

A collage of images showing various industrial components and machinery, overlaid with the Ferro Tec logo. The logo is semi-transparent and positioned in the upper left of the collage. Below the logo, there is a list of product types: THERMOELECTRIC MODULE, COMPUTER SEAL, VACUUM FEEDER, QUARTZ, and CMS (Contract Manufacturing Services).

Ferro Tec

THERMOELECTRIC MODULE

COMPUTER SEAL

VACUUM FEEDER

QUARTZ

CMS (Contract Manufacturing Services)

Ferrotec Corporation

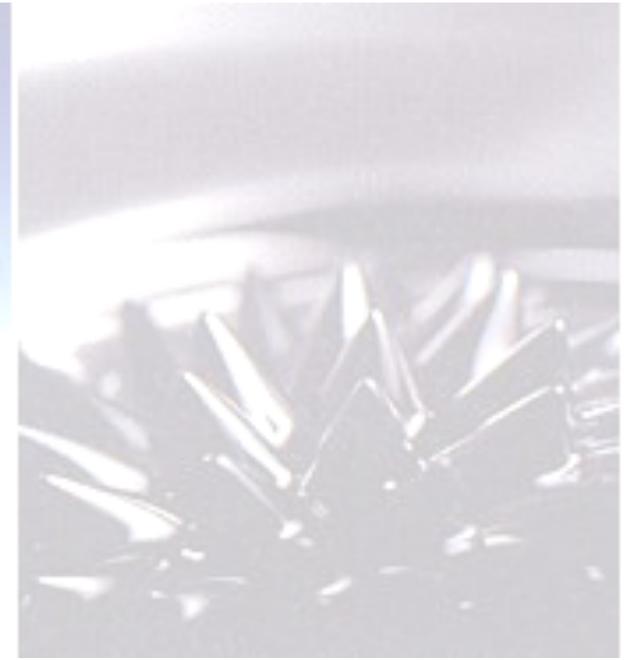
Results for the 1st half of the fiscal year ending March 31, 2017

November 28, 2016

(JASDAQ 6890)

<http://www.ferrotec.co.jp/>

1. This 1st half results cover six months period from April to September of Ferrotec, and six months period from Jan. to June of consolidated subsidiaries and affiliated companies included in investment profit loss in equity method.
2. These materials were prepared for the purpose of providing information regarding the company's results of operations for the 1st half of the fiscal year ending March 31, 2017.
3. These materials were prepared based on information available as of Nov. 28, 2016. All opinions, forecasts and other forward-looking statements are based on management's judgments in accordance with materials available at that time and may be changed without prior notice.



First Half of FY March 2017 Financial Results

Consolidated Financial Summary



¥ in millions	FY March 2016 1 st half		FY March 2017 1 st half		YOY	
	Amount	Pct. of sales(%)	Amount	Pct. of sales(%)	Amount	Pct. of sales(%)
Net sales	33,615	100.0	37,650	100.0	4,035	12.0
Cost of sales	25,067	74.6	27,556	73.2	2,489	9.9
Gross profit	8,548	25.4	10,094	26.8	1,546	18.1
SG&A expenses	6,605	19.6	6,717	17.8	112	1.7
Operating profit	1,942	5.8	3,376	9.0	1,434	73.8
Non-operating income	415	1.2	323	0.9	△ 92	△ 22.2
Non-operating expense	469	1.4	1,592	4.2	1,123	239.4
Ordinary profit	1,888	5.6	2,107	5.6	219	11.6
Extraordinary income	29	0.1	2	0.0	△ 27	△ 93.1
Extraordinary loss	54	0.2	288	0.8	234	433.3
Net income attributable to owners of parent	1,202	3.6	1,033	2.7	△ 169	△ 14.1
Capital investment	1,936	-	3,149	-	1,213	62.7
Depreciation	2,119	-	1,930	-	△ 189	△ 8.9

Consolidated Financial Summary



¥ in millions	FY March 2017 1 st half	
	Amount	Pct. of sales(%)
Net sales	37,650	100.0
Cost of sales	27,556	73.2
Gross profit	10,094	26.8
SG&A expenses	6,717	17.8
Operating profit	3,376	9.0
Non-operating income	323	0.9
Non-operating expense	1,592	4.2
Ordinary profit	2,107	5.6
Extraordinary income	2	0.0
Extraordinary loss	288	0.8
Income before income tax	1,821	4.8
Income taxes	865	2.3
Net income attributable to owners of parent	1,033	2.7

Big increase in sales due to a recovery in photovoltaic-related business sales and higher equipment-related business sales

Small increase in SG&A expenses relative to sales growth, due partly for foreign exchange rates, resulting in a lower SG&A ratio

Foreign exchange loss of ¥1,122 million, mainly for yen-denominated payables at overseas subsidiaries (fiscal year-end: December), as the yen appreciated rapidly from ¥120.61 at the end of December, 2015 to ¥102.91 at the end of June, 2016 to the US\$

Loss on disposal of some photovoltaic-related business equipment as capacity utilization rate declined

Net Sales and Operating Profits by Segment



Net sales (¥ in millions)	FY March 2016 1 st half		FY March 2017 1 st half		YOY	
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Difference	Pct. change
Equipment-related	15,491	46.1	16,049	42.6	558	3.6
Electronic device	6,466	19.2	6,130	16.3	△ 336	△ 5.2
Photovoltaic-related	8,741	26.0	10,644	28.3	1,903	21.8
Others	2,917	8.7	4,826	12.8	1,909	65.4
Total	33,615	100.0	37,650	100.0	4,035	12.0

Operating income (¥ in millions)	FY March 2016 1 st half		FY March 2017 1 st half		YOY	
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Difference	Pct. change
Equipment-related	1,436	9.3	1,905	11.9	469	32.7
Electronic device	1,218	18.8	1,263	20.6	45	3.7
Photovoltaic-related	△ 737	-	193	1.8	930	-
Others	62	2.2	37	0.8	△ 26	△ 41.3
Corporate & elimination	△ 38	-	△ 22	-	16	-
Total	1,942	5.8	3,376	9.0	1,434	73.8

Consolidated Balance Sheet ~Assets~



(¥ in millions)	FY3/16	FY3/17 1H	Difference
Current assets	45,284	47,551	2,267
Cash & deposits	10,038	12,564	2,526
Note & accounts receivable	17,745	17,308	△ 437
Inventory	14,442	13,972	△ 470
Fixed assets	33,484	34,814	1,330
Tangible fixed assets	26,044	27,843	1,799
Building	6,695	6,568	△ 127
Equipment & machinery	9,575	7,765	△ 1,810
Tools, furniture, and fixture	6,103	5,188	△ 915
Land	631	883	252
Intangible fixed assets	2,062	2,001	△ 61
Goodwill	668	847	179
Investments & other assets	5,377	4,970	△ 407
Total assets	78,769	82,366	3,597

[Current assets]

Increase in current assets was due to increase in cash and deposits, mainly resulting from higher long-term debt

[Main reason for increase in tangible fixed assets]

Increase in construction in progress by ¥4,470 million to ¥6,760 million, mostly for 8-inch wafer equipment

Increase in land is due to the assets held by Asahi Seisakusho Co., Ltd., which became the company's subsidiary

[Intangible fixed assets]

Goodwill on acquisition of Asahi Seisakusho:
¥ 331 million

Amortization of goodwill : ¥ 99 million
(including ¥ 17 million of Asahi Seisakusho)

Effect of foreign exchange rate changes on foreign currency-denominated goodwill :

△ ¥ 53 million

Consolidated Balance Sheet

~Liabilities and net worth~



(¥ in millions)	FY3/16	FY3/17 1H	Difference
Current liabilities	29,351	29,540	189
Notes and accounts payable	10,996	12,315	1,319
Short-term debt	6,922	5,594	△ 1,328
Current portion of long-term borrowings	3,386	4,036	650
Fixed liabilities	9,929	18,400	8,471
Long-term debt	6,399	11,602	5,203
Total liabilities	39,280	47,941	8,661
Net Assets	39,488	34,424	△ 5,064
Shareholder's equity	30,199	30,925	726
Total accumulated other comprehensive income	8,484	2,831	△ 5,653
Non-controlling interests	780	637	△ 143
Total liabilities & shareholder's equity	78,769	82,366	3,597

【 Current liabilities 】

Notes and accounts payable up due primarily to the acquisition of Asahi Seisakusho

Short-term debt down mainly because of the replacement of this debt with long-term debt used to fund for the 8-inch wafer and other equipment

[Interest-being debt]

Short-term debt + Current portion of long-term borrowings ¥ 9,630 million(10,308)
Long-term debt + bond etc. ¥ 11,602 million (6,399)

Total ¥ 21,232 million(16,707)

[Net interest-being debt ¥ 8,668 million(6,669)]

*Parentheses represent the figures as of end-FY3/16

【Net assets】

Breakdown:

Net income : ¥ 1,033 million

Dividends : △ ¥ 308 million

Foreign currency translation adjustments :
 △ ¥ 5,695 million

Consolidated Cash Flow



(¥ in million)	FY3/16 1H	FY3/17 1H
Cash flow from operating activities	3,596	2,915
Income before income taxes	1,864	1,821
Depreciation	2,119	1,930
Exchange gain & loss (△ : gain)	△90	644
Changes in notes & accounts receivable (△ : increase)	△941	△ 2,662
Changes in inventories (△ : increase)	△2,390	△ 372
Changes in accounts payable (△ : decrease)	1,713	2,434
Others	1,313	△ 880
Cash flow from investing activities	△2,316	△ 2,779
Payments for purchase of tangible fixed assets	△1,936	△ 3,149
Proceeds from sales of tangible fixed assets	196	48
Payments for purchase of shares of subsidiaries accompanying changes in the scope of consolidation	△221	-
Proceeds for purchase of shares of subsidiaries accompanying changes in the scope of consolidation	-	387
Others	△355	△ 65
Cash flow from financing activities	1,164	3,689
Changes in short-term borrowing	△1,314	△ 636
Proceeds from long-term debt	4,500	6,590
Payments of long-term debt	△1,723	△ 1,885
Payments for dividend	△248	△ 307
Others	△51	△ 73
Changes in cash & cash equivalents	2,554	2,526
Cash and cash equivalents, beginning of year	10,517	10,038
Cash and cash equivalents, end of year	13,072	12,564

[Operating cash flow]

Income before income tax + Depreciation	¥3,751million
Decrease in operating CF due to increase in notes & accounts receivable	△¥2,662million
Decrease in operating CF due to increase in inventories	△¥372million
Increase in operating CF due to increased accounts payable :	¥2,434million

[Investing cash flow]

Main content of payments for tangible fixed assets acquired	
• Shanghai subsidiary :	¥ 668 million
• Hangzhou subsidiary :	¥1,371 million
• Yinchuan subsidiary :	¥ 909 million

[Financing cash flow]

• Increase/decrease in short-term debt :	△¥636 million
• Increase/decrease in long-term debt :	¥4,705 million

Full-Year Forecast



(¥ in millions)	FY3/16	FY3/17(E)	YoY(%)
Net sales	69,463	75,000	8.0
Operating income	4,024	5,800	44.1
Ordinary income	3,822	4,700	23.0
Net income attributable to owners of parent	2,162	2,900	34.1
Capital investment	3,440	8,000	132.6
Depreciation	4,303	4,500	4.6

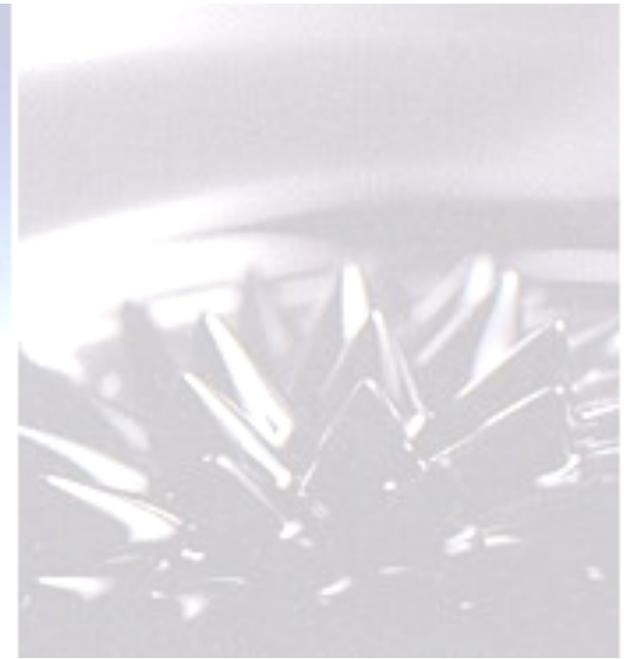
Note: Exchange rate FY3/16⇒FY3/17(assumed rate) : ¥ 121.03 → ¥ 105/ US dollar ¥ 19.19 → 16.50 /RMB (Avg. during period)

Capital investment is based on cash flow considering unprojected large-scale capital investment and accounts payable facilities at the end of previous fiscal year.

Business forecast (sales by segment)



(¥ in millions)	FY3/16	FY3/17(Est.)	YoY(%)
Equipment-related	31,405	34,112	8.6
Vacuum Feedthroughs	7,163	8,043	12.3
Quartz	7,624	8,650	13.5
Ceramics	6,147	6,269	2.0
CVD-SiC	1,685	2,650	57.3
EB-Gun, LED	4,468	4,550	1.8
Semiconductor wafer	4,317	3,950	△ 8.5
Electronic device	13,328	12,650	△ 5.1
Thermo-electric module	12,559	11,801	△ 6.0
Ferrofluid, others	769	849	10.4
Photovoltaic-related	18,505	17,696	△ 4.4
Quartz crucibles	3,524	2,200	△ 37.6
Solar silicon	8,483	9,847	16.1
PV manufacturing Equip.	359	599	66.9
Solar cell, Others	6,141	5,050	△ 17.8
Others	6,224	10,542	69.4
Total	69,463	75,000	8.0



Status by Segment and Outlook

Segment



Vacuum feedthroughs

Quartz

Ceramics

CVD-SiC

Ferrofluid

Thermo-electric module

Substrates for power semiconductor

PV silicon (Ingot) [OEM]

Mono-crystal ingot

Multi-crystal ingot

PV wafer

Solar cell

Consumable

Quartz crucible

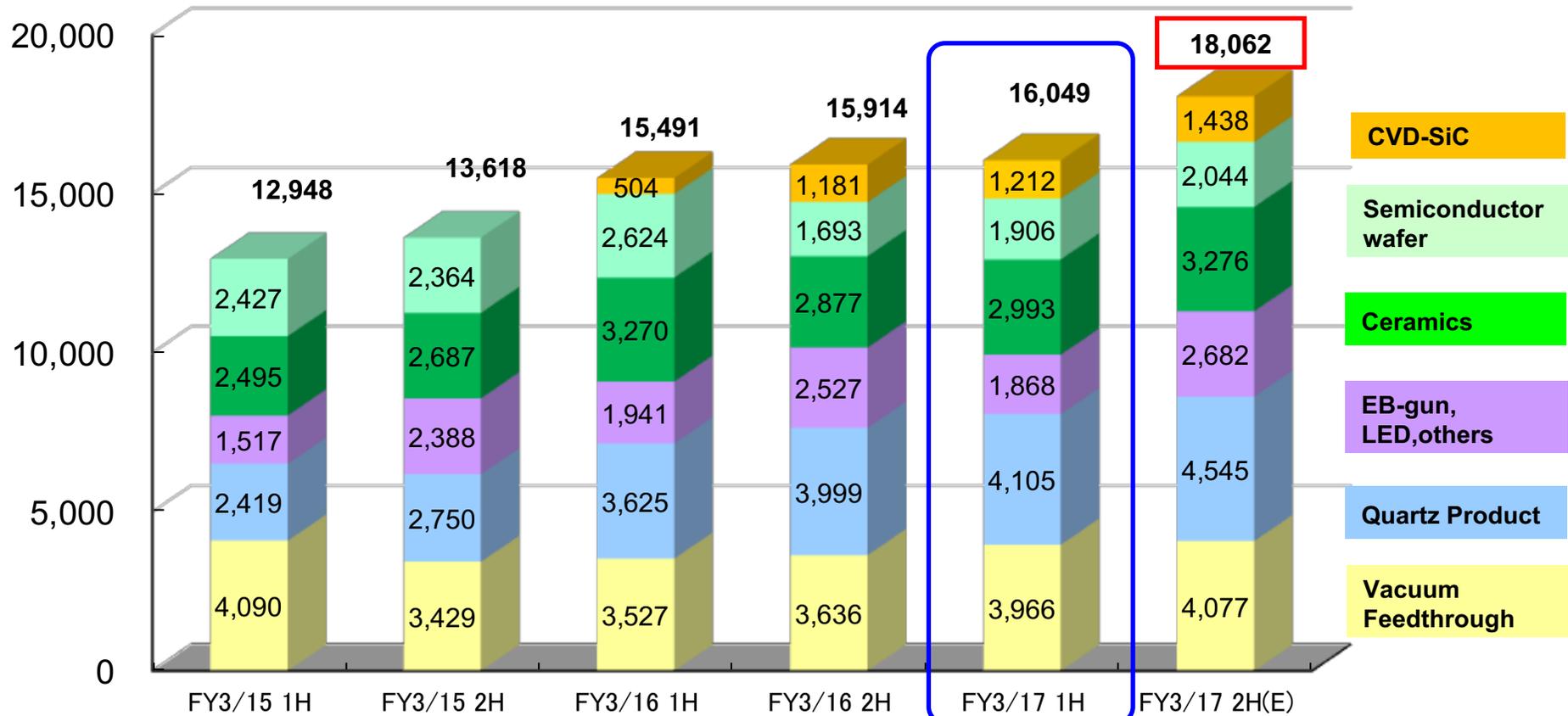
Vessel

※ The bar chart represents the pct. of each segment in FY3/17 1H sales

Equipment-related Segment

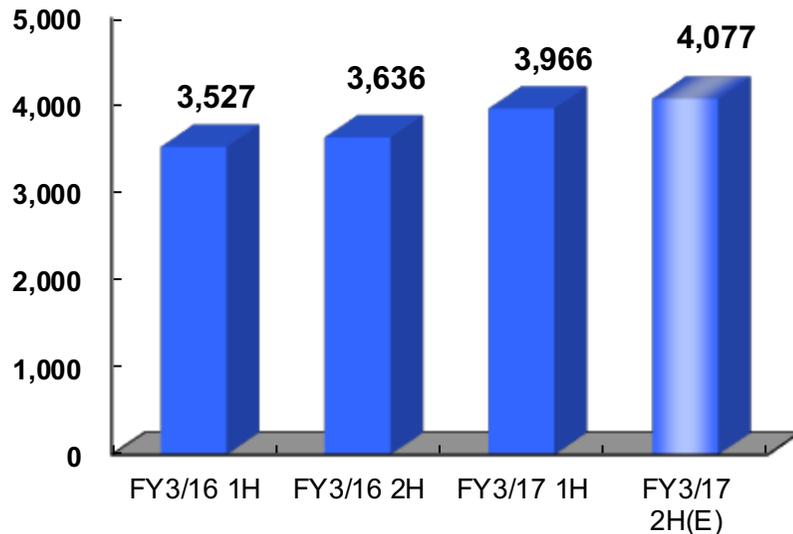


Sales
(¥ in million)

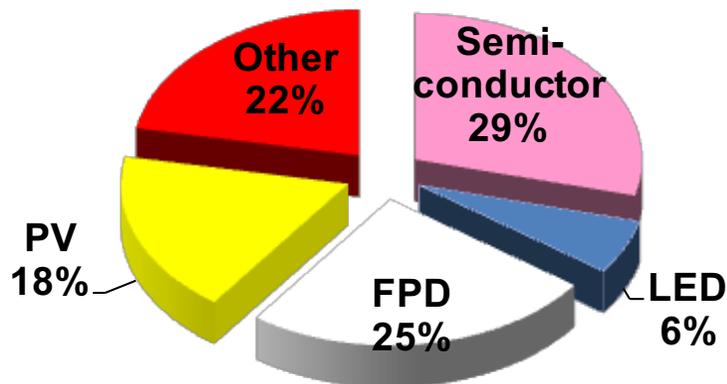


(m¥)

Transition of sales



Sales by category



Note) Other: Vacuum feedthrough equipment for industrial use, aviation, medical care, science, etc.

1. Status of 1st half of FY3/17

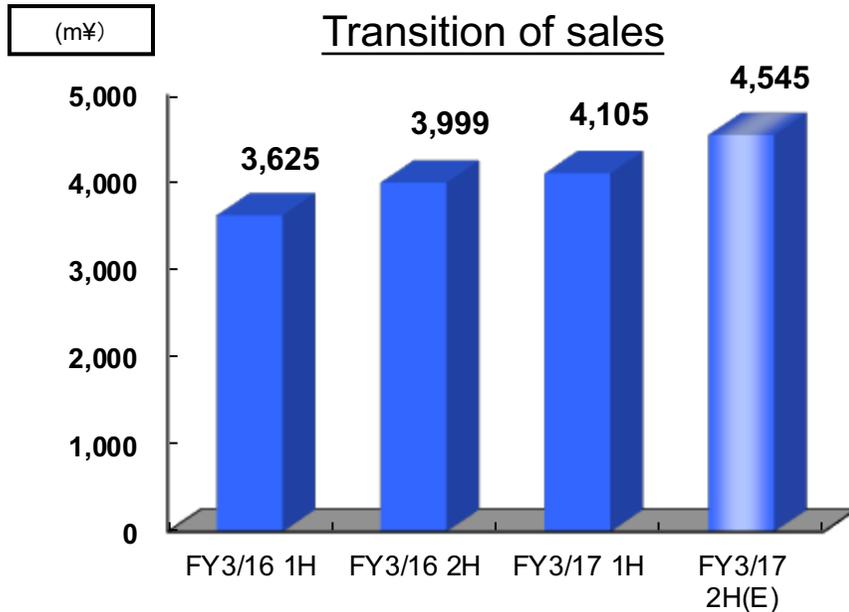
- Capital investments in semiconductor recovered at foundries and logic device manufacturers and were strong in the 3D-NAND sector.
- FPD capital investments remained firm in the LCD sector in China and Taiwan and the organic EL sector in Korea and China.
- Demand involving robots used in FPD application has been solid since the second half of the previous year.
- Contract manufacturing performed well.

2. Outlook for 2nd half of FY3/17

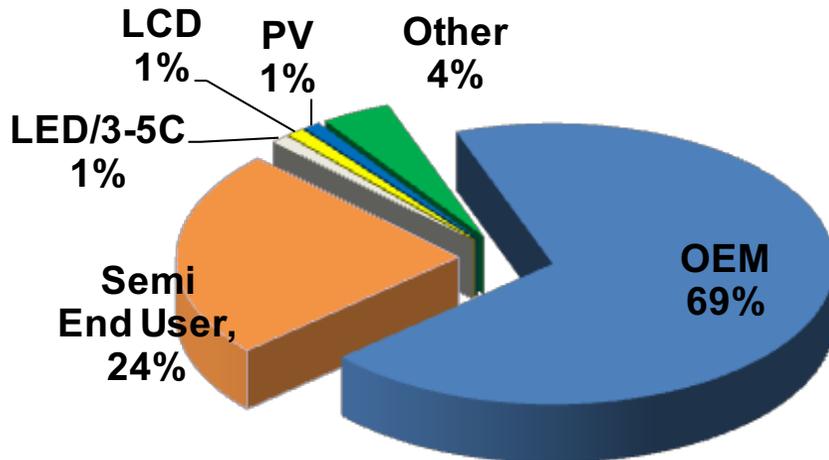
- 3D-NAND is expected to drive growth of semiconductor industry capital investments.
- The focus of FPD investments is shifting from LCD to organic EL; LCD market is shifting to high-resolution panels, which have a high profit margin.

[Measures]

- Continue joint development projects with semiconductor manufacturing equipment companies.
- Investment in high-volume processing equipment.
- Increase synergies by reinforcing ties among group companies.
- Step up sales activities in Asia.



Sales by category



1. Status of 1st half of FY3/17

- OEM sales to major US semiconductor manufacturers have been strong since FY3/16 4Q and results also benefited from substantial investments by major foundries in Taiwan.
- OEM sales were strong to major semiconductor manufacturers in Japan, too.
- High volume of demand at semiconductor manufacturers and end users in Taiwan, China and Japan due to high capacity utilization rates

2. Outlook for 2nd half of FY3/17

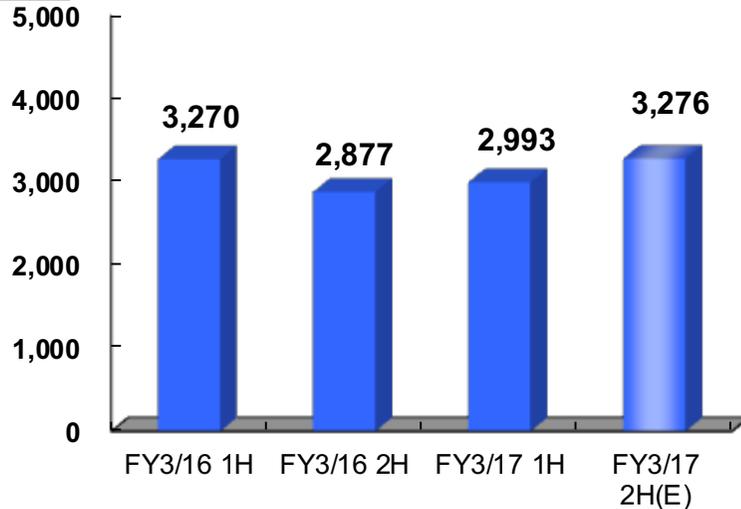
- Expect more growth in demand at major US OEM customers due to its investment in next-generation production equipment; anticipate a big sales increase starting in FY3/18 2Q
- Expect higher demand at major Japanese OEM customers as production increases in association with new versions of devices and products for next-generation applications
- Capacity utilization at end users of semiconductors is consistently high in Taiwan, China and Japan.
- Silicon product demand is increasing because of logic device investments at major foundries in Taiwan

[Measures]

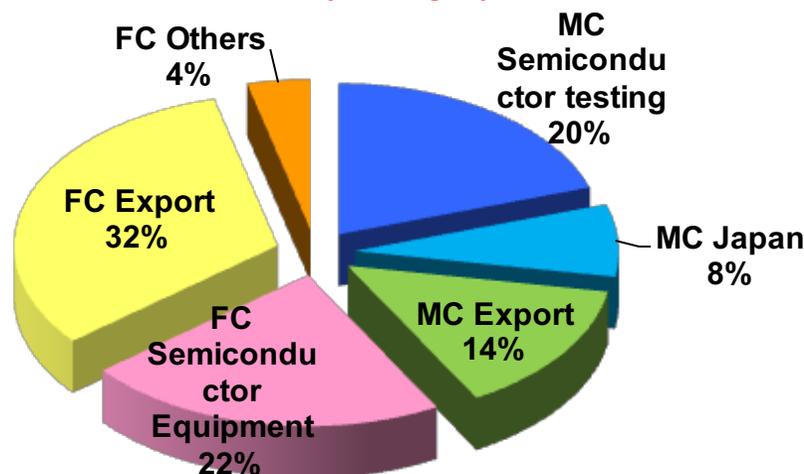
- Plan to increase production capacity and the workforce at the factory in China.
- Start increasing production of silicon products for major OEM customers from the next year.

(m¥)

Transition of sales



Sales by category



FC (Fine Ceramics), MC (Machinable Ceramics)

1. Status of 1st half (Jan-Jun) of FY 3/17

Machinable ceramics “Photoveel”

- For memory applications in Japan, higher demand starting late in the first half for a new type of wafer circuit inspection equipment
- Sales of logic wafer circuit inspection devices to major overseas foundries were slow early in 2016 but demand started recovering in FY3/17 1H.

Fine ceramics

- In Japan, strong demand for parts used by thin film deposition equipment
- Overseas, higher demand for parts associated with miniaturization and 3D semiconductor device manufacturing equipment

Others

- Exports sales decreased because of the exchange fluctuation.

2. Outlook for 2nd half (Jul-Dec) of FY 3/17

Machinable ceramics “Photoveel”

- In Japan, there are strong sales of logic wafer circuit inspection equipment for automotive applications.
- Overseas, there are growing needs at major foundries for miniaturization inspection equipment for next-generation smartphones.

Fine ceramics

- Anticipate growth starting late in 2016 in overseas demand for parts involving miniaturization and 3D semiconductor device manufacturing equipment

3. Sales policy

<Machinable ceramics >

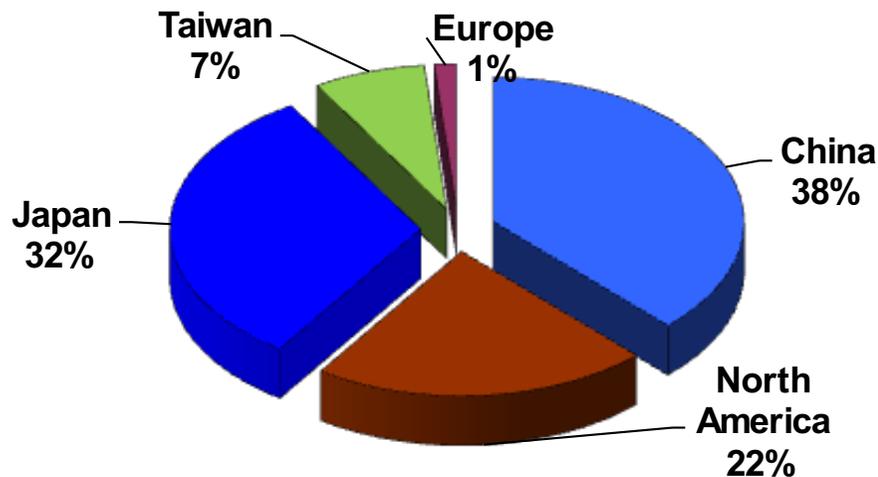
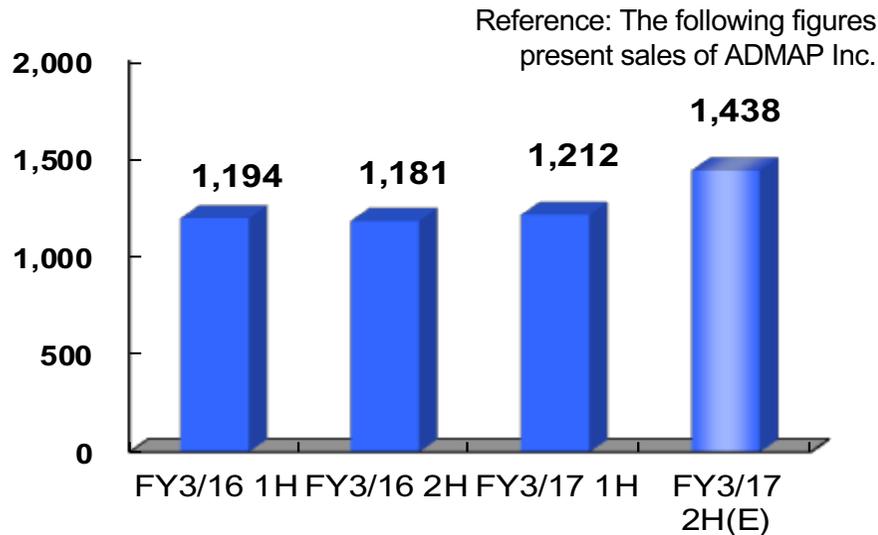
- Wafer circuit inspection equipment needs are shifting to a new type of equipment; plan to start manufacturing high-precision equipment and increase sales

< Fine ceramics >

- Plan to boost production capacity in response to rising demand for parts for new types of semiconductor manufacturing equipment for 3D/miniaturization requirements in order to increase sales.

(m¥)

Transition of sales



Sales by region (1st half of FY3/17)

1. Status of 1st half of FY3/17

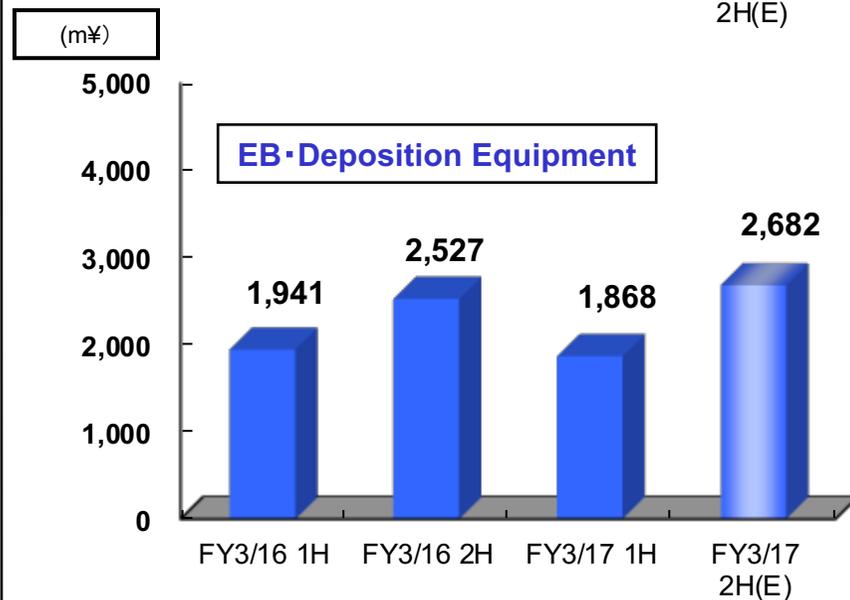
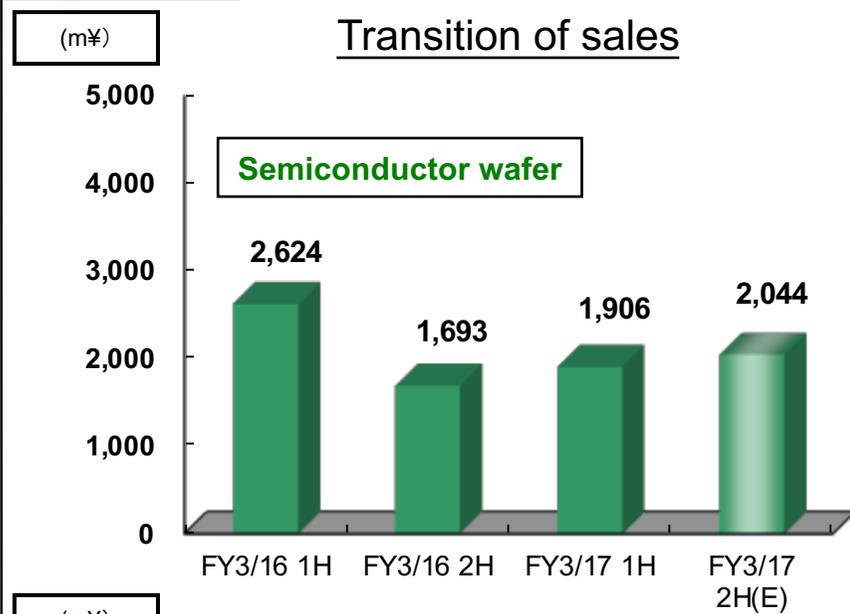
- Strong sales to equipment manufacturers in China
- Sales to major US equipment manufacturers were strong, too.
- Sales to major Japanese equipment manufacturers increased due to investments in China.
- Received new OEM orders from major Japanese equipment manufacturers
- Received prospective inquiries from outside the semiconductor sector

2. Outlook for 2nd half of FY3/17

- Expect sales to increase to equipment manufacturers in China.
- Expect 2H sales to US major equipment manufacturers to be same as in 1H
- Anticipate continuation of strong sales to major Japanese equipment manufacturers due to investments in China
- Expect to start volume production of parts for new OEM order from a major Japanese equipment manufacturer
- Expect sales growth outside the semiconductor sector

[Measures]

- Establish a manufacturing infrastructure capable of meeting the rapid growth in demand for OEM parts at major equipment manufacturers.
- Continue to aggressively pursue opportunities outside the semiconductor industry.
- Build a stronger framework for developing technologies and products.



Semiconductor wafer:

1. Status of 1st half of FY 3/17

- Generally performed well and 1H sales were as planned.
- Construction of the 8-inch wafer factory building is nearing completion.

2. Outlook for 2nd half of FY 3/17

- Demand is stable and sales are about the same as in the initial plan.
- Construction of the 8-inch wafer factory building will be completed within this year, and start taking measures from the beginning of the next year.

[Measures]

- Plan to raise annual 8-inch wafer production capacity to 100,000 in FY3/18.

EB gun and Deposition equipment:

1. Status of 1st half of FY 3/17

- Strong sales for applications involving compound semiconductors
- Also solid demand for communication chip applications

2. Outlook for 2nd half of FY 3/17

- Working on increasing compound semiconductor/communication chip application sales in Europe and the US
- Add more applications, such as the production of electronic devices associated with the IoT

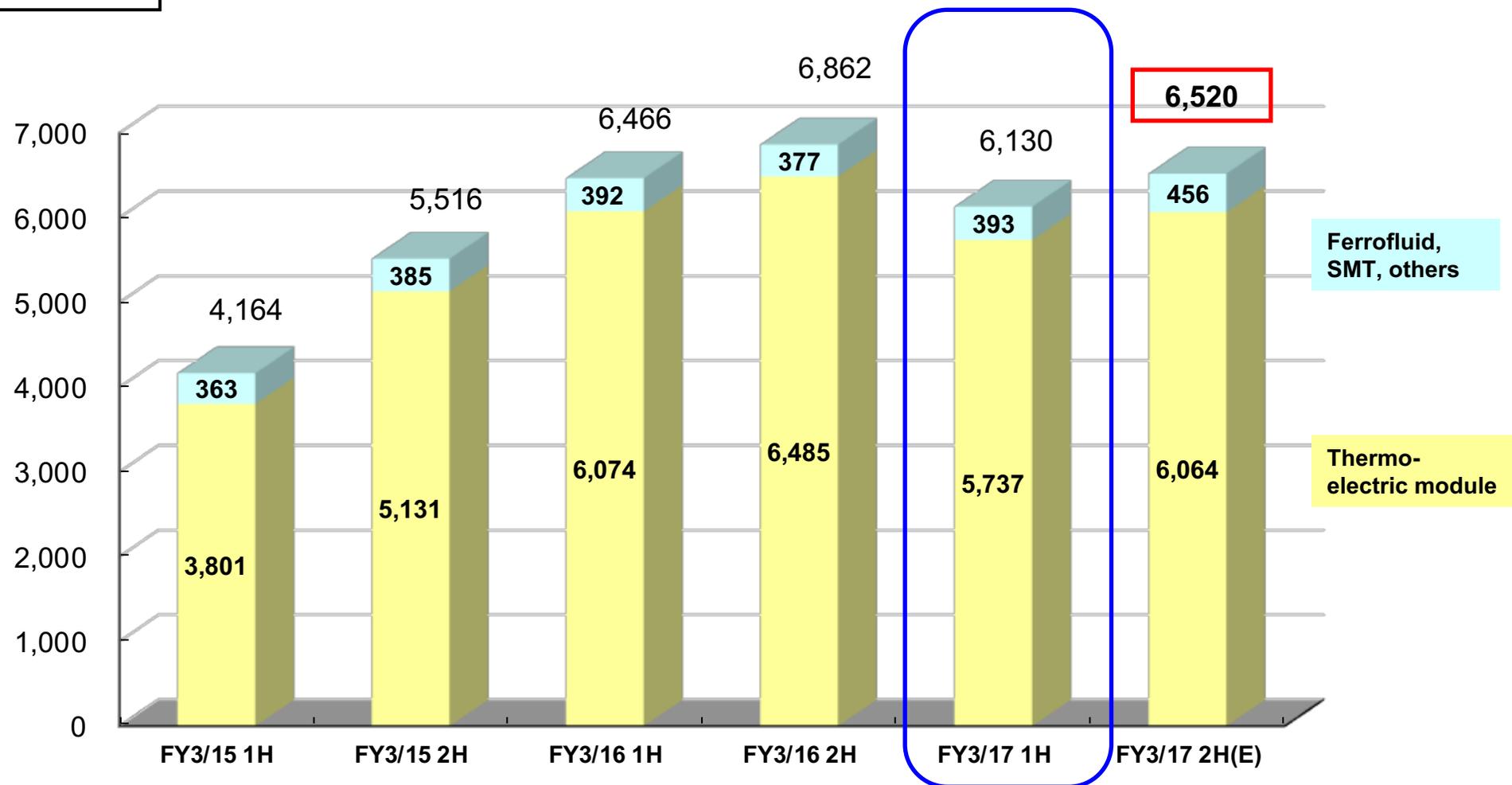
[Measures]

- Deposition equipment/wireless communication chips: Focusing sales activities on manufacturers of semiconductor power devices

Electronic Device Segment

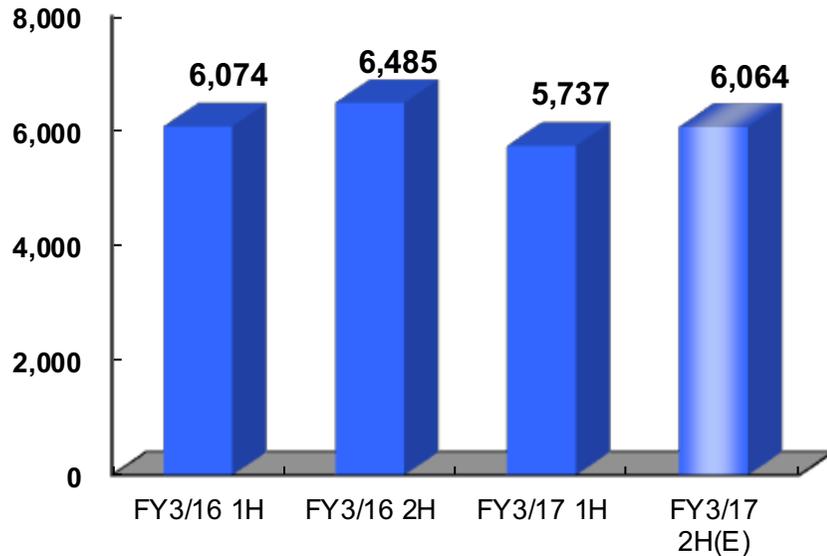


Sales
(¥ in million)

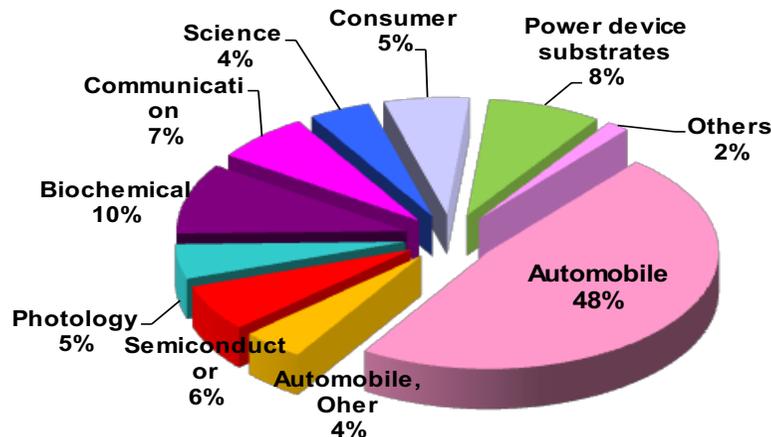


(m¥)

Transition of sales



Sales by category



1. Status of 1st half of FY3/17

Automobile Seat Application

- Demand was strong, mainly in North America, but sales were unchanged partly because of the yen's strength

Other Applications

- Demand was firm for both consumer product and semiconductor applications.
- Demand also remained solid in the biotechnology/medical devices sector and in the industrial sector.
- For power semiconductor device substrates, sales increased to a manufacturer in China and a major European manufacturer certified a substrate.

2. Outlook for 2nd half of FY3/17

Automobile Seat Application

- Demands from North America are likely to be generally stable but the yen's strength is expected to keep sales flat

Other Applications

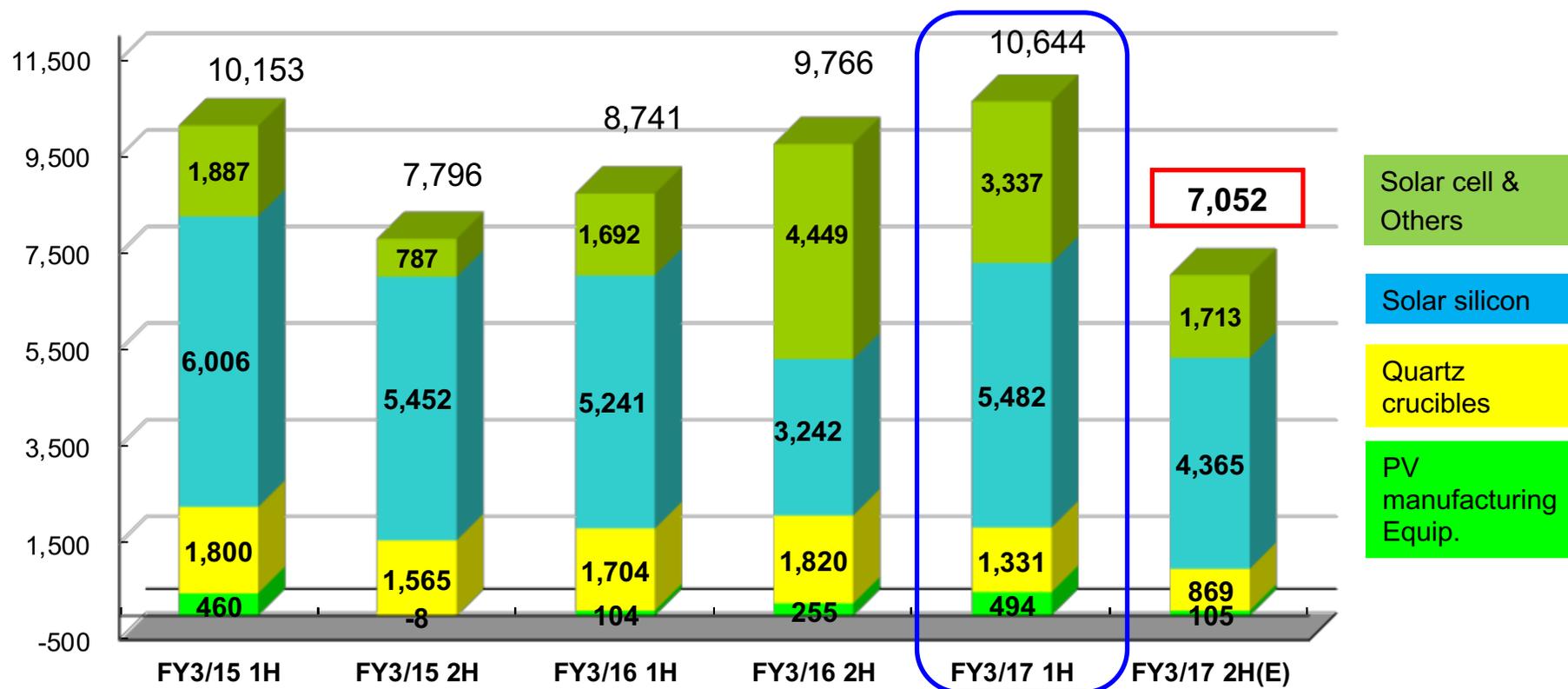
- Expect a continuation of strong demand for consumer product and firm demand for semiconductor applications
- Anticipate demand in the biotechnology/medical device and industrial sectors to remain healthy
- Foresee growth in applications involving optical communications
- Plan to supply more versions of power semiconductor device substrates in Europe and Japan

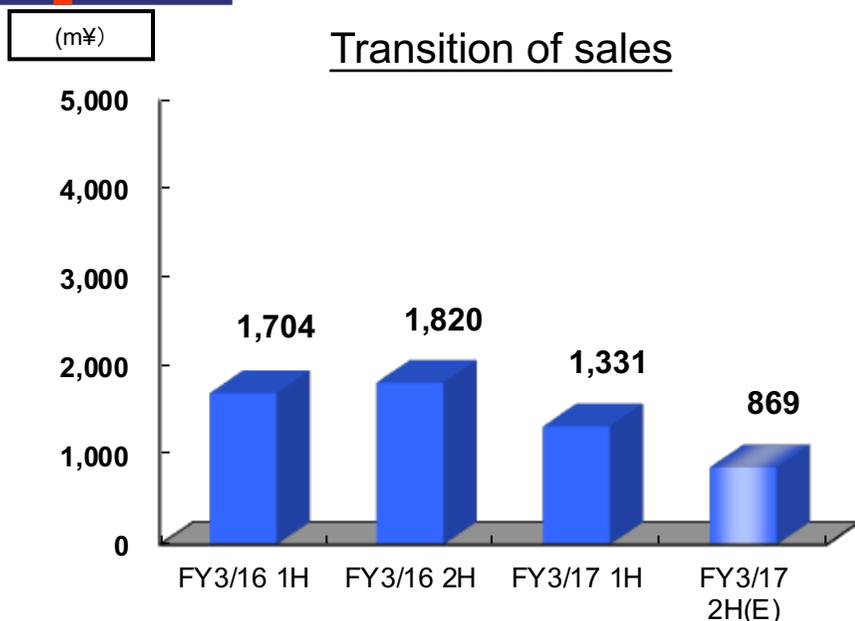
[Measures]

- Enlarge the lineup of sub-assembly products and reinforcing sales activities (semiconductors, medical products)
- Introduce new types of modules and increase the lineup of embedded products
- Continue to make capital investments for increasing output and using automation
- Continue to make investments for increasing output of power semiconductor device substrates

Photovoltaic-related Segment

Sales
(¥ in million)





Mono-crystal quartz crucible



Multi-crystal vessel

1. Status of 1st half of FY3/17

- Decline in demand for mono-crystal crucibles for solar cell
- Demand for multi-crystal vessels is decreasing, too.
- Little change in sales of crucibles to the semiconductor industry

2. Outlook for 2nd half of FY3/17

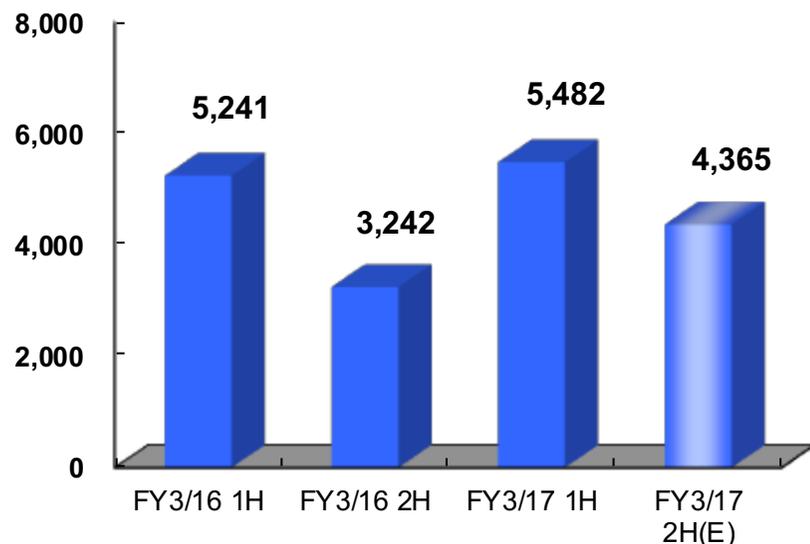
- Small upturn in sales of mono-crystal crucibles for solar cell
- Demand for multi-crystal vessels may be declining.
- Firm demand for improved small-diameter crucibles for the semiconductor industry

[Measures]

- Start production of medium-diameter (24 inch) crucible for the semiconductor industry.
- Increase of newly developed crucible for semiconductor with coating technology

(m¥)

Transition of sales



Mono-crystal ingot



Multi-crystal ingot



PV wafer

1. Status of 1st half of FY3/17

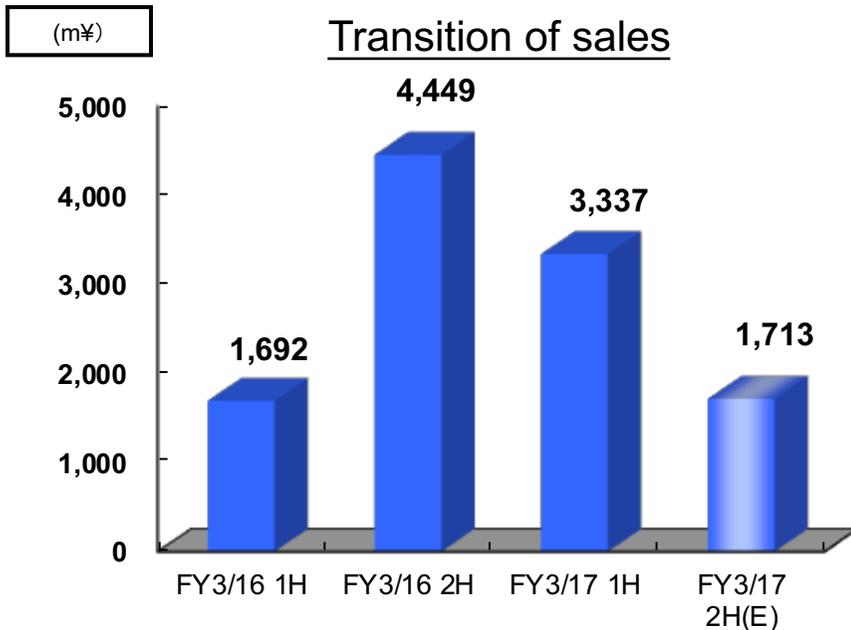
- Current OEM customers continue to hold down production.
- Plan to start volume production in 2H for a new OEM customer.
- Strong technological demands concerning thinner mono-crystal wafers, reducing the amount of oxygen and other advances
- Increasing number of plans for solar power projects in India and other emerging countries
- Upturn in multi-crystal production due to a rush to make solar investments in China prior to a solar feed-in-tariff reduction will probably not last long

2. Outlook for 2nd half of FY3/17

- Start sales of mono-crystal wafers to new OEM customers.
- Demand in China is likely to weaken after a surge in demand prior to a feed-in-tariff reduction.
- Public and private-sector projects continue to grow in India and emerging countries in Southeast Asia and other regions (COP22 is one reason).
- Uncertainty about the upcoming direction of market prices, especially for multi-crystal
- Expect prices to remain low
- Vigilant about potential effects of policies of the upcoming Trump administration

[Measures]

- Use fixed abrasives (wire saw) to make thinner wafers.
- Improve the performance of N-type mono-crystals to meet customers' demands.



Solar cell

1. Status of 1st half of FY3/17

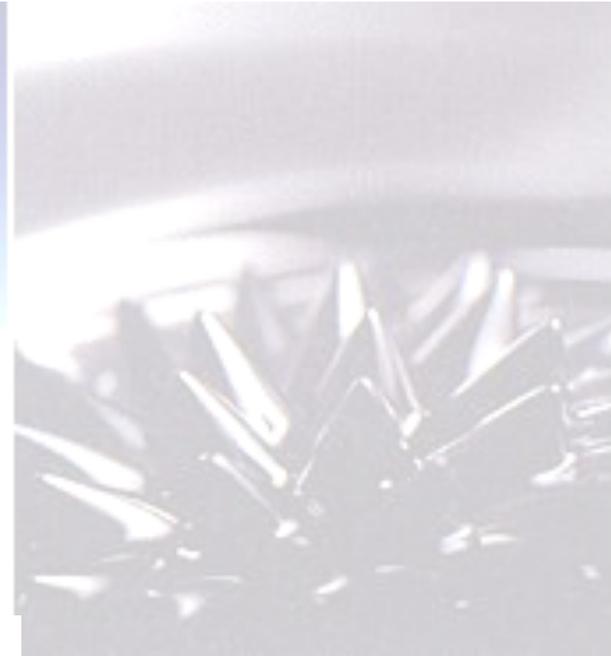
- Very strong multi-crystal demand; focusing on China and India
- More growth in demands in China and other countries for high conversion efficiency
- Operating at full capacity and adding an automated production line to increase output

2. Outlook for 2nd half of FY3/17

- Focus on India and other emerging countries due to China's feed-in-tariff reduction
- Worldwide growth of solar power continues as prices remain low
- Vigilant about potential effects of policies of the upcoming Trump administration

[Measures]

- Improve earnings by using passive emitter rear contact (PERC) technology to increase conversion efficiency.
- Become more competitive by using wafer quality and solar cell technologies.
- Increase productivity of mono and multi-crystal products by introducing fixed production line
- Cut costs by using automation.

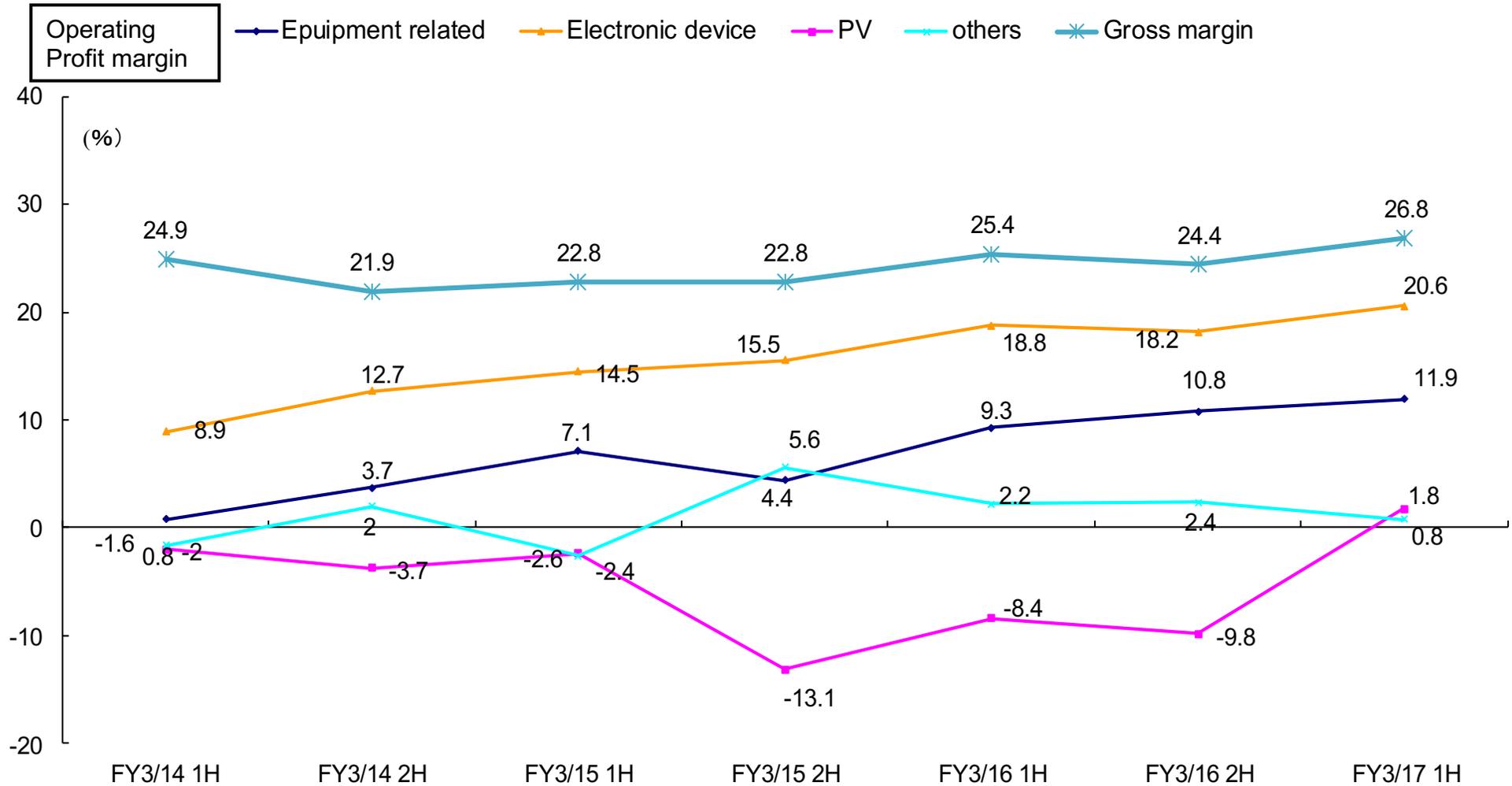


Reference Materials

Corporate Name	Ferrotec Corporation
Date of Foundation	September 27, 1980
Address	Nihonbashi Plaza Building, 2-3-4, Nihonbashi, Chuo-ku, Tokyo Japan
Listed	JASDAQ (Listed Code : 6890)
President	Akira Yamamura
Business Segment	<ul style="list-style-type: none">• Equipment-related business : Vacuum Feedthrough, Quartz, Ceramics, silicon, wafer processing• PV-related business : PV manufacturing equip, Quartz crucibles, solar silicon• Electronic device business : thermo-electric module, Ferrofluid
Capital	13,201,346,010 JPY
Issued Stock	30,903,702
Related Company	[31 Consolidated Subsidiary] [6 Companies Accounted for by the Equity Method]
Employees	[Consolidated] 5,695 [Non-consolidated] 130

1980~	1990~	2000~
<p>Started manufacturing and selling products using ferrofluids (computer seals, vacuum feedthroughs)</p> <p>Vacuum Feedthroughs</p> 	<p>92 – Started manufacturing and selling thermo-modules and modules in China 98 – Started manufacturing and selling quartz products for the semiconductor industry</p> <p>Thermo-electric module</p>  <p>Quartz</p> 	<p>02 – Started contract manufacturing service business for silicon wafer processing, machine tool production and other activities (Shanghai factory) 05 – Started photovoltaic products business; started manufacturing and selling machinery and crucibles for manufacturing silicon ingots and crystals 08 – Started manufacturing and selling ceramic products</p> <p>Ingot</p>  <p>Single crystal silicon growing furnaces</p>  <p>Machinable Ceramics</p> 
<p>With a core of ferrofluid expertise</p> <p><i>~ Ferrotec's core Technology ~</i></p>	<p>Establishing operations in other countries</p> <p>91: Established subsidiary in Massachusetts, USA 92: Established subsidiary in Hangzhou, China 95: Established subsidiary in Shanghai, China 97: Established subsidiary in Singapore 99: Started operations in North America and Europe by acquiring Ferrofluidics</p>	<p>Building a new profit structure</p> <p>02: Started contract manufacturing service (CMS) business at the Shanghai factory, including silicon wafer processing, machine tool production and other activities Expertise in production technologies extending from component processing to final assembly allowed Ferrotec to start the CMS business</p> <p>05 : Increased manufacturing and sales activities for photovoltaic products in Hangzhou, China</p>

Operating Margin by Business Segment



Strategies for M&A and Alliances



Time	Company acquired/Alliance partner	Description
July 2016	Acquired Asahi Seisakusho Co., Ltd.	Acquired a major business-use laundry equipment manufacturer
July 2015	Acquired ADMAP Inc.	Acquired ADMAP which manufactures and sells CVD-SiC products
Oct. 2011	Merged with a subsidiary	Merged with Ferrotec silicon which manufactures and sells single crystal silicon products
Sep. 2010	Established a joint venture manufacturing and sales company	Ferrotec, a local subsidiary and Covalent Materials agreed to establish a joint venture "Hangzhou Solartech Co., Ltd." to manufacture and sell vessels and related products .
Jul. 2010	Acquired shares of IMI in the US	Began sales of pure silicon products
April. 2010	Merged with a subsidiary	Merged with Ferrotec Quartz which manufactures and sells quartz products
Jan. 2010	Acquired the Temescal Division of Edwards Vacuum	Acquired the Temescal Division of Edwards Vacuum which is the leading manufacturer and distributor of electron beam-based evaporative coating systems .
July. 2008	Acquired of Sumikin Ceramics. Changed the name of the company.	Acquired 90% of the surviving company Sumikin Ceramics & Quartz Co., Ltd. after spinning of its business except the ceramics business, converted it into a subsidiary, became "Ferrotec Ceramics" and made it a wholly owned subsidiary in 2013
Dec. 2007	Jointly established an assembly sales company in Korea.	Established "CMC Ferrotec" with the local company for the manufacture of solar cell manufacturing equipment .
April. 2007	Established a joint venture Manufacturing Corporation in Korea	Established joint venture corporation Ferrotec Korea Co.Ltd with Korean Company(KSMC Corp) for manufacturing Vacuum Feedthrough .
Nov. 2006	Merger and liquidation	Merged with Ferrotec Precision, which produces Vacuum feedthrough . Liquidated two subsidiaries(Dec.).
Sep. 2006	Established a joint venture in Taiwan	Established Ferrotec Taiwan jointly with a local partner to sell vacuum feedthroughs and offer maintenance services
Dec. 2005	Established a joint venture with LTD Ceramics Inc. (USA)	Established joint venture in China to manufacture ceramics
July 2005	Acquired NORD Co., Ltd.(Russia)	Acquired company that manufactures and sells Peltier (thermoelectric) devices in order to increase share of global market
May 2005	Business alliance with KSM Inc.(Korea)	Alliance for mutual sales of vacuum feedthroughs and products associated with semiconductor manufacturing equipment
July 2004	Exclusive contract with Applied Films(Germany)	Gave this company exclusive rights to purchase Ferrotec vacuum feedthroughs
Oct. 2003	Business and financial alliance with Aliontek	Technology alliance with ALIONTEK CORPORATION, which has technology for the grinding of quartz products, strengthened manufacturing technology for quartz products in China
Feb. 2002	Business alliance with Toshiba Ceramics and Mitsui Co. for wafer production by commissioning	Ferrotec silicon wafer production equipment moved to China factory to conduct a CMS business, and manufacturing is outsourced to this factory

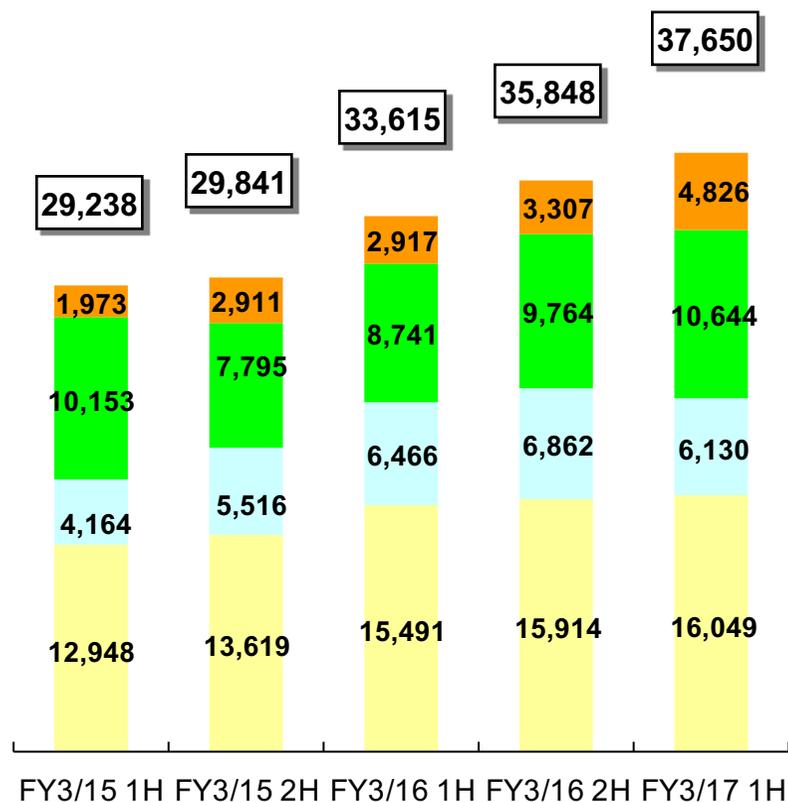
Sales and Operating income Trend



Sales Trend

(¥ in millions)

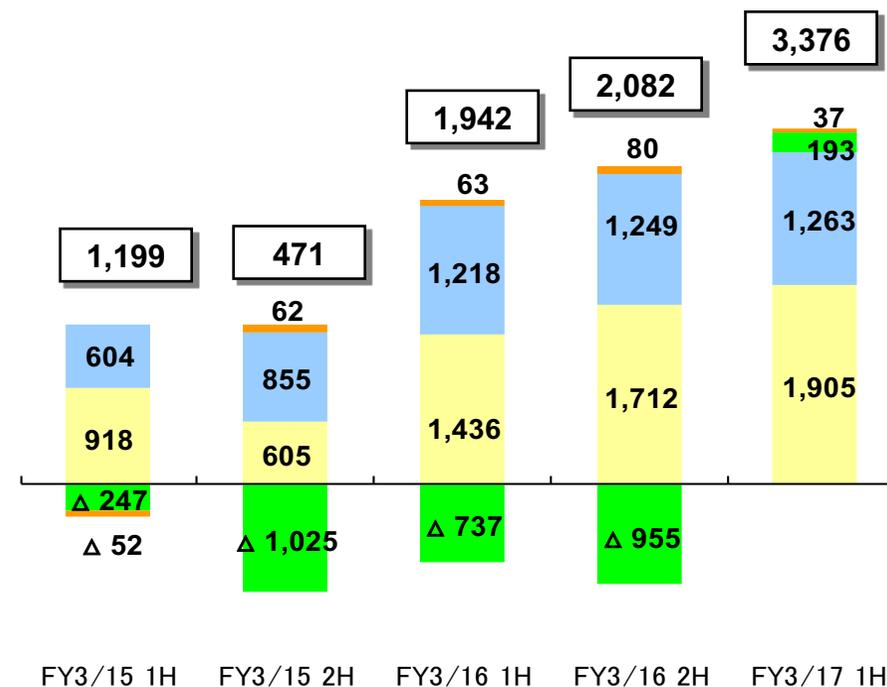
Equipment related Electronic device PV Others



Operating income Trend

(¥ in millions)

Equipment related Electronic device PV Others



Business performance (FY3/17 1st half Plan vs. Results)



¥ in millions	FY3/17 1H Plan		FY3/17 1H Results			
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Amount	Pct(%)
Equipment-related	15,427	41.7	16,049	42.6	622	4.0
Vacuum Feedthroughs	3,750	10.1	3,966	10.5	216	5.8
Quartz	3,950	10.7	4,105	10.9	155	3.9
Ceramics	2,700	7.3	2,993	7.9	293	10.9
CVD-SiC	1,380	3.7	1,212	3.2	△ 168	△ 12.2
EB-Gun, LED	1,796	4.9	1,868	5.0	72	4.0
Semiconductor wafer	1,850	5.0	1,906	5.1	56	3.0
Electronic device	5,991	16.2	6,130	16.3	139	2.3
Thermo-electric module	5,641	15.2	5,737	15.2	96	1.7
Ferrofluid, Others	350	0.9	393	1.0	43	12.3
Photovoltaic-related	12,131	32.8	10,644	28.3	△ 1,487	△ 12.3
Quartz crucibles	1,541	4.2	1,331	3.5	△ 210	△ 13.6
Solar silicon	6,090	16.5	5,482	14.6	△ 608	△ 10.0
PV manufacturing Equip.	800	2.2	494	1.3	△ 306	△ 38.3
Solar cell, Others	3,700	10.0	3,337	8.9	△ 363	△ 9.8
Others	3,450	9.3	4,826	12.8	1,376	39.9
Total	37,000	100.0	37,650	100.0	650	1.8
Gross income	8,702	23.5	10,094	26.8	1,392	16.0
SG&A expenses	6,332	17.1	6,717	17.8	385	6.1
Operating income	2,370	6.4	3,376	9.0	1,006	42.4
Ordinary income	1,740	4.7	2,107	5.6	367	21.1
Net income	1,250	3.4	1,033	2.7	△ 217	△ 17.4

※Net income=Net income attributable to owners of parent

Business performance (FY3/17 2nd half Initial plan vs. Revised plan)



¥ in millions	FY3/17 2H initial plan		FY3/17 2H revised plan			
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Amount	Pct(%)
Equipment-related	16,223	42.7	18,062	48.4	1,839	11.3
Vacuum Feedthroughs	3,650	9.6	4,077	10.9	427	11.7
Quartz	3,900	10.3	4,545	12.2	645	16.5
Ceramics	2,700	7.1	3,276	8.8	576	21.3
CVD-SiC	1,620	4.3	1,438	3.9	△ 182	△ 11.2
EB-Gun, LED	2,203	5.8	2,682	7.2	479	21.7
Semiconductor wafer	2,150	5.7	2,044	5.5	△ 106	△ 4.9
Electronic device	6,209	16.3	6,520	17.5	311	5.0
Thermo-electric module	5,859	15.4	6,064	16.2	205	3.5
Ferrofluid, Others	350	0.9	456	1.2	106	30.3
Photovoltaic-related	11,418	30.0	7,052	18.9	△ 4,366	△ 38.2
Quartz crucibles	1,959	5.2	869	2.3	△ 1,090	△ 55.6
Solar silicon	5,910	15.6	4,365	11.7	△ 1,545	△ 26.1
PV manufacturing Equip.	0	-	105	0.3	105	-
Solar cell, Others	3,549	9.3	1,713	4.6	△ 1,836	△ 51.7
Others	4,151	10.9	5,716	15.3	1,565	37.7
Total	38,000	100.0	37,350	100.0	△ 650	△ 1.7
Gross income	8,990	23.7	9,720	26.0	730	8.1
SG&A expenses	6,360	16.7	7,297	19.5	937	14.7
Operating income	2,630	6.9	2,424	6.5	△ 206	△ 7.8
Ordinary income	2,455	6.5	2,593	6.9	138	5.6
Net income	1,750	4.6	1,867	5.0	117	6.7

Business performance (FY3/17 1st half vs. 2nd half)



¥ in millions	FY3/17 1H		FY3/17 2H			
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Amount	Pct(%)
Equipment-related	16,049	42.6	18,062	48.4	2,013	12.5
Vacuum Feedthroughs	3,966	10.5	4,077	10.9	111	2.8
Quartz	4,105	10.9	4,545	12.2	440	10.7
Ceramics	2,993	7.9	3,276	8.8	283	9.5
CVD-SiC	1,212	3.2	1,438	3.9	226	18.6
EB-Gun, LED	1,868	5.0	2,682	7.2	814	43.6
Semiconductor wafer	1,906	5.1	2,044	5.5	138	7.2
Electronic device	6,130	16.3	6,520	17.5	390	6.4
Thermo-electric module	5,737	15.2	6,064	16.2	327	5.7
Ferrofluid, Others	393	1.0	456	1.2	63	16.0
Photovoltaic-related	10,644	28.3	7,052	18.9	△ 3,592	△ 33.7
Quartz crucibles	1,331	3.5	869	2.3	△ 462	△ 34.7
Solar silicon	5,482	14.6	4,365	11.7	△ 1,117	△ 20.4
PV manufacturing Equip.	494	1.3	105	0.3	△ 389	△ 78.7
Solar cell, Others	3,337	8.9	1,713	4.6	△ 1,624	△ 48.7
Others	4,826	12.8	5,716	15.3	890	18.4
Total	37,650	100.0	37,350	100.0	△ 300	△ 0.8
Gross income	10,094	26.8	9,720	26.0	△ 374	△ 3.7
SG&A expenses	6,717	17.8	7,297	19.5	580	8.6
Operating income	3,376	9.0	2,424	6.5	△ 952	△ 28.2
Ordinary income	2,107	5.6	2,593	6.9	486	23.1
Net income	1,033	2.7	1,867	5.0	834	80.7

Business performance (FY3/16vs. FY3/17 Initial Plan)



¥ in millions	FY3/16 Results		FY3/17 Initial Plan			
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Amount	Pct(%)
Equipment-related	31,405	45.2	31,650	42.2	245	0.8
Vacuum Feedthroughs	7,163	10.3	7,400	9.9	237	3.3
Quartz	7,624	11.0	7,850	10.5	226	3.0
Ceramics	6,147	8.8	5,400	7.2	△ 747	△ 12.1
CVD-SiC	1,685	2.4	3,000	4.0	1,315	78.0
EB-Gun, LED	4,468	6.4	3,999	5.3	△ 469	△ 10.5
Semiconductor wafer	4,317	6.2	4,000	5.3	△ 317	△ 7.3
Electronic device	13,328	19.2	12,200	16.3	△ 1,128	△ 8.5
Thermo-electric module	12,559	18.1	11,500	15.3	△ 1,059	△ 8.4
Ferrofluid, Others	769	1.1	700	0.9	△ 69	△ 9.0
Photovoltaic-related	18,505	26.6	23,549	31.4	5,044	27.3
Quartz crucibles	3,524	5.1	3,500	4.7	△ 24	△ 0.7
Solar silicon	8,483	12.2	12,000	16.0	3,517	41.5
PV manufacturing Equip.	359	0.5	800	1.1	441	122.8
Solar cell, Others	6,141	8.8	7,249	9.7	1,108	18.0
Others	6,224	9.0	7,601	10.1	1,377	22.1
Total	69,463	100.0	75,000	100.0	5,537	8.0

Gross income	17,313	24.9	17,692	23.6	379	2.2
SG&A expenses	13,289	19.1	12,692	16.9	△ 597	△ 4.5
Operating income	4,024	5.8	5,000	6.7	976	24.3
Ordinary income	3,822	5.5	4,200	5.6	378	9.9
Net income	2,162	3.1	3,000	4.0	838	38.8
Capital Investment	3,440	-	8,000	-	4,560	132.6
Depreciation	4,303	-	4,500	-	197	4.6

Business performance (FY3/16 vs. FY3/17 Revised Plan)



¥ in millions	FY3/15 Results		FY3/16 Revised Plan			
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Amount	Pct(%)
Equipment-related	31,405	45.2	34,112	45.5	2,707	8.6
Vacuum Feedthroughs	7,163	10.3	8,043	10.7	880	12.3
Quartz	7,624	11.0	8,650	11.5	1,026	13.5
Ceramics	6,147	8.8	6,269	8.4	122	2.0
CVD-SiC	1,685	2.4	2,650	3.5	965	57.3
EB-Gun, LED	4,468	6.4	4,550	6.1	82	1.8
Semiconductor wafer	4,317	6.2	3,950	5.3	△ 367	△ 8.5
Electronic device	13,328	19.2	12,650	16.9	△ 678	△ 5.1
Thermo-electric module	12,559	18.1	11,801	15.7	△ 758	△ 6.0
Ferrofluid, Others	769	1.1	849	1.1	80	10.4
Photovoltaic-related	18,505	26.6	17,696	23.6	△ 809	△ 4.4
Quartz crucibles	3,524	5.1	2,200	2.9	△ 1,324	△ 37.6
Solar silicon	8,483	12.2	9,847	13.1	1,364	16.1
PV manufacturing Epuip.	359	0.5	599	0.8	240	66.9
Solar cell, Others	6,141	8.8	5,050	6.7	△ 1,091	△ 17.8
Others	6,224	9.0	10,542	14.1	4,318	69.4
Total	69,463	100.0	75,000	100.0	5,537	8.0

Gross income	17,313	24.9	19,814	26.4	2,501	14.4
SG&A expenses	13,289	19.1	14,014	18.7	725	5.5
Operating income	4,024	5.8	5,800	7.7	1,776	44.1
Ordinary income	3,822	5.5	4,700	6.3	878	23.0
Net income	2,162	3.1	2,900	3.9	738	34.1
Capital Investment	3,440	-	8,000	-	4,560	132.6
Depreciation	4,303	-	4,500	-	197	4.6

Business performance (FY3/16 1st half vs. FY3/17 1st half



¥ in millions	FY3/161H Results		FY3/17 1H Results			
	Amount	Pct. Of Sales(%)	Amount	Pct. Of Sales(%)	Amount	Pct(%)
Equipment-related	15,491	46.1	16,049	42.6	558	3.6
Vacuum Feedthroughs	3,527	10.5	3,966	10.5	439	12.4
Quartz	3,625	10.8	4,105	10.9	480	13.2
Ceramics	3,270	9.7	2,993	7.9	△ 277	△ 8.5
CVD-SiC	504	1.5	1,212	3.2	708	140.5
EB-Gun, LED	1,941	5.8	1,868	5.0	△ 73	△ 3.8
Semiconductor wafer	2,624	7.8	1,906	5.1	△ 718	△ 27.4
Electronic device	6,466	19.2	6,130	16.3	△ 336	△ 5.2
Thermo-electric module	6,074	18.1	5,737	15.2	△ 337	△ 5.5
Ferrofluid, Others	392	1.2	393	1.0	1	0.3
Photovoltaic-related	8,741	26.0	10,644	28.3	1,903	21.8
Quartz crucibles	1,704	5.1	1,331	3.5	△ 373	△ 21.9
Solar silicon	5,241	15.6	5,482	14.6	241	4.6
PV manufacturing Equip.	104	0.3	494	1.3	390	375.0
Solar cell, Others	1,692	5.0	3,337	8.9	1,645	97.2
Others	2,917	8.7	4,826	12.8	1,909	65.4
Total	33,615	100.0	37,650	100.0	4,035	12.0

Gross income	8,548	25.4	10,094	26.8	1,546	18.1
SG&A expenses	6,605	19.6	6,717	17.8	112	1.7
Operating income	1,942	5.8	3,376	9.0	1,434	73.8
Ordinary income	1,888	5.6	2,107	5.6	219	11.6
Net income	1,202	3.6	1,033	2.7	△ 169	△ 14.1