )
Equipment Business	Environmental Test Chambers	•Temperature & humidity chamber •Walk-in type temperature & humidity chamber •Thermal shock chamber •Vibration combined environmental test system •Bench-top type temperature & humidity chamber •HAST chamber	•Electronic component and equipment market •Automobile market •Semiconductor market • Medicine, Cosmetics, Foods and others	•For R & D •For credibility and evaluation •For production and inspection	 80%
	Energy Device Equipment	•Advanced battery tester •LIB electrode oven •LIB safety evaluation system •Solar battery evaluation system	•Next generation automobile •Secondary batteries •Power semiconductors •Fuel cells •Solar battery	•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	
	FPD Equipment	•Single processing system vertical clean oven •Low Oxygen Clean Oven (Temperature Property: Maximum 500℃ )	•LCD market • Organic Electro-Luminescence market	• For production (Annealing, baking, drying)	
Service Business	After-sales Service and Engineering	• After-sales service •Construction around equipment	•Electronic component and equipment market •Automobile market •Semiconductor market	—	 16%
	Commissioned Tests and Facility Rentals	•Commissioned test   •Resale • Equipment rental   •Calibration		•For R & D •For credibility and evaluation	
Other Business	Environmental Engineering Business	Reforestation (Tree planting) , Waterfront biotope restoration, urban greening			 4%
	New Business	Plant factory, developing and creating new businesses as a major source of profit			

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# **Financial Result for the Fiscal 2014 Ended March 31, 2015**

# Financial Highlights

■ Orders received increased year on year in all business segments

■ Net sales increased year on year in both domestic and overseas markets

- In Japan, highly versatile standard products sold strongly

Customized products were unable to reach the level achieved in the previous fiscal year, when they sold briskly

- Overseas, China and Asia exports were firm, and sales at Chinese subsidiaries also increased

In Europe and the U.S., exports to Europe were firm, and U.S. subsidiary reached the level achieved in the previous fiscal year, when sales were brisk

■ Operating income rose 27.3% year on year due to a robust performance

by standard products with high earnings ratios

■ Year-end dividend is ¥19 per share, a ¥6 increase from that initially planned; accordingly,

the annual dividend is ¥26 per share



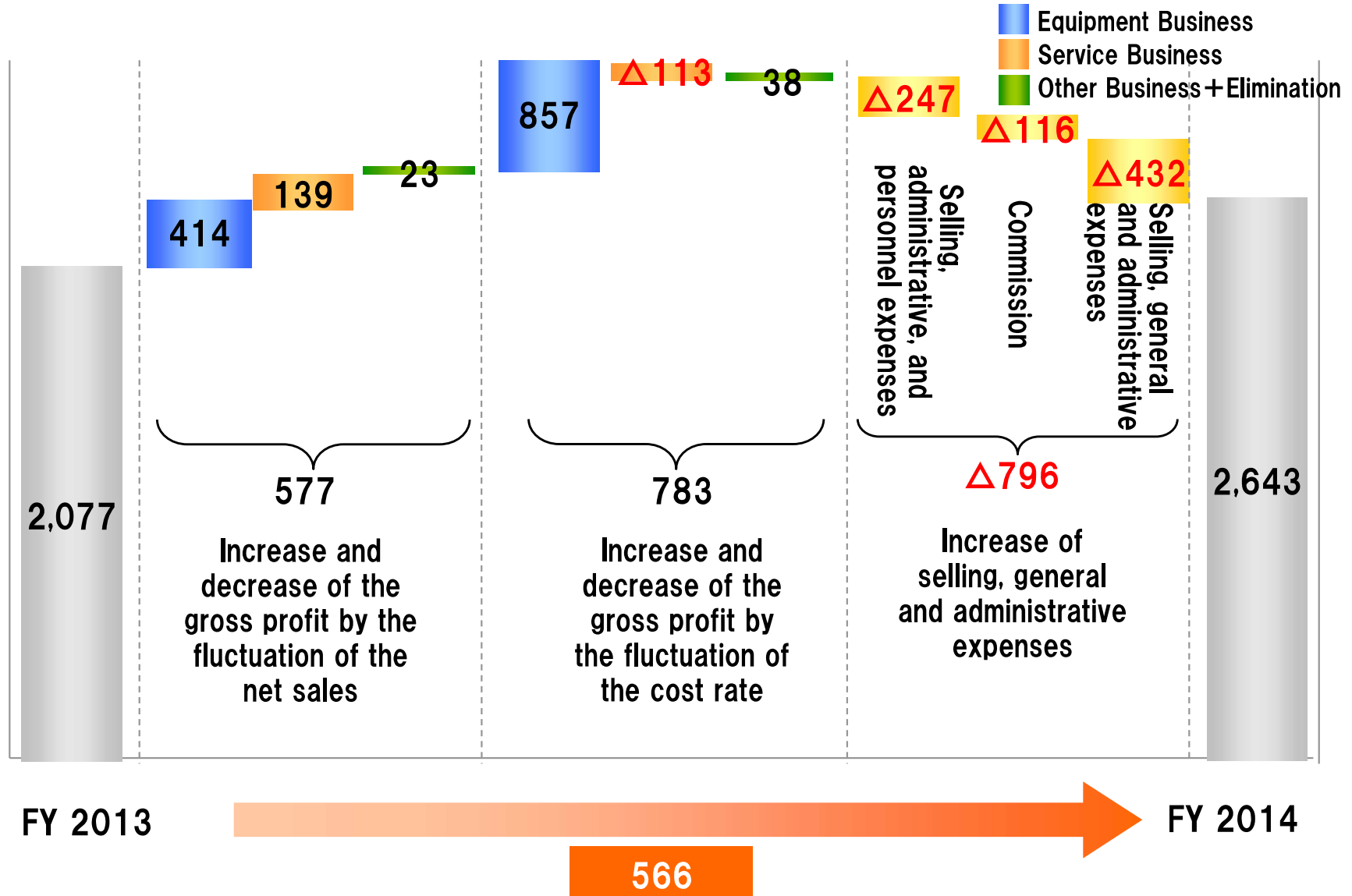
# Summary of Profits and Losses

(millions of yen)

	FY 2013	FY 2014	Rate of Change
Orders-Received	31, 760	36, 287	14. 3%
Net sales	32, 099	33, 661	4. 9%
Cost of Net Sales	21, 367 (66. 6%)	21, 567 (64. 1%)	0. 9%
Gross profit	10, 731	12, 094	12. 7%
SG & A	8, 654	9, 450	9. 2%
Operating income	2, 077	2, 643	27. 3%
Ordinary income	2, 370	3, 044	28. 5%
Net income	1, 570	2, 118	34. 9%

# Analysis of Operating Income Increase and Decrease Factor

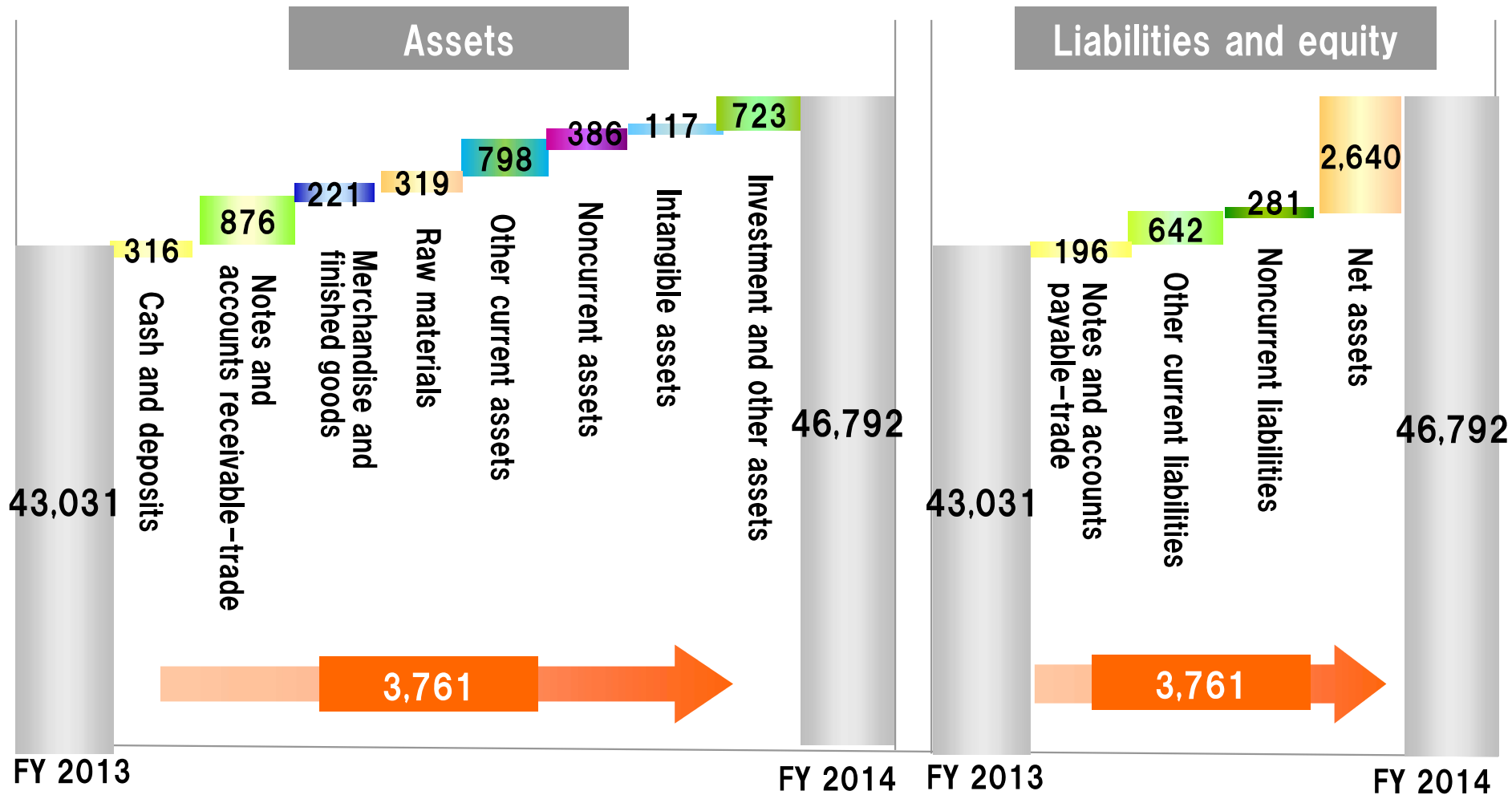
(millions of yen)



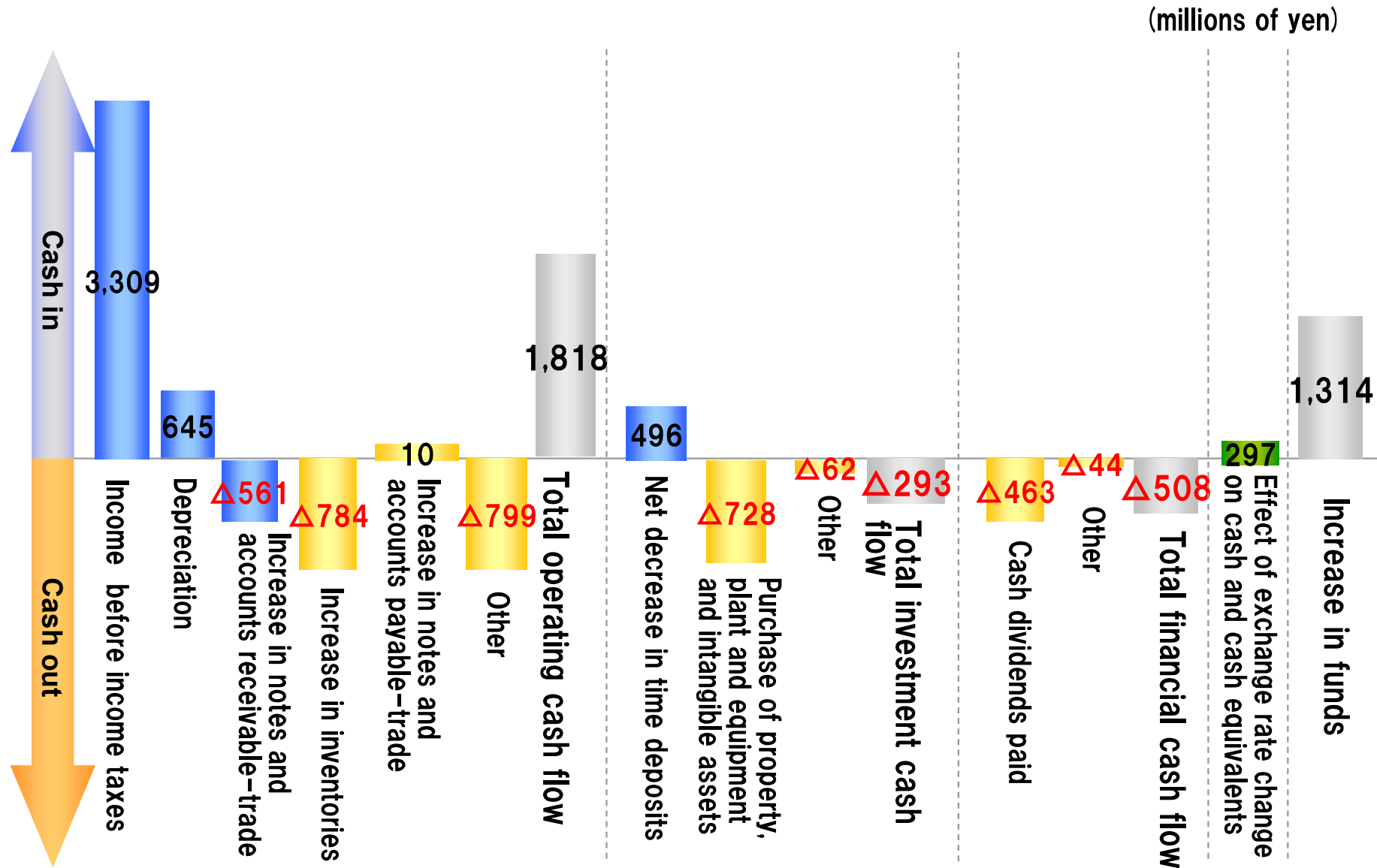
# Analysis of Assets and Liabilities

## Increase and Decrease Factor

(millions of yen)



# Statement of Cash Flow



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# **Analysis per Segment for the Fiscal 2014 Ended March 31, 2015**

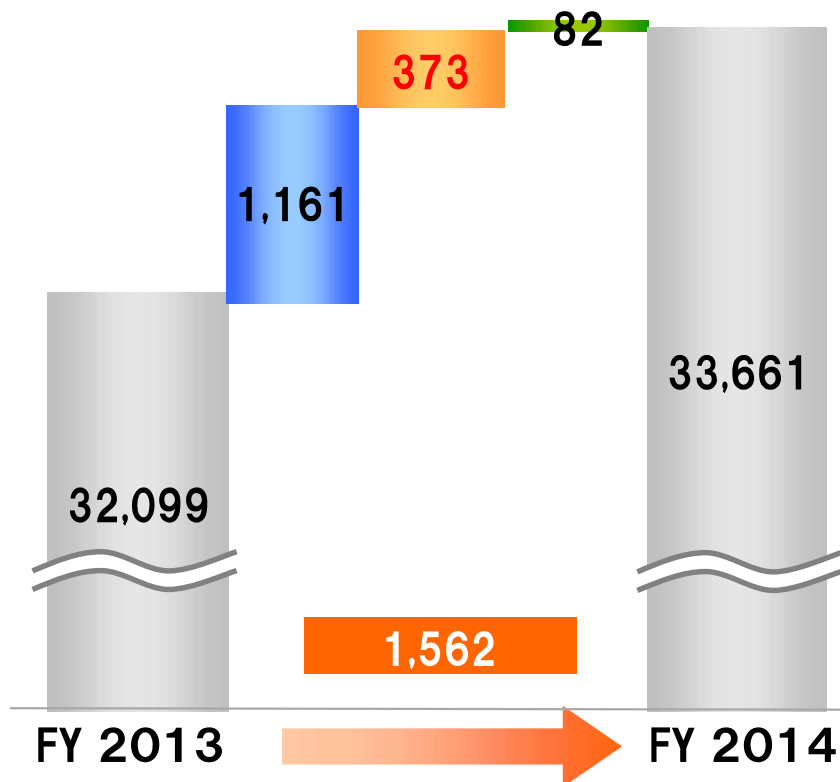
# Performance by Segment

		(millions of yen)		
Segment		FY 2013	FY 2014	Rate of Change
Equipment Business	Orders-Received	25,271	29,399	16.3%
	Net Sales	25,831	26,992	4.5%
	Operating Income	1,625	2,178	34.0%
Service Business	Orders-Received	5,288	5,589	5.7%
	Net Sales	5,168	5,541	7.2%
	Operating Income	504	430	△14.6%
Other Business	Orders-Received	1,375	1,527	11.1%
	Net Sales	1,267	1,350	6.5%
	Operating Income	△52	34	—
Elimination	Orders-Received	△174	△227	—
	Net Sales	△168	△223	—
	Operating Income	△0	0	—
Total	Orders-Received	31,760	36,287	14.3%
	Net Sales	32,099	33,661	4.9%
	Operating Income	2,077	2,643	27.3%

# FY 2014 Results and FY 2013 Applicable Products

- Equipment Business
- Service Business
- Other Business

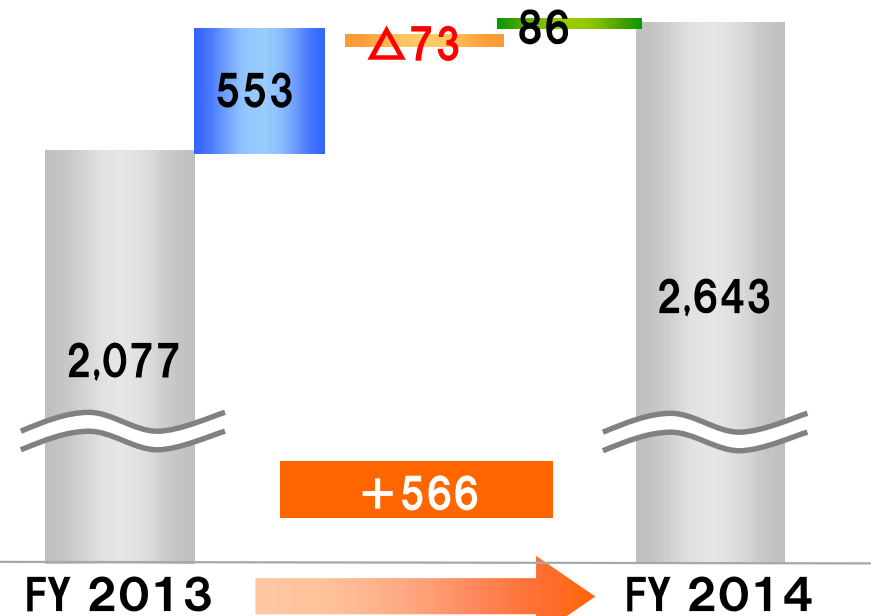
## Net Sales



■ Net sales increased in all businesses

## Operating Income

(millions of yen)



■ The Equipment Business significantly contributed to the increased operating income

# Equipment Business

## Environmental Test Chambers

- In the Japanese market, net sales increased
  - With highly versatile standard products, orders–received and net sales both increased from the previous fiscal year
  - With customized products, orders–received increased year on year but net sales were unable to reach the level achieved in the previous fiscal year
- In the overseas market, net sales increased
  - Exports to China and other parts of Asia were firm, and sales at Chinese subsidiaries also increased
  - Exports to Europe were firm, and the U.S. subsidiary was at about the same level as the previous fiscal year
- Orders–received and net sales both increased

## Energy Device Equipment

- Orders won for charge–discharge evaluation systems for secondary batteries for automobiles and for safety testing equipment
- Power device evaluation systems performed firmly, and orders–received and net sales both increased

## Semiconductor Equipment

- Despite the orders received from certain semiconductor manufacturers and automotive–related manufacturers, orders–received declined and net sales were mostly unchanged

## FPD Equipment

- There were few large business deals, and orders–received were mostly unchanged, and net sales declined



# Equipment Business

(millions of yen)

	FY 2013	FY 2014	
			Rate of Change
Orders- Received	25, 271	29, 399	16. 3%
Net Sales	25, 831	26, 992	4. 5%
Operating Income [Profit ratio (%) ]	1, 625 [6. 3%]	2, 178 [8. 1%]	34. 0%

# Service Business

(millions of yen)

	FY 2013	FY 2014	
			Rate of Change
Orders- Received	5, 288	5, 589	5. 7%
Net Sales	5, 168	5, 541	7. 2%
Operating Income [Profit ratio (%) ]	504 [9. 8%]	430 [7. 8%]	△14. 6%

## After-sales Service and Engineering

- Both orders-received and net sales were mostly unchanged

## Commissioned Tests and Facility Rentals

- The mainstay test consulting business saw growth in the automobile market, and both orders-received and net sales increased

# Other Business

(millions of yen)

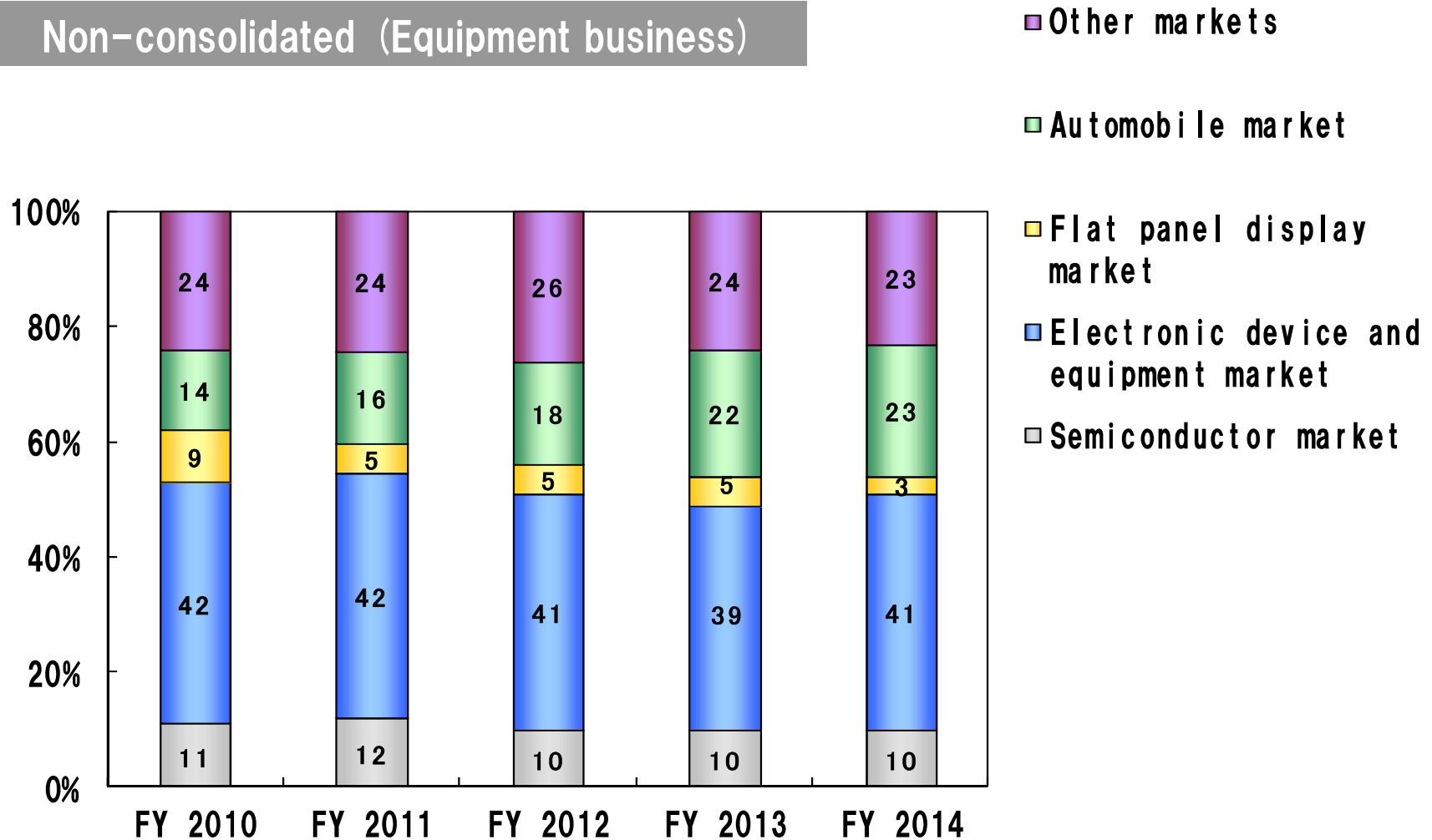
	FY 2013	FY 2014	
			Rate of Change
Orders- Received	1, 375	1, 527	11. 1%
Net Sales	1, 267	1, 350	6. 5%
Operating Income [Profit ratio (%) ]	△52 [△4. 1%]	34 [2. 5%]	—

## Environmental Engineering and Plant Factory

- Environmental engineering in reforestation (tree planting) and the plant factory business performed strongly
- Both orders-received and net sales increased, and earnings also improved from the previous fiscal year, resulting in the posting of operating profit

# Breakdown of Sales by Market

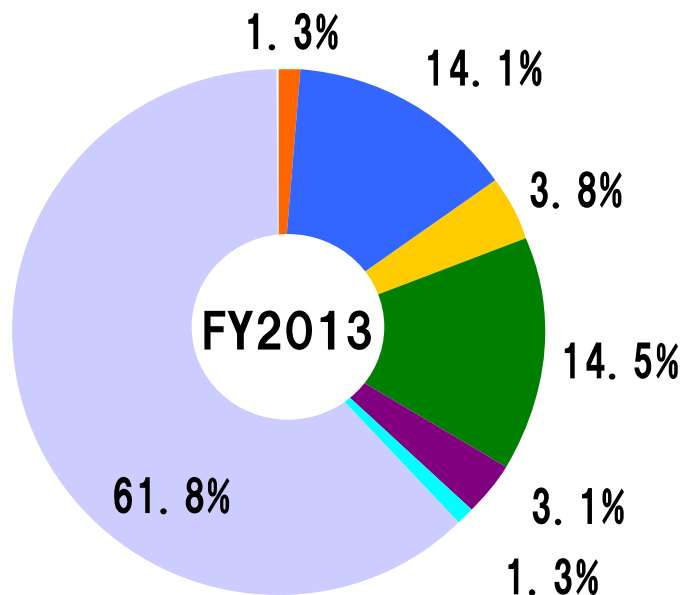
Non-consolidated (Equipment business)



# Sales by Region

FY 2013

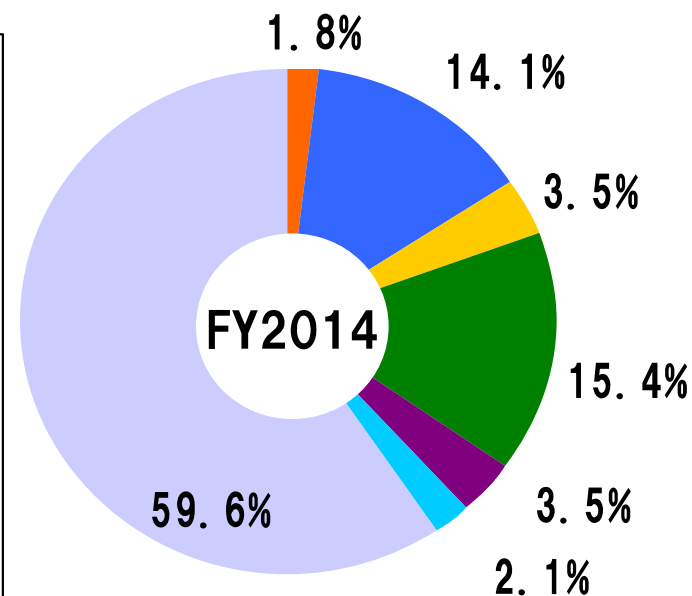
Overseas sales ratio:38. 2%



Total: 32, 099million yen  
(Overseas sales:12, 252million yen)

FY 2014

Overseas sales ratio:40. 4%



Total: 33, 661million yen  
(Overseas sales:13, 609million yen)

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# **Management Plan for the Fiscal Ending March 31, 2016**

# Targets for Consolidated Revenues and Earnings for the Fiscal Ending March 31, 2016

(millions of yen)

	<b>FY 2014 Results</b>	<b>FY 2015 Target</b>
<b>Net Sales</b>	<b>33,661</b>	<b>35,000</b>
<b>Operating Income</b>	<b>2,643</b>	<b>2,800</b>
<b>Operating Income Ratio</b>	<b>7.9%</b>	<b>8.0%</b>

# Business Plan for the Fiscal Ending March 31, 2016

(millions of yen)

	FY 2014	FY 2015 (Plan)			
	Fiscal (Results)	2Q	Second half	Fiscal	Year on Year (%)
Orders-received	36, 287	18, 000	18, 500	36, 500	0. 6%
Net sales	33, 661	16, 000	19, 000	35, 000	4. 0%
Gross profit [Profit ratio (%) ]	12, 094 (35. 9%)	5, 740 (35. 9%)	6, 660 (35. 1%)	12, 400 (35. 4%)	2. 5%
Operating income (loss) [Profit ratio (%) ]	2, 643 (7. 9%)	1, 000 (6. 3%)	1, 800 (9. 5%)	2, 800 (8. 0%)	5. 9%
Ordinary income (loss) [Profit ratio (%) ]	3, 044 (9. 0%)	1, 100 (6. 9%)	1, 900 (10. 0%)	3, 000 (8. 6%)	△1. 5%
Net Income [Profit ratio (%) ]	2, 118 (6. 3%)	750 (4. 7%)	1, 350 (7. 1%)	2, 100 (6. 0%)	△0. 9%
Capital expenditures	954	790	570	1, 360	42. 6%
Depreciation expenses	637	392	422	814	27. 8%
R&D expenditures	1, 013	590	460	1, 050	3. 7%
Profit Per Share (yen)	91. 19	32. 47	58. 44	90. 91	△0. 3%



# Equipment Business

(millions of yen)

	FY 2014	FY 2015 (Plan)			
	Fiscal (Results)	2Q	Second half	Fiscal	Year on Year (%)
Orders-received	29,399	14,600	14,900	29,500	0.3%
Net sales	26,992	12,900	15,300	28,200	4.5%
Operating income [Profit ratio (%)]	2,178 [8.1%]	850 [6.6%]	1,450 [9.5%]	2,300 [8.2%]	5.6%

# Service Business

(millions of yen)

	FY 2014	FY 2015(Plan)			
	Fiscal (Results)	2Q	Second half	Fiscal	
					Year on Year (%)
Orders-received	5, 589	2, 900	3, 100	6, 000	7. 4%
Net sales	5, 541	2, 700	3, 100	5, 800	4. 7%
Operating income [Profit ratio (%)]	430 [7. 8%]	200 [7. 4%]	300 [9. 7%]	500 [8. 6%]	16. 1%

# Other Business

(millions of yen)

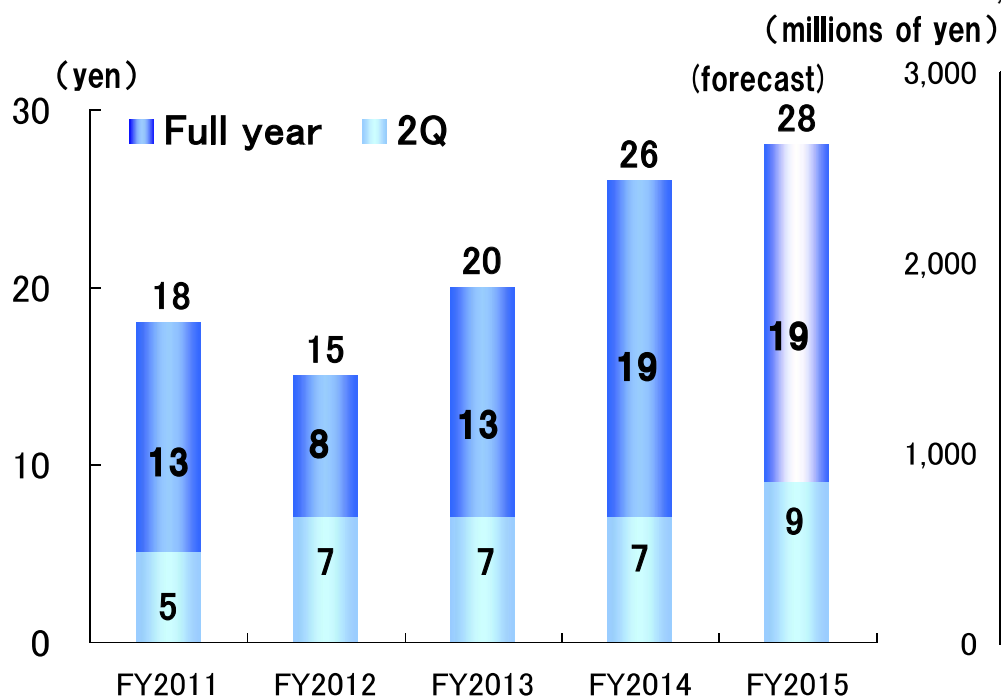
	FY 2014	FY 2015 (Plan)			
	Fiscal (Results)	2Q	Second half	Fiscal	
					Year on Year (%)
Orders-received	1, 527	600	600	1, 200	Δ21. 4%
Net sales	1, 350	500	700	1, 200	Δ11. 1%
Operating income [Profit ratio (%)]	34 [2. 5%]	Δ 40 [Δ8. 0%]	50 [7. 1%]	10 [0. 8%]	Δ70. 9%

# Dividends

## Dividend policy

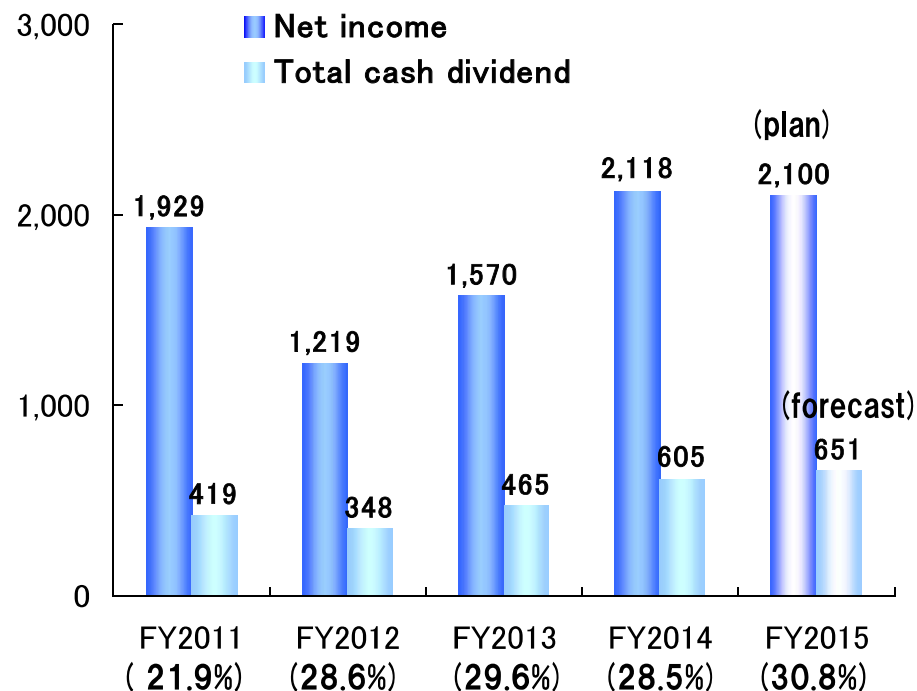
Recognizing that passing on profits to our shareholders is a key priority and that raising corporate value on a lasting basis is fundamental to raising shareholder value, dividends are decided taking into account sustainability and the dividend payout ratio.

## Dividend per share



## Net income and total cash dividend

\*Consolidated dividend payout ratio in parentheses.



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# **Priority Strategies for the Fiscal Ending March 31, 2016**

# Priority Strategies for the Fiscal Ending March 31, 2016

## Priority Strategy 1

**Strengthen Group alliances to increase sales in overseas markets centered on China and ASEAN countries**

## Priority Strategy 2

**Expand business domains targeting growing and strategic markets**

**Investment of management resource**

## Priority Strategy 3

**Provide comprehensive technological services that are useful in increasing the efficiency of the testing business, and develop new products to take the lead domestically**

# 1 – 1. Increase sales in overseas markets

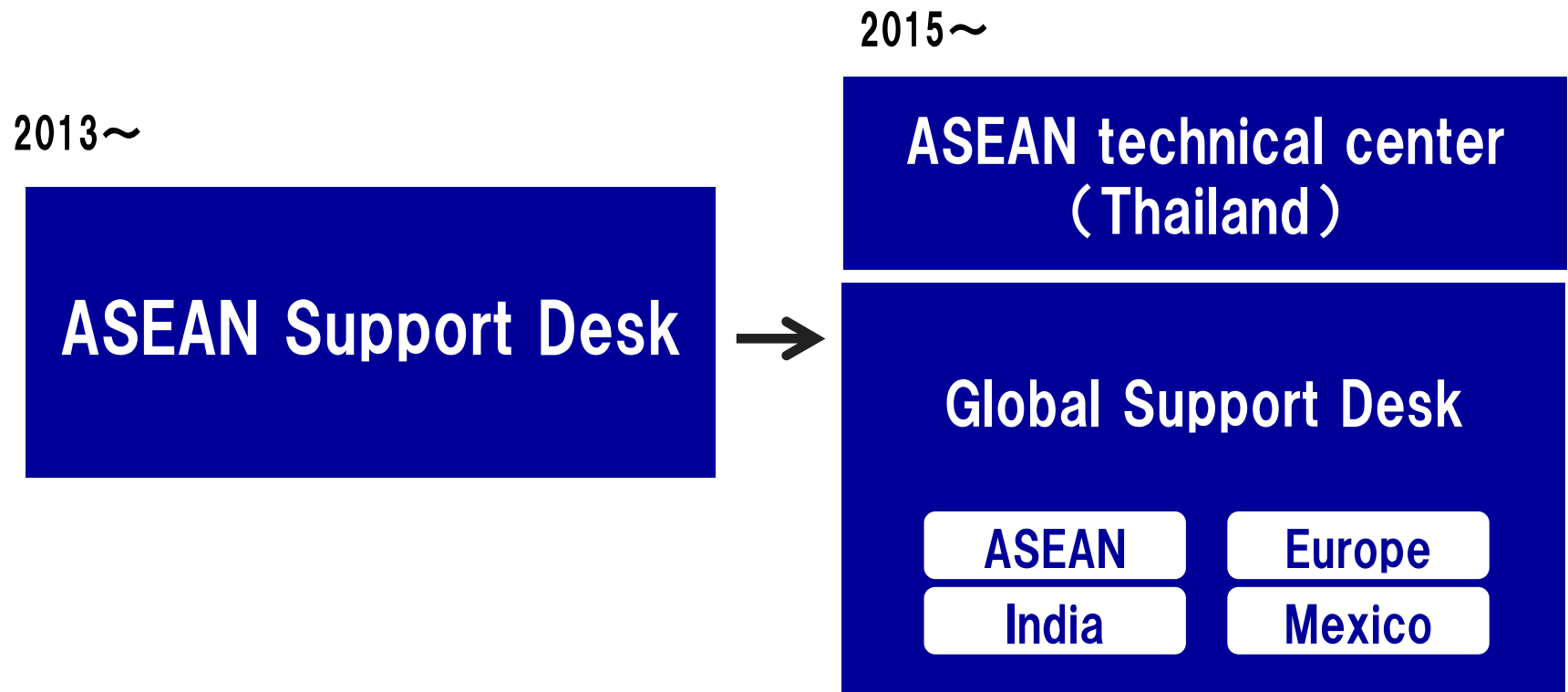
## ASEAN countries



- ★Further cultivate the ASEAN market by strengthening the technological support of the new Thai company
- ★At the new Thai company  
Preparing to start commissioned testing services in fiscal 2016
- ★Open a sales base (Turkey)

# 1 – 2. Global Support

Offer Japanese-language technical support for Japanese customers





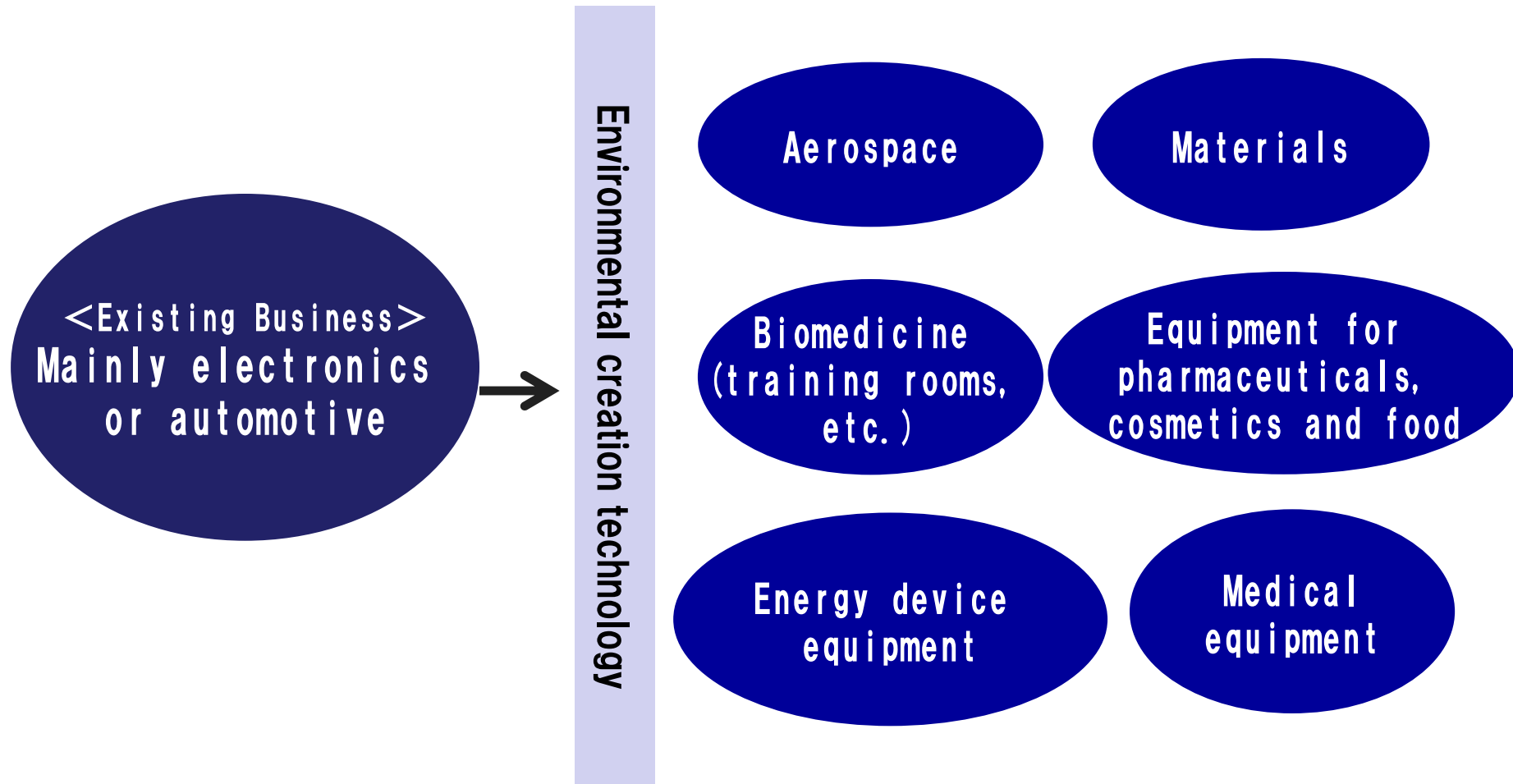
# 1—3. Expand sales in overseas markets

## China



- ★ Strengthen production capacity and expand sales of ESPEC TEST EQUIPMENT (GUANGDONG) CO., LTD
- ★ Expand sales by rebuilding sales system (Acquire 100% ownership of SHANGHAI ESPEC ENVIRONMENTAL EQUIPMENT CORP.)

## 2-1. Expand business domains in growth strategy markets



## 2—2. Expand business domains in growth strategy markets

### Energy Device Equipment

Market: secondary batteries, power semiconductors, fuel cells, Solar battery

- Expand the lineup of secondary battery evaluation equipment
- Enhance commissioned test services
- Expand commission testing services and verification services at ESPEC's Energy Device Environmental Test Center



secondary battery  
evaluation equipment



LIB safety evaluation system

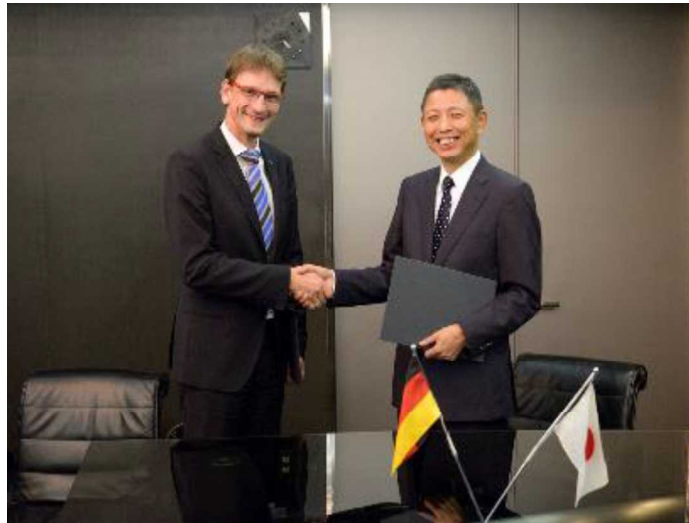
## 2—3. Business alliance with TÜV SÜD Japan

Secondary batteries for eco cars at ESPEC' s Energy Device Environmental Test Center

One-stop provision of testing and verification services compliant with UN-agreed regulations

Contract date: October 10, 2014

Start full-fledged operation : October 2015



Signing ceremony



Energy Device Environmental Test Center

## 2-4. Expand business domains in growth strategy markets

### Food and Drug markets

Market: Pharmaceuticals, Cosmetics, Foods,  
medical equipment

- Expand sales of stability test chambers and walk-in stability test chambers used for pharmaceuticals
- Expand sales of low-temperature (&humidity) chambers suitable for preservation testing of foods



**NEW**



Walk-in Stability Test Chamber

**NEW**



Low Temperature (&Humidity) Chamber

## 2-5. Expand business domains in growth strategy markets

### Aerospace related

- Expand sales of customized products
- Bolster commissioned testing services



Replicating the changes in pressure, vibration and temperature to control pressure



Replicating the changes in pressure, vibration and temperature  
Temperature (Humidity) & Vibration Combined  
Environmental Test Chamber

### **3. Win to survive in the domestic environmental testing business**

#### **Enhance customer value**

- Strengthen competitiveness through original products and services
- Provide maintenance contracts, inspection, calibration & other general technological services

#### **Responding to customization needs**

Work on initiatives with other companies to expand the scope of support for customized products



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Quality is more than a word

ESPEC



**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**

**Corporate Communication Department**

**Natsuko Okawa**

**Corporate Communication Department**

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# 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 has been growing in new energy sectors such as secondary batteries and solar batteries.



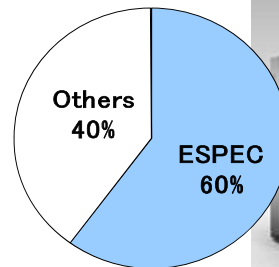
1961 Japan's First Environmental Test Chamber



【 Low temperature & humidity chamber "Lucifer" 】



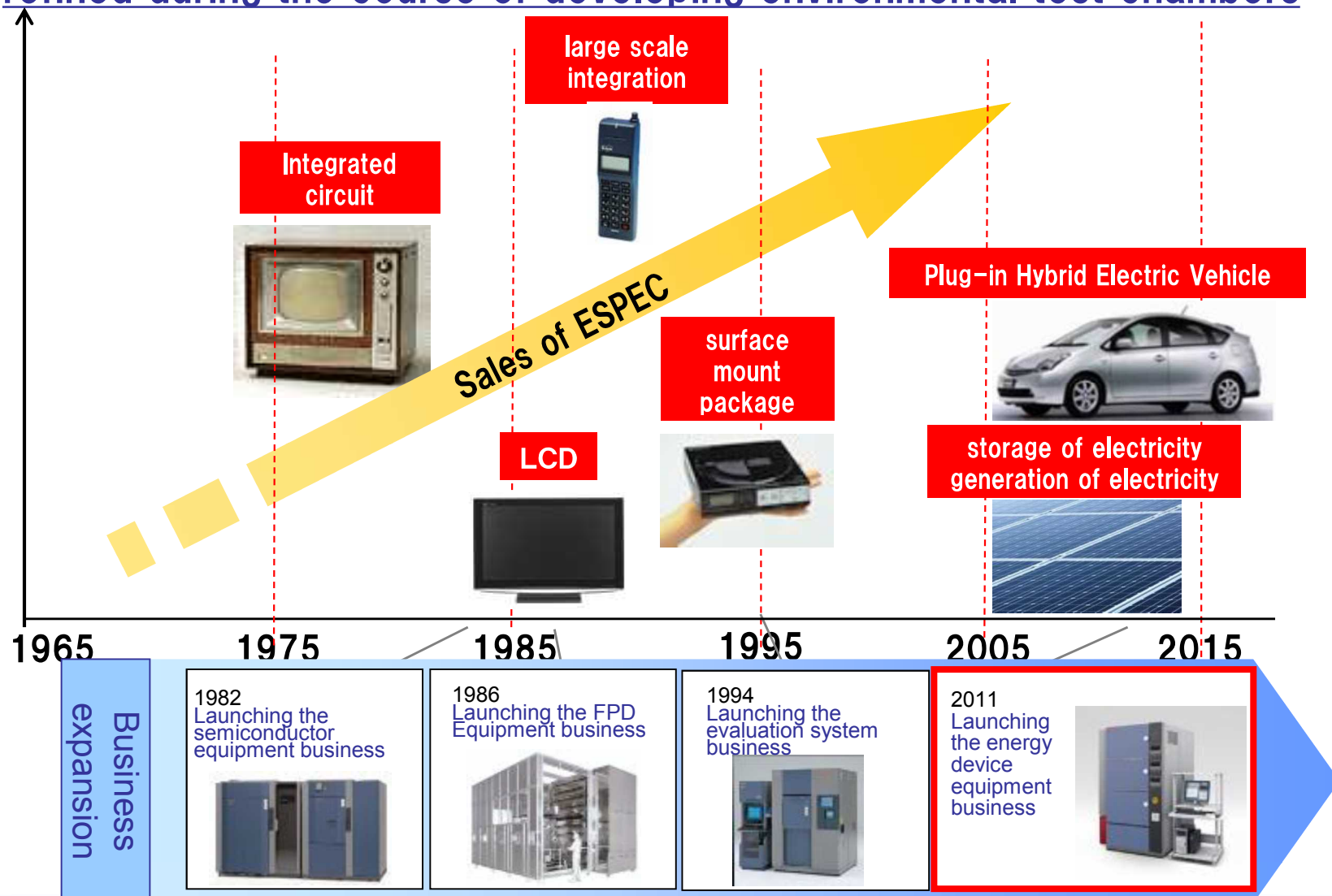
To Domestic Market Share No.1



【 Temperature & humidity chamber "Platinous J series" 】

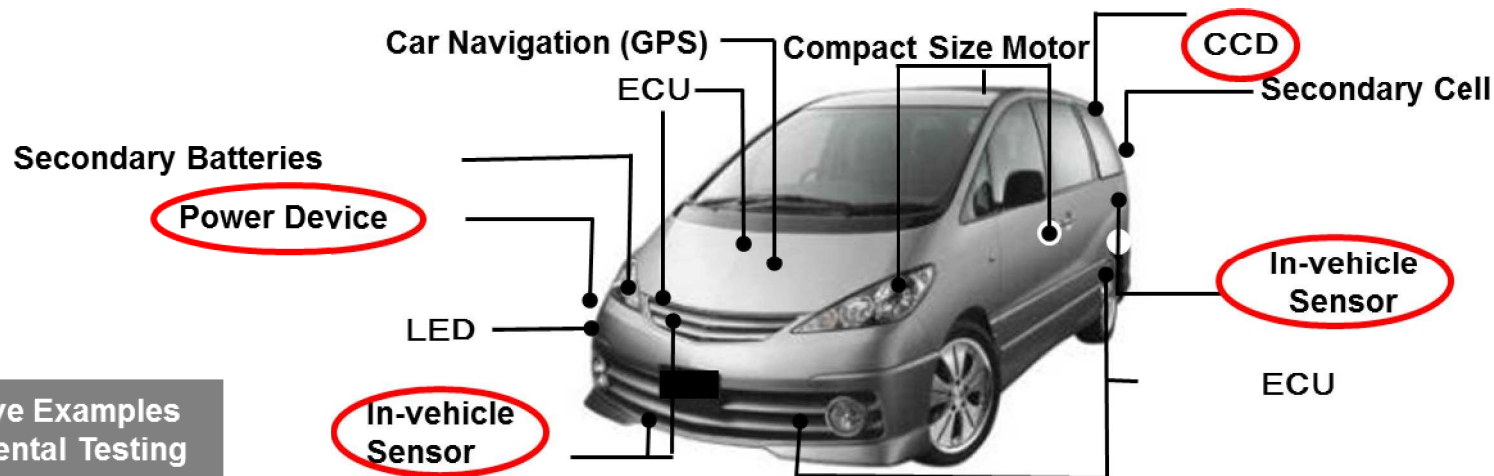
# Transition in Business

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
<b>【Power Device】</b> 	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
<b>【In-vehicle Sensor】</b> 	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 $-30^{\circ}\text{C}$ 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
<b>【CCD/CMOS】</b> 	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] Introduction of New Products

Release Date	Name of product	Features
2015/2	Low Temperature (&Humidity) Chamber	Preservation testing of foods Long-term refrigerated storage testing of pharmaceuticals and cosmetics
2014/11	Thermal Shock Chamber TSA series	Build in state-of-the-art controllers to improve operability
2014/11	Advanced Safety Tester	Conduct three types of safety testing of rechargeable batteries on one platform
2014/11	Advanced Battery Chamber Next	Constant-temperature bath that can control the temperature of the charge-discharge testing of rechargeable batteries with even higher precision
2014/7	Constant Climate Cabinet	• 100 V/15 A usable
2014/7	Compact Ultra Low Temperature Chamber	• Precise control from -85°C to 180°C
2014/5	Stability Test Chamber／ Walk-in Stability Test Chamber	• Total lineup of 9 models • Complies with international standards
2013/11	Bench-Top Type Temperature (& Humidity) Chamber	• Ease of system configuration • Enhanced network-based functions
2012/12	Advanced Battery Tester Enhance the product lineup	• Charge-discharge evaluation systems for Secondary batteries • Increasing test processing volume and test current

# [Equipment Business] TOPICS

## Bench-top Type Temperature (and Humidity) Chamber wins 2014 Good Design Award

The Bench-top Type Temperature (and Humidity) Chamber has followed on from the Platinous J series of temperature and humidity chambers and won a Good Design Award.

Design features rated highly were incorporating the features in a compact body, thereby making the environmental testing chamber accessible to the researchers or engineers who use it, and the sense unified design between the main device and numerous optional extras.





# [Equipment Business]

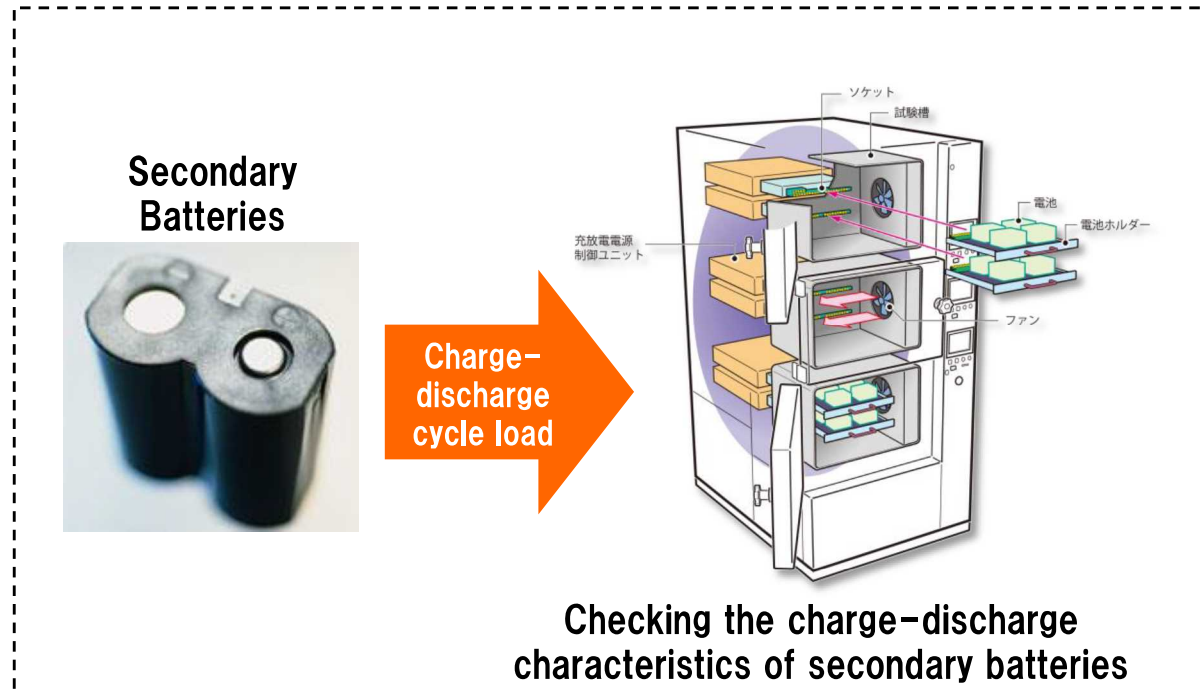
## Usage Case with Energy Device Equipment

### 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]

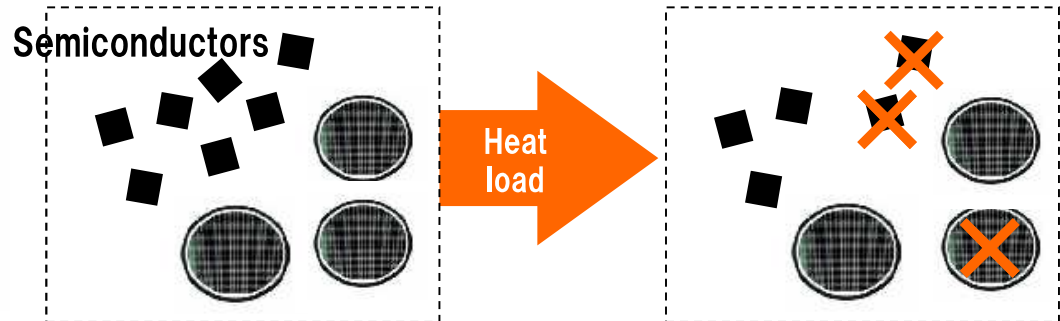
## Usage Case with Semiconductor Equipment

### Screening

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



Burn-in chamber



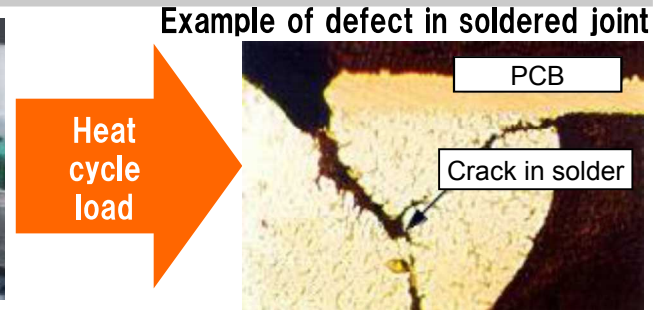
Elimination of latent early failures

### Reliability Evaluation

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



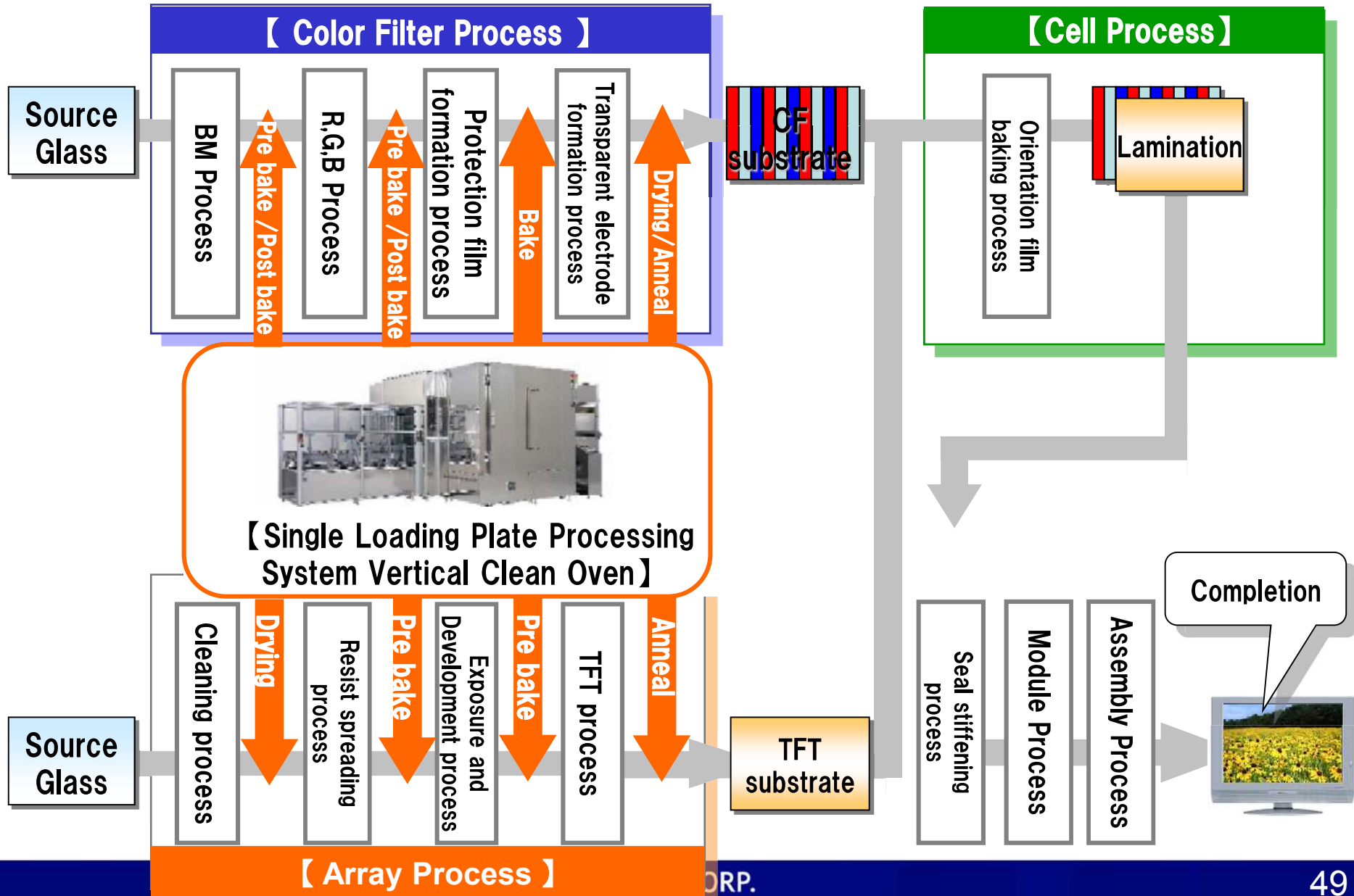
Conductor resistance evaluation system



Electrical evaluation of reliability of joints in electronic parts

# [Equipment Business]

## Usage Case with FPD Equipment



# [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
- Extending support through a full-fledged global framework, with distributors located in many countries

## Commissioned Tests and Facility Rentals

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

- Meeting new test needs whenever they arise
  - Newly built the industry-first Energy Device Environmental Test Center (Exclusively for secondary batteries, power semiconductors, and solar batteries)
  - October 2014: Independent German test verification agency Business alliance with TÜV SÜD Japan to test the safety and verify services of secondary batteries used in cars
- The company has four commissioned test centers in Japan (Utsunomiya, Toyota, Kariya and Kobe).
- 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).



【Energy Device Environmental Test Center】

# [Service Business] TOPICS

## Start the industry-first "5-year Product Guarantee"

In January 2015, ESPEC started a free 5-year product guarantee service based on the two key concepts of "making connections" and "reliability" to build even stronger relationships of trust with our customers

### ●Applicable products



Temperature & Humidity Chamber  
Platinous J Series



Bench-Top Type  
Temperature (& Humidity) Chamber



Thermal Shock Chamber  
TSA Series

# [Service Business] TOPICS

**The Energy Device Environmental Test Center was established with the latest “first-in-the-world” equipment developed in-house.**

In November 2013, the test center was established at the Utsunomiya Test Center.  
This commissioned test center specializes in reliability and safety testing of energy devices.  
(energy devices: secondary batteries, power semiconductors, and solar batteries)

## <Examples of equipment introduced>



**External short-circuit testing equipment**  
Capable of handling up to 24 kA current  
(the first in the world)



**Nail penetration/crush testing equipment**  
Capable of handling cells and battery packs

# [Other Business]

## Environmental Engineering Business

### Environmental Engineering 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 factory

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



Container plant factory



Phyto-toron



# [Other Business] TOPICS

**Toward the reconstruction of areas affected by the earthquake, Kawauchi Highlands Agricultural Plant Growth Facility started operation in Kawauchi Village, Fukushima Prefecture.**

**The plant growth facility (100% artificial lighting type) was delivered by ESPEC MIC CORP. in collaboration with other manufacturers. Production of vegetables started to revitalize agriculture and create jobs in the disaster-stricken area.**

