

Ferrotec Holdings Corporation

6890

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Summary

Leading manufacturer of quartz, silicon, ceramic, and other inorganic parts and products, core customers are major semiconductor manufacturing equipment firms

Ferrotec Holdings <6890> manufactures vacuum seals, quartz products, ceramic products, CVD-SiC, ferrofluids, thermo-electric modules, silicon wafers, solar-cell silicon, and other various products, equipment, parts, and materials. It also handles cleaning and consignment processing and assembly of various parts and products for semiconductor manufacturing equipment firms. Primary customers thus are global major semiconductor manufacturing equipment firms. Ferrotec plans large-scale capital investments from 2018 as well. We think its business trends should be closely watched along with the global semiconductor market over the next few years.

1. 1H FY3/18 results

In 1H FY3/18, Ferrotec reported ¥42,983mn in net sales (+14.2% year on year (YoY)), ¥4,498mn in operating profit (+33.2%), ¥3,857mn in ordinary profit (+83.0%), and ¥2,299mn in net income attributable to owners of parent (+122.5%). It posted sharply higher sales and earnings, despite a slump in photovoltaic-related business, thanks to steep sales and profit increases in the mainstay semiconductor and other equipment-related business spurred by vibrant conditions in the global semiconductor market as well as upbeat trends in others business that handles cleaning and wafer processing.

2. FY3/18 forecast

Ferrotec raised FY3/18 forecast in light of healthy 1H results and currently projects ¥85,000mn in net sales (+15.1% YoY; vs. ¥83,000mn in initial forecast), ¥8,500mn in operating profit (+49.7%; vs. ¥7,200mn), ¥7,500mn in ordinary profit (+32.1%; vs. ¥6,400mn), and ¥4,400mn in net income attributable to owners of parent (+35.1%; vs. ¥4,000mn). Device manufacturers are actively investing and manufacturing equipment firms are enjoying robust business too amid anticipated continuation of semiconductor shortages globally for the time being. Ferrotec, which supplies products and services to semiconductor manufacturing equipment firms as its main customers, hence is likely to continue realizing vibrant results. We believe it is capable of attaining FY3/18 forecast and might even raise targets further depending on subsequent trends, given these conditions.

3. Currently implementing an aggressive expansion plan

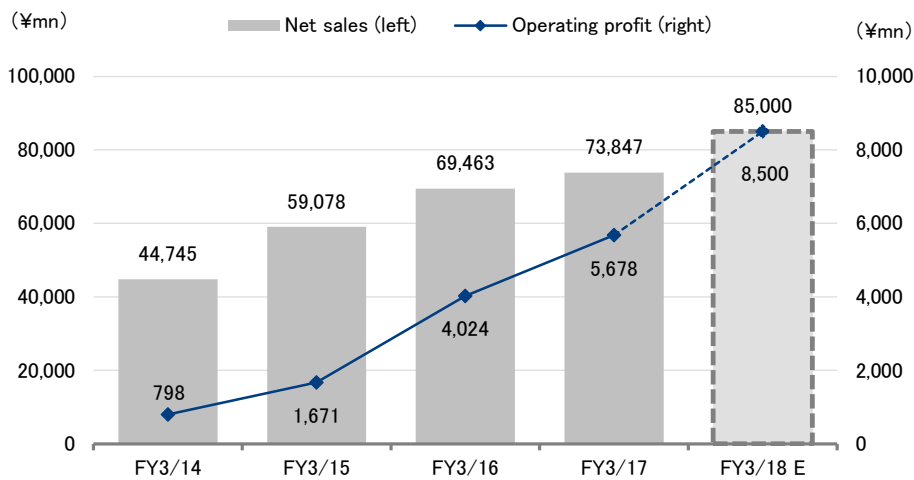
Ferrotec plans to sharply increase production facilities for major products over the next few years and budgets around ¥70-80bn in capital investments over four years. It expects to obtain some of the necessary funds through assistance from Chinese regional governments. Ferrotec's FY3/19 goals are ¥100bn in consolidated net sales and operating margin in the 10% range. Management also expects higher sales and profits and continued growth thereafter in line with aggressive capital investments.

Summary

Key Points

- Leading manufacturer of quartz, ceramic, and other inorganic products; mainly supplies the semiconductor industry
- Expects a 49.7% YoY increase in FY3/18 operating profit with benefits from the vibrant semiconductor industry
- Budgets up to ¥70-80bn in capital investments over the next few years

Results trends



Source: Prepared by FISCO from the Company's financial results

Company profile

Manufactures a wide range of parts and products mainly for semiconductor manufacturing equipment firms

Ferrotec is a pure holding company with 33 consolidated subsidiaries and 6 equity-method subsidiary and affiliates and 6,536 group employees as of end-September 2017. It was originally established as US-based Ferrofluidics Corporation's Japanese entity (former Nippon Ferrofluidics Co., Ltd.) in 1980, but later separated from the parent company and has pursued an independent path.

It manufactures vacuum seals, quartz products, ceramic products, CVD-SiC, ferrofluids, thermo-electric modules, silicon wafers, solar-cell silicon, and other various products that are mainly made from inorganic materials, equipment, parts, and materials. It also handles cleaning and consignment processing and assembly of various parts and products for semiconductor manufacturing equipment firms. Primary customers thus are global major semiconductor manufacturing equipment firms.

■ Business overview

Has wide-ranging business content (products), but semiconductor and other equipment-related business is the main area

1. Business segments

Ferrotec has broad business content because of its proprietary development of many products and acquisitions of numerous companies as subsidiaries through M&A activity. Its business segments are semiconductor and other equipment-related business (43.7% of overall sales in FY3/17), electronic devices business (17.1%), photovoltaic-related business (25.4%), and others business (13.8%).

Additionally, these segments consist of the sub-segments described below.

Regional sales ratios (using FY3/17 values) were Japan at 22.4%, Asia including China at 50.8%, and the US and Europe at 26.8%.

2. Semiconductor and other equipment-related

The semiconductor and other equipment-related business covers vacuum seals, quartz products, ceramics, CVD-SiC, electron-beam guns and LED deposition equipment, and semiconductor wafer processing sub-segments.

(1) Vacuum seals (11.0% of overall sales in FY3/17)

Vacuum seals function as a rotary manipulator into a vacuum environment using ferrofluid and are utilized in semiconductor, FPD, LED, solar cell, and other manufacturing processes. These are Ferrotec's core products used mainly in semiconductor wafer etching and deposition processes and in the rotary mechanism of FPD panel conveyance robots. They are capable of precisely transferring required power for processing while keeping sealed space separated from the outside.

Sales shares by industries (FY3/17) are semiconductors at 28%, LEDs at 6%, FPDs at 30%, solar cells at 11% and others (mainly consignment business, etc.) at 25%.

(2) Quartz products (11.2%)

Quartz products are silica glass with very high purity that can withstand heat and chemical changes. Ferrotec's products are primarily utilized in semiconductor manufacturing for the wafer deposition and dispersion process and as jigs and consumables in conveyance and cleaning processes. Quartz products serve in an important capacity in semiconductor manufacturing processes that are becoming more precise and requiring higher purity levels.

Sales shares by industries (FY3/17) are OEM mainly to major semiconductor manufacturers at 68%, end users (device manufacturers) at 23%, LEDs at 1%, photovoltaic at 2%, LCDs at 1%, and others at 4%.

Business overview

(3) Ceramics (8.5%)

Ferrotec supplies a variety of ceramic parts with high strength and high purity. Its offerings can be categorized as fine ceramics (FC) with robust strength, high purity, and excellent heat resistance and machinable ceramics (MC) that can undergo advanced machine processing. The former are mainly used as parts in semiconductor manufacturing equipment. In particular, they are vital to the dry-etching method (plasma etchers). The latter are used as parts and jigs in a variety of processing. Demand is growing for use as jigs in the semiconductor inspection process. Usage in advanced medical equipment that leverages precision processing features is also growing in recent years.

Sales shares by major products are MC semiconductor inspection at 19%, MC domestic general at 6%, MC exports at 10%, FC semiconductor equipment at 19%, FC exports at 27%, and others at 19%.

(4) CVD-SiC (2.6%)

Ferrotec realizes very high purity, excellent heat resistance, high wear resistance, and erosion resistance in silicon carbide (SiC) products that apply a proprietary CVD production method. It is broadly utilized in jigs for use in high temperatures, including wafer boats and tubes and dummy wafers (silicon wafer replacements). Sales shares by regions are China at 40%, Japan at 35%, Taiwan at 7%, North America at 17%, and Europe at 1%.

(5) Electron beam guns and LED deposition equipment (5.2%)

Ferrotec supplies electron-beam (EB) guns and a wide range of US-made Temescal mount systems (precision deposition equipment), which are outfitted with an advanced EB guns and high-pressure power supply as core components, from smaller production types for universities and research centers to large product models with high throughput. Many customers employ these systems as a global standard for compound semiconductors that are likely to be adopted in next-generation communications and other areas. Steady advances are proceeding in LED and communications chip process areas.

(6) Semiconductor wafer processing (5.2%)

Ferrotec handles integrated production from mono-crystal ingots to wafer processing for small-diameter silicon wafers (six inches or less) for the semiconductor industry. It has built global supply operations mainly for volume-output products used by bipolar ICs, discrete circuit applications, and MEMS. It also started production of eight-inch wafers in 2017.

3. Electronic device

The electronic devices business consists of thermo-electric modules and ferrofluids and others.

(1) Thermo-electric modules (15.9%)

Thermo-electric modules are plate-like semiconductor cooling devices (Peltier devices) that utilize the effect of heat transferring from one metal to the other when electric current flows through a junction between two types of metal. These modules are compact and lightweight and do not require freons. Common uses are temperature-control sheets in automobiles and cooling chillers, optical communications, biochemical, air-conditioners, and dryers and other consumer electronics products.

Sales shares by industry are automotive at 49%, semiconductors at 7%, photology at 4%, biochemical at 8%, communications equipment at 8%, scientific areas at 3%, consumer at 8%, power device substrates at 6%, and others at 7%.

Business overview

(2) Ferrofluids and others (1.2%)

Ferrofluids are a functional liquid material that is magnetically affected by external magnetic fields and is attracted to magnets. The NASA space program in the 1960s developed ferrofluids for the purpose of transporting fuel in a zero-gravity environment. Today they are utilized in speakers, actuators, sensors, recycling separation, and vacuum seals (which are one of Ferrotec's main products).

Other businesses include power semiconductor substrates. The latter are heat-dissipation and insulation substrates that apply thermo-electric module manufacturing technologies and bond a copper circuit board to alumina and aluminum nitride ceramics through a eutectic reaction. These products contribute to downsizing and energy savings in trains, electric-drive vehicles, air-conditioners, and servers and are likely to attract growing demand.

4. Photovoltaic-related

The photovoltaic-related business consists of quartz crucible, solar-cell silicon, silicon crystal manufacturing equipment, and solar cells and other products.

(1) Quartz crucibles (2.8%)

Ferrotec's quartz crucibles use raw materials with the same level of high purity as quartz products vital to the semiconductor manufacturing process and serve as containers for mono-crystal silicon raw material. Main customers are manufacturers of mono-crystal silicon for semiconductor and photovoltaic applications.

(2) Solar-cell silicon (14.4%)

Ferrotec produces crystallized ingots by melting raw-material silicon at a high temperature and then gradually cooling it. Besides mono-crystal ingots with excellent power-generation performance thanks to well-ordered atomic arrangement, Ferrotec also makes multi-crystal ingots economically and with robust production efficiency using its own production facilities.

It produces thinly sliced mono-crystal wafers by cutting these ingots with a fixed abrasive grain wire saw. Ferrotec's wafers correspond to thinning wires and are utilized in modules with high power conversion.

(3) Silicon crystal manufacturing equipment (1.3%)

Mono-crystal drawing equipment is manufacturing equipment for mono-crystal silicon ingots utilizing Ferrotec's core technology cultivated in the semiconductor process. The ingot shape is formed while drawing silicon melt, which is obtained by melting raw-material polysilicon in a vacuum electric furnace. This equipment incorporates many products based on Ferrotec technologies, including vacuum seals, carbon heaters (for melting the raw material at high temperatures), and receiving crucibles.

Ferrotec also manufactures multi-crystal manufacturing equipment that makes ingots with robust productivity. Its manufacturing equipment supports high-volume filling of polycrystalline materials and recycled materials and performs well in multi-crystal ingot quality and productivity. These features contribute to high conversion efficiency for multi-crystal modules.

(4) Solar cells and others (7.0%)

Solar cells combine a photovoltaic wafer with an electrode that uses two types of electrode (p-type, n-type) semiconductors with different electrical properties. Ferrotec manufactures mono-crystal and multi-crystal cells and sells these cells to photovoltaic product firms.

5. Others

This business includes various consignment tasks and cleaning procedures for semiconductor manufacturing equipment parts. Ferrotec intends to focus on these areas.

Business performance

Operating profit rose 33.2% YoY on vibrant demand from the semiconductor industry

● Review of 1H FY3/18 results

In 1H FY3/18, Ferrotec reported ¥42,983mn in net sales (+14.2% YoY), ¥4,498mn in operating profit (+33.2%), ¥3,857mn in ordinary profit (+83.0%), and ¥2,299mn in net income attributable to owners of parent (+122.5%).

Sales climbed in semiconductor and other equipment-related business, the main segment, on strong inquiries for products from the semiconductor manufacturing equipment industry and high facility operation levels at device manufacturers. Overall gross margin improved considerably to 28.6% (vs. 26.8% a year earlier), and gross profit increased 21.8% to ¥12,293mn. SG&A expenses were up 16.0%. Operating profit moved sharply higher with the gain in gross profit. Ordinary profit had an even higher growth rate due to decline in forex losses (¥312mn) from the year-ago level (¥1,122mn). Net income attributable to owners of parent grew even faster with help from non-recurrence of an extraordinary loss (¥288mn fixed-asset disposal loss) from the previous year.

Ferrotec booked large capital investments totaling ¥4,702mn (+49.3% YoY), mainly because of capital investments at the Chinese subsidiary, while depreciation costs dropped 0.7% to ¥1,916mn.

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Business performance

1H FY3/18 results

(¥mn)

	FY3/17 1H		FY3/18 1H			
	Amount	% of sales	Amount	% of sales	Change	% change
Net sales	37,650	100.0%	42,983	100.0%	5,333	14.2%
Gross profit	10,094	26.8%	12,293	28.6%	2,199	21.8%
SG&A expenses	6,717	17.8%	7,795	18.1%	1,078	16.0%
Operating profit	3,376	9.0%	4,498	10.5%	1,122	33.2%
Ordinary profit	2,107	5.6%	3,857	9.0%	1,750	83.0%
Net income attributable to owners of parent	1,033	2.7%	2,299	5.4%	1,266	122.5%
Capital investment	3,149	-	4,702	-	1,553	49.3%
Depreciation	1,930	-	1,916	-	-14	-0.7%

Source: Prepared by FISCO from the Company's financial results

Segment results

(¥mn)

	FY3/17 1H		FY3/18 1H			
	Amount	% of sales	Amount	% of sales	Change	% change
Net sales	37,650	100.0%	42,983	100.0%	5,333	14.2%
Semiconductor and other equipment-related business	16,049	42.6%	20,617	48.0%	4,568	28.5%
Vacuum seals	3,966	10.5%	5,622	13.1%	1,656	41.8%
Quartz products	4,105	10.9%	5,153	12.0%	1,048	25.5%
Ceramics	2,993	7.9%	4,087	9.5%	1,094	36.6%
CVD-SiC	1,212	3.2%	1,643	3.8%	431	35.6%
EB guns and LED deposition systems	1,868	5.0%	1,674	3.9%	-194	-10.4%
Wafer processing	1,906	5.1%	2,438	5.7%	532	27.9%
Electronic devices business	6,130	16.3%	6,305	14.7%	175	2.9%
Thermo-electric modules	5,737	15.2%	5,853	13.6%	116	2.0%
Ferrofluids and others	393	1.0%	452	1.1%	59	15.0%
Photovoltaic-related business	10,644	28.3%	9,971	23.2%	-673	-6.3%
Quartz crucibles	1,331	3.5%	811	1.9%	-520	-39.1%
Solar-cell silicon	5,482	14.6%	6,078	14.1%	596	10.9%
Silicon crystal manufacturing equipment	494	1.3%	77	0.2%	-417	-84.4%
Solar cells and others	3,337	8.9%	3,006	7.0%	-331	-9.9%
Others business	4,825	12.8%	6,089	14.2%	1,264	26.2%
Operating profit	3,376	9.0%	4,498	10.5%	1,122	33.2%
Semiconductor and other equipment-related business	1,905	-	3,515	-	1,610	84.5%
Electronic devices business	1,263	-	1,530	-	267	21.1%
Photovoltaic-related business	193	-	-668	-	-861	-
Others business	37	-	139	-	102	275.7%
Adjustment value	-22	-	-18	-	4	-

Source: Prepared by FISCO from the Company's results briefing materials

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Business performance

Balance sheet

	(¥mn)		
	FY3/17	FY3/18 1H	Change
Cash and deposit	14,778	27,166	12,388
Note and accounts receivable	17,656	19,943	2,287
Inventory	13,882	14,753	871
Total current assets	51,245	66,493	15,248
Tangible fixed assets	34,294	37,947	3,653
Building	8,583	9,492	909
Equipment and machinery	8,454	8,864	410
Land	1,280	1,586	306
Intangible fixed assets	2,060	1,896	-164
Goodwill	769	659	-110
Investments and other assets	4,499	4,149	-350
Total fixed assets	40,855	43,994	3,139
Total assets	92,100	110,487	18,387
Notes and accounts payable	13,926	15,519	1,593
Shot-term debt	5,002	5,400	398
Current portion of long-term borrowings + Bonds	4,538	5,878	1,340
Total current liabilities	32,108	37,788	5,680
Bonds	-	2,712	2,712
Long-term debt	12,625	12,153	-472
Total fixed liabilities	20,290	22,889	2,599
Total liabilities	52,399	60,678	8,279
Net assets	39,701	49,809	10,108

Source: Prepared by FISCO from the Company's results briefing materials

Cash flow statement

	(¥mn)	
	FY3/17 1H	FY3/18 1H
Cash flow from operating activities	2,915	4,794
Income before income taxes	1,821	3,802
Depreciation	1,930	1,916
Changes in notes and accounts receivable (-: increase)	-2,662	-2,665
Changes in inventories (-: increase)	-372	-1,053
Changes in accounts payable (-: decrease)	2,434	1,902
Cash flow from investing activities	-2,779	-4,640
Cash flow from financing activities	3,689	12,311
Changes in short-term borrowing and long-term debt	4,068	778
Proceeds from the issuance of bonds	-	3,245
Proceeds from the issuance of stock	-	8,659
Payments for dividend	-307	-370
Changes in cash and cash equivalents	2,526	12,327
Cash and cash equivalents, end of year	12,564	27,166

Source: Prepared by FISCO from the Company's financial results

Business outlook

Healthy demand led by the semiconductor manufacturing equipment industry, also a possibility of additional upward revisions

● FY3/18 forecast

Ferrotec raised FY3/18 forecast in light of healthy 1H results and currently projects ¥85,000mn in net sales (+15.1% YoY; vs. ¥83,000mn in initial forecast), ¥8,500mn in operating profit (+49.7%; vs. ¥7,200mn), ¥7,500mn in ordinary profit (+32.1%; vs. ¥6,400mn), and ¥4,400mn in net income attributable to owners of parent (+35.1%; vs. ¥4,000mn). Device manufacturers are actively investing and production equipment firms are enjoying robust business too amid anticipated continuation of semiconductor shortages globally for the time being. Ferrotec, which supplies products and services to semiconductor manufacturing equipment firms as its main customers, hence is likely to continue realizing vibrant results. We believe it is capable of attaining FY3/18 forecast and might even raise targets further depending on subsequent trends, given these conditions.

Expecting ¥10,000mn in capital investments and ¥4,000mn in depreciation costs

FY3/18 forecast

	FY3/17		FY3/18 forecast			
	Amount	% of sales	Amount	% of sales	Change	% change
Net sales	73,847	100.0%	85,000	100.0%	11,153	15.1%
Semiconductor and other equipment-related business	32,243	43.7%	41,694	49.1%	9,451	29.3%
Vacuum seals	8,160	11.0%	10,937	12.9%	2,777	34.0%
Quartz products	8,242	11.2%	10,700	12.6%	2,458	29.8%
Ceramics	6,266	8.5%	8,075	9.5%	1,809	28.9%
CVD-SiC	1,905	2.6%	3,304	3.9%	1,399	73.4%
EB guns and LED deposition systems	3,817	5.2%	3,772	4.4%	-45	-1.2%
Wafer processing	3,854	5.2%	4,906	5.8%	1,052	27.3%
Electronic devices business	12,627	17.1%	12,407	14.6%	-220	-1.7%
Thermo-electric modules	11,747	15.9%	11,476	13.5%	-271	-2.3%
Ferroluids and others	879	1.2%	931	1.1%	52	5.9%
Photovoltaic-related business	18,773	25.4%	18,978	22.3%	205	1.1%
Quartz crucibles	2,041	2.8%	1,645	1.9%	-396	-19.4%
Solar-cell silicon	10,599	14.4%	11,755	13.8%	1,156	10.9%
Silicon crystal manufacturing equipment	967	1.3%	105	0.1%	-862	-89.1%
Solar cells and others	5,166	7.0%	5,473	6.4%	307	5.9%
Others business	10,204	13.8%	11,921	14.0%	1,717	16.8%
Gross income	19,708	26.7%	23,900	28.1%	4,192	21.3%
SG&A expenses	14,031	19.0%	15,400	18.1%	1,369	9.8%
Operating profit	5,678	7.7%	8,500	10.0%	2,822	49.7%
Ordinary profit	5,675	7.7%	7,500	8.8%	1,825	32.1%
Net income attributable to owners of parent	3,256	4.4%	4,400	5.2%	1,144	35.1%
Capital investment	7,322	-	10,000	-	2,678	36.6%
Depreciation	3,593	-	4,000	-	407	11.3%

Source: Prepared by FISCO from the Company's results briefing materials

■ Medium- to long-term growth strategy

Planning aggressive capital investments to increase output of key products

While conditions are currently vibrant in semiconductor and semiconductor manufacturing equipment industries, the main customer segments, Ferrotec expects further advances in semiconductor demand fueled by IoT, AI, and EV-shift and automated driving in automobiles. Additionally, the Chinese government has presented a goal of “raising the self-supply ratio for IC chips, silicon wafers, and semiconductor manufacturing equipment to 50% by 2025.” Ferrotec intends to make aggressive investments over the next few years in light of these trends. It will primarily focus on OEM, materials (quartz products, ceramics, CVD-SiC, and silicon parts), cleaning services, wafer production, and auto-related parts.

■ Shareholder return policy

Priority on internal reserves to fund aggressive capital investments for the time being

Ferrotec pays dividends as its shareholder returns. While the ¥22 FY3/18 dividend target only works out to a 17.4% payout ratio, we think priority is on internal reserves due to planned continuation of strong capital investments over the next few years, as explained above. Nevertheless, we expect steady dividends that reflect profit increases and thus review of higher dividends as appropriate given the upward trend in earnings.



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