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ESPEC CORP.

Results Briefings of The Second Quarter of Fiscal Ending March 2011

November 25, 2010

www.espec.co.jp



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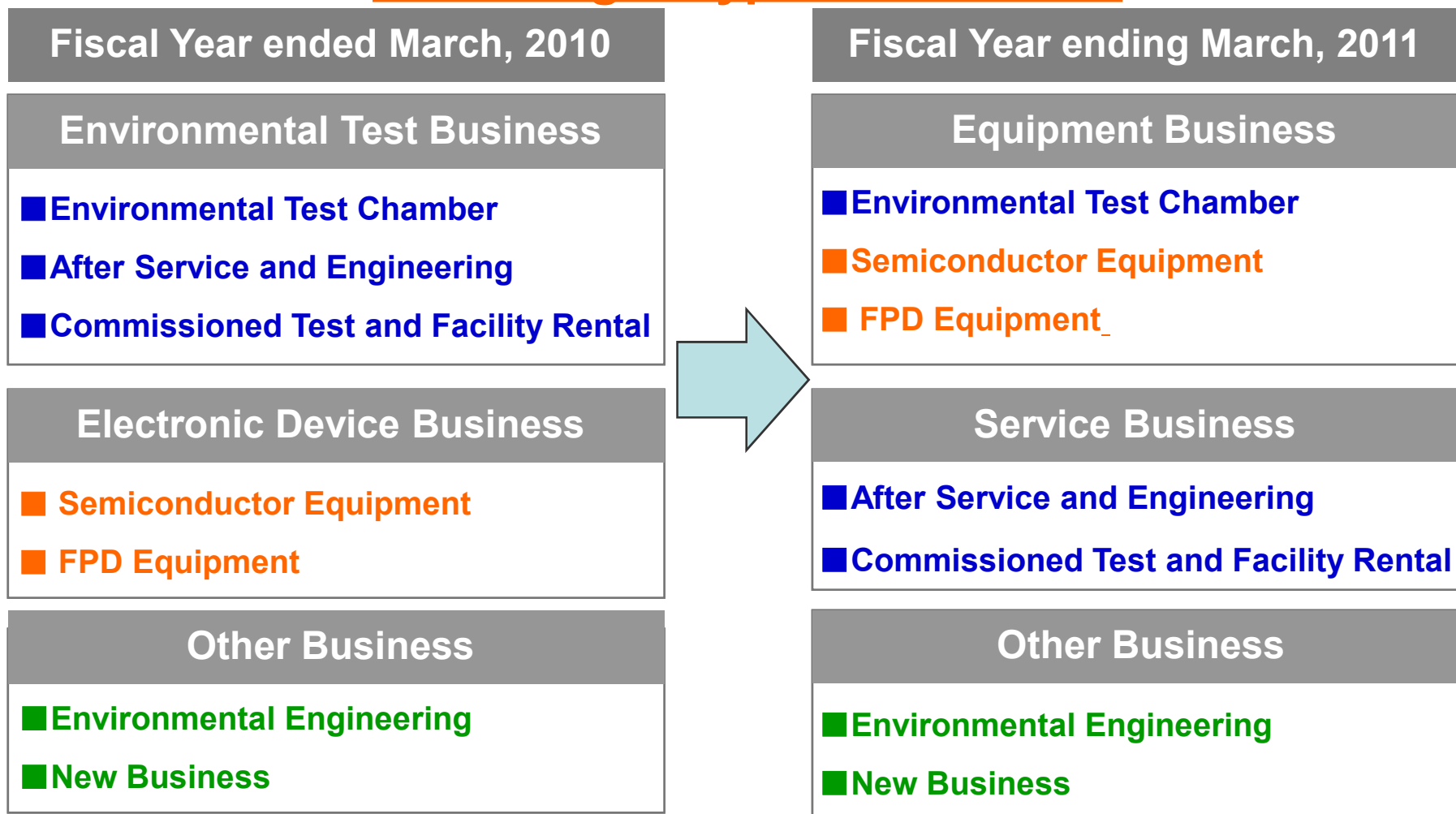
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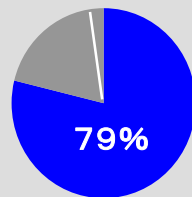
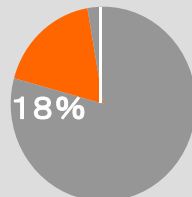
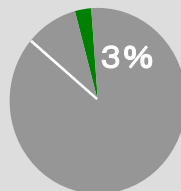
Reference

Segment Change

**Business segments were changed in April 2010
according to type of business.**



Individual Business Market / Use

		Main Products	Market	Use	Sales composition (2011/3 2Q)
Equipment Business	Environmental Test Chamber	▪Temperature & humidity chamber ▪Walk-in type temperature & humidity chamber ▪Thermal shock chamber ▪Vibration combined environmental test system ▪HAST chamber	▪Semiconductor market ▪FPD market ▪Automobile market ▪Communication market and others	▪For R & D ▪For credibility and evaluation ※ Partially used for production and inspection	
	Semiconductor Equipment	▪Burn-in system ▪Semiconductor evaluation system ▪Instrumentation system	▪Semiconductor market ▪Automobile market	▪For production (inspection) ※ Instrumentation system is for development and evaluation	
	FPD Equipment	▪Single processing system vertical clean oven ▪Booth type burn-in system	▪LCD market ▪ PDP market and others	▪ For production (Annealing, baking, drying)	
Service Business	After Service and Engineering	▪ After service ▪Construction around equipment	▪Semiconductor market ▪FPD market ▪Automobile market ▪Communication market and others	—	
	Commissioned Test and Facility Rental	▪Commissioned test ▪ Equipment rental ▪Resale ▪Calibration		▪For R & D ▪For credibility and evaluation ※ Partially used for production and inspection	
Other Business	Environmental Protection Business	Growth of forest, creation of waterfront, urban greening			
	New Business	Plant factory, developing and creating new businesses as a major source of profit			



*Financial Results of the Second Quarter of
Fiscal Ending March 2011*



Financial Highlights

Backed by the improvement in capital spending, the business results during the period under review show a drastic increase from the same period of the previous year.

Profit (Loss)

- The company revised its business results forecast for the full fiscal year upward in October, against the backdrop of the improvement in capital spending by its main customers.
- The improvement in the earnings of the Environmental Test Chamber Business and Semiconductor Equipment Business resulted in a sharp increase in both sales and the amount of orders received. As a result, the company restored profitability in all its profit categories.

Balance Sheet and Cash Flow

- Total assets increased by approx. 550 million yen, reflecting the increase in securities and other current assets.
- The company registered an increase in both net assets and total assets. As a result, the equity ratio dropped by 0.1 percentage point to 75.9%.
- Cash rose approx. 710 million yen, due to the increase in the operation cash flow and other factors.

Dividends

- The company paid an interim dividend of 5 yen per share as planned at the beginning of the current fiscal year.

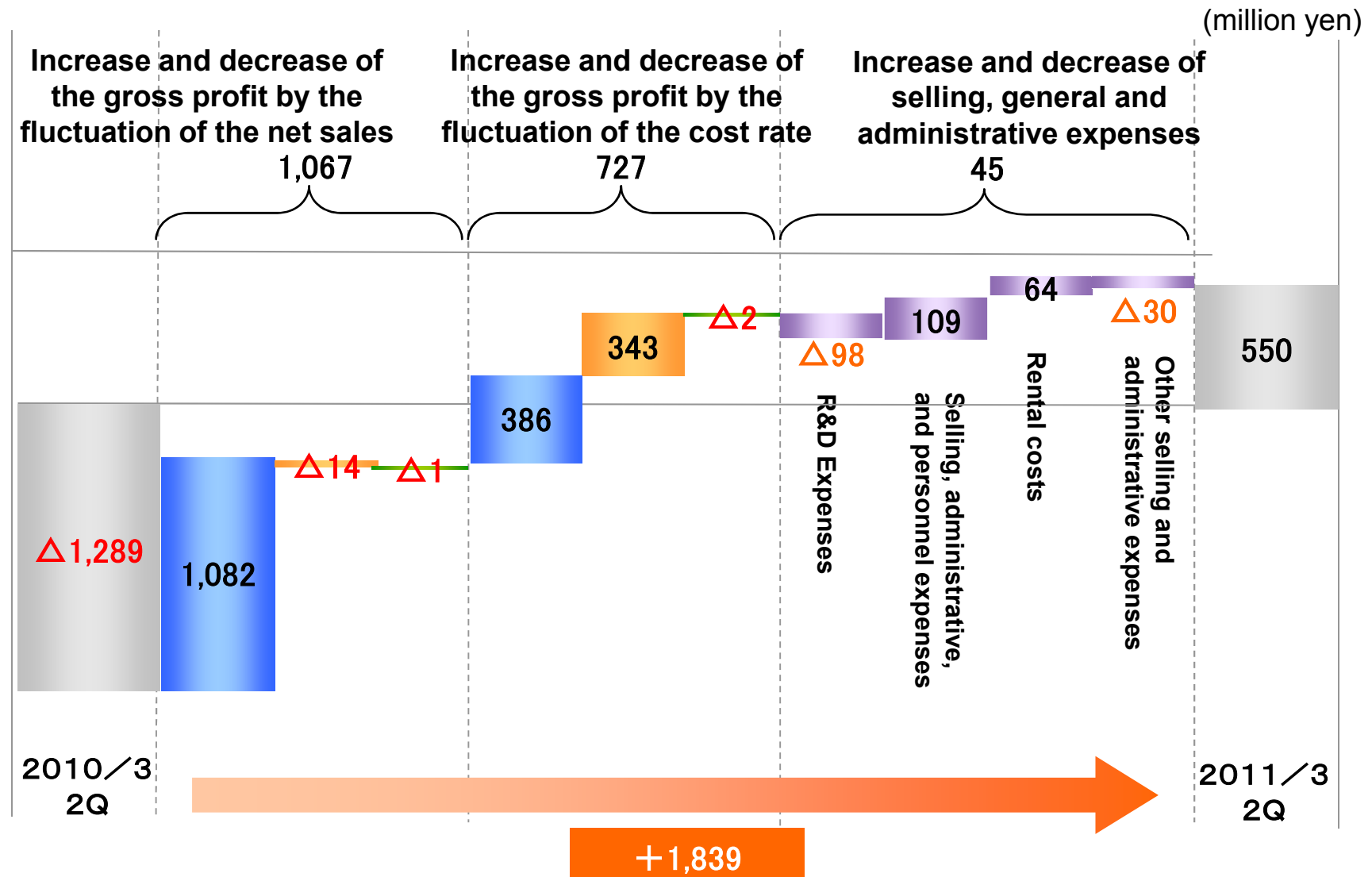
Summary of Profits and Losses

(Millions of yen)	2010/3		2010/3 2Q		2011/3 2Q		Rate of Change
		Composition		Composition		Composition	
Net sales	23, 775	100. 0	9, 433	100. 0	12, 916	100. 0	36. 9%
Cost of Net Sales	17, 148	72. 1	7, 103	75. 3	8, 792	68. 1	23. 8%
Gross profit	6, 626	27. 9	2, 330	24. 7	4, 124	31. 9	77. 0%
SG & A	7, 365	31. 0	3, 619	38. 4	3, 574	27. 7	Δ1. 2%
Operating income (loss)	Δ738	Δ3. 1	Δ1, 289	Δ13. 7	550	4. 3	—%
Non-operating income	270	1. 1	137	1. 5	184	1. 4	34. 3%
Non-operating expenses	97	0. 4	77	0. 8	54	0. 4	Δ29. 9%
Ordinary income (loss)	Δ565	Δ2. 4	Δ1, 229	Δ13. 0	680	5. 3	—%
Extraordinary income	1	0. 0	5	0. 1	38	0. 3	660%
Extraordinary loss	953	4. 0	103	1. 1	62	0. 5	Δ39. 8%
Income (loss) before income taxes and other adjustments	Δ1, 517	Δ6. 4	Δ1, 327	Δ14. 1	656	5. 1	—%
Quarterly net income (loss)	Δ2, 630	Δ11. 1	Δ1, 365	Δ14. 5	776	6. 0	—%

- **Sales increased by approx. 37% from the same period of the previous fiscal year.** The successful implementation of the management rationalization measures during the previous period led to the improvement in the ratio of selling, general and administrative expenses to sales by approx. 10 percentage points. As a result, **the company restored profitability.**
- Backed by the increased earnings in Environmental Test Chamber Business and Semiconductor Equipment Business, **the company's cost-to-sales ratio fell by 7.2 percentage points.**

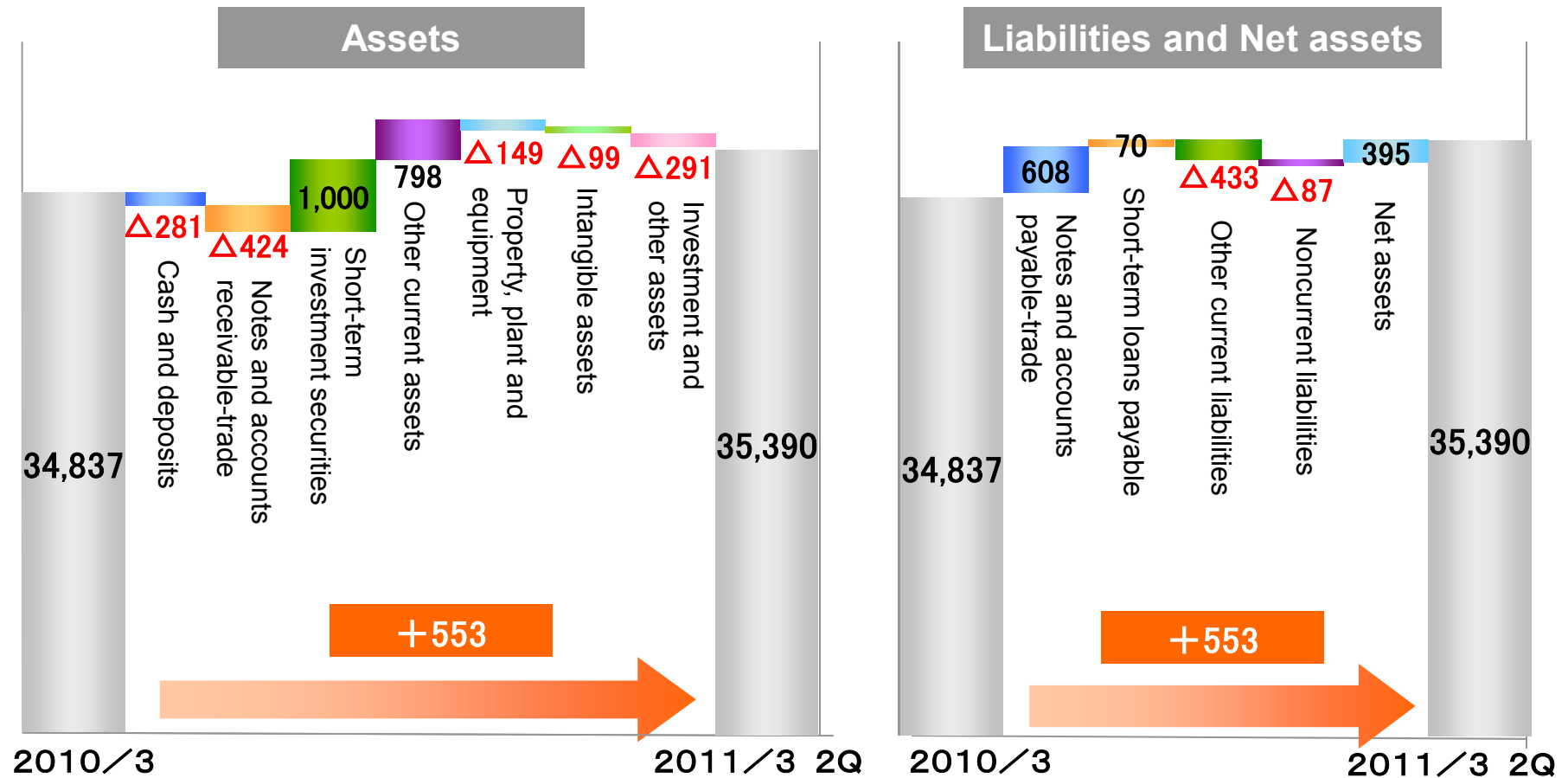
Analysis of Operating Income Increase and Decrease Factor

- Equipment Business
- Service Business
- Other Business+Elimination



Changes in Balance Sheets

(million yen)

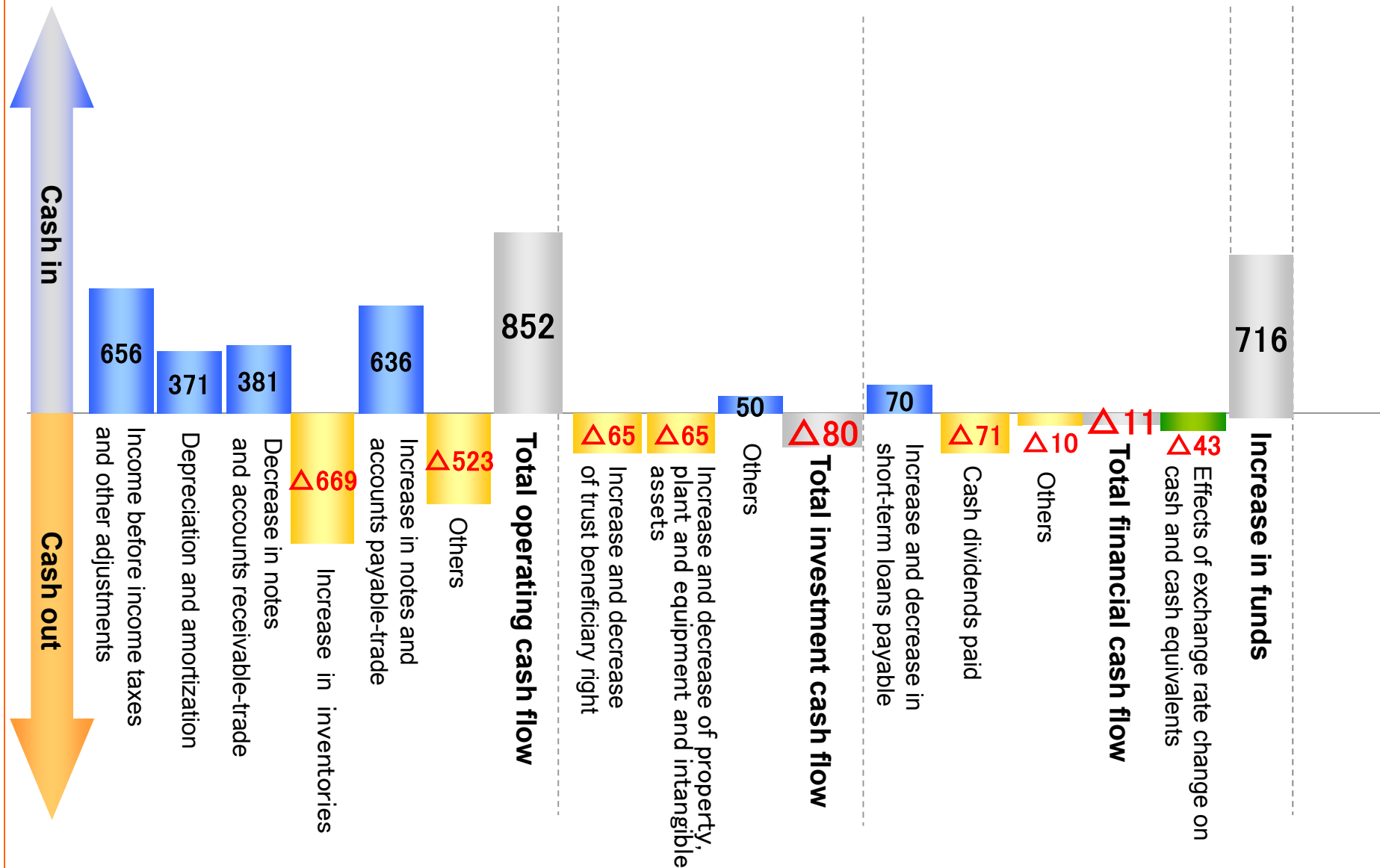


■ **Total assets increased by approx. 550 million yen**, reflecting the increase in securities and other current assets.

■ The equity ratio dropped by 0.1 percentage point to **75.9%**, backed by the increase in both net assets and total assets.

Statement of Cash Flow

(million yen)



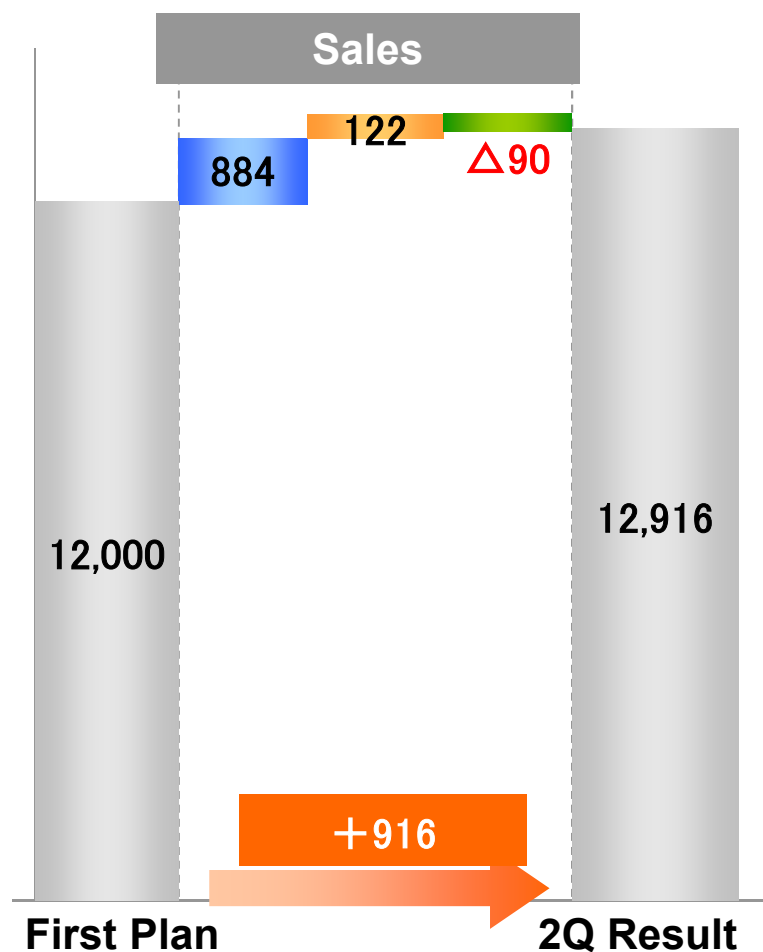


*Analysis per Segment of the Second Quarter
of Fiscal Ending March 2011*

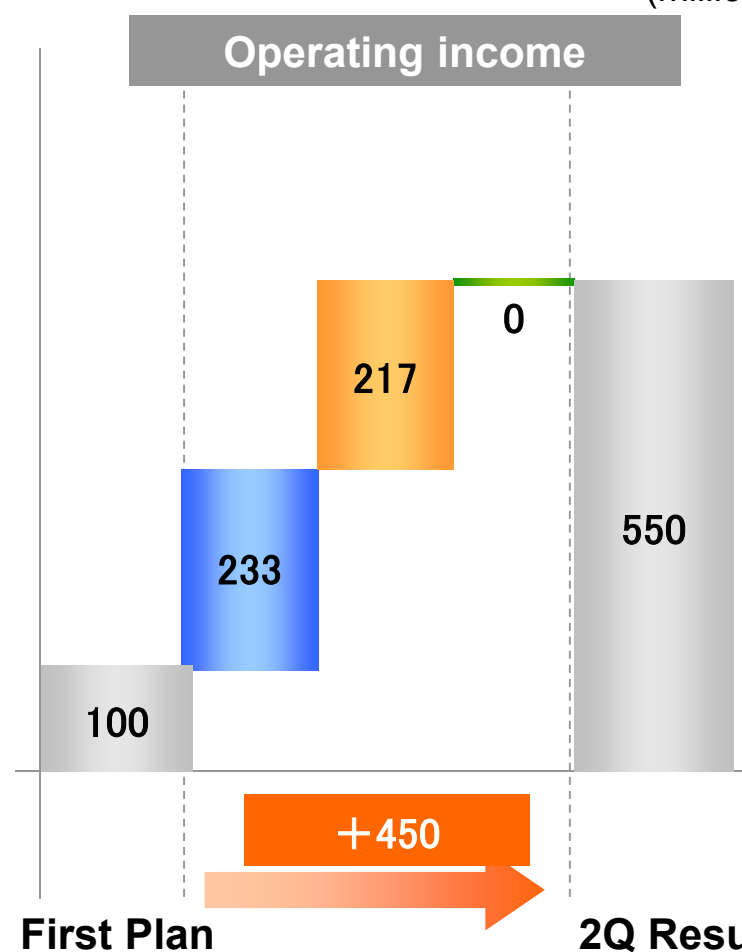
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Variation Analysis on The period First Plan and The Second Quarter Results

■ Equipment Business
■ Service Business
■ Other Business + Elimination
 (million yen)



■ Driven by the improvement in capital spending by some of its main customers, sales during the period under review posted an increase, especially in the Equipment Business.



■ Operating income also rose drastically, backed by the increase in profit from the Equipment Business and from improvement in the cost-to-sales ratio and the ratio of selling, general and administrative expenses to sales.

Equipment Business

(million yen)		2011/3 2Q		First Plan
			Change from the First Plan	
Orders-Received	Environmental Test Chamber	10,030	14.0%	8,800
	Semiconductor Equipment	1,675	28.8%	1,300
	FPD Equipment	437	45.7%	300
	Total	11,996	15.3%	10,400
Net Sales	Environmental Test Chamber	8,274	8.4%	7,630
	Semiconductor Equipment	1,449	20.8%	1,200
	FPD Equipment	555	Δ7.5%	600
	Total	10,284	9.4%	9,400
Operating Income (loss) [Profit ratio (%)]	Environmental Test Chamber	445	122.5%	200
	Semiconductor Equipment	20	Δ60.0%	50
	FPD Equipment	Δ27	—%	Δ50
	Total	433 [4.2%]	116.5%	200 [2.1%]

Equipment Business

Environmental Test Chamber

- Design and production processes for customized products were reinforced, focusing on the energy market.
- Replacement demand for new energy-efficient models was stimulated among existing customers.
- Intensive sales promotion measures were taken in China and other emerging countries in Asia. New customer bases were developed in the Korean and Taiwanese markets.
- Sales of temperature and humidity chambers and thermal shock chambers increased, especially in the battery and electronic device and equipment markets.
- Both sales and the amount of orders received posted sharp increase, allowing the company to return to the black.

Semiconductor Equipment

- Burn-in systems posted a sharp increase in both sales and the amount of orders received. Sales of secondary battery evaluation systems by one of our subsidiaries also showed positive growth.
- Backed by the drastic increase in sales and the amount of orders received, the company restored profitability.

FPD Equipment

- The company registered an increase in sales and the amount of orders received by encouraging users of fifth- and sixth-generation systems to upgrade their systems to improve tact time. While this increase allowed the company to restore profit in the second quarter alone, the company still posted an operating loss in the cumulative total.

Service Business

(million yen)		2011/3 2Q		First Plan
			Change from the First Plan	
Orders-Received	After Service	1, 987	28. 2%	1, 550
	Commissioned Test	724	11. 4%	650
	Total	2, 711	23. 2%	2, 200
Net sales	After Service	1, 691	9. 1%	1, 550
	Commissioned Test	631	△2. 9%	650
	Total	2, 322	5. 5%	2, 200
Operating income (loss) [Profit ratio (%)]	After Service	89	—%	△70
	Commissioned Test	43	—%	0
	Total	147 [6. 3%]	—%	△70 [—%]

After Service and Engineering

- The company posted an increase in both sales and the amount of orders received, backed by the growing demand for repairing products and upgrading existing models to reduce energy consumption, and also by the increase in electrical and other works following the relocation of facilities by customers.
- While the hiring of additional service personnel resulted in an increase in personnel cost, profit remains almost unchanged thanks to successful cost reduction efforts.

Commissioned Test and Facility Rental

- Both sales and the amount of orders received declined.
- Operating profit largely increased, reflecting the improved capacity utilization ratio of testing facilities and reduced fixed costs.

Other Business

(million yen)	2011/3 2Q		First Plan
		Change from the First Plan	
Orders- Received	463	7. 7%	430
Net Sales	381	△13. 4%	440
Operating Income (loss) [Profit ratio (%)]	△32 [－%]	－%	△30 [－%]

Environmental Engineering, New Business

- The sales of plant factories remained solid, as shown by the increase in the amount of orders received.
- The company posted a decline in sales and operating loss due to the unfavorable results of the forest and waterfront recovery sectors.

The Osaka Pavilion at the Shanghai Expo



The company offered technical assistance to a plant factory Osaka Prefecture University exhibited (design and production by Tsubakimoto Chain Co.)

Top Users in Terms of Value of Sales by Segment

Non-consolidated

*Listed in alphabetical order

Environmental Test Chamber

Canon Inc. (Japan)

Honda R&D Co., Ltd. (Japan)

Mitsubishi Electric Corporation (Japan)

Panasonic Corporation (Japan)

SANYO Electric Co., Ltd. (Japan)

Semiconductor Equipment

DENSO CORPORATION (Japan)

Powertech Technology Inc. (Taiwan)

STK TECHNOLOGY CO., LTD. (Japan)

FPD Equipment

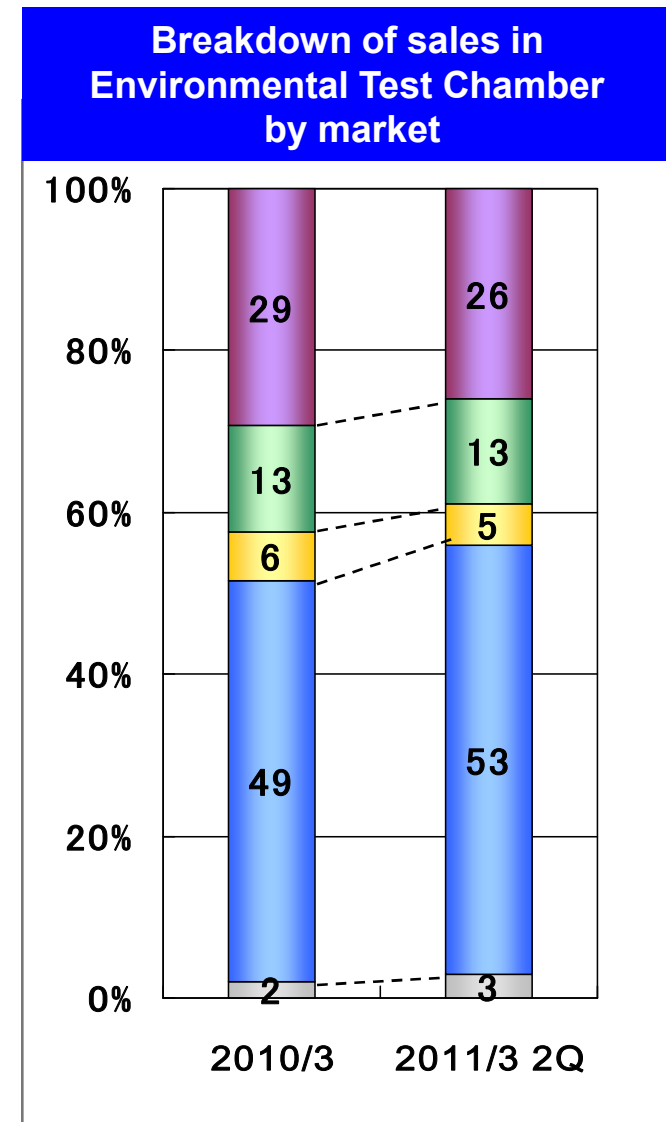
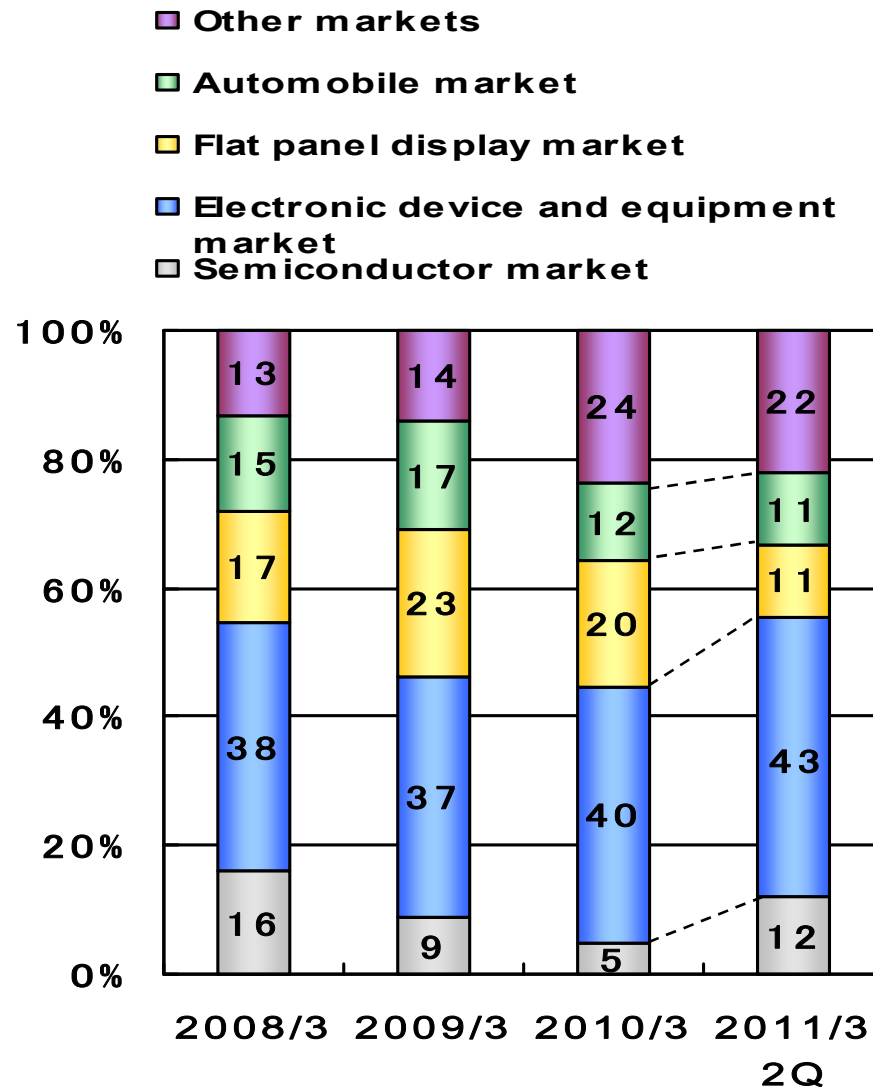
Chimei Innolux Corporation (Taiwan)

Chi Mei Optoelectronics Corporation (Taiwan)

Melco Display Technology Inc. (Japan)

Breakdown of Sales by Market

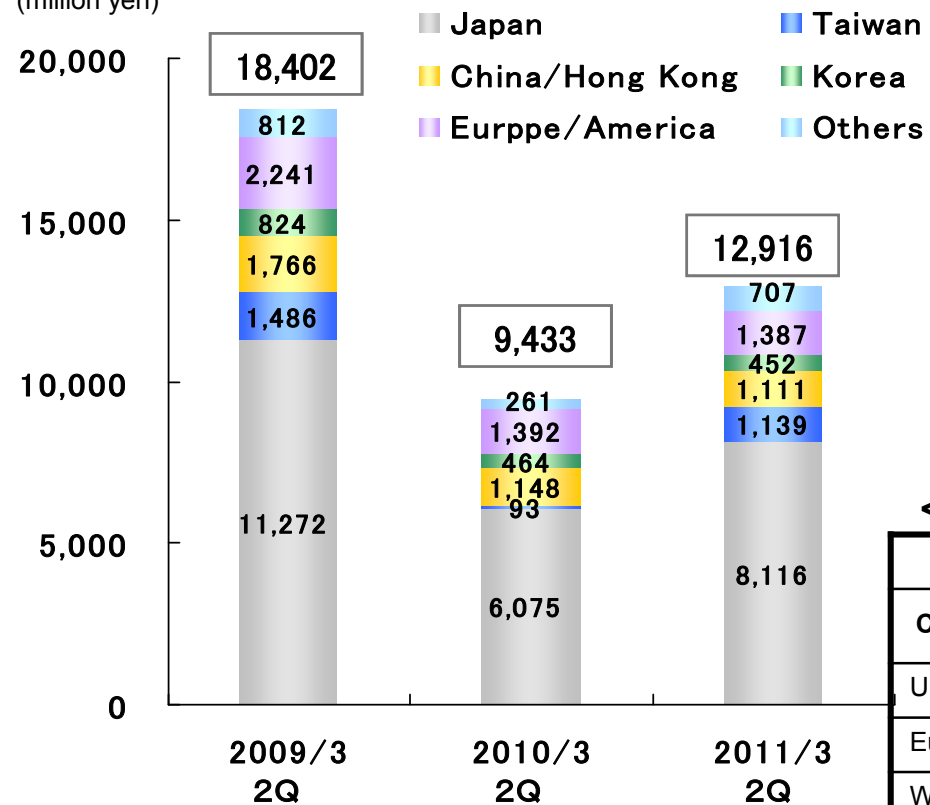
Non-consolidated



Sales by Region

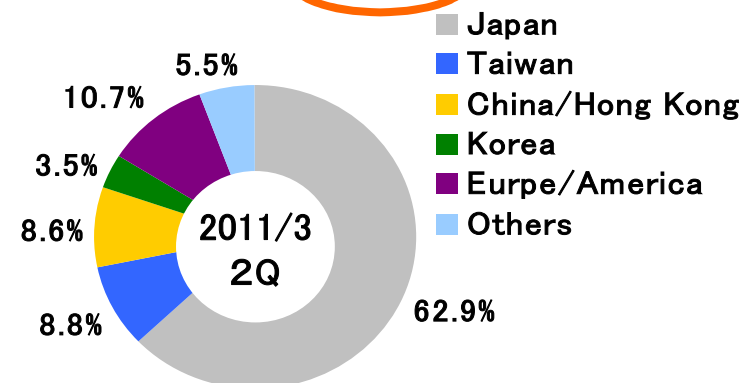
Sales by Region

(million yen)



Regional sales composition ratio in segment

Overseas sales ratio: 37.2%



< Exchange rate (Non-consolidated) >

Currency	2010/3 2Q		2011/3 2Q	
	Percentage of total	Internal rate	Percentage of total	Internal rate
U.S. dollar	18%	95	12%	95
Euro	7%	130	6%	130
Won	0%	0.06-0.07	1%	0.07
Yen	75%	—	81%	—

Sales growth rate (Y o Y change)

	Japan	Taiwan	China/Hong Kong	Korea	Europe/North America	Others
2011/3 2Q	33.6%	1124.7%	△3.2%	△2.6%	△0.4%	170.9%
2010/3 2Q	△46.1%	△93.7%	△35.0%	△43.7%	△37.9%	△67.9%



Progress of Key Strategy March 2011

Management Policy

Establishing overwhelming business competitiveness through the concentration of cross-group synergy and innovation

Key Strategies

Re-building domestic competitiveness through reform of “production, sales and technology” from a customer perspective

Proactive development of overseas growth markets

Expansion of new business fields with a view to growth

Radical reform of the revenue base in order to restore profitability

Re-building domestic competitiveness through reform of “production, sales and technology” from a customer perspective

Developing new customers and markets, and restructuring the revenue base by enhancing strength in: production, sales, and technology

Sales

- **Bring new value to customers by integrating customer contact channels.**
 - **To offer integrated solutions to customers, such as consulting for testing, commissioned tests, and after service, when selling products**
 - To facilitate sales promotion using service personnel**
- **Promote an area-specific strategy by introducing the Area Management System (East Japan, the Tokyo Metropolitan Area, Central Japan and West Japan).**
 - **To offer products and services that best meet region-specific customer needs**

Technology and R&D

- **Launch high-quality products and services in the market earlier.**
 - **To develop six new environmental test chamber models and one semiconductor-related equipment model and to launch these new models on the market**

Design and production

- **Strengthen the customization capability by improving the design and production processes.**
 - **To achieve numerical targets through attempts utilizing model cases to shorten the design period and reduce variable costs**

Product and Service Development: strengthening capability in technology and R&D (1)

Launch high-quality products and services in the market earlier

Product category	Product name	Market-launch time	Features
Environmental Test Chamber	Battery Charge-Discharge Tester	Launched in April	Employs a double-stack structure that requires less space for installation; available at low price
	High temperature and high humidity chamber: Eco model	Launched in June	Employs a heat-pipe cooling system that reduces energy consumption by up to about 70%
	Constant Climate Cabinet	Launched in June	Can be used in a 100V environment; suitable for a wide range of uses, e.g., in a laboratory
	Solid walk-in chamber	Orders accepted from August	Usable for testing solar panel standards
	Thermal Shock Chamber TSA series: Eco Type	Launched in September	Reduces energy consumption by up to 37% with the improved refrigeration circuit and automated optimization of precooling/preheating temperatures; available at a price 10% lower than conventional models
	Walk-in Type Temperature: Eco Type	Launched in November	Reduces energy consumption by about up to 30% with its proprietary lowest-frequency control technology
	Platinous series Eco Type	Scheduled to be launched next year	Reduces energy consumption with its latest refrigeration circuit and other innovations
Semiconductor Equipment	Burn-in System of customized user specifications	Orders accepted from April	Reduces the cost of repetitive products with customized user specifications
	Secondary Battery Evaluation System	To be launched in January	Reliability Evaluation system of the secondary battery
Communication networking products	Pattern Manager Web Manager	To be launched by the end of the current year	Makes test operation easier and the collection and analysis of test results more efficient
Commissioned Test	New menu	As necessary	Develop new menus that cater to customer needs and conduct joint research.

Product and Service Development: strengthening capability in technology and R&D (2)

Customer need for products that consume less energy



Products differentiated in terms of energy efficiency and total price

High temperature and high humidity chamber Eco model



Power consumption is **reduced by about up to 70%** from the conventional model, thanks to the heat-pipe cooling system that does not use a refrigerator and therefore does not use CFC.

Thermal Shock Chamber TSA series E-Type



Power consumption is **reduced by up to 37%** from the conventional model, thanks to the improved refrigeration circuit and the automated optimization of precooling/preheating temperatures.

Product and Service Development: strengthening capability in technology and R&D (3)

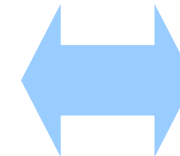
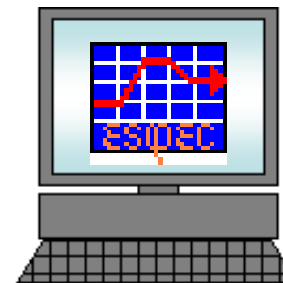
Constant Climate Cabinet



This product can be operated in a 100V environment and is suitable for a wide range of uses within laboratories.

Pattern Manager Web Manager

Pattern Manager



This product is designed for editing and executing the patterns of test program operation, as well as for storing data



This software makes test operation easier and enhances efficiency in collecting and analyzing test results.

Proactive development of overseas growth markets

Take positive action to develop business within the growth markets in China and other emerging economies in Asia, in order to increase revenue.

Enhancing corporate capabilities by reorganizing the formation of affiliated companies in China and other parts of Asia

■ **Ensure effective and efficient implementation of strategy by strengthening the control over affiliated companies in China and other parts of Asia using regional headquarters.**

→ **A regional headquarters was established and its organizational structure and infrastructure was developed. Business strategy was formulated and other necessary preparations were made for the commencement of business.**

Expanding the markets in China and the rest of Asia

■ **Take measures to dominate the Chinese market.**

→ **A test center was opened in Suzhou in April.**

••• **After six months, the test center is now at full operation.**

Efforts are underway to develop new customers in Korea and Taiwan.

••• **The company is now doing business with 23 companies in Korea and 11 companies in Taiwan.**

Expansion of new business fields with a view to growth

Expand business into new growth markets/areas and develop new business themes.

Increasing sales of battery production equipment

- Develop and offer for sale new equipment for the production of secondary and solar batteries.
 - About 90% of the sales target was achieved during the first half of the fiscal year under review.
- Increase sales of evaluation devices for rechargeable potteries.
 - The company was awarded an order for an Electrode dryer for PV cell (55 million yen) during the first half of the fiscal year under review.



Electrode dryer for PV cell

Promoting sales of plant factories and developing new services

- Strengthen sales promotion measures.
 - ESPEC CORP's Plant Factory Department took over the responsibility to distribute plant factories in the second half of the fiscal year under review.
- Build an internal system to respond to overseas needs.
 - ESPEC MIC CORP., a subsidiary of ESPEC, undertakes the service
- Develop sales channels for plant factories, especially for container-type products and the "PLANTCELLAR".
 - In the first half of the fiscal year under review, the company posted sales of 124 million yen, with a backlog reaching 112 million yen.



Vegetable growing system
"PLANTCELLAR"

Radical reform of the revenue base in order to restore profitability

Regain profitability by management rationalization and completing a drastic reform of the revenue base.

Promoting cost reduction

- Reduce the cost of production by further improving the production process, logistics operations, and inventory control.
- Reduce variable costs by changing product design and revising the purchase prices of repeatedly procured products.

Reduce costs by about 200 million yen

Results in the first half of the fiscal year: Costs reduced by about 150 million yen

Promoting cost reduction through the consolidation of business sites

- Reduce fixed costs by consolidating business sites.
- Reduce costs by integrating management and accounting tasks.

Reduce costs by about 200 million yen

Results in the first half of the fiscal year: Costs reduced by about 100 million yen

Reducing the current ratio of selling, general and administrative expenses to sales

- Make a strategic shift from indirect departments to direct departments regarding personnel allocation.
- Implement stricter control over selling, general and administrative expenses to reduce the ratio of expenses to sales.

• Improve the ratio of production personnel in direct departments to those in indirect departments.

• Implement stricter budget control through use of the Revenue Management Committee.



*Business Plan for the Second-half and Full-year
Periods of the Fiscal Year Ending March 2011*

Business environment and measures to be taken in the second half of the fiscal year


While the economic situation remains uncertain, the company's major customers are steadily improving performance.

Negative factors

- Prudence and the “selection and concentration” approach are still required for capital spending, which, however, continues to improve.
- Competition remains intense, affected by the shrinkage of both the domestic and overseas markets.
- Japan is losing international competitiveness due to the appreciation of the yen.

Positive factors

- The markets within the new energy and environment-related business are expanding.
- Demand for tests and test chambers is growing in overseas markets, especially in emerging countries.
- R&D investment, which remained stagnant, has begun to improve.

- 
- The company will launch competitive products with differentiating features.
 - The company will further reduce production costs.
 - The company will consider and propose VE (value engineering) on a case-by-case basis to better cater to specific customer needs.

- 
- The company will facilitate the development and market introduction of new products.
 - The company will take positive measures to develop business in new areas and markets.

Full Fiscal Year Plan March 2011

(million yen)	2010/3	2011/3				
	Full year (Result)	First half (Result)	Second half (Plan)	Full year (Plan)	Change from the First Plan	First Plan
Orders-received	22, 989	15, 101	14, 899	30, 000	11. 1%	27, 000
Net sales	23, 775	12, 916	16, 084	29, 000	7. 4%	27, 000
Gross profit [Profit ratio (%)]	6, 626 [27. 9%]	4, 124 [31. 9%]	5, 301 [33. 0%]	9, 425 [32. 5%]	8. 3%	8, 700 [32. 2%]
Operating income (loss) [Profit ratio (%)]	△738 [－%]	550 [4. 3%]	450 [2. 8%]	1, 000 [3. 4%]	25. 0%	800 [3. 0%]
Ordinary income (loss) [Profit ratio (%)]	△565 [－%]	680 [5. 3%]	520 [3. 2%]	1, 200 [4. 1%]	41. 2%	850 [3. 1%]
Net income (loss) [Profit ratio (%)]	△2, 630 [－%]	776 [6. 0%]	424 [2. 6%]	1, 200 [4. 1%]	20. 0%	1, 000 [3. 7%]
Capital Investment	317	114	286	400	17. 6%	340
Depreciation	866	371	389	760	0. 7%	755
R&D Expense	870	519	591	1. 110	24. 7%	890
Profit Per Share (yen)	△110. 84	32. 70	17. 87	50. 57	20. 0%	42. 14
Dividend (yen)	8	5	7	12	20. 0%	10

Equipment Business

Environmental Test Chamber

- Stimulate replacement demand among existing customers by launching energy-efficient models of major products.
- Expand business into non-electronics markets (especially the pharmaceutical market) and growing markets (especially the secondary battery market).
- Strengthen price competitiveness and increase earning capacity by reducing the production costs of customized products.
- Put special focus on markets in China and emerging countries in Asia.

Semiconductor Equipment

- Launch new models of the burn-in chamber (energy-efficient models) in the market and promote sales.
- Promote the sales of measurement evaluation systems, along with sales in the power device and eco device markets

FPD Equipment

- Promote the sales of clean ovens for FPDs in the Taiwanese market.
- Promote the sales of clean ovens to semiconductor and organic material manufacturers.

Equipment Business

(million yen)		2011/3				
		First half (Result)	Second half (Plan)	Full year (Plan)		First Plan
					Change from the First Plan	
Orders- Received	Environmental Test Chamber	10,030	9,770	19,800	10.3%	17,950
	Semiconductor Equipment	1,675	1,525	3,200	23.1%	2,600
	FPD Equipment	437	263	700	0.0%	700
	Total	11,996	11,704	23,700	11.8%	21,200
Net sales	Environmental Test Chamber	8,274	10,326	18,600	5.4%	17,650
	Semiconductor Equipment	1,449	1,451	2,900	16.0%	2,500
	FPD Equipment	555	845	1,400	55.6%	900
	Total	10,284	12,616	22,900	9.0%	21,000
Operating income (loss) [Profit ratio (%)]	Environmental Test Chamber	445	405	850	13.3%	750
	Semiconductor Equipment	20	30	50	△66.7%	150
	FPD Equipment	△27	△73	△100	—%	△150
	Total	433 [4.2%]	367 [2.9%]	800 [3.5%]	6.7%	750 [3.6%]

Service Business

(million yen)		2011/3				
		First half (Result)	Second half (Plan)	Full year (Plan)		First Plan
					Change from the First Plan	
Orders- Received	After Service	1, 987	1, 813	3, 800	7. 0%	3, 550
	Commissioned Test	724	676	1, 400	△3. 4%	1, 450
	Total	2, 711	2, 489	5, 200	4. 0%	5, 000
Net sales	After Service	1, 691	1, 909	3, 600	1. 4%	3, 550
	Commissioned Test	631	769	1, 400	△3. 4%	1, 450
	Total	2, 322	2, 678	5, 000	0. 0%	5, 000
Operating income (loss) [Profit ratio (%)]	After Service	89	61	150	650. 0%	20
	Commissioned Test	43	7	50	66. 7%	30
	Total	147 [6. 3%]	53 [2. 0%]	200 [4. 0%]	300. 0%	50 [1. 0%]

After Service and Engineering

- Encourage users to sign a maintenance contract for new products and enhance maintenance service under the contract.
- Promote the sales of communication networking products.
- Reduce costs by liquidating inventories of parts and products and by cutting logistics costs.

Commissioned Test and Facility Rental

- Develop and offer new test menus.

Other Business

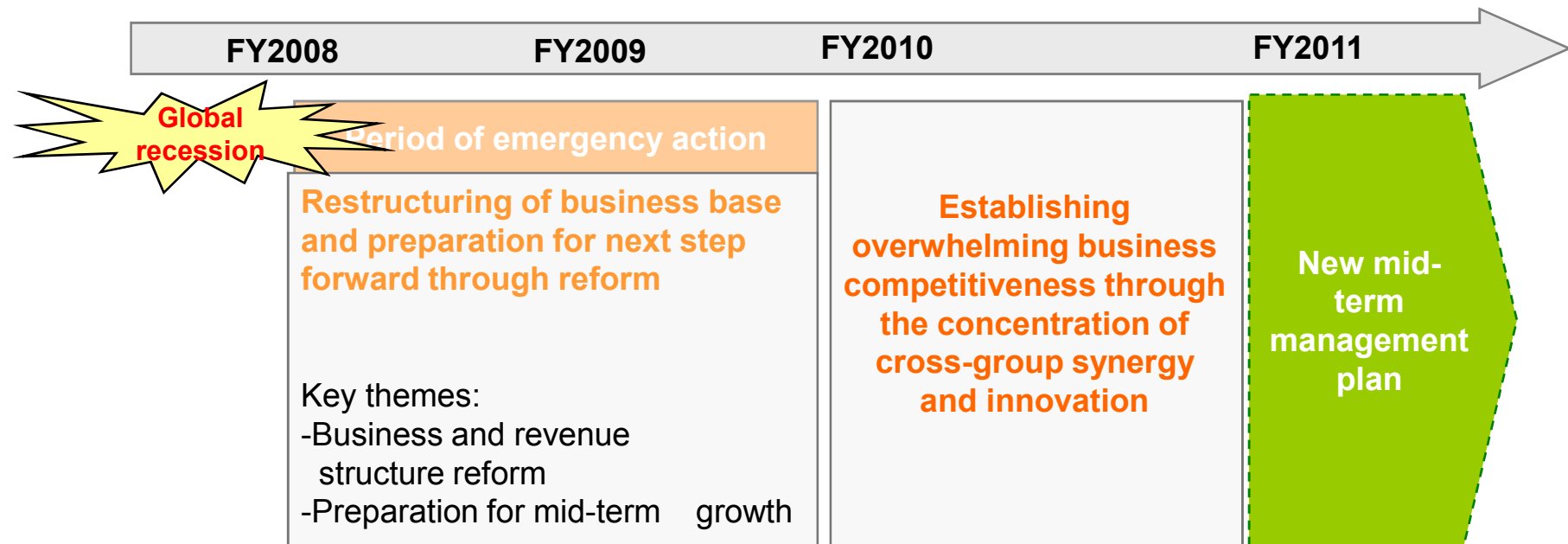
(million yen)	2011/3				
	First half (Result)	Second half (Plan)	Full year (Plan)		First Plan
				Change from the First Plan	
Orders-Received	463	737	1, 200	33. 3%	900
Net sales	381	819	1, 200	20. 0%	1, 000
Operating income (loss) [Profit ratio (%)]	△32 [－%]	32 [3. 9%]	0 [－%]	－%	0 [－%]

Environmental Protection Business, New Business

- Promote the sales of plant factories in both domestic and overseas markets, establish the business system, and offer new services.
- Promote sales in the sectors of forest and waterfront recovery, and offer greening systems combined with urban greening products.

Toward Sustained Growth and Development

**Become a company that has an impressive presence
despite being small in size.**



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.co.jp

Keiji Oshima

General Manager

General Affairs & Personnel Department

Yo Hirao

Corporate Services Group

General Affairs & Personnel Department

ESPEC

Reference



ESPEC

Company and Business Profile

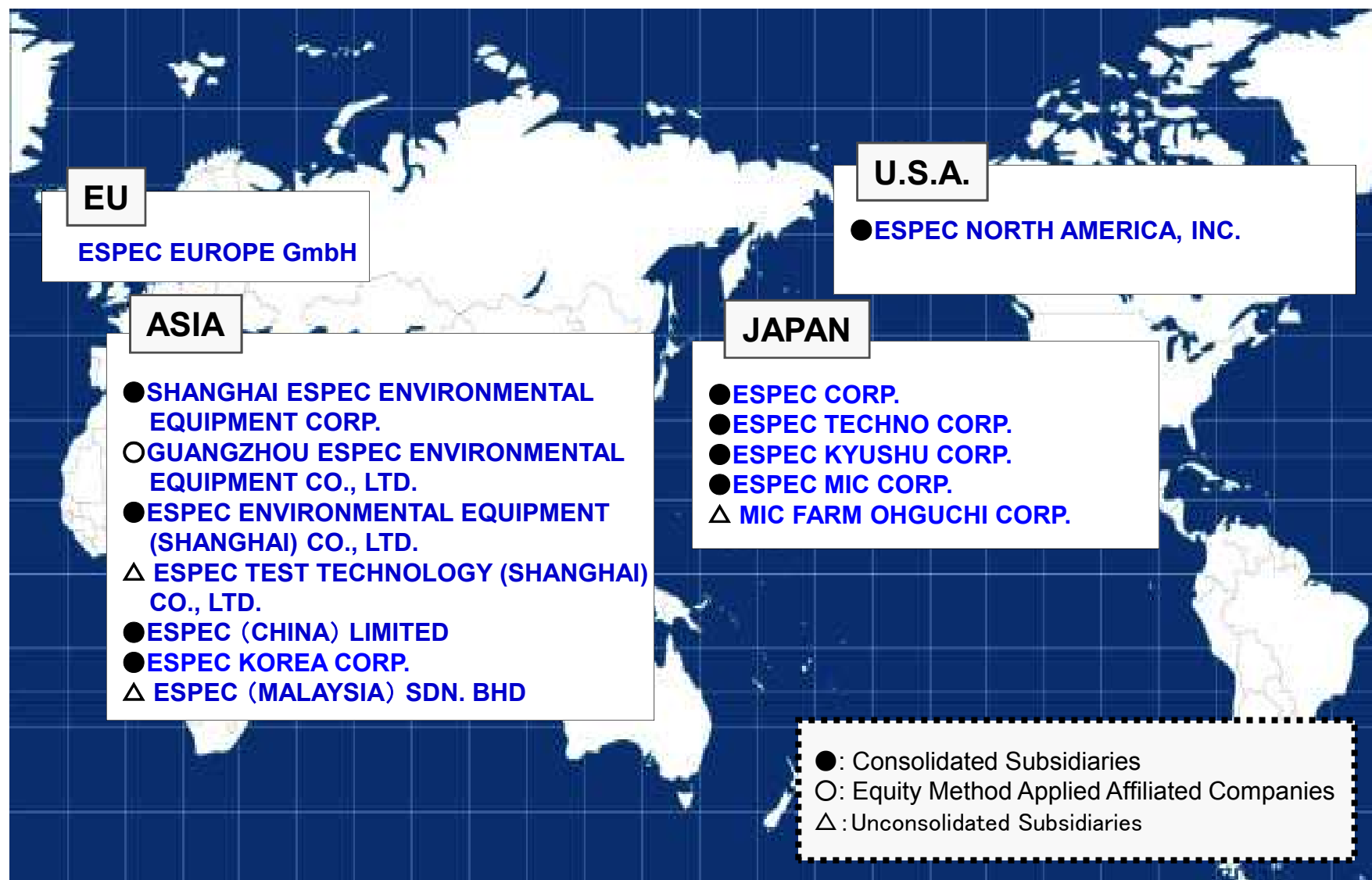


Company Profile

Name	ESPEC CORP.
Head Office	3-5-6, Tenjinbashi, Kita-ku, Osaka
Represented By	Nobuyosh Shin
Established	July 25,1947
Incorporated	January 13,1954
Paid-up Capital	¥6,895Million
Shares Issued	23,781,394 Shares
Employees	1,301 (consolidated)
Main Business	Manufacture and Sales of Environmental Test Chamber, Semiconductor Equipment, FPD Equipment and Plant Factory. After Service, Commissioned Test and others.

(As of September 30, 2010)

Global Network



(As of September 30, 2010)

[Equipment Business] 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.

<During the WW II>

Environmental test was standardized in the United States for stabilizing and improving quality of military supplies.



<Postwar>

Environmental test was JIS standardized in Japan for stabilizing and improving quality of consumer products.



<Present>

Demand for environmental test has increased due to increased use of electronic parts, shortened development period, and pursuit for lower cost and higher quality.

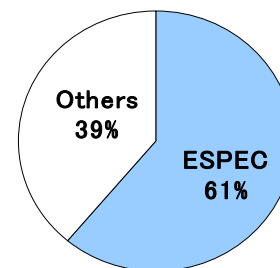


Japan's First Environmental Test Chamber



Low temperature & humidity chamber "Lucifer" (1961)

To Domestic Market Share No.1



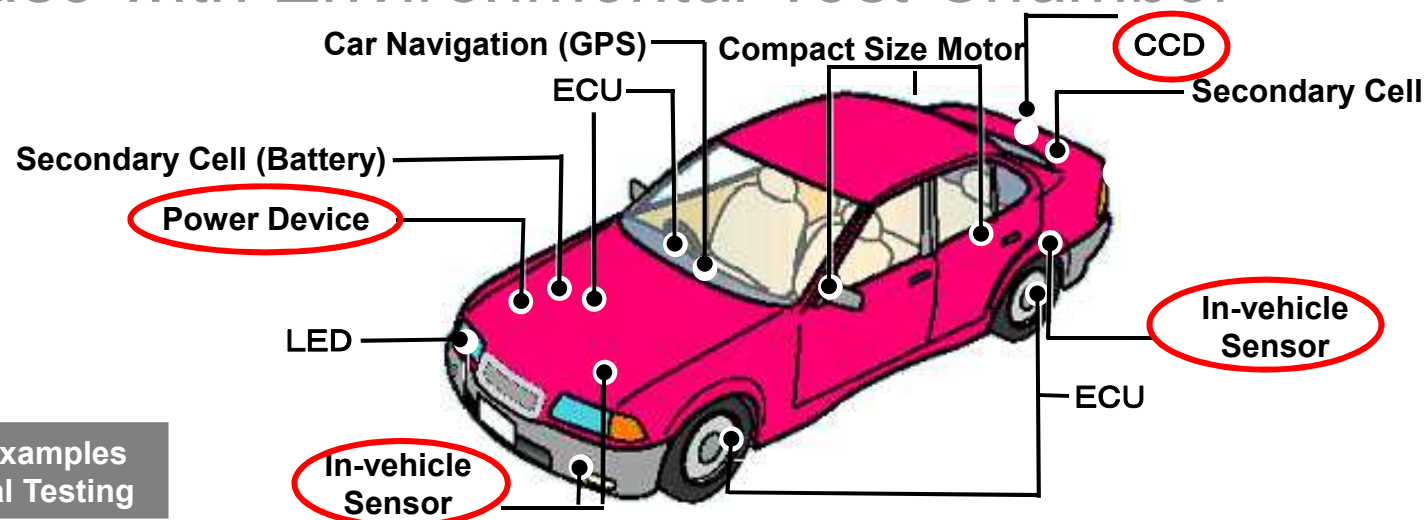
※Our presumption (2008)






Temperature & humidity chamber "Platinous K series" (1997)

[Equipment Business]

Usage Case with Environmental Test Chamber



Representative Examples for Environmental Testing

Device	Process/Test Condition		Our Products
【Power Device】 	Inspection	■ Thermal shock test: $-40^{\circ}\text{C} \rightleftharpoons +125^{\circ}\text{C}$	Thermal shock chamber
		■ left under high temperature: $+175^{\circ}\text{C}$, $+85^{\circ}\text{C}$	(Compact size) Oven
		■ Burn-in test	Burn-in chamber
【In-vehicle Sensor】 	Inspection	■ Temperature cycle test of board: $-40^{\circ}\text{C} \rightleftharpoons +110^{\circ}\text{C}$	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 : $-30^{\circ}\text{C} \rightleftharpoons \text{RT} \rightleftharpoons +80^{\circ}\text{C}$, $-55^{\circ}\text{C} \rightleftharpoons +155^{\circ}\text{C}$	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 : $-40^{\circ}\text{C} \rightleftharpoons +125^{\circ}\text{C}$, $-20^{\circ}\text{C} \rightleftharpoons +85^{\circ}\text{C}$	Thermal shock chamber

[Equipment Business]

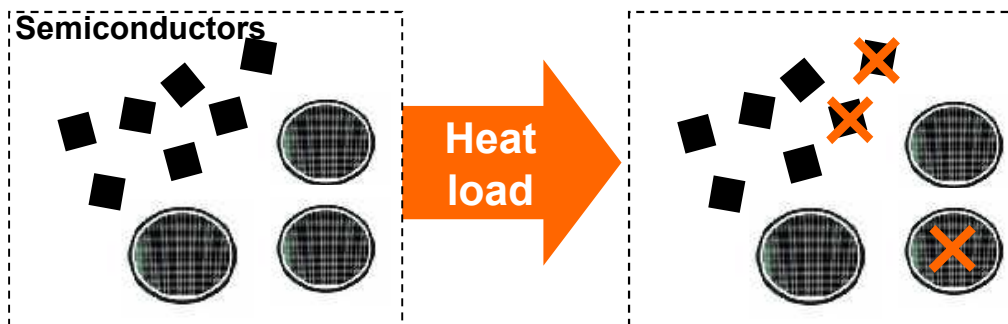
Usage Case with Semiconductor Equipment

Screening

Used for inspection in the manufacture of semiconductor devices to ensure product reliability suitable for mass production



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

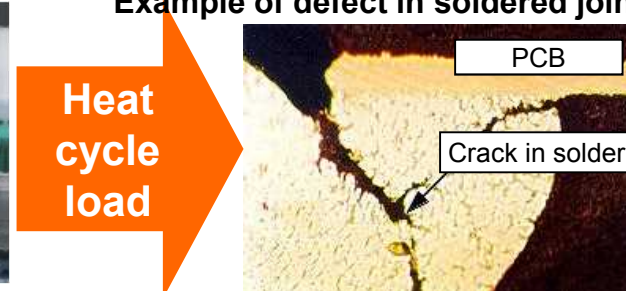


Conductor resistance evaluation system

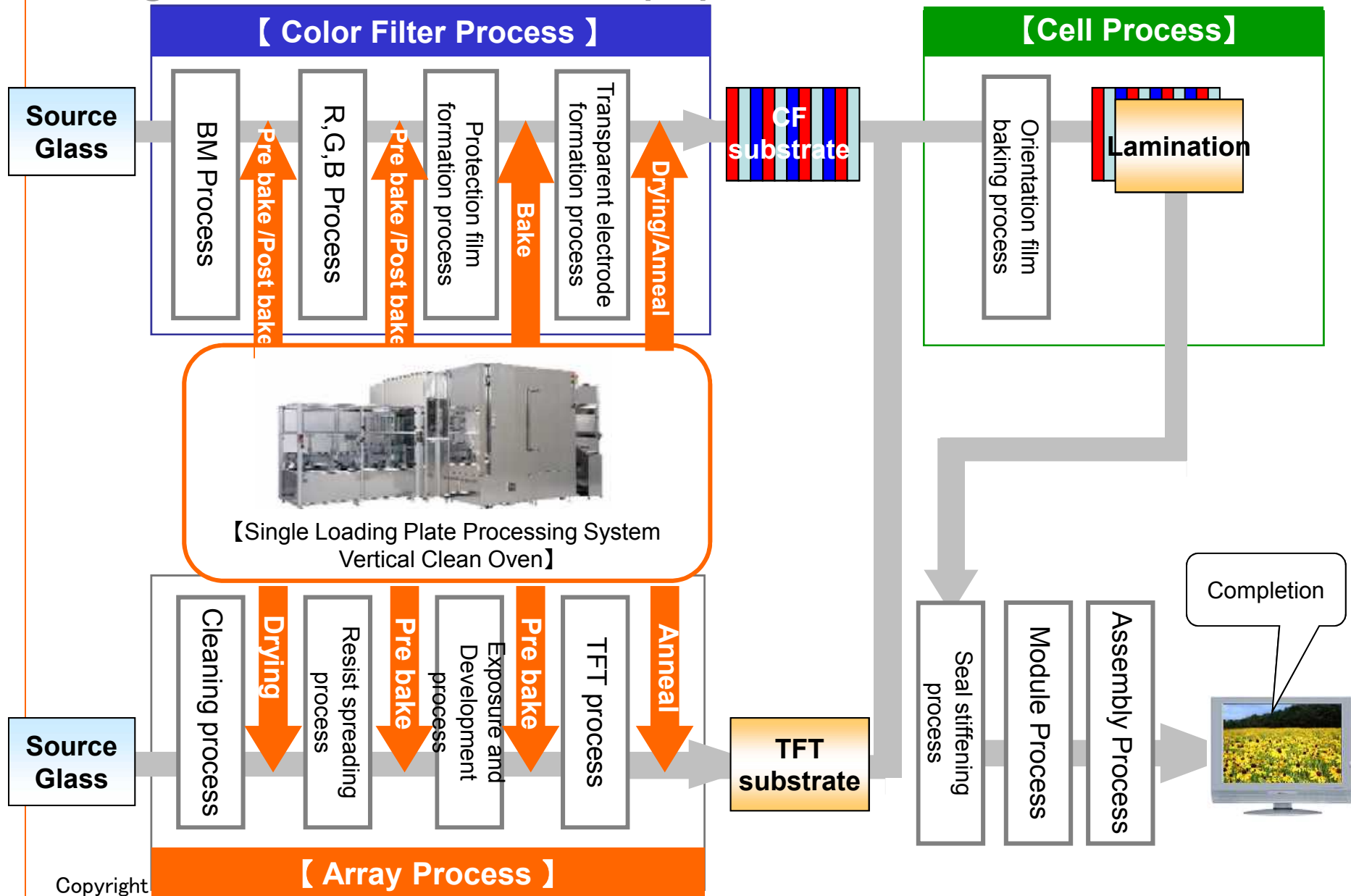


Electrical evaluation of reliability of joints in electronic parts

Example of defect in soldered joint



Equipment Business Usage Case with FPD Equipment



[Service Business]

After Service and Engineering

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

- Well-developed domestic and overseas networks
- Technical service available around-the-clock

Commissioned Test and Facility Rental

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 (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).



【Commissioned test center in Kobe】



【 Test conducted by a staff member】

[Other Business]

Forest Recovery

■ Seedling-based forest recovery technology

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



Waterfront Recovery

■ Bestmann plant-based waterfront recovery system

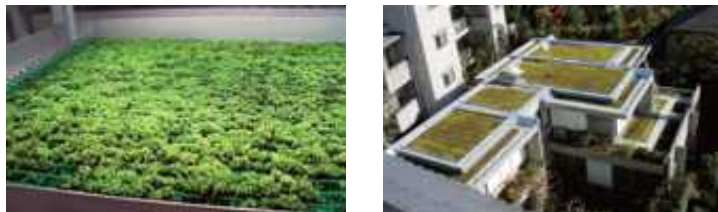
Reconstruction of natural environment, development of vegetative revetments, and water quality improvement using aquatic plants.



Urban Greening

■ Unit greening system

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



Plant Factory

■ Plant production and propagation system

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

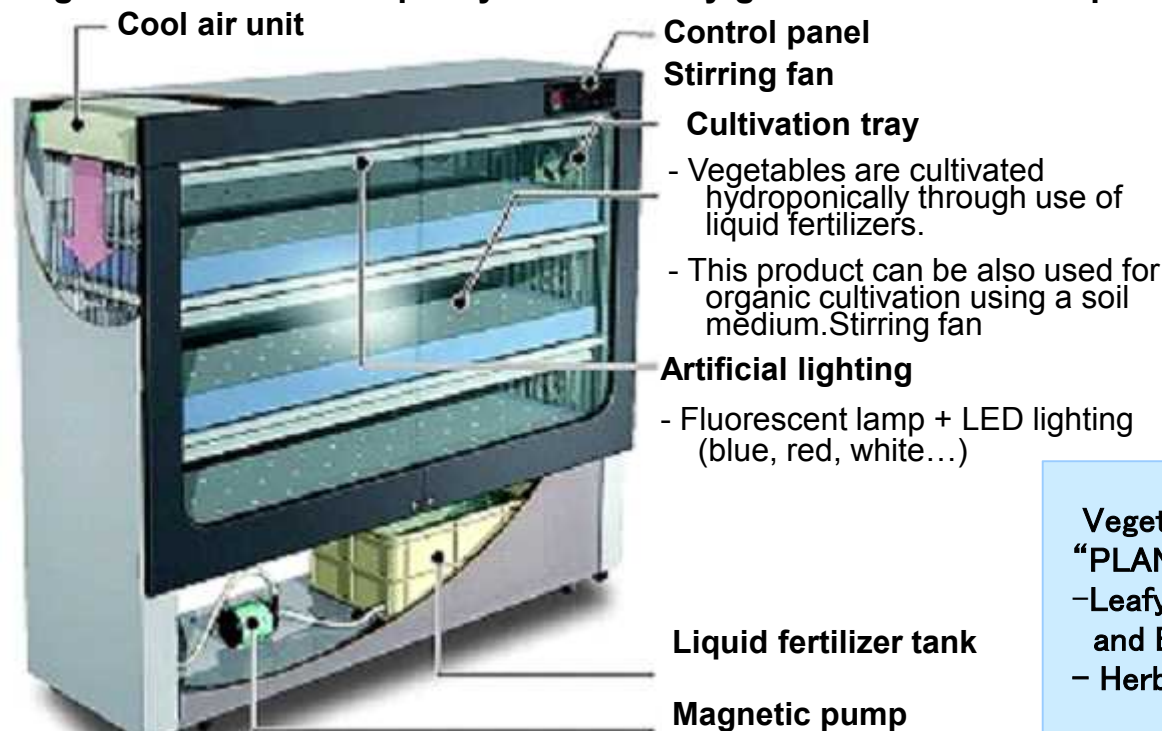


[Other Business] Usage Case with plant factory

Plant factories are attracting greater attention against the backdrop of the growing awareness of food safety/security among consumers and because of concern over the increase of extreme weather, which is considered a by-product of global warming.

Vegetable growing system “PLANTCELLAR”

- This product employs a hydroponic culture system that grows vegetables in a cleaner environment without soil.
- Due to its compact size, this product fits comfortably into limited space within a restaurant or store.
- Vegetables of uniform quality can be easily grown even without specialized knowledge.



Artificial lighting: Fluorescent lamp
+ LED lighting (red)

Vegetables that can be grown using the “PLANTCELLAR”

- Leafy vegetables, such as leaf lettuce and Boston lettuce
- Herbs, such as basil and Italian parsley