

Toyo Tanso Co., Ltd.

Results for the First Half of the Fiscal Year Ending December 31, 2018

August 2018
Toyo Tanso Co., Ltd.

Part 1. Summary of Results for the First Half of the Fiscal Year Ending December 31, 2018

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1. Key Points of the Results

Point 1

The market environment was favorable overall, including the semiconductor market. Net sales reached a record high in the first half, in part due to the posting of sales (about 3.2 billion yen) for China's high-temperature reactor-pebble-bed modules (HTR-PM).

Point 2

On the profit side, efforts to improve profitability by restoring prices and other measures and strengthening sales of high value-added products were a success.

Point 3

Demand in the semiconductor market picked up even into the second half of FY2018, and we expect sales in the electronics applications sector to increase significantly. We expect other sectors, with some exceptions, to retain first-half levels plus α .

Point 4

We began improving the production process, reinforcing the development system further and improving governance on a global basis to lay the groundwork for growth in future generations. The Company is creating a solid foundation while enhancing quality and productivity.

2. Results for the First Half of the Fiscal Year Ending December 31, 2018 and Forecasts for the Fiscal Year Ending December 31, 2018

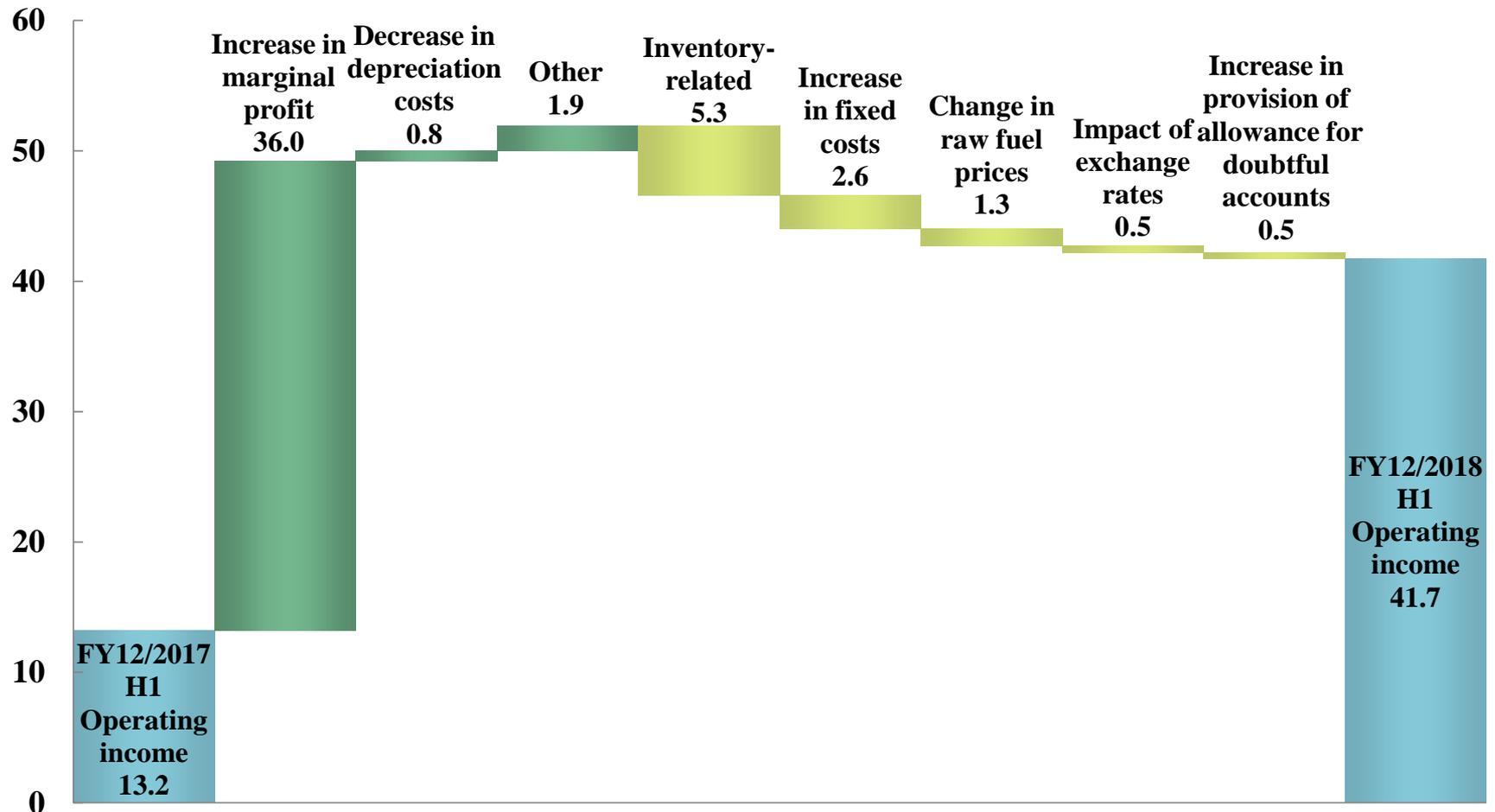
(Unit: Yen, millions)	FYE Dec. 2017		FYE Dec. 2018			
	H1	Full year	H1	Year-on-year change	Full year (forecast)	Year-on-year change
Net sales	16,564	35,240	22,056	+ 5,491 / + 33.2 %	41,000	+ 5,759 / + 16.3 %
Operating income	1,326	3,708	4,179	+ 2,853 / + 215.1 %	6,500	+ 2,791 / + 75.3 %
(Ratio of operating income to net sales)	8.0%	10.5%	18.9%		15.9%	
Ordinary income	1,130	3,719	4,092	+ 2,962 / + 262.2 %	6,400	+ 2,680 / + 72.1 %
(Ratio of ordinary income to net sales)	6.8%	10.6%	18.6%		15.6%	
Profit attributable to owners of parent	1,129	3,020	3,055	+ 1,925 / + 170.5 %	4,700	+ 1,679 / + 55.6 %
Profit attributable to owners of parent per share (basic) (yen)	54.47	145.52	146.11		224.64	
Exchange rate	112.4 yen/\$ 121.6 yen/€ 16.4 yen/CNY	112.2 yen/\$ 126.7 yen/€ 16.6 yen/CNY	108.7 yen/\$ 131.6 yen/€ 17.1 yen/CNY		(H2) 110 yen/\$ 125 yen/€ 17.0 yen/CNY	
ROE		5.2%			7.5%	

3. Factors Affecting Changes in Operating Income

(First half of fiscal year ended December 2017 vs. first half of fiscal year ending December 2018)

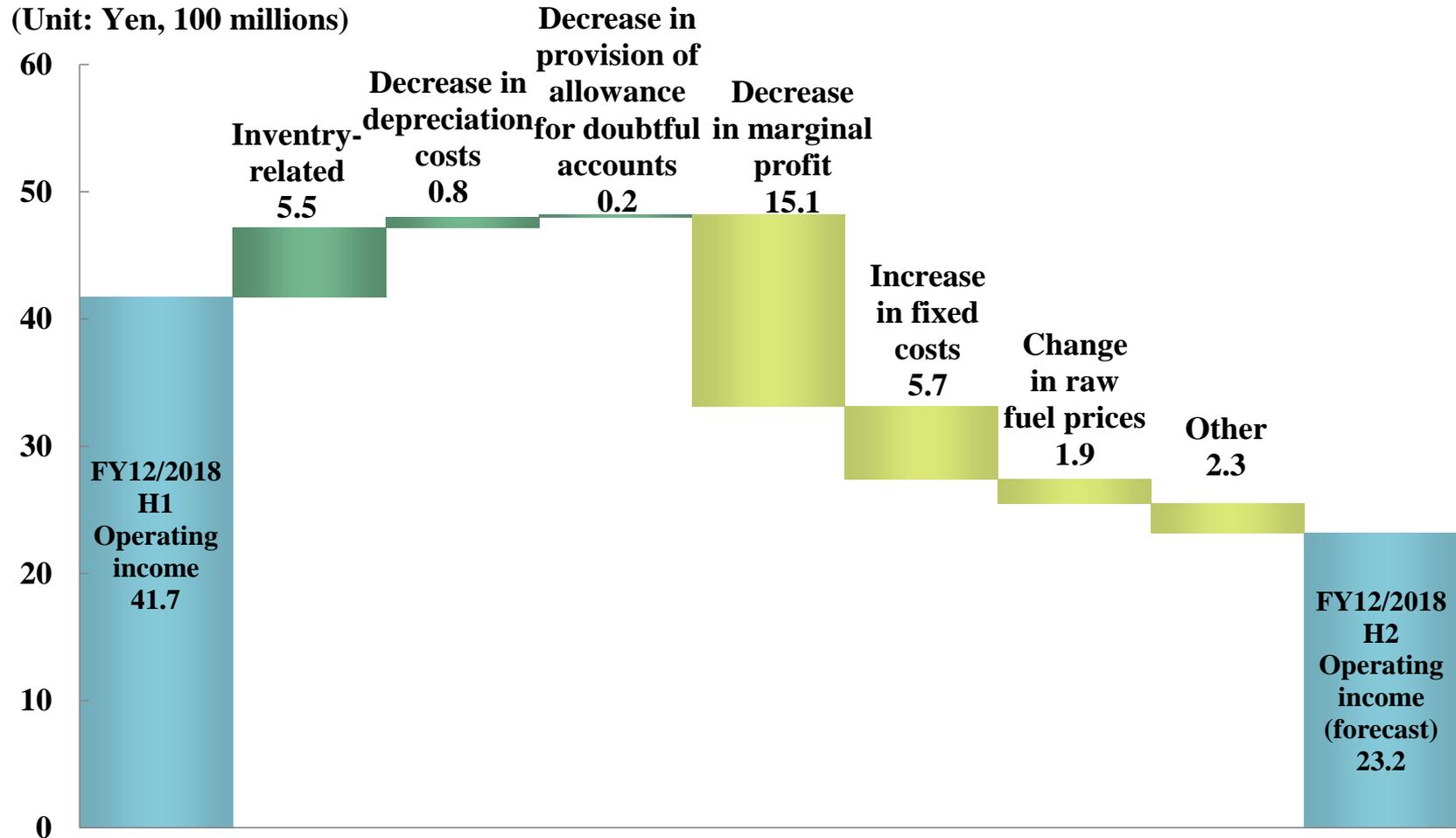
✓ Higher net sales (including China’s high-temperature reactor–pebble-bed modules project), improved profitability and reinforced sales of high value-added products made significant contributions to marginal sales gains.

(Unit: Yen, 100 millions)



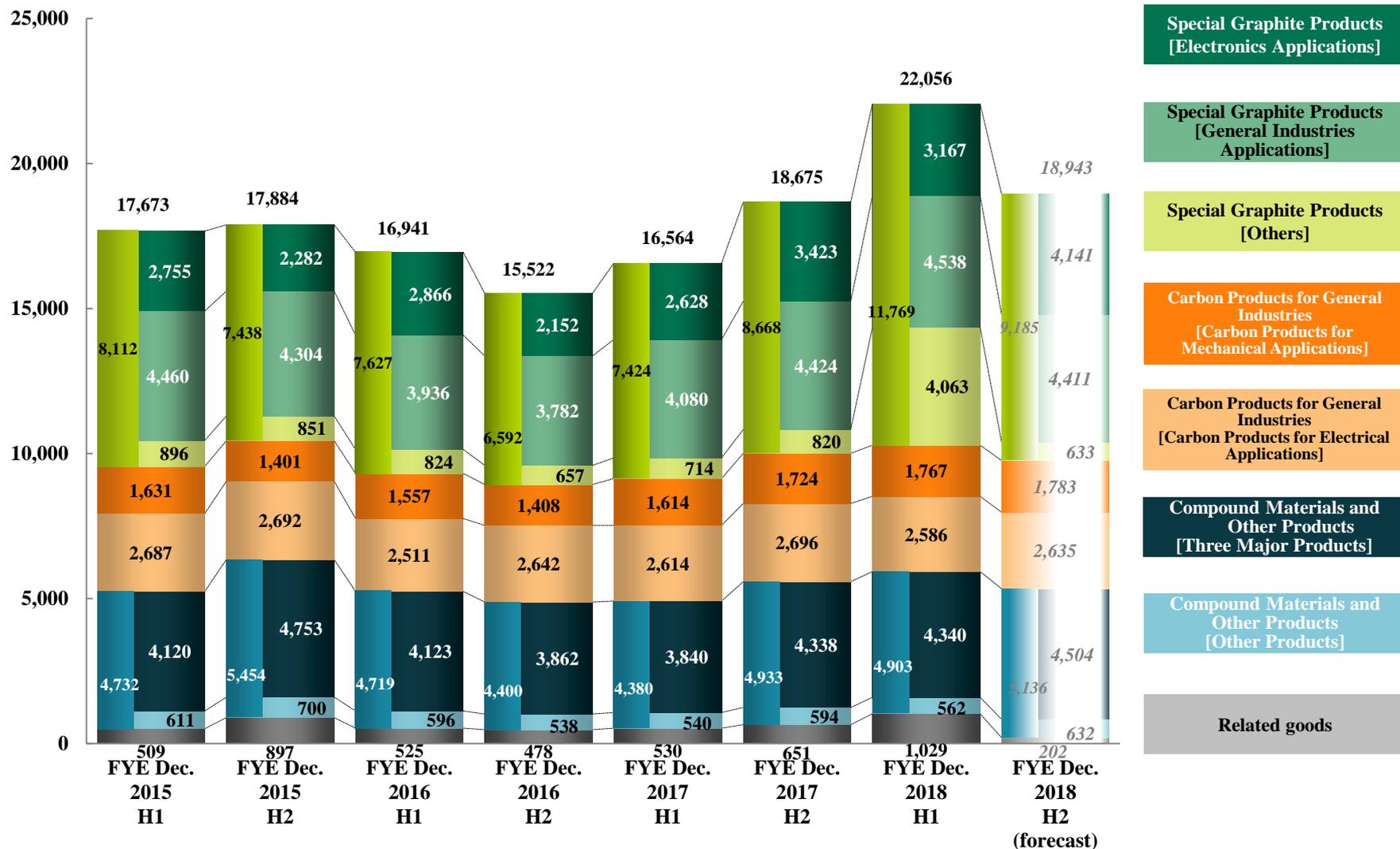
3. Factors Affecting Changes in Operating Income (First half vs. second half of fiscal year ending December 2018)

✓ While there are positive factors resulting from inventory build-ups, the decrease due to the posting of China's high-temperature reactor-pebble-bed modules sales, higher fixed costs (almost half are personnel costs), and raw material and fuel prices were factors.



4. Net Sales by Product and Segment

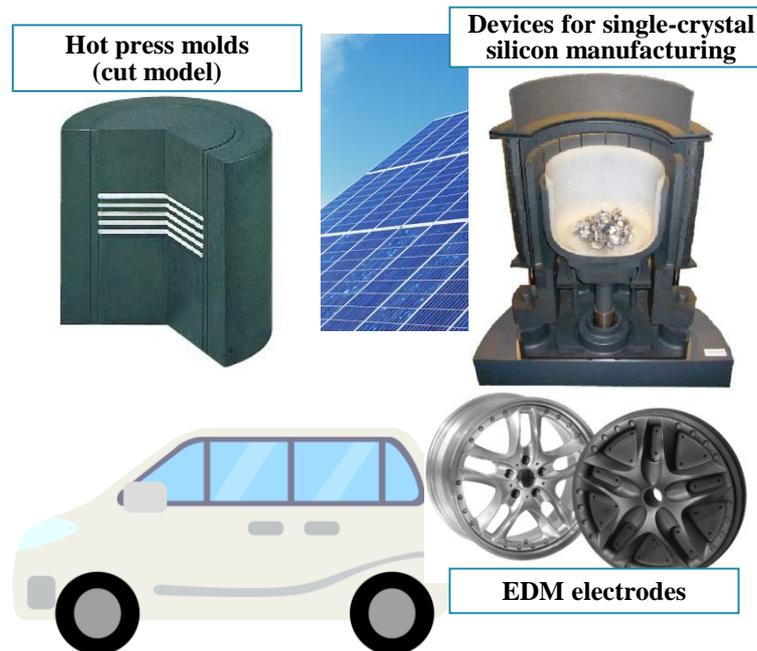
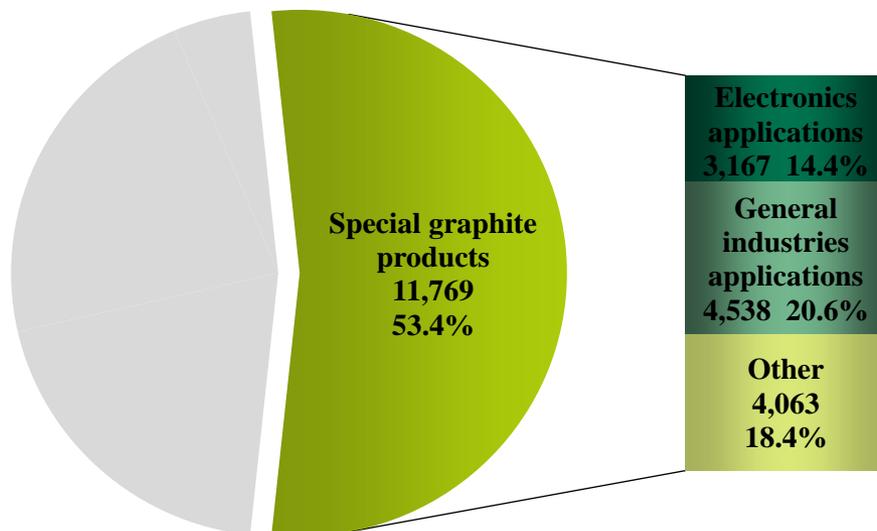
(Unit: Yen, millions)



4. Key Points of Net Sales by Product and Segment (1)

<Special Graphite Products>

(Unit: Yen, millions)



Key points

[Electronics applications]

For the manufacture of single-crystal silicon, inquiries regarding components for within furnaces using large-scale graphite materials increased as crystal manufacturers plan to increase production (300 mm). Supported by strong demand for silicon semiconductors, sales of graphite parts for ion implantation equipment were strong. Currently, replacement demand for C/C composites, for which supply is tight, is increasing.

[General industries applications]

Applications for EDM are solid for aircraft and cars. And applications for continuous casting are also strong for infrastructure construction such as electric wire and for semiconductor production such as IC lead frames.

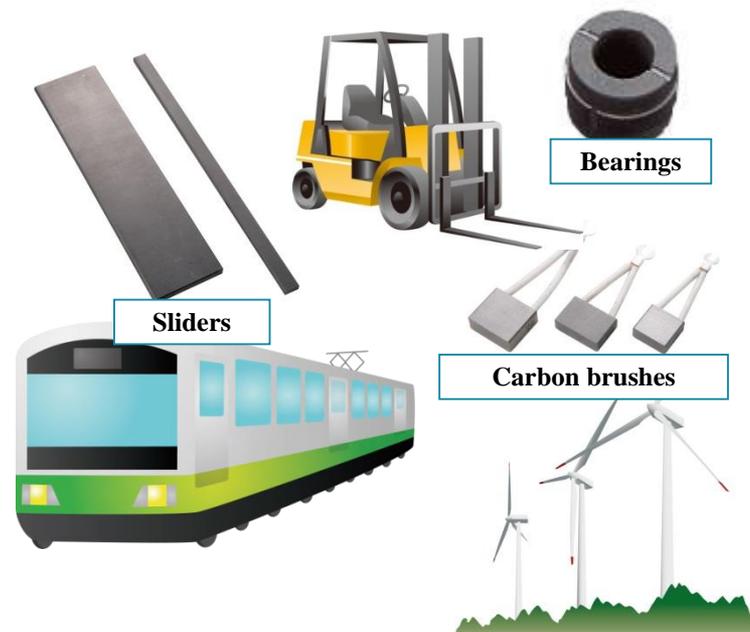
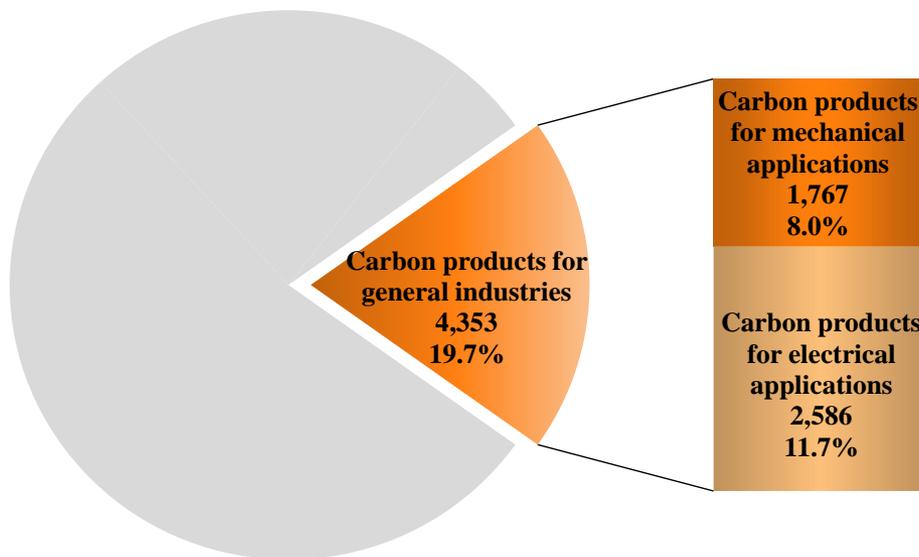
[Other]

Inspections of graphite materials for China's high-temperature reactor-pebble-bed modules were completed in the first quarter of FY2018, and 3,216 million yen in sales was posted.

4. Key Points of Net Sales by Product and Segment (2)

<Carbon Products for General Industries>

(Unit: Yen, millions)



Key points

[Carbon products for mechanical applications]

Sales of shaft bearings and sealing rings were solid for vacuum pumps and compressors used in manufacturing equipment, and strong for air conditioners and hot water heaters due to lifestyles change in China and other emerging countries. Sales of pantograph sliders had been centered on domestic markets up until this point, but are expanding to overseas markets (new transportation systems, China's subway system).

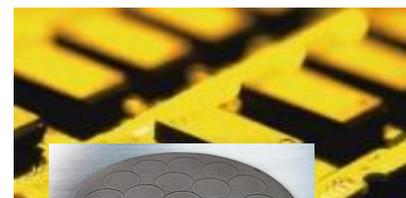
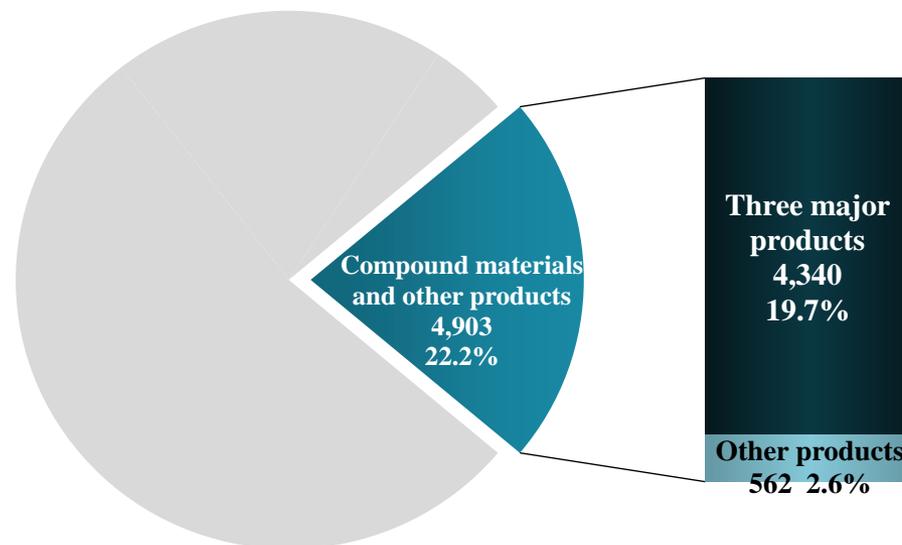
[Carbon products for electrical applications]

Supply/Demand conditions for carbon brushes for small motors are in an adjustment stage and sales are flat. Going forward, we will work to raise revenue in the carbon products for electrical applications sector overall, including carbon brushes for large motors for industrial applications.

4. Key Points of Net Sales by Product and Segment (3)

<Compound Materials and Other Products>

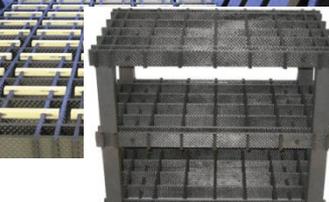
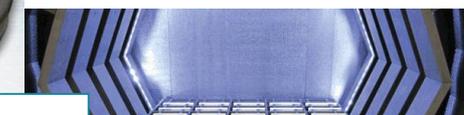
(Unit: Yen, millions)



**MOCVD susceptor
(SiC-coated graphite products)**



Graphite sheet products



**Three-layered trays
(C/C composite products)**



**Bolts and nuts
(C/C composite products)**

Key points

[Three major products]

In SiC coating products, Si-Epi susceptors were strong due to strong Si semiconductor demand. In addition to graphite parts for crystal growth SiC semiconductors and SiC-Epi device applications, demand for next-generation device applications increased rapidly, and LED applications (susceptors for MOCVD devices) were strong.

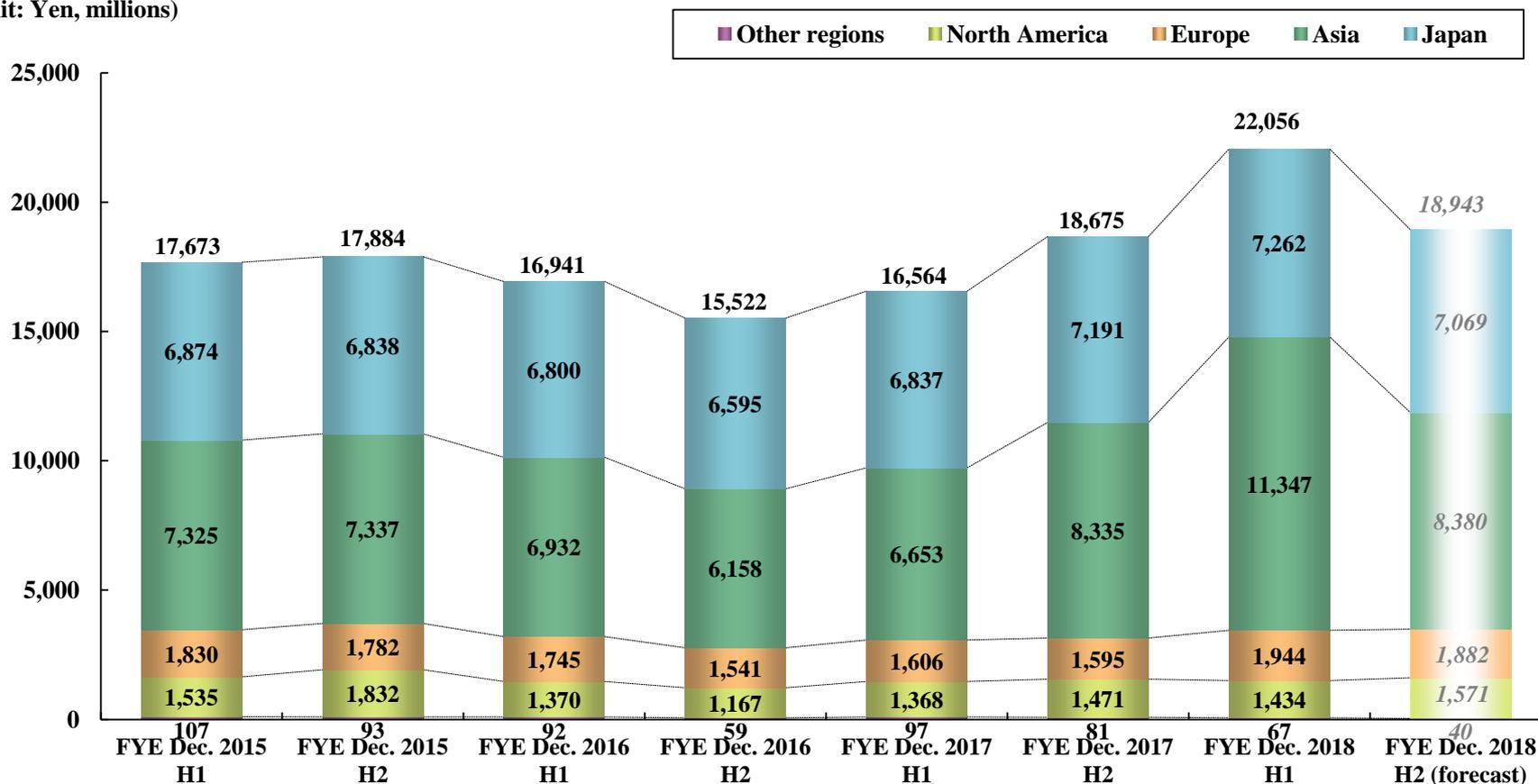
In C/C composite products, components for within furnaces for various wafer manufacturing devices remained strong, and there is a trend for higher sales of applications for heat treatment furnaces that carry out carburizing for parts that must have abrasion resistance and resilience, such as aircraft and auto gears and missions.

In graphite sheet products, seal materials such as gaskets and packing for automotive applications and protective layers for dies and parts for semiconductor production were solid. We are currently strengthening sales for adoption for new demand for electronic devices such as lithium-ion secondary batteries, medical equipment, and packing materials.

5. Sales by Region

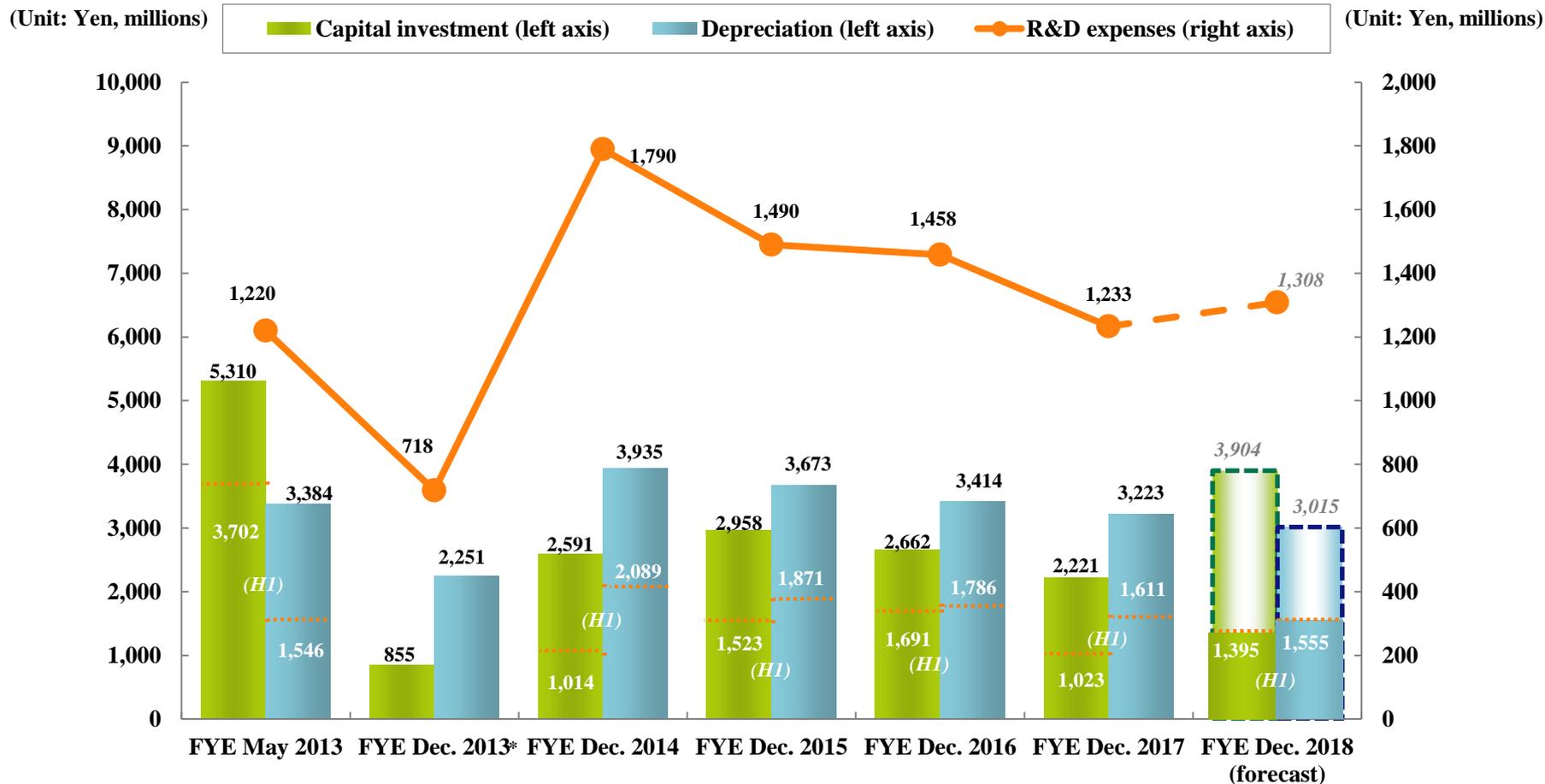
- ✓ Performance was strong in Japan and Asia, driven by strong demand in the semiconductor market.
- ✓ In addition, significant increase in Asia in the first half of 2018 due to the posting of sales for China's high-temperature reactor-pebble-bed modules (HTR-PM)

(Unit: Yen, millions)



6. Capital Investment, Depreciation, and R&D Expenses

✓ Reinforce strategic investments to strengthen and expand existing core businesses

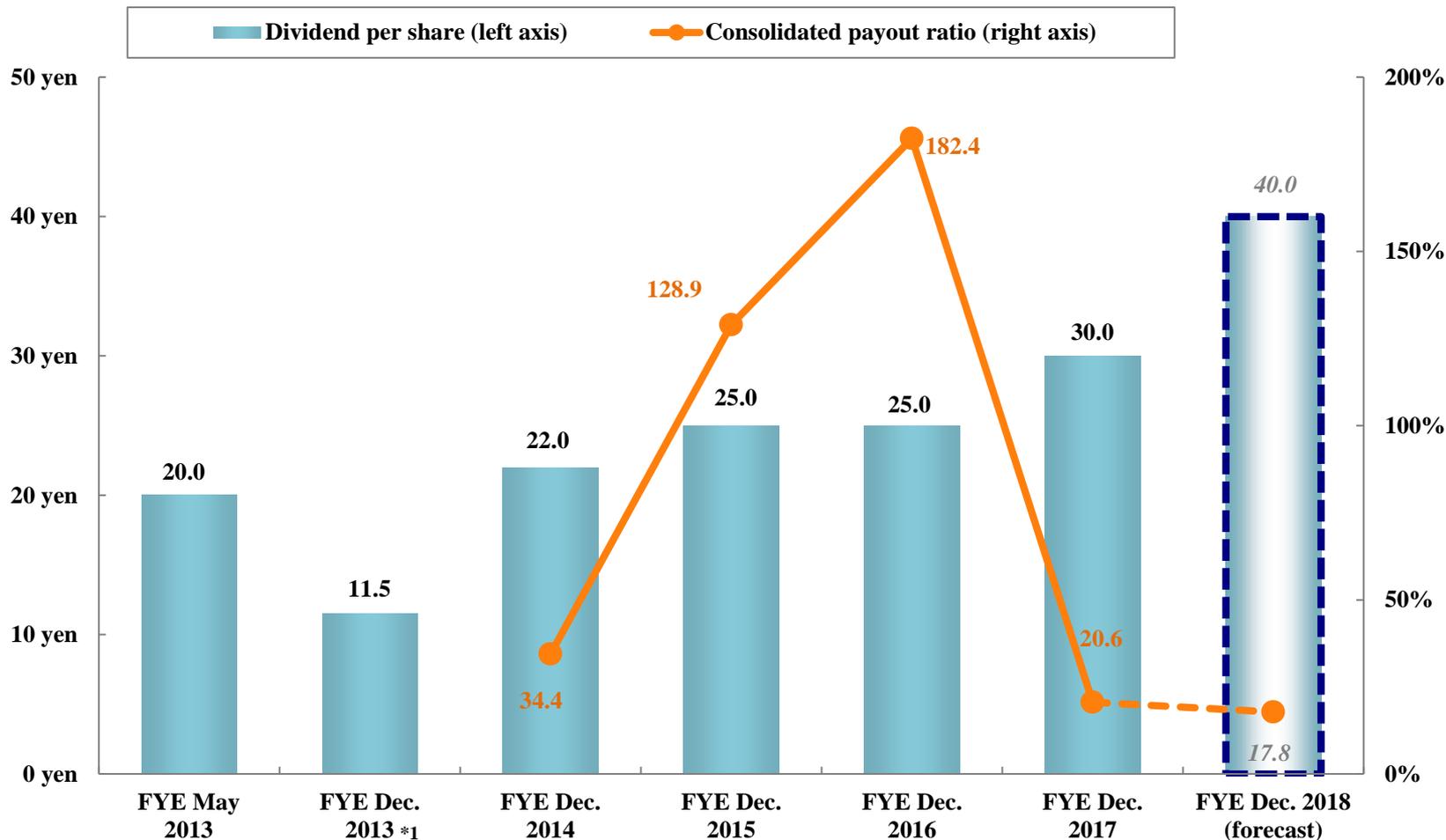


Note: The final day of the fiscal period was changed from May 31 to December 31 as of the fiscal year ended December 31, 2013.

For this reason, the fiscal year ended December 31, 2013 was an irregular seven-month fiscal period (nine months for some subsidiaries).

7. Dividend

- ✓ Strengthen returns to shareholders while considering balance with capital efficiency and strategic investment
- ✓ We plan to increase dividends by 10 yen in this fiscal year.



Note 1. The final day of the fiscal period was changed from May 31 to December 31 as of the fiscal year ended December 31, 2013.

For this reason, the fiscal year ended December 31, 2013 was an irregular seven-month fiscal period (nine months for some subsidiaries).

2. Since profit was negative in the fiscal year ended May 31, 2013 and the fiscal year ended December 31, 2013, information on consolidated payout ratio is excluded here.

8. Consolidated Balance Sheet and Statement of Cash Flows

Consolidated Balance Sheet	(Unit: Yen, millions)			Consolidated Statement of Cash Flows	(Unit: Yen, millions)	
	Jun. 30, 2017	Dec. 31, 2017	Jun. 30, 2018		FYE Dec. 2017 H1	FYE Dec. 2018 H1
Total assets	69,559	74,223	73,358	Cash and cash equivalents at end of period	4,915	5,058
Notes and accounts receivable - trade	12,302	14,255	14,934	Net increase (decrease) in cash and cash equivalents	(1,509)	(1,302)
Inventories	15,728	15,471	13,963	Cash and cash equivalents at beginning of period	6,424	6,361
Property, plant and equipment	24,703	24,642	24,278	Net cash provided by (used in) operating activities	3,236	2,751
Total liabilities and net assets	69,559	74,223	73,358	Net cash provided by (used in) investing activities	(3,797)	(2,847)
Interest-bearing liabilities	1,619	1,194	645	Net cash provided by (used in) financing activities	(925)	(1,057)
Capital stock	7,711	7,810	7,906			
Net assets	57,998	60,986	62,835			
Equity ratio	82.2%	81.0%	84.6%			

Part 2. Direction of Growth

1. Strengthening Production Systems with Next Generation in Mind P. 16
2. Aggressive Expansion to High Value-Added Products and Growth Fields P. 17
3. Strengthening Global Management Governance P. 20

1. Strengthening Production Systems with Next Generation in Mind

- ✓ Plans to gradually install next-generation production facilities incorporating AI and automation at key bases
Technology is currently being reformed and reinforced in line with a long-term vision with productivity, people and the environment in mind
- ✓ Focus on expanding our share in applications and fields, particularly in overseas markets that cannot be fully covered, by improving production technologies at the global level

Europe

- Augment production capacity for carbon for mechanical applications
 - Reinforcement for German subsidiaries' products for automotive parts (investment of about 1.1 billion yen)
- Production systems for high value-added sectors has improved by equipment enhancement also in France and Italy

Germany
France
Italy

East Asia

- Efforts to further strengthen production capacity by introducing latest equipment to plants in China, which generate about 30% of sales

South Korea
China
Thailand
Taiwan
Singapore
Indonesia
Japan

North America

- Construction of supply system at optimal site based on market needs is currently under consideration (USA)
- Processing and sales targeting auto industry in particular (Mexico)

USA
Mexico

Southeast Asia

- Processing within the region is underway in Thailand and Indonesia, and Singapore and Malaysia are also covered

Japan

- Expand capacity for high value-added products
 - Over 20% increase in production capacity for graphite sheet products in anticipation of expansion for EV (completed in June 2018; investment of about 600 million yen)
 - 1.5-fold increase in production capacity for SiC coating graphite products in anticipation of higher demand for LED and semiconductors (including next generation) (Operations to begin in 2020; investment of about 2.5 billion yen)

- ★ Head office (material production, processing, sales)
- Processing and sales base
- Sales base

Special graphite products

Applications

Related markets

Market forecasts, targets, initiatives

EDM electrode (General industries applications)



Mold making

Automotive, semiconductors,
home electronics

- We expect growth primarily in adoption for the finishing process in the manufacture of automotive and home electronics components, and high-functioning materials in precision processing parts.
- We anticipate growth in southeast Asia and Mexico, where auto production is increasing.
- Going forward, we plan to reinforce high-functioning materials, such as graphite materials for micro-processing and copper-impregnated materials compatible with carbide, and expand applications from microscopic products for semiconductors and smartphones to large-scale airplane engine applications.

Continuous casting dies (General industries applications)



Copper

Semiconductors, home electronics,
automotive, architecture

- Graphite dies are primarily used for continuous casting of copper alloys.
- Phosphor-bronze, used in IC lead frames, is primarily manufactured in developed countries, while brass and bronze for building and general industrial applications are primarily manufactured in China and southeast Asia.
- Going forward we will further expand our share of the infrastructure and overseas markets.

Carbon products for general industries

Applications	Related markets
Market forecasts, targets, initiatives	

Shaft bearings, seal rings, vanes, pantograph sliders

(Carbon Products for mechanical applications)



Production equipment, transport machinery and appliances	Railways, new transportation systems
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Shaft bearings, seal rings, vanes

- We will meet growing demand for vacuum pumps for production facilities in Japan and overseas and applications for compressors, air conditioners, and water heaters.
- Reinforce applications for automotive components at German subsidiary

Pantograph sliders

- In Japan, we will expand sales for use by private railways and new transportation systems in metropolitan areas, in addition to JR. Overseas, we expect pantograph sliders to be increasingly adopted as railways, subways, and new transportation systems spread in China and elsewhere.
- Anticipating a global expansion, we plan to invest in the installation of impregnation equipment and HIP furnaces.
- Going forward, we will begin developing materials for use with high-speed railways, such as shinkansen, and developing products that meet European standards.

Industrial brushes

(Carbon products for electrical applications)



Motors	Power generation, railways, iron making, paper manufacturing
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- We are expanding both in domestic markets and overseas to expand the share of carbon brushes for large motors for industrial applications.
- Besides large-scale applications, we will reformulate our global strategy and strive to raise revenue, including for small-scale motors for power tools and vacuum cleaners.
- We aim for long-term ongoing demand by entering the infrastructure market, such as railway applications and natural energy.

Compound materials and Other products

Applications

Related markets

Market forecasts, targets, initiatives

Susceptors (SiC-coated graphite products)



For semiconductor production equipment

Semiconductors, LED

- Demand for Si semiconductors, SiC semiconductors, and SiC-coated graphite products for the LED field has spiked as the use of sensors accompanied by advancement in the IoT, utilization of big data, and use of electronic systems for cars has become popular.
- In addition to deciding on the first round of domestic investment (2.5 billion yen), we are considering capital investment at our overseas production sites. We are planning a global expansion that starts in Japan and extends to device manufacturers and end users in Asia and America.

Gasket and protective layer

(Graphite sheets)



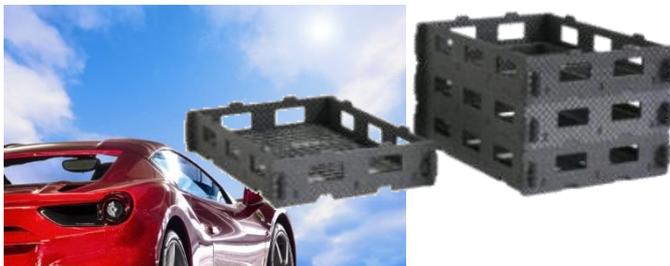
Motors

Automotive, semiconductors

- We ensured overwhelming dominance by using our unique technology to achieve high grades of purity with automotive applications.
- Utilizing our advanced purification technology, we began operating a new plant with the aim of expanding to high value-added applications such as semiconductors and electrochemical applications.

Components for within industrial furnaces

(C/C composite products)



Heat-treating furnace, vacuum furnace

Automotive, aircraft

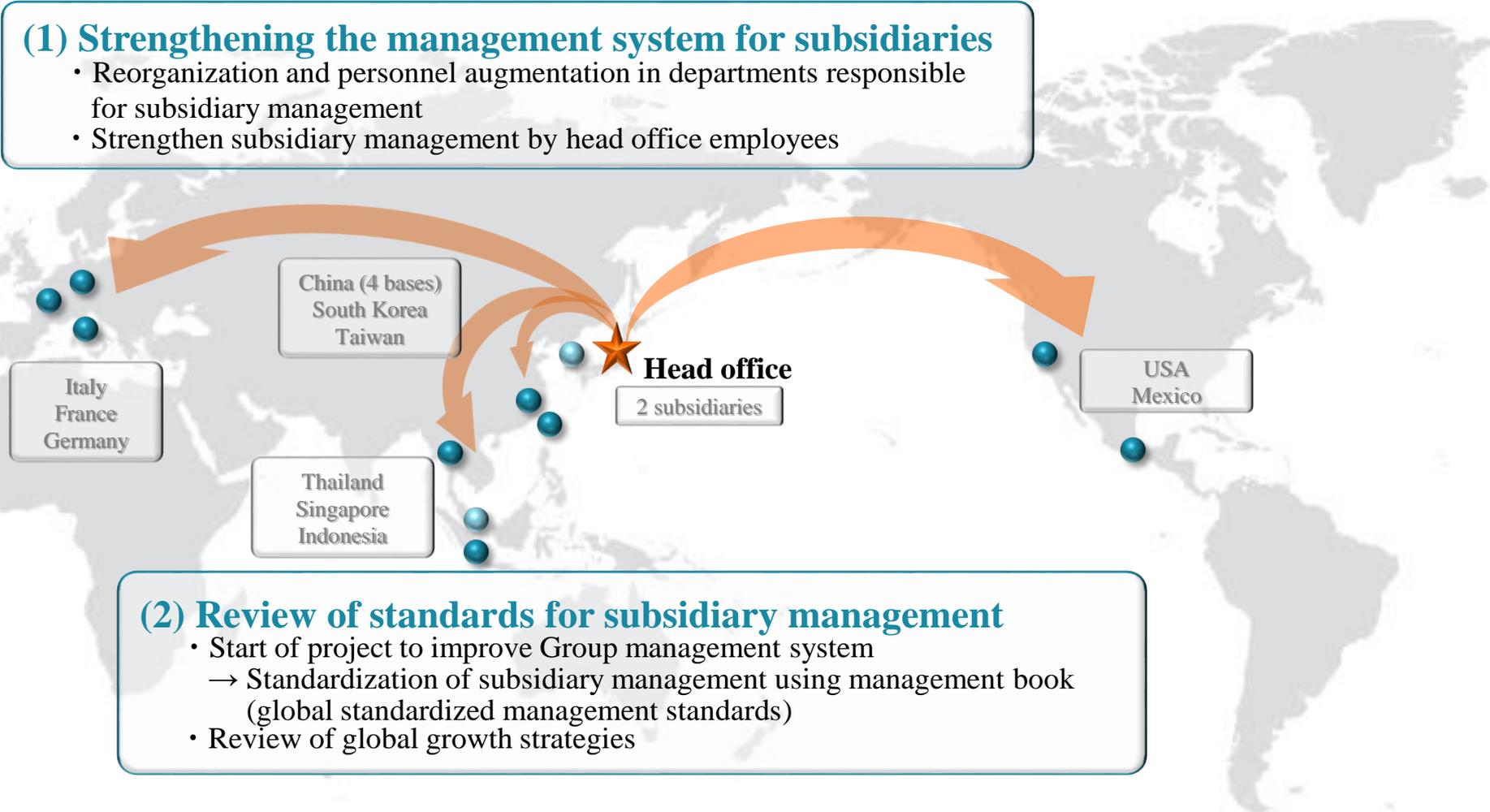
- In heat treatment applications, replacement demand for C/C composite products is increasing due to high praise for higher ability for production process automation and energy conservation, compared to previous metal products.
- We will expand globally, including Europe, the US, China, southeast Asia, and Mexico, where the auto industry is particularly robust, and also focus on heat treatment applications for aircraft parts.

3. Strengthening Global Management Governance

- ✓ We will build a more solid management system through unified supervision of management governance for our 16 bases around the world at head office.

(1) Strengthening the management system for subsidiaries

- Reorganization and personnel augmentation in departments responsible for subsidiary management
- Strengthen subsidiary management by head office employees



(2) Review of standards for subsidiary management

- Start of project to improve Group management system
→ Standardization of subsidiary management using management book (global standardized management standards)
- Review of global growth strategies

TOYO TANSO

Inspiration for Innovation



Note: This presentation contains “forward-looking statements” and forecasts of business results. These statements are not historical facts but instead represent the Company’s beliefs regarding future events, many of which, by their nature, are inherently uncertain and beyond the Company’s control. It is possible that the Company’s actual results may differ, possibly materially, from the anticipated results and financial condition indicated in these forward-looking statements.

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