



# Ferrotec Holdings Corporation

Results for the 1st half of the fiscal year ending March 31, 2020

November 27, 2019

(JASDAQ 6890)

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

1. This fiscal year results cover period from April to September of Ferrotec, and period from January to June of consolidated subsidiaries and companies accounted for using the equity method.
2. This presentation was prepared for the purpose of providing information regarding the company's results of operations for the first half of the fiscal year ending March 31, 2020 and is not a solicitation to purchase securities issued by the company. Please ensure that the decision on whether to make an investment in our company is made at your own risk.
3. These materials were prepared based on information available as of November 27, 2019. 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.



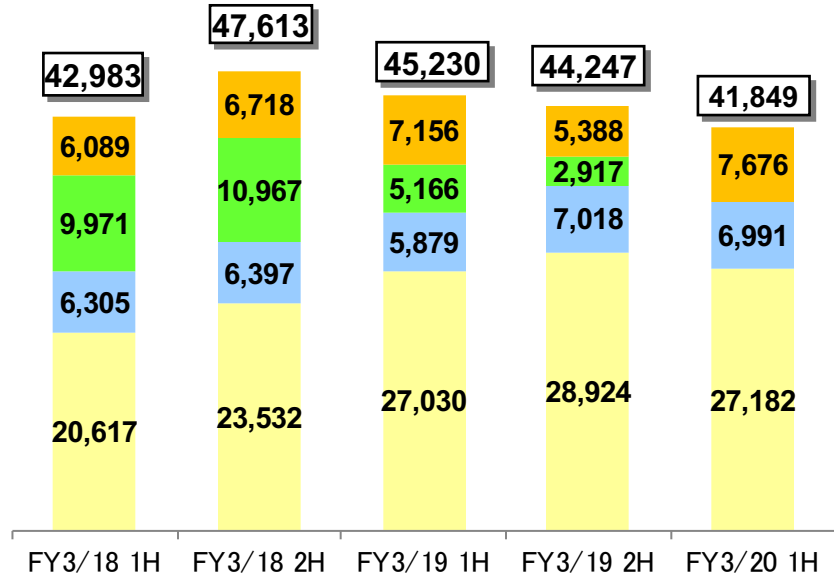
# First Half of FY3/20 Financial Results

# Sales and Operating Income Trend

## Sales Trend

(Million yen)

Others PV Electronic device Semiconductor and other equipment-related

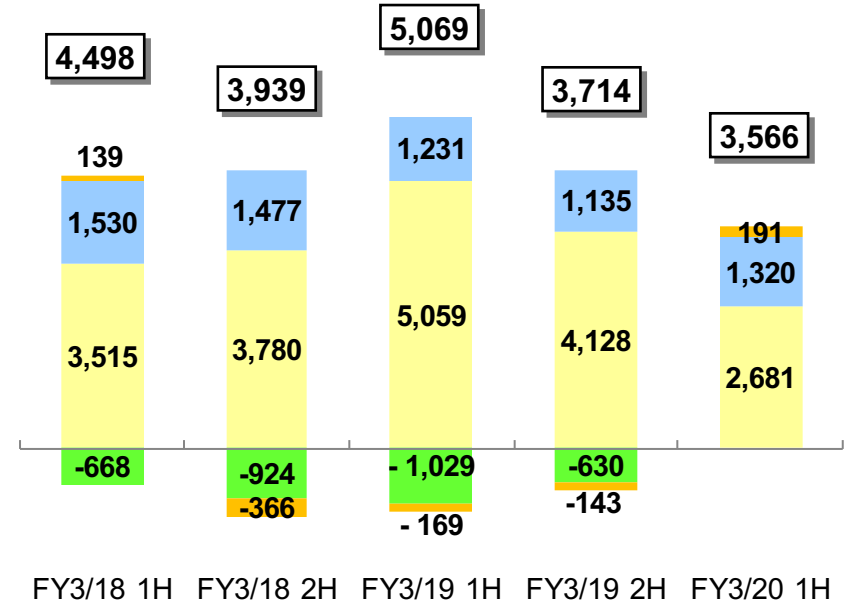


Note: Equipment parts cleaning has been included in semiconductor and other equipment-related segment from FY 3/18.  
PV-related business has been included in other segment from FY3/20

## Operating income Trend

(Million yen)

Others PV Electronic device Semiconductor and other equipment-related



Note: The difference between the sums and totals in each segment is due to transactions between segments.  
PV-related business has been included in other segment from FY3/20.

# Consolidated Financial Summary



| (Million yen)                               | FY3/19 2Q |                   | FY3/20 2Q |                   | YoY     |                 |
|---|-----------|-------------------|-----------|-------------------|---------|-----------------|
|   | Amount    | Pct. Of sales (%) | Amount    | Pct. of sales (%) | Amount  | Pct. change (%) |
| Net sales                                   | 45,231    | 100.0             | 41,849    | 100.0             | - 3,382 | - 7.5           |
| Cost of sales                               | 31,354    | 69.3              | 27,941    | 66.8              | - 3,413 | - 10.9          |
| Gross income                                | 13,877    | 30.7              | 13,908    | 33.2              | 31      | 0.2             |
| SG&A expenses                               | 8,808     | 19.5              | 10,342    | 24.7              | 1,534   | 17.4            |
| Operating income                            | 5,069     | 11.2              | 3,566     | 8.5               | - 1,503 | - 29.7          |
| Non-operating income                        | 611       | 1.4               | 786       | 1.9               | 175     | 28.6            |
| Non-operating expense                       | 814       | 1.8               | 1,880     | 4.5               | 1,066   | 131.0           |
| Ordinary income                             | 4,866     | 10.8              | 2,472     | 5.9               | - 2,394 | - 49.2          |
| Extraordinary income                        | 148       | 0.3               | 67        | 0.2               | - 81    | - 54.7          |
| Extraordinary loss                          | 283       | 0.6               | 12        | 0.0               | - 271   | - 95.8          |
| Net income attributable to owners of parent | 2,826     | 6.2               | 1,540     | 3.7               | - 1,286 | - 45.5          |
| Capital Investment                          | 12,030    | -                 | 19,123    | -                 | 7,093   | 59.0            |
| Depreciation                                | 2,652     | -                 | 3,435     | -                 | 783     | 29.5            |

Note: Exchange rate FY3/19⇒FY3/20: US\$ ¥110.36 → ¥109.97; RMB ¥16.64 → ¥16.23 (Avg. during period)

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

# Consolidated Financial Summary

| (Million yen)                               | FY3/20 2Q |                   |
|---|-----------|-------------------|
|   | Amount    | Pct. of sales (%) |
| Net sales                                   | 41,849    | 100.0             |
| Cost of sales                               | 27,941    | 66.8              |
| Gross income                                | 13,908    | 33.2              |
| SG&A expenses                               | 10,342    | 24.7              |
| Operating income                            | 3,566     | 8.5               |
| Non-operating income                        | 786       | 1.9               |
| Non-operating expense                       | 1,880     | 4.5               |
| Ordinary income                             | 2,472     | 5.9               |
| Extraordinary income                        | 67        | 0.2               |
| Extraordinary loss                          | 12        | 0.0               |
| Income before income tax                    | 2,527     | 6.0               |
| Corporate tax, etc.                         | 1,081     | 2.6               |
| Net income attributable to owners of parent | 1,540     | 3.7               |

Sales of vacuum feedthroughs and ceramics declined due to the adjustment of capital investment including semiconductor memories. Cost ratio also deteriorated. On the other hand, the cost ratio of PV products (other businesses) improved due to impairment in the previous fiscal year. As a whole, cost ratio improved to 66.8% from 69.3% in the previous year.

SG&A expenses increased 1,533 million yen YoY. This is due to the provision of allowance for doubtful accounts at the Chinese subsidiary (up 435 million yen YoY), R&D expenses (up 566 million yen YoY), and full-scale operation of the subsidiary established in the previous year.

Equity-accounted investment income: 181 million yen  
 Subsidy income: 359 million yen  
 Interest expense: 540 million yen  
 Exchange loss: 984 million yen  
 Exchange losses were generated mainly from yen-denominated borrowings at Chinese subsidiaries. The fluctuation of 1% of Chinese yuan is expected to generate approximately 300 million yen foreign exchange gains or losses.

# Sales and Operating Income by Segment

| Net sales<br>(¥ in millions)              | FY3/19 2Q     |                   | FY3/20 2Q     |                   | YOY            |                 |
|---|---------------|-------------------|---------------|-------------------|----------------|-----------------|
|   | Amount        | Pct. of sales (%) | Amount        | Pct. of sales (%) | Amount         | Pct. change (%) |
| Semiconductor and other equipment-related | 27,580        | 61.0              | 27,182        | 65.0              | - 398          | - 1.4           |
| Electronic device                         | 5,879         | 13.0              | 6,991         | 16.7              | 1,112          | 18.9            |
| Others                                    | 11,772        | 26.0              | 7,676         | 18.3              | - 4,096        | - 34.8          |
| <b>Total</b>                              | <b>45,231</b> | <b>100.0</b>      | <b>41,849</b> | <b>100.0</b>      | <b>- 3,382</b> | <b>- 7.5</b>    |

| Operating income<br>(¥ in millions)       | FY3/19 2Q    |                   | FY3/20 2Q    |                   | YOY            |                 |
|---|--------------|-------------------|--------------|-------------------|----------------|-----------------|
|   | Amount       | Pct. of sales (%) | Amount       | Pct. of sales (%) | Amount         | Pct. change (%) |
| Semiconductor and other equipment-related | 5,054        | 18.3              | 2,681        | 9.9               | - 2,373        | - 47.0          |
| Electronic device                         | 1,232        | 21.0              | 1,320        | 18.9              | 88             | 7.1             |
| Others                                    | -1,195       | -                 | 191          | 2.5               | 1,386          | -               |
| Corporate & elimination                   | -22          | -                 | -626         | -                 | - 604          | -               |
| <b>Total</b>                              | <b>5,069</b> | <b>11.2</b>       | <b>3,566</b> | <b>8.5</b>        | <b>- 1,503</b> | <b>- 29.7</b>   |

\*Due to the segment change, the Photovoltaic-related business has been included in the Other segment.

# Consolidated Balance Sheet –Assets-

| (Million yen)                 | End-FY3/19     | FY3/20<br>End-Sep. | Difference |
|-------------------------------|----------------|--------------------|------------|
| Current assets                | 77,271         | <b>76,282</b>      | - 989      |
| Cash & deposits               | 31,555         | <b>28,086</b>      | - 3,469    |
| Note & accounts receivable    | 21,461         | <b>19,699</b>      | - 1,762    |
| Inventory                     | 16,277         | <b>17,990</b>      | 1,713      |
| Fixed assets                  | 85,827         | <b>107,696</b>     | 21,869     |
| Tangible fixed assets         | 76,134         | <b>100,786</b>     | 24,653     |
| Buildings and structures      | 10,789         | <b>12,532</b>      | 1,743      |
| Equipment and machinery       | 18,256         | <b>21,676</b>      | 3,420      |
| Tools, furniture, and fixture | 7,595          | <b>7,589</b>       | - 6        |
| Land                          | 1,562          | <b>1,892</b>       | 330        |
| Leased assets (net)           | 405            | <b>5,559</b>       | 5,154      |
| Construction in progress      | 37,527         | <b>51,538</b>      | 14,011     |
| Intangible fixed assets       | 3,557          | <b>792</b>         | - 2,765    |
| Goodwill                      | 166            | <b>83</b>          | - 83       |
| Investments & other assets    | 6,136          | <b>6,118</b>       | - 18       |
| <b>Total assets</b>           | <b>163,098</b> | <b>183,978</b>     | 20,880     |

**[Main reason for decrease in current assets]**  
Cash and deposits decreased due to investing in production equipment for large-diameter wafers.

**[Main reason for increase in tangible fixed assets]**  
(1) Machinery and construction in progress increased due to investment in production equipment for large-diameter wafers.  
(2) Lease assets were recorded mainly at Chinese subsidiaries as influenced by IFRS 16 (About 5 billion yen: Land-use rights posted in intangible fixed assets in and before the previous fiscal years (including transfer of about 3 billion yen))

**[Main reason for decrease in intangible fixed assets]**  
Impact of transfer of land-use rights (about 3 billion yen) to lease assets.

# Consolidated Balance Sheet -Liabilities and Net Assets-

| (Million yen)                                       | End-FY3/19     | FY3/20<br>End-Sep. | Difference    |
|---|----------------|--------------------|---------------|
| Current liabilities                                 | 60,180         | <b>63,924</b>      | 3,744         |
| Notes and accounts payable                          | 20,887         | <b>17,987</b>      | - 2,900       |
| Short-term debt                                     | 9,603          | <b>12,183</b>      | 2,580         |
| Current portion of long-term borrowings + bonds     | 10,743         | <b>13,390</b>      | 2,647         |
| Fixed liabilities                                   | 53,070         | <b>71,101</b>      | 18,031        |
| Bonds   | 11,225         | <b>20,246</b>      | 9,021         |
| Long-term debt                                      | 29,505         | <b>30,489</b>      | 984           |
| <b>Total liabilities</b>                            | <b>113,250</b> | <b>135,025</b>     | <b>21,775</b> |
| Net assets  | 49,848         | <b>48,954</b>      | - 894         |
| Shareholder's equity                                | 45,793         | <b>46,997</b>      | 1,204         |
| Total accumulated other comprehensive income        | 3,705          | <b>1,643</b>       | - 2,062       |
| Non-controlling interests                           | 324            | <b>263</b>         | - 61          |
| <b>Total liabilities &amp; shareholder's equity</b> | <b>163,098</b> | <b>183,978</b>     | <b>20,880</b> |

## [Main reason for increase in current liabilities]

Although trade payables (notes and accounts payable) decreased, short-term loans payable, current portion of long-term borrowings + bonds, and accounts payable for facilities increased.

## [Status of interest-bearing debt]

\*Parentheses represent the figures as of end-FY3/19

|  |                                 |
|--|---------------------------------|
| Short-term debt + current portion of long-term borrowings + bonds: | ¥25,573 million (20,346)        |
| Long-term debt + bonds:  | ¥50,735 million (40,730)        |
| <b>Total:</b>  | <b>¥76,308 million (61,076)</b> |
| [Net interest-bearing debt:  | ¥48,221 million (29,521)]       |

## [Net assets]

Breakdown:

|  |                 |
|--|-----------------|
| Net income attributable to owners of parent: | ¥1,540 million  |
| Dividends:                                   | -¥443 million   |
| Foreign currency translation adjustments:    | -¥1,636 million |

Note: Exchange rate FY3/19⇒FY3/20: US\$ ¥111.00 → ¥107.79; RMB ¥16.16 → ¥15.69 (as of end of March)



# Consolidated Cash Flow

| (Million yen)                                       | FY3/19 2Q       | FY3/20 2Q       |
|---|-----------------|-----------------|
| <b>Cash flow from operating activities</b>          | <b>5,403</b>    | <b>933</b>      |
| Income before income tax                            | 4,731           | 2,527           |
| Depreciation  | 2,652           | 3,435           |
| Exchange gain & loss (-:gain)                       | 279             | 405             |
| Changes in notes & accounts receivable (-:increase) | - 1,324         | 936             |
| Changes in inventories (-:increase)                 | - 182           | - 2,131         |
| Changes in accounts payable (-:decrease)            | - 215           | - 2,768         |
| Others  | -538            | -1,471          |
| <b>Cash flow from investing activities</b>          | <b>- 12,252</b> | <b>- 19,229</b> |
| Payments for purchase of tangible fixed assets      | - 11,115        | - 19,057        |
| Proceeds from sales of tangible fixed assets        | 29              | 18              |
| Payments for purchase of intangible fixed assets    | - 915           | - 66            |
| Others  | - 251           | - 124           |
| <b>Cash flow from financing activities</b>          | <b>20,680</b>   | <b>14,909</b>   |
| Changes in short-term debt                          | 3,283           | 2,757           |
| Proceeds from long-term borrowings                  | 14,247          | 6,637           |
| Payments of long-term borrowings                    | - 2,890         | - 4,197         |
| Proceeds from the issuance of bonds                 | 6,638           | 11,154          |
| Proceeds from the issuance of shares                | - 294           | - 979           |
| Cash dividends paid                                 | - 443           | - 443           |
| Others  | 139             | - 20            |
| <b>Changes in cash &amp; cash equivalents</b>       | <b>13,072</b>   | <b>- 3,591</b>  |
| Cash and cash equivalents, beginning of year        | <b>23,649</b>   | <b>31,556</b>   |
| Cash and cash equivalents, end of year              | <b>36,720</b>   | <b>28,087</b>   |

| [Operating cash flow]  |
|--|
| <b>Income before income tax + depreciation:</b><br><b>¥5,962 million</b>                                 |
| <b>Increase in operating CF due to decrease in notes and accounts receivable:</b><br><b>¥936 million</b> |
| <b>Decrease in operating CF due to increase in inventories:</b><br><b>¥-2,131 million</b>                |
| <b>Decrease in operating CF due to decrease in notes and accounts payable:</b><br><b>¥-2,768 million</b> |

| [Investing cash flow]   |
|---|
| <b>Main content of payments for tangible fixed assets acquired</b><br><b>•Investment mainly in large-diameter wafer-related equipment: 14.6 billion yen</b> |

# Full-Year Business Forecast (Revised on November 7)

| (Million yen)                               | FY3/19 | FY3/20 (Est.) | YoY (%) |
|---|--------|---------------|---------|
| Net sales                                   | 89,478 | 85,000        | - 5.0   |
| Operating income                            | 8,783  | 6,500         | - 26.0  |
| Ordinary income                             | 8,060  | 4,500         | - 44.2  |
| Net income attributable to owners of parent | 2,846  | 2,500         | - 12.2  |
| Capital Investment                          | 35,953 | 40,000        | 11.3    |
| Depreciation                                | 5,755  | 7,000         | 21.6    |

Note: Exchange rate FY3/19⇒FY3/20: US\$ ¥110.36 → ¥110.00; RMB ¥16.64 → ¥ 16.00 (Avg. during period)

Capital investment is based on cash flow for acquiring tangible and intangible fixed assets considering unprojected large-scale capital investment and accounts payable facilities at the end of previous fiscal year

# Full-Year Business Forecast (Sales by Segment)

| (Million yen)                                   | FY3/19        | FY3/20 (Est.) | YoY (%)      |
|---|---------------|---------------|--------------|
| Semiconductor and other equipment-related       | 57,026        | 54,485        | - 4.5        |
| Vacuum feedthroughs                             | 11,889        | 8,055         | - 32.2       |
| Quartz  | 15,590        | 16,050        | 3.0          |
| Ceramics  | 10,221        | 8,800         | - 13.9       |
| CVD-SiC   | 2,800         | 2,100         | - 25.0       |
| EB-Gun, LED                                     | 4,750         | 3,880         | - 18.3       |
| Semiconductor wafer                             | 7,236         | 8,100         | 11.9         |
| Equipment parts cleaning                        | 3,468         | 6,400         | 84.5         |
| Quartz crucibles (segment changed from this FY) | 1,072         | 1,100         | 2.6          |
| Electronic device                               | 12,897        | 13,300        | 3.1          |
| Thermo-electric module                          | 11,930        | 12,600        | 5.6          |
| Ferrofluid, others                              | 967           | 700           | - 27.6       |
| Others  | 19,555        | 17,215        | - 12.0       |
| <b>Total</b>                                    | <b>89,478</b> | <b>85,000</b> | <b>- 5.0</b> |

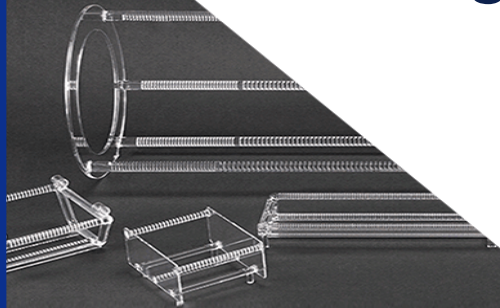
**\*Due to the segment change, the Photovoltaic-related business has been included in the Other segment.**



**Ferrotec**  
Ferrotec Holdings Corporation



## Status by Segment and Outlook



**65%** **Semiconductor and other equipment-related**

|  |                             |
|--|-----------------------------|
| <p><b>Vacuum feedthroughs</b></p>      | <p><b>Quartz</b></p>        |
| <p><b>Ceramics</b></p>                 | <p><b>CVD-SiC</b></p>       |
| <p><b>Equipment parts cleaning</b></p> | <p><b>Silicon wafer</b></p> |

etc...

**17%** **Electronic device**

|  |
|--|
| <p><b>Ferrofluid</b></p>                         |
| <p><b>Thermo-electric module</b></p>             |
| <p><b>Substrates for power semiconductor</b></p> |

**18%** **Others**

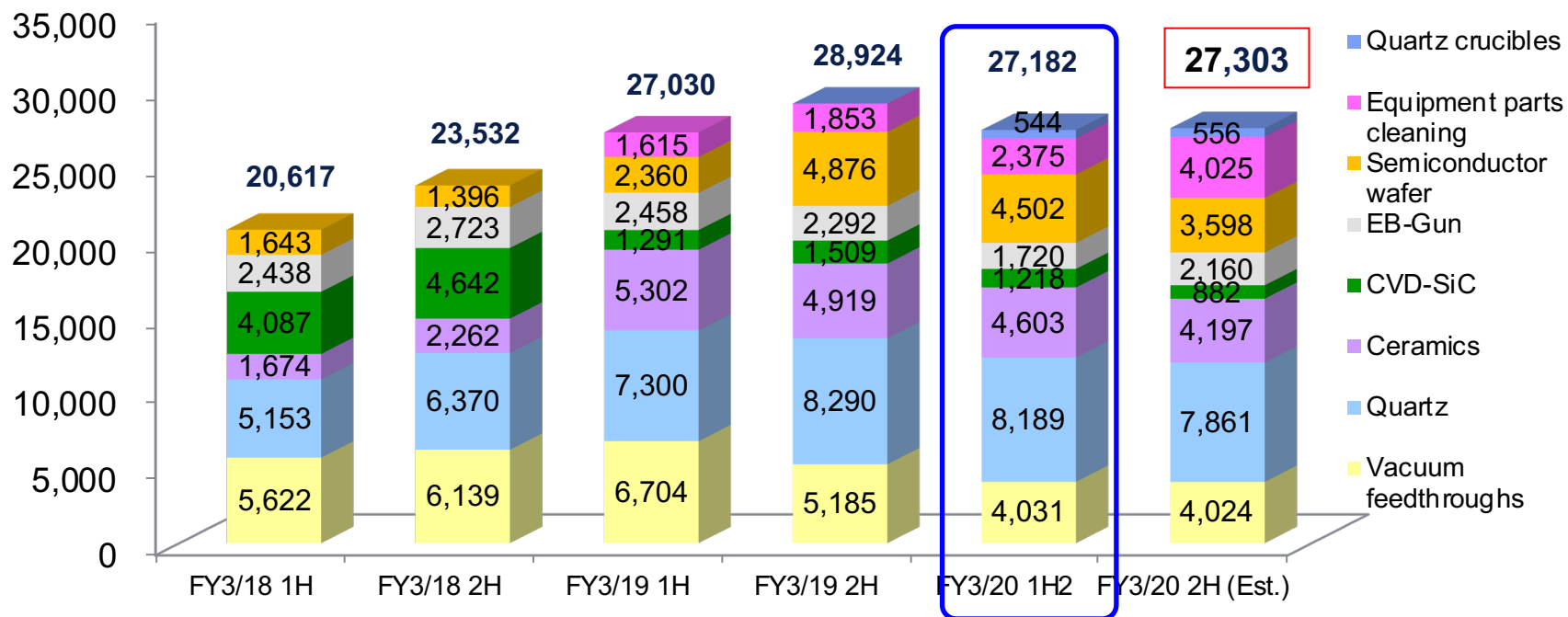
|  |                                 |
|--|---------------------------------|
| <p><b>Industrial blade</b></p>           | <p><b>Contract assembly</b></p> |
| <p><b>Commercial washing machine</b></p> |                                 |
| <p><b>Photovoltaic (OEM)</b></p>         |                                 |
| <p><b>PV wafer</b></p>                   | <p><b>PV cell</b></p>           |

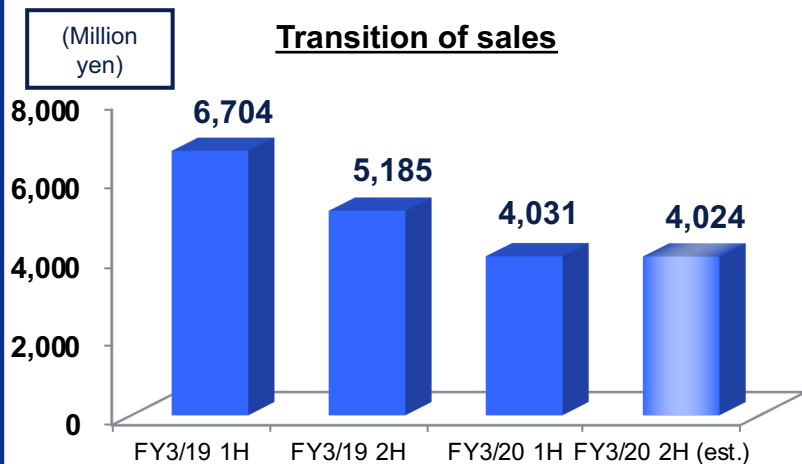
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\*The circle graph represents the proportion of each segment to net sales as of 1H FY3/20.

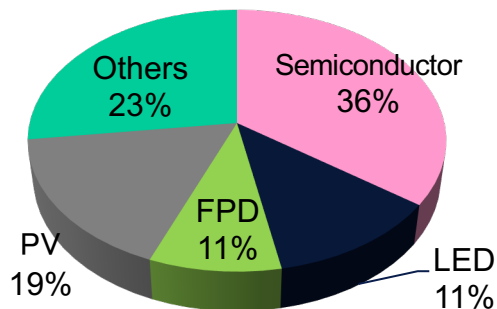
Sales  
(¥ in million)

\*Quartz crucibles are added from FY3/20 due to reallocation of segments.





Sales by category



Note) Others: Industrial vacuum systems, aviation, medical, science, etc.

## 1. Status for the first half of FY3/20

- For semiconductor manufacturing equipment, investment in memories was weak and demand declined significantly YoY.
- For organic EL in the FPD market, demand from China is showing signs of slight recovery.
- Regarding contract processing, sales declined YoY, although demand for applications other than semiconductor manufacturing equipment, which continues to be weak, was captured.

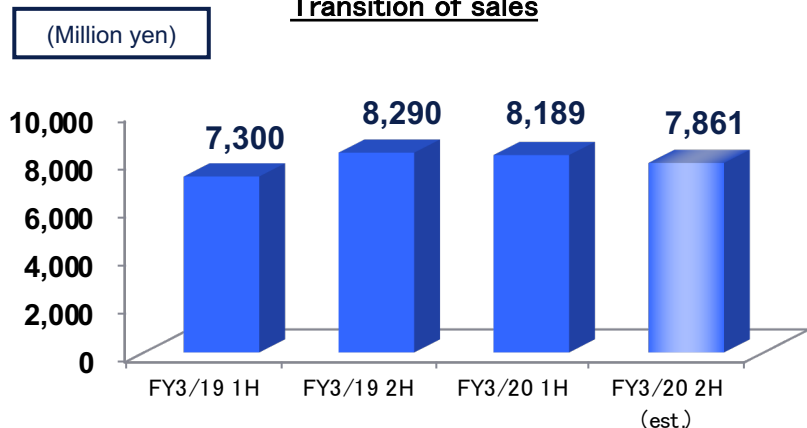
## 2. Outlook for the second half of FY3/20

- In the second half of the year, demand for semiconductor and organic EL manufacturing equipment is expected to recover, but a full-scale recovery can be expected only from the first half of the next fiscal year.
- Concerning contract processing, domestic and foreign demand for non-semiconductor applications to ensure operation is expected.

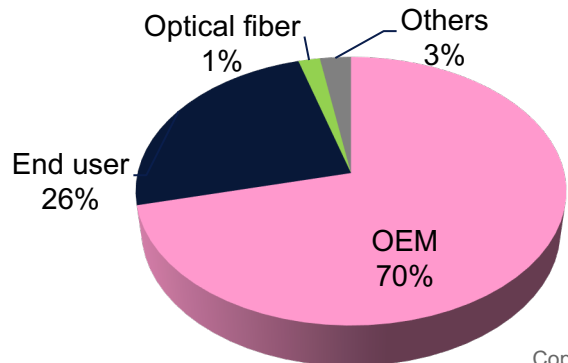
### <<Measures>>

- Continue joint development projects with manufacturers of semiconductor manufacturing equipment
- Capital investments for large processing machinery
- Strengthen ties among Ferrotec Group companies to generate synergies
- Strengthen sales in the Chinese market, utilizing Group companies' existing channels and brands

## Transition of sales



## Sales by category



### 1. Status for the first half of FY3/20

- Investment in semiconductor manufacturing equipment for memories (DRAM, 3D-NAND) decreased due to a break in investment in data center and price. However, the demand for repeat materials based on IC production operations was steady.
- Some OEM certifications for two bases in China (Changshan and Dongtai) established in 2018 and one development base in Yamagata were acquired.
- Sales of Si boats used in fine-pitch high temperature processes and Si parts\* for vacuum etchers were strong.

### 2. Outlook for the second half of FY3/20

- Demand from semiconductor device manufacturers is recovering, and capital investment projects by major IC manufacturers in South Korea, Taiwan, and China are expected to recover from the latter part of the second half. However, as for memories, the uncertain situation is expected to continue.
- Si parts are being applied to semiconductor manufacturing equipment in the Chinese market, and demand for Si boats from Chinese IC manufacturers increased. Sales are expected to be strong.

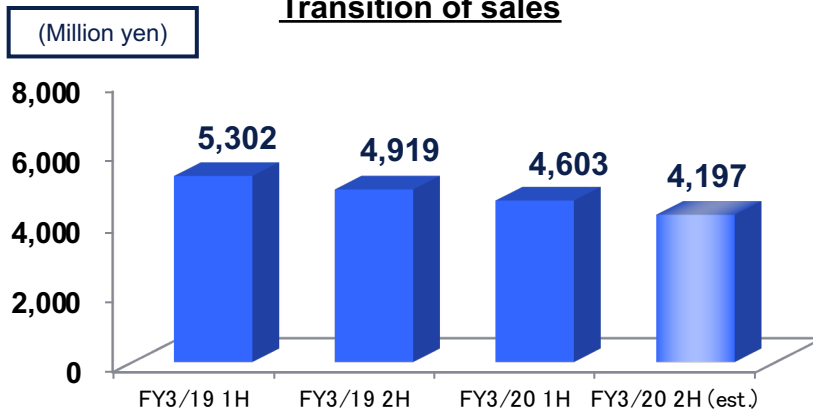
### <<Measures>>

- Strengthen production capacity in response to increased demand from major OEMs. (Operation started at 2 new factories (Changshan and Dongtai) in China.)
- Work more actively on development projects involving next-generation and later generation devices.

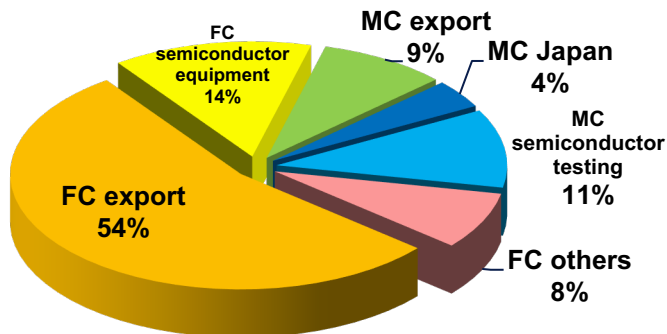
(In Yamagata, Japan, a development base and factory for next-generation product development began operations in May 2019. From the next fiscal year, they will move to the full-scale production phase.)



## Transition of sales



Sales by category



### 1. Status for FY3/20 (January to June)

#### Machinable ceramics “Photoveel”

- Strong domestic and overseas sales of semiconductor inspection jigs
- Weak sales of materials for semiconductor inspection jigs in some overseas countries
- Strong overseas sales of medical parts

#### Fine ceramics

- Weak domestic and overseas sales of parts for semiconductor manufacturing equipment

### 2. Outlook for FY3/20 (July to December)

#### Machinable ceramics “Photoveel”

- Domestic and overseas sales of new semiconductor inspection jigs are expected to be strong.
- Overseas sales of materials for semiconductor inspection jigs are expected to increase.

#### Fine ceramics

- Overseas sales of etching device parts are expected to be weak.
- Sales of parts for domestic film deposition equipment will recover.

### 3. Continued sales policy

#### Machinable ceramics

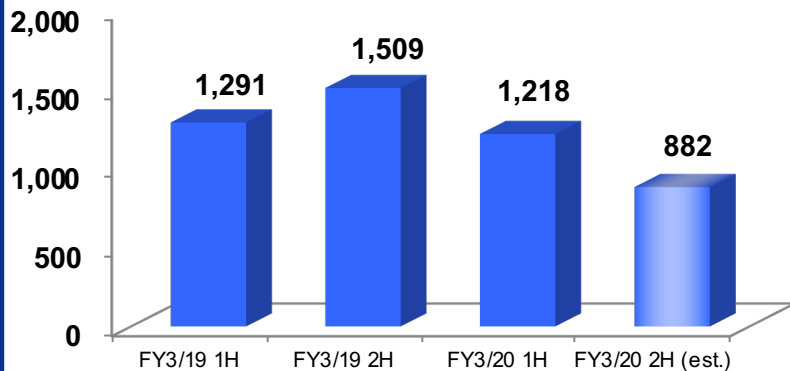
- Focus on sales of new inspection jigs for miniaturization as the demand is strong.
- Focus on increasing sales of highly-functional machinable ceramics.
- Aim to increase sales as overseas demand for medical parts is strong.

#### Fine ceramics

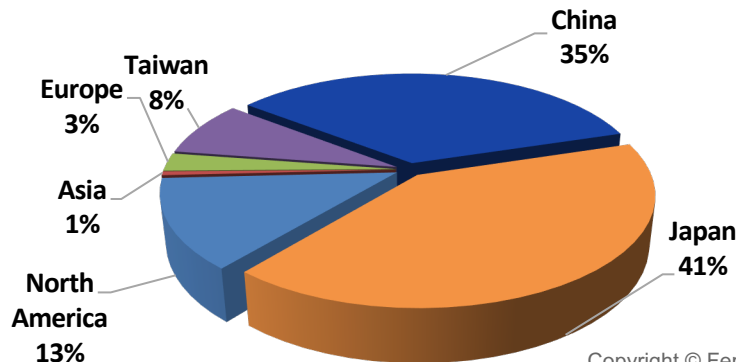
- Aim to increase sales as the overall market is on the recovery trend and there is an increasing demand for parts, although there are variations in overseas and domestic demand for semiconductor manufacturing equipment.
- Target a wide range of sales to include machine parts for general industries.

(Million yen)

## Transition of sales



## Sales by region



### 1. Status for FY3/20 (January to June)

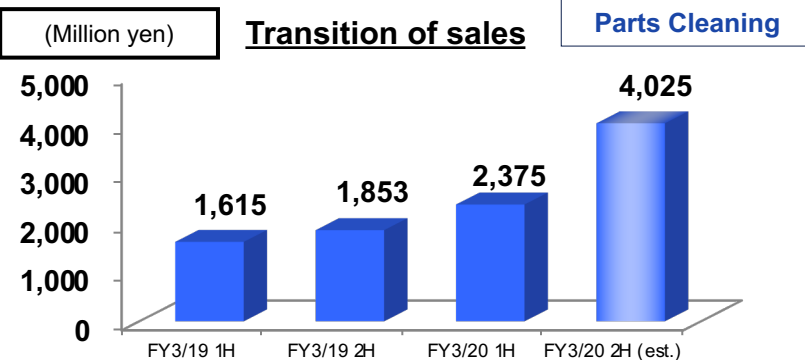
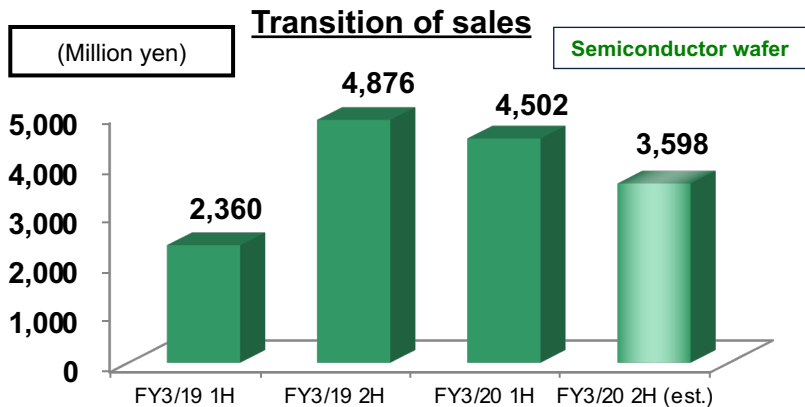
- Sales of components for semiconductor manufacturing equipment were weak due to postponement of equipment investment and inventory adjustment.
- Demand for high-purity heat-resistant components used in SiC epitaxial growth equipment increased thanks to strong sales among device manufacturers.

### 2. Outlook for the second half of FY3/20

- Recovery of the sluggish sales of components for semiconductor manufacturing equipment cannot be expected within the fiscal year.
- Demand for high-purity heat-resistant components used in SiC epitaxial growth equipment will be steady.

### <<Measures>>

- Increase sales of consumable materials for semiconductor etcher equipment and LED manufacturing equipment and develop production systems.
- Strengthen development and trial production systems in the SiC semiconductor field.
- Recruit manufacturers of semiconductor manufacturing equipment and device manufacturers in China.



## Semiconductor wafers:

### 1. Status for the first half of FY3/20

- Sales of 6-inch wafers were up 36% YoY even though the demand weakened slightly from the second half of FY3/19.
- Sales of 8-inch wafers were sluggish partially due to demand adjustment for industrial equipment.

### 2. Outlook for the second half of FY3/20

- Sales of both 6-inch and 8-inch wafers are expected to decline due to weak demand compared with the first half of FY3/20.

### <<Measures>>

- Install equipment for 8-inch wafers at new Hangzhou factory and mass production will begin from the 1<sup>st</sup> quarter of next fiscal year.
- The mass production in Hangzhou will be implemented step by step in line with demand. Eventually, a system of 450,000 units per month will be built (including 100,000 units in Shanghai).

## Parts Cleaning:

### 1. Status for the first half of FY3/20

- The new base in Tongling, Anhui, and the second factory in Neijiang, Sichuan, contributed to the sales, and the system of 5 bases and 6 factories are established. Sales increased 47% YoY.

### 2. Outlook for the second half of FY3/20

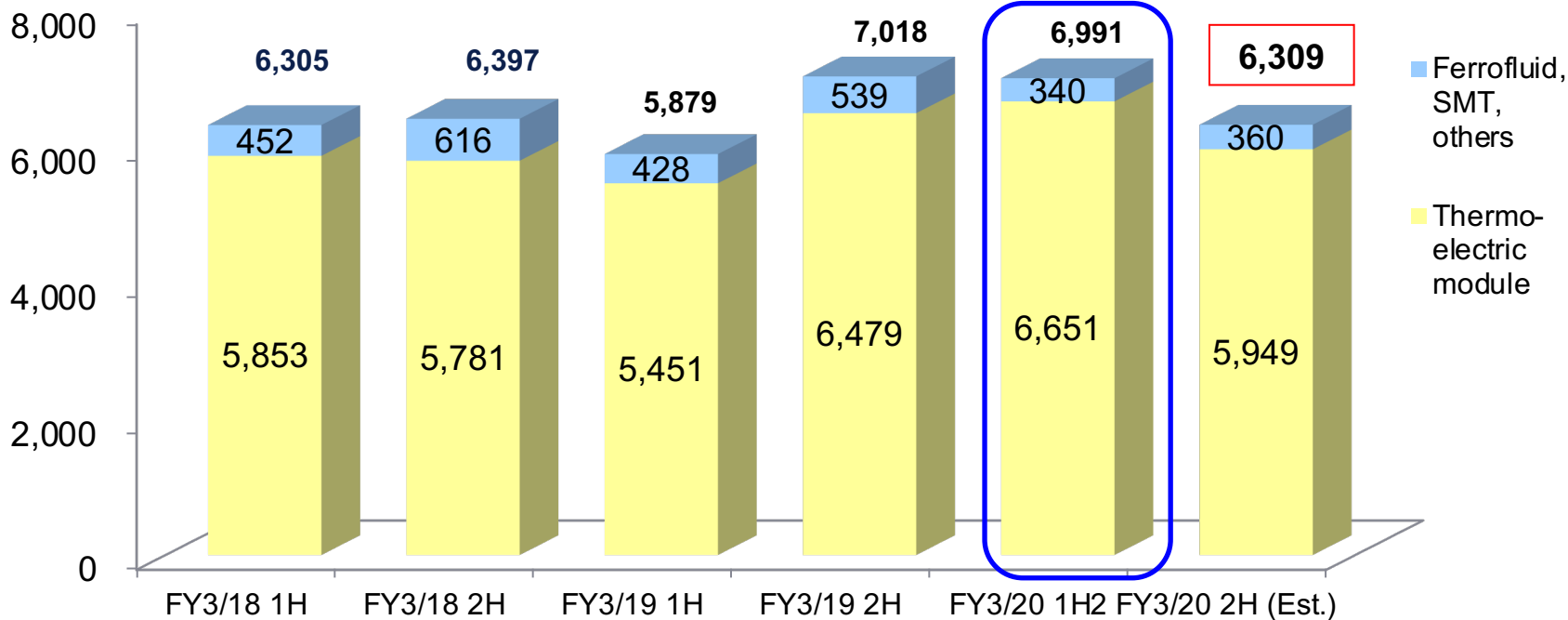
- Sales are expected to increase significantly in the second half thanks to expansion of production scale of semiconductor device manufacturers and FPD manufacturers in China.

### <<Measures>>

- The parts cleaning business will be reorganized with its Tongling factory in Anhui as its main sub-subsidiary. An analysis center will be established in Shanghai to capture more advanced fields.

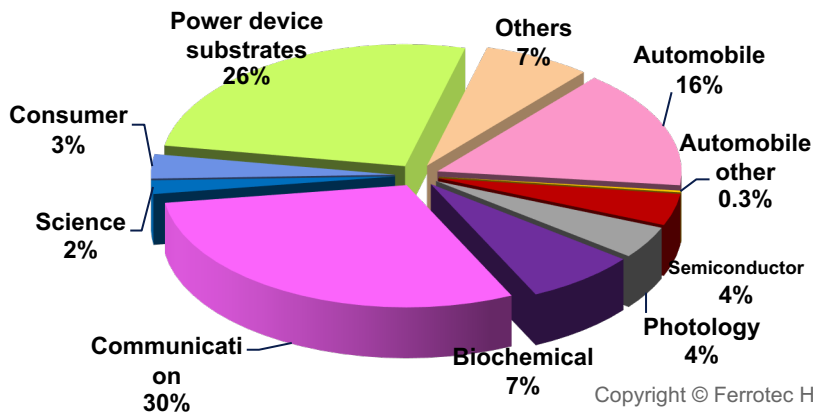
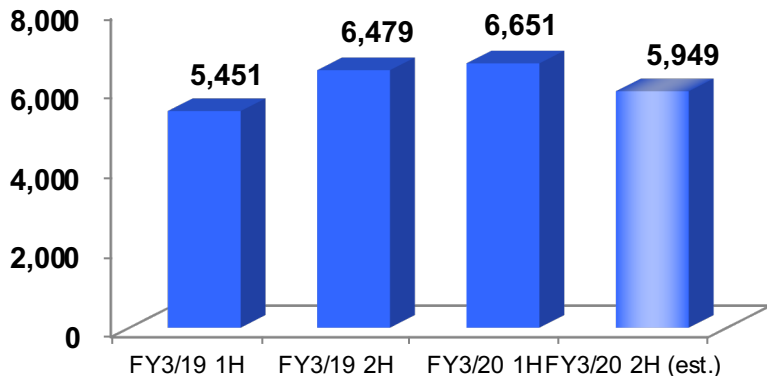
\*Falls under "Other" segment until FY3/17; from FY3/18 onwards, moved to semiconductor and other equipment-related segment.

Sales  
(¥ in million)



(Million yen)

## Transition of sales



### 1. Status for the first half of FY3/20

#### Modules for Automobiles

- Sales of modules for seat temperature controllers decreased 9% YoY.
- Prototypes of temperature controllers for next-generation vehicles were developed and marketing was strengthened.

#### Other applications

- Sales of modules used in communications equipment in China grew significantly, and sales of modules for biotechnology were also strong.
- Sales of power substrates increased 113% YoY due to increased production capacity at the new base.

### 2. Outlook for the second half of FY3/20

#### Modules for Automobiles

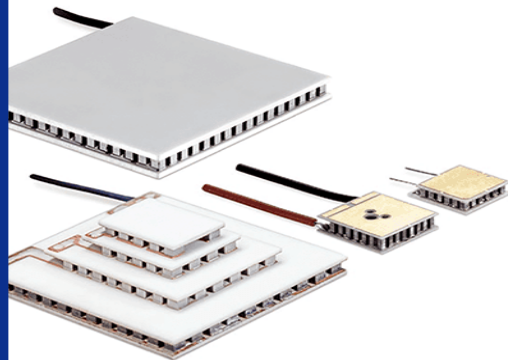
- Demand for seat temperature controllers are expected to remain weak.
- For new automobile applications, we will focus on projects with a high probability of future adoption.

#### Other applications

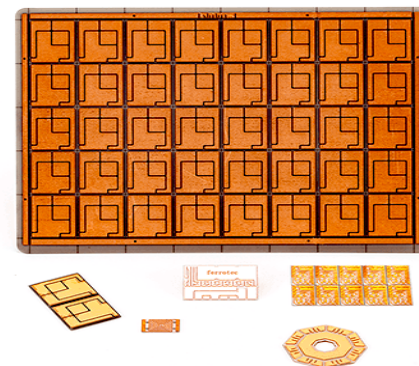
- Demand for modules used in communication equipment related to 5G and new wearable devices is expected to increase.
- Sales of power substrates are expected to decrease due to adjustment of industrial equipment and home appliances.

#### <<Measures>>

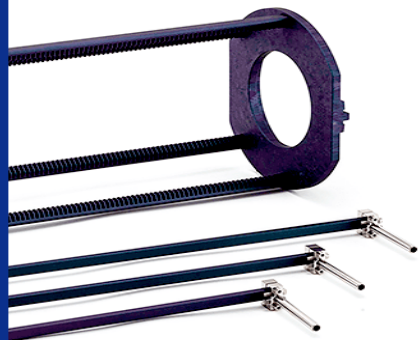
- Expand sales activities worldwide for thermo-electric module subassembly.
- Further strengthen sales of modules used in automobiles, aiming for mass production in 3-5 years.
- As for power substrate, strengthen sales of silicon nitride (AMB substrate) for automobiles.



**Ferrotec**  
Ferrotec Holdings Corporation



## Appendix



|                    |  |
|--------------------|--|
| Corporate Name     | Ferrotec Holdings Corporation  |
| Date of Foundation | September 27, 1980   |
| Address            | 5 <sup>th</sup> floor of Nihonbashi Plaza Building, 2-3-4 Nihonbashi, Chuo-ku, Tokyo Japan |
| Listed on          | JASDAQ (Listed Code: 6890)   |
| President          | Akira Yamamura   |
| Business Segment   | Business management and R&D operations of group companies                                  |
| Capital            | 17,646,000,000 JPY   |
| Issued Stock       | 37,203,702 shares (including 93,568 shares of treasury stock)                              |
| Related Company    | [42 consolidated subsidiary]<br>[6 companies accounted for by the equity method]           |
| Employees          | [Consolidated] 7,408, [Non-consolidated] 81  |

## From 1980

Started manufacturing and selling products using ferrofluids (computer seals, vacuum feedthroughs)

Vacuum feedthroughs



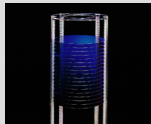
## From 1990

92 - Started manufacturing and selling thermo-electric modules and modules in China  
 98 - Started manufacturing and selling quartz products for the semiconductor industry

Thermo-electric module



Quartz



## From 2000

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 developing ceramic products

Ingot



Single crystal silicon growing furnaces



Machinable ceramics



With a core of ferrofluid expertise

*~Ferrotec's core Technology~*

Establishing operations in other countries

- 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

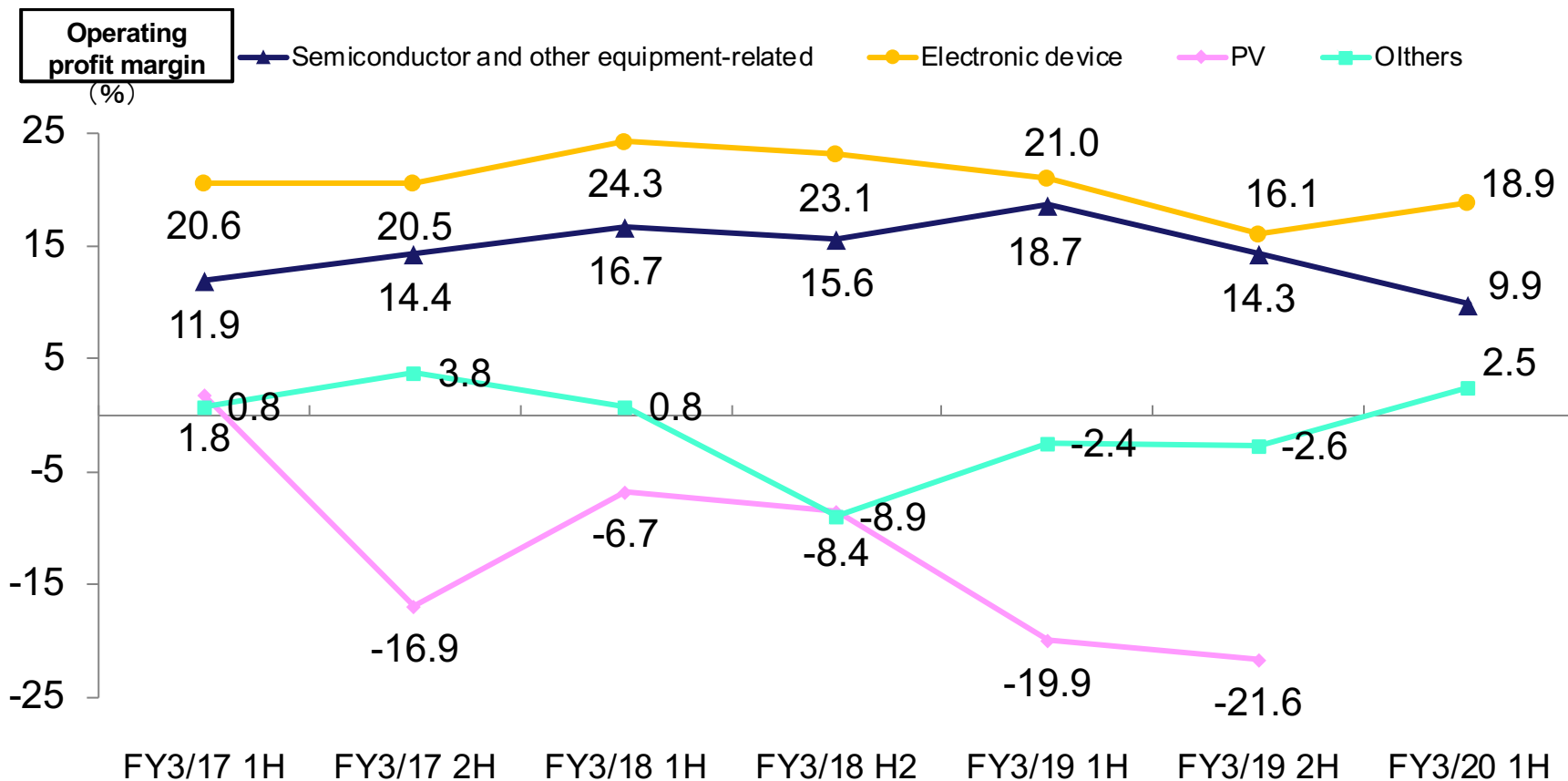
Building a new profit structure

02: Started **contract manufacturing service (CMS) business** at the Shanghai factory, including **silicon wafer processing, machine tool production and other activities**

05: **Increased total assembly** allowed Ferrotec to start the **CMS business** in Hangzhou, China  
Expertise in production technologies extending from component processing to final assembly allowed Ferrotec to start the CMS business



# Operating Margin by Business Segment



# Business Performance -FY3/20 1H Results vs. Plan (Before Revision on Nov. 7)



| ¥ in millions                             | FY3/20 1H Results |                   | FY3/20 1H Plan (revised on Nov. 7) |                   |              |                 |
|---|-------------------|-------------------|------------------------------------|-------------------|--------------|-----------------|
|   | Amount            | Pct. of sales (%) | Amount                             | Pct. of sales (%) | Amount       | Pct. change (%) |
| Semiconductor and other equipment-related | 27,182            | 65.0              | 29,000                             | 64.4              | 1,818        | 6.7             |
| Vacuum feedthroughs                       | 4,031             | 9.6               | 4,000                              | 8.9               | - 31         | - 0.8           |
| Quartz                                    | 8,189             | 19.6              | 8,300                              | 18.4              | 111          | 1.4             |
| Ceramics                                  | 4,603             | 11.0              | 5,000                              | 11.1              | 397          | 8.6             |
| CVD-SiC                                   | 1,218             | 2.9               | 1,300                              | 2.9               | 82           | 6.7             |
| EB-Gun, LED                               | 1,720             | 4.1               | 1,900                              | 4.2               | 180          | 10.5            |
| Semiconductor wafer                       | 4,502             | 10.8              | 4,700                              | 10.4              | 198          | 4.4             |
| Parts cleaning                            | 2,375             | 5.7               | 3,000                              | 6.7               | 625          | 26.3            |
| Quartz crucible                           | 544               | 1.3               | 800                                | 1.8               | 256          | 47.1            |
| Electronic device                         | 6,991             | 16.7              | 7,100                              | 15.8              | 109          | 1.6             |
| Thermo-electric module                    | 6,651             | 15.9              | 6,500                              | 14.4              | - 151        | - 2.3           |
| Ferrofluid, others                        | 340               | 0.8               | 600                                | 1.3               | 260          | 76.5            |
| Others                                    | 7,676             | 18.3              | 8,900                              | 19.8              | 1,224        | 15.9            |
| <b>Total</b>                              | <b>41,849</b>     | <b>100.0</b>      | <b>45,000</b>                      | <b>100.0</b>      | <b>3,151</b> | <b>7.5</b>      |
| Gross income                              | 13,908            | 33.2              | 13,661                             | 30.4              | - 247        | - 1.8           |
| SG&A expenses                             | 10,342            | 24.7              | 9,339                              | 20.8              | - 1,003      | - 9.7           |
| Operating income                          | 3,566             | 8.5               | 4,322                              | 9.6               | 756          | 21.2            |
| Ordinary income                           | 2,472             | 5.9               | 4,000                              | 8.9               | 1,528        | 61.8            |
| Net income                                | 1,540             | 3.7               | 2,300                              | 5.1               | 760          | 49.4            |

\*Net income: Net income attributable to owners of parent

\*Some figures are rounded

# Business Performance -FY3/20 1H vs. 2H Plan (revised on Nov. 7)



| ¥ in millions                             | FY3/20 1H Results |                   | FY3/20 2H Plan |                   |              |                 |
|---|-------------------|-------------------|----------------|-------------------|--------------|-----------------|
|   | Amount            | Pct. of sales (%) | Amount         | Pct. of sales (%) | Amount       | Pct. change (%) |
| Semiconductor and other equipment-related | 27,182            | 65.0              | 27,303         | 63.3              | 121          | 0.4             |
| Vacuum feedthroughs                       | 4,031             | 9.6               | 4,024          | 9.3               | - 7          | - 0.2           |
| Quartz                                    | 8,189             | 19.6              | 7,861          | 18.2              | - 328        | - 4.0           |
| Ceramics                                  | 4,603             | 11.0              | 4,197          | 9.7               | - 406        | - 8.8           |
| CVD-SiC                                   | 1,218             | 2.9               | 882            | 2.0               | - 336        | - 27.6          |
| EB-Gun, LED                               | 1,720             | 4.1               | 2,160          | 5.0               | 440          | 25.6            |
| Semiconductor wafer                       | 4,502             | 10.8              | 3,598          | 8.3               | - 904        | - 20.1          |
| Parts cleaning                            | 2,375             | 5.7               | 4,025          | 9.3               | 1,650        | 69.5            |
| Quartz crucible                           | 544               | 1.3               | 556            | 1.3               | 12           | 2.2             |
| Electronic device                         | 6,991             | 16.7              | 6,309          | 14.6              | - 682        | - 9.8           |
| Thermo-electric module                    | 6,651             | 15.9              | 5,949          | 13.8              | - 702        | - 10.6          |
| Ferrofluid, others                        | 340               | 0.8               | 360            | 0.8               | 20           | 5.9             |
| Others                                    | 7,676             | 18.3              | 9,539          | 22.1              | 1,863        | 24.3            |
| <b>Total</b>                              | <b>41,849</b>     | <b>100.0</b>      | <b>43,151</b>  | <b>100.0</b>      | <b>1,302</b> | <b>3.1</b>      |
| Gross income                              | 13,908            | 33.2              | 13,497         | 31.3              | - 411        | - 3.0           |
| SG&A expenses                             | 10,342            | 24.7              | 10,538         | 24.4              | 196          | 1.9             |
| Operating income                          | 3,566             | 8.5               | 2,934          | 6.8               | - 632        | - 17.7          |
| Ordinary income                           | 2,472             | 5.9               | 2,028          | 4.7               | - 444        | - 18.0          |
| Net income                                | 1,540             | 3.7               | 960            | 2.2               | - 580        | - 37.7          |

# Business Performance -FY3/19 1H vs. FY3/20 1H



| ¥ in millions                             | FY3/19 1H Results |              | FY3/20 1H Results |              |                |              |
|---|-------------------|--------------|-------------------|--------------|----------------|--------------|
|   |                   |              |                   |              |                |              |
| Semiconductor and other equipment-related | 27,580            | 61.0         | 27,182            | 65.0         | - 398          | -1.4         |
| Vacuum feedthroughs                       | 6,704             | 14.8         | 4,031             | 9.6          | - 2,673        | - 39.9       |
| Quartz                                    | 7,300             | 16.1         | 8,189             | 19.6         | 889            | 12.2         |
| Ceramics                                  | 5,302             | 11.7         | 4,603             | 11.0         | - 699          | - 13.2       |
| CVD-SiC                                   | 1,291             | 2.9          | 1,218             | 2.9          | - 73           | - 5.7        |
| EB-Gun, LED                               | 2,458             | 5.4          | 1,720             | 4.1          | - 738          | - 30.0       |
| Semiconductor wafer                       | 2,360             | 5.2          | 4,502             | 10.8         | 2,142          | 90.8         |
| Parts cleaning                            | 1,615             | 3.6          | 2,375             | 5.7          | 760            | 47.1         |
| Quartz crucible                           | 550               | 1.2          | 544               | 1.3          | - 6            | - 1.1        |
| Electronic device                         | 5,879             | 13.0         | 6,991             | 16.7         | 1,112          | 18.9         |
| Thermo-electric module                    | 5,451             | 12.1         | 6,651             | 15.9         | 1,200          | 22.0         |
| Ferrofluid, others                        | 428               | 0.9          | 340               | 0.8          | - 88           | - 20.6       |
| Others                                    | 11,772            | 26.0         | 7,676             | 18.3         | - 4,096        | - 34.8       |
| <b>Total</b>                              | <b>45,231</b>     | <b>100.0</b> | <b>41,849</b>     | <b>100.0</b> | <b>- 3,382</b> | <b>- 7.5</b> |
| Gross income                              | 13,877            | 30.7         | 13,908            | 33.2         | 31             | 0.2          |
| SG&A expenses                             | 8,808             | 19.5         | 10,342            | 24.7         | 1,534          | 17.4         |
| Operating income                          | 5,069             | 11.2         | 3,566             | 8.5          | - 1,503        | - 29.7       |
| Ordinary income                           | 4,866             | 10.8         | 2,472             | 5.9          | - 2,394        | - 49.2       |
| Net income                                | 2,896             | 6.4          | 1,540             | 3.7          | - 1,356        | - 46.8       |

# Business Performance -FY3/19 Results vs. FY3/20 Plan (revised on Nov. 7)



| ¥ in millions                             | FY3/19 Results |                   | FY3/20 Plan (revised on Nov. 7) |                   |                |                 |
|---|----------------|-------------------|---------------------------------|-------------------|----------------|-----------------|
|   | Amount         | Pct. of sales (%) | Amount                          | Pct. of sales (%) | Amount         | Pct. change (%) |
| Semiconductor and other equipment-related | 57,026         | 63.7              | 54,485                          | 64.1              | - 2,541        | - 4.5           |
| Vacuum feedthroughs                       | 11,889         | 13.3              | 8,055                           | 9.5               | - 3,834        | - 32.2          |
| Quartz                                    | 15,590         | 17.4              | 16,050                          | 18.9              | 460            | 3.0             |
| Ceramics                                  | 10,221         | 11.4              | 8,800                           | 10.4              | - 1,421        | - 13.9          |
| CVD-SiC                                   | 2,800          | 3.1               | 2,100                           | 2.5               | - 700          | - 25.0          |
| EB-Gun, LED                               | 4,750          | 5.3               | 3,880                           | 4.6               | - 870          | - 18.3          |
| Semiconductor wafer                       | 7,236          | 8.1               | 8,100                           | 9.5               | 864            | 11.9            |
| Parts cleaning                            | 3,468          | 3.9               | 6,400                           | 7.5               | 2,932          | 84.5            |
| Quartz crucible                           | 1,072          | 0.12              | 1,100                           | 1.3               | 28             | 2.6             |
| Electronic device                         | 12,897         | 14.4              | 13,300                          | 15.6              | 403            | 3.1             |
| Thermo-electric module                    | 11,930         | 13.3              | 12,600                          | 14.8              | 670            | 5.6             |
| Ferrofluid, others                        | 967            | 1.1               | 700                             | 0.8               | - 267          | - 27.6          |
| Others                                    | 19,555         | 21.9              | 17,215                          | 20.3              | - 2,340        | - 12.0          |
| <b>Total</b>                              | <b>89,478</b>  | <b>100.0</b>      | <b>85,000</b>                   | <b>100.0</b>      | <b>- 4,478</b> | <b>- 5.0</b>    |
| Gross income                              | 27,137         | 30.3              | 27,405                          | 32.2              | 268            | 1.0             |
| SG&A expenses                             | 18,354         | 20.5              | 20,880                          | 24.6              | 2,526          | 13.8            |
| Operating income                          | 8,783          | 9.8               | 6,500                           | 7.6               | - 2,283        | - 26.0          |
| Ordinary income                           | 8,060          | 9.0               | 4,500                           | 5.3               | - 3,560        | - 44.2          |
| Net income                                | 2,846          | 3.2               | 2,500                           | 2.9               | - 346          | - 12.2          |
| Capital investment                        | 35,953         | -                 | 40,000                          | -                 | 4,047          | 12.6            |
| Depreciation                              | 5,755          | -                 | 7,000                           | -                 | 1,245          | 21.6            |

# Thank You

