

Freund Corporation (6312)

World's Leader in Pharmaceutical Product Use, Cultivating New Business Realms

May 4, 2017

JASDAQ

Key Points

- Freund launched its new Medium Term Business Plan covering a five year period from this term. Based upon the assumption of an end to the boom in generic drugs within Japan, new product development for pharmaceutical formulation equipment, global deployment of the unique business realm of pharmaceutical excipients, development of coating equipment for lithium ion battery electrodes, and development of other business realms aside from formulation equipment is being conducted. Efforts in all of these business realms have begun and the market has high expectations for these businesses.

- Freund maintains targets for sales, operating profit, operating profit margin and return on equity ratio of JPY30.0 and JPY3.0 billion, 10% and 8% respectively, to be achieved in fiscal year February 2022. These targets are slightly conservative due to the outlook for adjustments in the formulation equipment market within Japan. Furthermore, new business realms will be cultivated to help cover any potential weakness in the formulation machinery market and to ensure that these targets can be achieved or exceeded. Freund will update this Plan on a successively rolling basis.

- Earnings are trending strongly. Record high orders have been booked, and new orders for 20 tablet printing equipment (TABREX) are anticipated. During the coming fiscal year February 2018, a decline in consigned manufacture of supplements and the change in the accounting period for subsidiaries in the term just ended are expected to contribute to a loss of JPY1.7 billion in sales. However, strength in main product segments is expected to offset this loss and allow current profits to rise by 9.7% year-on-year to JPY2.300 billion, exceeding estimates and achieving a new peak high profit.

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- The Japanese Government is promoting a strategy to reduce medical expenditures by raising the usage of generic drugs to 80% of all medicines by 2020. This figure represents a 1.5 fold increase in the current market scale, and subsequent demand for tablet manufacturing equipment is also expected to remain strong. Freund is a company that boasts of both drug formulating equipment and chemical products used as pharmaceutical excipients. Its technological development capability is highly advanced and its tablet manufacturing and coating equipment boast of a high 70% share of the Japanese market. At the same time, it ranks just behind Glatt Corporation and Gea Corporation of Europe in the global market.

- According to the future outlook, Freund seeks to raise its global position a step further as a research and development based company that leverages its unique drug formulation technologies to expand its overseas market share, while taking advantage of the anticipated expansion in demand within Japan over the next several years. Therefore, it is critical for the Company to develop products for emerging markets. Freund Vector Corporation of the United States will collaborate with Freund Turbo Corporation of Japan to promote new market development. Over the next five years, sales and operating profits are expected to expand to JPY32.0 and JPY4.0 billion, and operating profit margin and return on equity ratio to 10% each, respectively. Subsequently, a more favorable view of Freund in the stock market may enable it to move to the First Section of the Tokyo Stock Exchange at an early stage.

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Corporate Rating: A

Data as of May 2, 2017

Share Price: JPY1,379
 Market Capitalization: JPY25.4 billion (18.4 million shares)
 PBR: 1.95x
 ROE: 12.3%
 PER: 15.9x
 Dividend Yield: 1.5%

(Units: JPY Million)

FY End	Sales	Operating Profit	Current Profit	Net Profit	EPS (Yen)	Dividend (Yen)
2010.2	12,943	970	951	563	32.7	7.5
2011.2	13,257	680	698	516	30.0	7.5
2012.2	15,236	1,065	1,123	608	35.3	7.5
2013.2	16,396	1,470	1,618	765	44.4	10.0
2014.2	17,616	1,286	1,341	787	45.7	12.5
2015.2	17,424	1,150	1,249	695	40.4	15.0
2016.2	19,027	1,346	1,394	961	55.7	12.5
2017.2	21,164	2,041	2,097	1,064	61.7	20.0
2018.2 (Est.)	21,600	2,300	2,300	1,500	87.0	20.0
2019.2 (Est.)	23,100	2,450	2,450	1,600	92.8	22.0

(Based upon February 2017 data)

Assets: JPY19.101 billion
 Net Assets: JPY12.185 billion
 Capital Adequacy Ratio: 63.8%
 BPS: JPY706.6

(Note) ROE, PER, Dividend Yield are based upon fiscal year February 2016 earnings estimate data. Stock splits of 2 for 1 were conducted in June 2009 and February 2016, and EPS and dividends have been adjusted to reflect these splits. A special dividend of JPY2.5 per share (Revised basis) has been issued in fiscal year February 2015 to commemorate the 50 anniversary of operations, and a special JPY5.0 per share dividend is expected to be paid to commemorate the 20th anniversary of Freund's listing.

Chief Analyst: Yukio Suzuki
 Belle Investment Research of Japan

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Company Rating Definition: Corresponding companies are evaluated on the following qualitative criteria of 1) strength of management, 2) growth and sustainability of business, and 3) potential for downward earnings revisions.

Based upon evaluations of the above mentioned qualitative criteria, the following four ratings are assigned to each company.

A: Favorable

B: Some improvement needed

C: Significant improvement needed

D: Extremely difficult conditions

1. Characteristics: Development of Unique Pharmaceutical Product Formulation Equipment

Main Products of Pharmaceutical Product Formulation Equipment and Excipients

Freund Corporation bases its business on the main products of granulating and coating equipment used in the process of manufacturing pharmaceutical products and manufacturing and sale of pharmaceutical excipients. In these realms, the Company is highly unique as it is the only in the world to produce both equipment and the consumable products used by its equipment.

The longstanding relationship between these equipment and products is similar to that of “pen and ink”, and the development of this relationship has evolved in recent years. Currently, Freund maintains a business strategy that focuses upon 1) the equipment and chemical products (Hardware) and 2) technologies used to manufacture these products (Software). Furthermore, the core competence of Freund lies in its development technologies used to manufacture products.

The term equipment refers to manufacturing machinery and equipment for drug formulations which use adjuvants (Excipients) as the main constituent of drugs to make them into tablet forms which are easier to ingest. They are not made in the form of liquid pharmaceuticals, but as orally ingested solid agents. Nearly half of the world’s pharmaceuticals are made in the form of tablets, capsules, granules, powders and other solid agents.

In some instances, the pharmaceutical and food manufacturers produce pharmaceuticals on their own, and in other instances they outsource the manufacture of these products. In both cases, there is a high possibility that the drug formulation manufacturing equipment they use are made by Freund.

Freund Corporation, Freund Vector (United States), and Freund Turbo are involved in the machinery business. Freund Vector is responsible for covering the markets in North, Central and South Americas, Europe, and the Middle East. Freund Turbo was acquired in 2010 and manufactures

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mainly industrial equipment used to make cosmetics, toners and other non-pharmaceutical products. In the machinery business, the Freund Group boasts of 70% share of the granulating and coating use equipment used within Japan, and it ranks as one of the top three companies globally.

With regards to the chemical and food business, pharmaceutical excipients, food quality preserving agents, dietary supplements and other products are manufactured. With regards to tablets and powder pharmaceutical excipients, the active ingredients used in drugs account for only 1% to 3% of the total, with harmless secondary materials including lactose, starch and other sugars added to make up the rest. With regards to food quality preserving agents, ethanol based transpiration agents are commonly used to preserve “baumkuchen” and other non-fully cooked cakes and confectionaries to prevent spoilage by blocking the growth of bacteria.

Freund Business Overview

(%)

	Sales		Operating Profit		Characteristics
	FY2/16	FY2/17	FY2/16	FY2/17	
Machinery	62.8	68.5	70.0	69.6	
Pharmaceutical	88	83			Pharmaceutical, food, fine chemical use
Industrial	12	17			Granulating, coating equipment manufacture, sales
Subtotal	100	100			Coating Equipment domestic share 70%, Global rank #3
Chemical, Foods	37.2	31.5	30.0	30.4	
Pharmaceutical Excipients	36	38			Pharmaceutical excipients, food quality preserving agents,
Food Quality Preserving Agent	33	31			dietary supplement manufacture, sales
New Products	31	31			Good manufacturing practices compliant
Subtotal	100	100			manufacturing facilities

Expanding Product Range from Pharmaceutical Excipients to Food Quality Preserving Agents, Dietary Supplements

Drug formulation technologies and equipment are also used in the food realm. The strong growth in health foods is leading to the creation of new business models. For example, food and houseware manufacturers are marketing dietary supplements for sale mainly through catalog channels. These dietary supplements often take the form of tablets and are commonly manufactured using Freund equipment that leverage its highly advanced drug formulation technologies. A main difference between supplements and pharmaceutical products is that supplements lack the active agents used in pharmaceutical products.

In addition, food product quality preserving agents are manufactured and used to preserve the quality and flavor of “baumkuchen”, “castella” and other half-cooked cakes and confectionaries. Spoilage of these and other foods is caused by oxidation. So to prevent spoilage, foods must be prevented from oxidizing by limiting their contact with oxygen. There are two main ways to prevent spoilage, the first through use of deoxidants, and the second through use of ethanol alcohol

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transpiration agents. Deoxidants often lead to drying out of cakes and confectionary products and contributes to degradation in their texture.

In these examples, silica impregnated with alcohol is packaged in small bags for use as alcohol transpiration agents to prevent the occurrence of fungus. Freund is a pioneer in alcohol transpiration agents and began developing them in 1977.

The Japanese market for deoxidants and alcohol transpiration agent type food quality preserving agents is estimated to total JPY20.0 and JPY3.0 billion respectively. And while market scale of the alcohol transpiration agents is smaller than that of deoxidant type agents, Freund maintains a superior position within this market. Because the Company has long promoted development of the ethanol transpiration agent segment of the market, its share is currently over 50%. At the same time, Freund also maintains a product lineup of and participates in the deoxidant agent segment of the market.

Freund's Main Products

Machinery	Chemicals and Foods
Granulating Equipment	Pharmaceutical Excipients
Flow Coater (Fluid bed granulation coating equipment)	Direct Compression Manitol Lactose
Flow Coater High Speed Granulating Model (Fluid bed granulation drying equipment)	Spherical granules
Granuformer (Continuous granulating equipment)	Absorbents, solidifying agents, fluidizers
Coating Equipment	Food Quality Preserving Agents
High Coater Model FZ (Fully Automated Sugar Film Coating Equipment)	Food additives
Tablet Printing Equipment	Food quality preserving agents
Tabrex	Dietary Supplements
Seamless Capsules	Seamless mini-capsules
Spherex	Drug delivery system responses
Pulverizing Equipment	AQ shelax supplement
V Turbo	Coenzyme Q10, lactoferrin
	Bifidobacteria

Independent Development at the Hamamatsu Technology Development Research Center

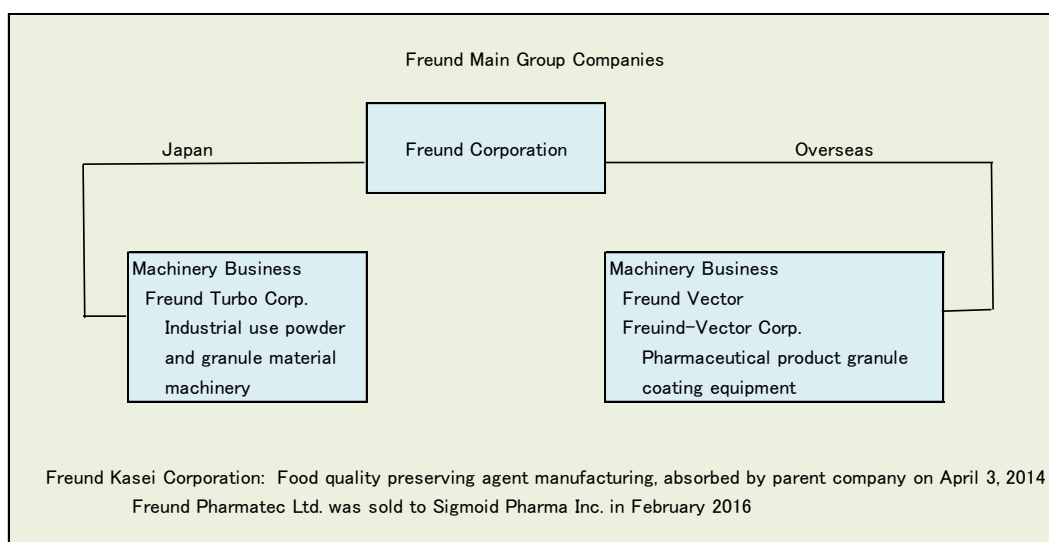
At the core of Freund lies its “Technology Development Research Center” in Hamamatsu City. Based upon its corporate philosophy of “Paving the Way to the Future through Creativity”, the Company’s driving force is its ability to develop unique technologies. Research and development activities are conducted by 30 staff within this division with a focus upon developing technologies in the three main realms of drug formulation equipment, excipients and food quality preserving agents.

In the realm of drug formulation equipment, research and development based upon powder, granule

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and coating processing technologies is conducted for both pharmaceutical product and other applications. With regards to excipients, Freund conducts unique research and development not only for applications within Japan but also for global applications as well. In addition, the Company also prioritizes research and development in the realms of food quality preserving agents and dietary supplements.

The Hamamatsu “Technology Development Research Center” also boasts of a library of over 300 intellectual properties (Patents and trademarks), and it provides customers with the facility to conduct tests of sample products because it maintains various machinery and equipment which has been developed in-house. Clients can also access knowhow on various applied uses of machinery in the realms of new drugs and food related products. In this manner, Freund is able to leverage this facility in its marketing strategy and come up with improvements of its machinery.



53 Years of Operations Since Its Founding, President Iwao Fusejima Leads Global Marketing

Freund celebrated its 50th year of operations in April 2014. Yasutoyo Fusejima (Currently 78 years of age, Honorary Chairman) founded Freund in 1964. His father’s company manufactured industrial use rubber products and Yasutoyo himself became aware of and impressed by the high profit margins of pharmaceutical products at the time he graduated from the Commerce Department of Waseda University in Japan.

While his friends joined trading companies, Yasutoyo decided to work at his father’s business of rubber product manufacture and considered the potential to cultivate other new businesses. After graduating from university, he decided to start up his own business while continuing to work at his

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father's rubber product company. At the time, Yasutoyo visited one of his high school classmates who worked for a major pharmaceutical company and discovered that drugs were manufactured in a labor intensive process using tweezers and a spray bottles. Upon seeing this highly labor intensive manufacturing process, he recognized the strong potential for automation to be introduced to this manufacturing process and he created his first machine in 1963. In principle, this machine used a spray gun to spray liquid on tablets, which were then dried in a drying machine. This is the basic principle for coating technologies used today.

Because he was interested in machinery, he had his friend's steel factory make this machine. The film coating agent used was purchased from Shin-Etsu Chemical Co., Ltd. When shown the final machine he created, his friend was impressed by how well it was made. In the following year 1964, Yasutoyo and his friend Shimesu Motoyama (Worked at the major pharmaceutical company, and later to become a managing director at Freund) established Freund (The German word meaning "friend").

At the age of 25, Yasutoyo Fusejima created his first prototype equipment, and established his company at the age of 26. The strong sales of both the first and second machines allowed his business to get off to a strong start. Film coating machine FM2 (This product name FM was taken from the two initials of the founders of Freund, Fusejima and Motoyama) were sold to pharmaceutical companies. This machine continued to sell strongly, despite having doubled in price because of its reputation for being too inexpensive. He developed automated film coating equipment, and started manufacture of coating liquids as well. Because of the strong sales of the first machine, Freund became profitable in its first year of operations. Since then, Freund has focused upon the two main business segments of machinery, and chemicals and foods.

He learned about the business model of copying machines from his uncle, who was the president of a copying machine company at the time, and how profits were generated by manufacture and sale of consumables which were used in wet type copying machines. Therefore, Yasutoyo decided to manufacture film coating use fluids within his company. At the time, the color of organic solvents was important and he was able to expand sales and profits by developing a coating technology that other companies could not duplicate.

The Company got its start in the tablet coating business. He used plasticizer in coating fluids to make it soft and acquired patents for both this fluid and machinery, in addition to acquiring patents in the United States for drug formulation equipment.

Yasutoyo Fusejima is the founder, and the next President Hori is the brother of Yasutoyo's wife. And in March 2012, Iwao Fusejima (The eldest son of Yasutoyo) became president of Freund. Iwao Fusejima was born in 1969 and is 47 years of age. He boasts of overseas experience since he attended Coe College in Cedar Rapids, Ohio of the United States where he studied management. In 1997 at

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the age of 28, he joined Freund. After spending a number of years working in the overseas division of the Company, and also holding positions of manager of the machinery business and chemical and food business before he became President of Freund.

Cultivating Human Resources, Corporate Culture Based upon the Four “S’s”

President Iwao Fusejima spoke with us at the start of the year about his views on “cultivating human resources based upon the Four S’s”. The Four S’s are represented by 1) sense (maintaining curiosity about all things), 2) speed (coming up with responses quickly) 3) study (studying up on competitors and understanding our own company) and 4) smile (always remembering to smile and stay healthy). Efforts will also be made to strengthen the corporate culture of taking proactive steps to prioritize and uphold compliance. Currently, Iwao is focusing the bulk of his efforts on changing the corporate culture.

Founder and Corporate Governance

As part of the Company’s corporate governance activities, the number of corporate auditors has been increased to four from three, and the number of outside corporate auditors has been increased to three from two. Of the five managing directors, two are outside directors to provide objective direction and advice. President Iwao Fusejima views 1) performance of functions that cannot be fulfilled within the Company and 2) provision of opinions about our management as the most important capabilities of these outside directors.

As of the end of February 2017, the total number of shareholders stood at 6,570. By shareholder classification, individual investors accounted for 38.9% and financial institutions 28.7%, reflecting an increase in the shareholdings of institutional investors. The Founder Fusejima and other family members maintain about 30% of total shares.

The board of directors is comprised of five managing directors including President Iwao Fusejima, Managing Director Norio Shiratori (Corporate Management), Director Narimichi Takei (Technology Development), Outside Director Tomohikio Manabe (Accountant), and Outside Director Ryuji Nakatake (Rugby coach). Iwao Fusejima has acted as President since 2012, and has led the global deployment of Freund’s business and collaboration with overseas subsidiaries.

Two outside directors were appointed to the board in May 2015. Tomohikio Manabe is a certified public accountant, and Ryuji Nakatake previously assumed positions as the coach of Waseda University’s rugby team and managing director of the Japan Rugby Football Union. They have been selected for their ability to take on an objective and fresh view of the management because of their roles outside of Freund.

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The founder and Honorary Chairman Yasutoyo Fusejima has led the company using his keen insight to develop highly unique products, and poured his passion into the development process. To this day, Yasutoyo still comes up with numerous ideas for business opportunities and still maintains an active support role within the company that is important to the operations of Freund.

The total number of managing directors of five is small. And while the number of executive managing directors of three also appears small, future potential changes to the management structure along with the growth of Freund in the future has not been clearly determined. The next in line to the managing directors in terms of executing responsibilities are general managers and managers. Therefore, one key issue is how the overall executive structure will be strengthened for not only Freund but its main subsidiaries including Freund Vector and Freund Turbo. At the same time, another key issue is how to implement an effective corporate governance structure. The implementation of these fortified structures is expected to be a positive step in achieving an effective global consolidated management system.

Group Company Earnings

(JPY Million, %)

		Sales	Operating Profit	Operating Margin
Freund Corporation	2011.2	10,669	495	4.9
	2012.2	12,248	839	6.8
	2013.2	13,506	1,350	10.0
	2014.2	13,694	1,241	9.1
	2015.2	13,364	1,126	8.4
	2016.2	13,741	1,096	8.0
	2017.2	15,696	1,537	9.8
Freund Vector Corporation	2011.2	2,757	112	4.0
	2012.2	2,812	277	9.9
	2013.2	2,943	147	5.0
	2014.2	3,892	169	4.3
	2015.2	3,905	291	7.5
	2016.2	4,686	293	6.3
	2017.2	4,727	388	8.2
Freund Turbo Corporation	2011.2	561	63	11.2
	2012.2	930	15	1.6
	2013.2	1,022	81	7.9
	2014.2	782	-8	-1.0
	2015.2	999	-12	-1.2
	2016.2	1,205	94	7.8
	2017.2	1,641	79	4.8
Freund Pharmatec Ltd.	2011.2	0	-67	—
	2012.2	0	-131	—
	2013.2	0	-134	—
	2014.2	0	-188	—
	2015.2	6	-190	—
	2016.2	0	-140	—

(Note) Freund Turbo was acquired in June 2010

Freund Pharmatec was sold to Sigmoid Pharma in February 2016

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Freund Vector of the United States Is a Cornerstone of Freund

Freund Vector manufactures and sells drug formulation equipment at its own plant in the state of Iowa in the United States. Freund in Japan and Freund Vector mutually share technologies, and in principle Freund Vector develops and manufactures its own products with a limited number of parts such as spray guns being imported from Japan.

The total number of employees of the Freund Group as of end February 2017 stood at 342, of whom 189, 114 and 39 were employed by Freund Corporation, Freund Vector and Freund Turbo respectively.

Freund Corporation established a local sales agent in the United States in 1966. In the following year, marketing activities for its machinery to major pharmaceutical companies within the United States began being conducted. Initially, the automated coating machinery received high regard. In 1979, a collaboration was formed with Vector Corporation of the United States, which was thereafter turned into a subsidiary. Vector is based in Marion, Iowa (Next to Cedar Rapids), and manufactures tableting and coating machinery. This company is responsible for the markets in North and South Americas, Europe and the Middle East.

Vector was turned into a subsidiary in 1997. Vector's largest shareholder was its founder, whom Yasutoyo Fusejima knew well and trusted highly. Vector developed equipment that matched the needs of United States customers based upon a license from Freund and was able to establish a strong track record.

Freund Geographical Sales

		(JPY Million, %)						
		Japan	North America	Europe	South Central America	Asia	Total	(Overseas)
2013.2	Sales (Composition)	12,800 [78.1]	948 [5.8]	772 [4.7]	1,875 [11.4]		15,236 [100.0]	[3596] [21.9]
2014.2	Sales (Composition)	13,233 [75.1]	1,503 [8.5]	701 [4.0]	2,177 [12.4]		17,616 [100.0]	[4382] [24.9]
2015.2	Sales (Composition)	13,056 [74.9]	1,599 [9.2]	450 [2.6]	1,071 [6.1]	1,246 [7.2]	17,424 [100.0]	[4367] [25.1]
2016.2	Sales (Composition)	13,547 [71.2]	2,190 [11.5]	937 [4.9]	1,325 [7.0]	1,027 [5.4]	19,027 [100.0]	[5480] [28.8]
2017.2	Sales (Composition)	15,601 [73.7]	3,331 [15.7]	553 [2.6]	830 [3.9]	847 [4.0]	21,164 [100.0]	[5563] [26.3]

(Note) South and Central America, and Asia have been separated as of fiscal year February 2015

Iwao Fusejima, the current President of Freund Corporation, is the Chief Executive Officer of Vector, and Masaaki Kubota took on the position of Chief Operating Officer, also responsible for technology, from the previous COO Steve Jensen in February 2014. While the President of Freund

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Vector is a Japanese national, local staff, some with 25 years of experience, assume responsibility for marketing and technology functions. Moreover, Iwao and Masaaki have been able to establish strong communications with and understanding of the staff of Freund Vector.

Freund Vector Business Deployment – Headquarters in Marion, Iowa

Freund Vector maintains its headquarters in Marion, Iowa of the United States. Marion is adjacent to Cedar Rapids and only a one hour airplane flight from Chicago. The state capitol of Iowa is Des Moines and is the first voting location in the United States Presidential primary elections. Cedar Rapids is the second largest city after Des Moines in the state of Iowa. Marion is a small city with a population of about 170,000 people.

Marion saw a large influx of immigrants from Czechoslovakia and the founder of Vector was Jerry Zahradnik, the son of an immigrant family from Czechoslovakia. Vector was established in 1972 as a press machinery company.

At the time, Freund's founder Yasutoyo Fusejima visited various American companies with the goal of cultivating the market for his drug formulating equipment. And in 1974, Freund signed a licensing agreement with the newly formed Vector for the manufacture of drug formulating equipment. Consequently, Freund was able to establish a foothold in the United States market through this agreement.

At the same time, Danforth Jr., who was a major shareholder of Vector, was asked to liquidate his position in Vector. And while Freund acquired the position from the major shareholder amounting to 88.08% of the shares of Vector in 1998, the remaining 11.92% of shares were held by Jerry Zahradnik who was the President of Vector at the time.

In 2003, Steve Jensen took over the role of President of Vector from Danforth Jr. Steve Jensen had been the Chief Financial Officer of Vector, and Matsugaki from Vector Japan was sent to replace Steve in his former position as CFO. Matsugaki joined Freund Corporation from Sanwa Bank at the time and is still the CFO at Freund Vector to this day. After 10 years of service as the President of Vector, Steve Jensen resigned from his post three years ago. At that time, Kubota assumed the position of Chief Operating Officer and still maintains this role. Kubota previously worked at a Japanese automaker and a metal mold company in the United States and has bountiful experience in management and technologies.

Vector founder Zahradnik passed away in May 2015. Subsequently, Freund was able to acquire his stake of 11.92% of the outstanding shares of Vector and Freund was able to turn Vector into a 100% owned consolidated subsidiary. Reflecting upon the 43 years of operations of Vector, it has operated independently for 25 years since the licensed manufacturing agreement for Freund equipment was

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started, and ties have been strengthened with Freund during the past 10 years despite its maintenance of an independent management structure.

While manufacturing and sales of drug formulating equipment is conducted, Freund Vector does not currently deal in the foods and chemicals business like Freund in Japan. And while manufacturing began under a licensing agreement, Vector is manufacturing equipment that has been modified to match the needs of the local market.

Freund Corporation in Japan implements a “fables” manufacturing process where the machinery manufacturing process is outsourced after technology development and design processes have been completed in-house. However, Vector in the United States performs its own manufacturing in-house at its own plant, with final assembly being done after parts are purchased externally. In this manner, they have placed a high priority upon developing manufacturing technologies in-house. Over 90% of Vector’s sales are derived from drug formulating equipment, with the remaining sales derived from manufacture of formulation equipment for foods and agricultural chemical products. Consigned manufacture of seed coating and other processes are conducted within the contracted services business.

Strengthening of Group Capabilities – Fables Manufacturing Process for Equipment in Japan

Demand for manufacturing equipment from generic drug manufacturers remains strong. Freund Corporation is a fables manufacturer without its own manufacturing plant, and therefore needs to increase the number of cooperating manufacturing companies to match its growing demand. The Company had conducted business with four manufacturing companies, but they added two new companies during 2015, bringing the total to six companies.

Freund’s first collaborative partnership was formed with Okawara Manufacturing Co., Ltd. back in 1980. Okawara Manufacturing became one of the companies to which manufacturing of equipment was outsourced. Currently, Freund outsources the manufacturing of its equipment to six different companies, but Okawara Manufacturing still maintains a high share of Freund’s outsourced equipment manufacturing.

Furthermore, Freund entered the market for alcohol tablet type food quality preserving agents in 1977. Freund Kasei Corporation, which was responsible for manufacturing of food quality preserving agents, was merged with Freund Corporation in March 2014 to pursue management efficiencies.

Freund also acquired the company Turbo Corporation five years ago at a cost of JPY400 million. Turbo is a powder processing equipment manufacturer with numerous patents. Turbo decided to sell itself to Freund as it faced the issue of a lack of appropriate persons to take over management. Turbo had sales of JPY900 million and was included into the machinery business segment. While it is also

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a powder processing equipment manufacturer, Turbo boasted of specialization in realms differing from those of Freund, including food and industrial powders use, and particularly hard powder equipment.

Commercialization of Drug Formulation Technologies in Ireland, Facilities Sold

Freund Pharmatec Ltd. was sold to Sigmoid Pharma in Ireland in February 2016. Sigmoid Pharma is a start-up new drug development company established in 2003 which uses Freund's seamless mini-capsule technology and has plans to list its shares in the United States capital markets. Because Freund maintains patents on this technology in the United States, the listing of Sigmoid could contribute to expanded use and lead to further recognition of this technology within the pharmaceutical industry.

Sigmoid Pharma has leveraged this mini-capsule technology as a drug delivery system for an orally administered ulcerative colitis treatment, which shows promise of growth. Freund has also invested in Sigmoid Pharma, creating a strong relationship that can continue to bear fruit after it becomes more successful in the future.

Freund is the only company in the world able to produce this cutting edge seamless mini-capsule manufacturing equipment (Spherex). Spherex uses this technology to manufacture capsules, allowing medicines to be administered as oral agents, which were previously administered in liquid form through injection.

Freund Pharmatec was established in January 2010 and incurred losses of between JPY100 to JPY200 million per year. Because Sigmoid sought to develop drug delivery systems, the timing of this sale was good.

2. Strengths: Top Ranking Company within Japan, One of the Top Three Companies Globally

Unique for Its Handling of Both Drug Formulation Equipment, Food and Chemical Products

Freund maintains a two segment business model where both segments complement each other. In the drug formulation equipment realm, excipients are used to form chemicals products and solid agents are used to make drugs and food products. Looking at the manufacturing process for tablet forms of drugs, the flow chart below shows the manufacturing processes for tablet drugs.

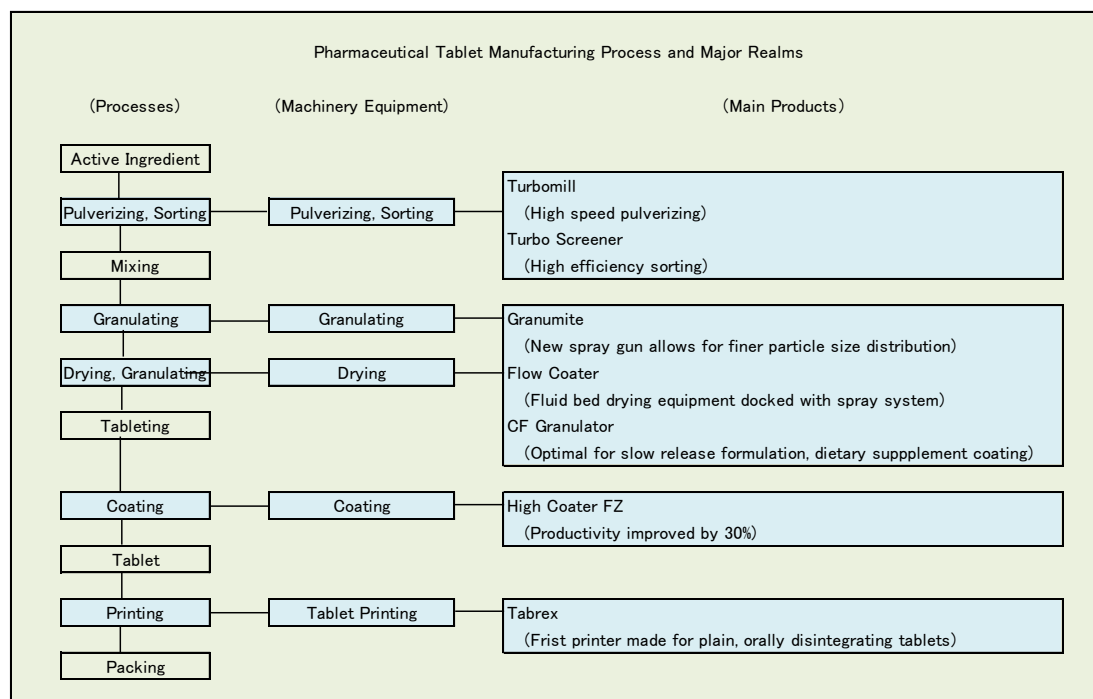
Pulverizing, Sorting→Mixing→Pelleting→Drying, Granulating→Tableting→Coating→Printing

Within the above mentioned process, Freund provides equipment for the pulverizing, sorting,

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pelletization (granulating), drying, coating and printing functions.

Moreover, equipment and machinery is a niche realm in which Freund boasts of 300 intellectual properties. At the same time, the Company is extremely well versed in the manufacturing processes and specifications of major pharmaceutical companies. Therefore, it is difficult for large machinery and equipment manufacturers to enter this niche market.



In addition to Freund, GLATT of Germany and GEA of Denmark (Both are privately owned companies) are amongst the world's top three machinery manufacturers. Consolidation of German pharmaceutical companies has progressed through the formation of alliances along with Manety and Hutlin. While GEA manufactures tableting machinery, Freund outsources the manufacture of its equipment within Japan to Kikusui Seisakusho Ltd., Hata Tekkosho Co., Ltd. and other specialized manufacturing companies. Furthermore, strengthened collaboration with Kikusui Seisakusho Ltd. is also being pursued.

Freund is the leader in Japan followed by the second placed company Powerex Corp. (Privately owned), which maintains a technological collaborative agreement with GLATT. Within Japan, Freund boasts of a share of over two thirds of the total market, with Powerex claiming the remaining one third of the market.

Within the Japanese market, Freund is in direct competition with the second placed Powerex, which

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has adopted a strategy of introducing lower priced products into the market by leveraging their license with an overseas company. In response, Freund has promoted a strategy of introducing products with strong brand image and high levels of functionality to avoid being drawn into pricing competition.

Freund Vector operating in North America is ranked second within the industry, and it is a key company in Freund's global business deployment strategy.

Freund ranks within the top five companies in the pharmaceutical excipients market behind the first, second and third placed companies Shin-Etsu Chemical Co., Ltd., Asahi Kasei Corp. and Sanwa Chemical Industry Co., Ltd respectively.

Expanding Its Specialized Business Globally

Freund maintains major facilities within Japan and the United States and seeks to expand its business globally. In contrast, rival Powerex acts as both an import agent through its agreement with Glatt and maintains its own manufacturing capability.

Within the Japanese market, Freund is in direct competition with the second placed Powerex, which has adopted a strategy of introducing lower priced products into the market by leveraging their license with an overseas company. In response, Freund has promoted a strategy of introducing products with strong brand image and high levels of functionality to avoid being drawn into pricing competition.

Freund boasts of strengths in granulating and coating processes. Furthermore, Powerex (GLATT) and GEA (Japan offices) lack an adequate maintenance and service structure and cannot duplicate the ability of Freund to respond with services within 24 to 48 hours within Japan.

At the same time, GLATT and GEA maintain overwhelming position of strength within the European market. Freund Vector of the United States has opened a machinery sales function in Milan, Italy to cultivate the European market. And while Freund Vector's business within the United States declined in the aftermath of the Lehman Shock in 2008, it has begun to recover recently. Also, it is seeing growth in Brazil and other South American markets as a result of its efforts to cultivate business in South America from the United States.

Hosokawa Micron Group and Dalton Corp. manufacture powder processing equipment, but neither of these companies produces equipment for pharmaceutical industry applications and Freund actually uses some of their equipment.

Hamamatsu "Technology Development Research Center" – Advanced Application Development, Alliances

The "Technology Development Research Center" is located about 13 kilometers north of Hamamatsu City at the foot of the Japan Southern Alps in a region which is relatively well sheltered

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from natural calamities including earthquakes. Experiment facilities, two manufacturing facilities, and a distribution warehouse have been constructed at this location. Furthermore, there is ample space at this site and plans call for a third manufacturing facility to be constructed sometime in the future.

At the “Hamamatsu Technology Development Research Center”, two manufacturing facilities are operated. One of Freund’s main products is called Flow Coater (Fluid bed granulation coating equipment) and it boasts of a capability for continuous production including uniform mixing and granulating, coating, and drying processes. Granulating is the process where granules are created from powders. Active pharmaceutical ingredient chemical compounds, which are active ingredients in pharmaceuticals, are combined with excipients in a predetermined ratio to control their function and made into particle format. Flow Coater uses a spray gun to spray mist upon the particles to increase their size and coat them. Actual production of this machinery is outsourced to Okawara Manufacturing Co., Ltd.

The large High Coater FZ (Fully automated sugar film coating equipment) is a revolutionary piece of equipment that allows for short and efficient coating of tablets and tablet shaped candies. This tablet surface coating allows for the control of the rate of dissolution of drugs within the human body. In addition, this coating also provides a masking function to hide the bitter taste of pharmaceuticals. In this coating process, polymer materials are used as a film and sugars as coverings.

High Coater FZ 1) increases the drying capability of the heated air by raising the heating efficiency, 2) raises the stirring and mixing efficiency and 3) improves the capability of the spray gun to spray a larger area more uniformly. The improved capabilities of this revolutionary equipment cannot be duplicated by competitors.

Spherex (Seamless capsule manufacturing equipment) manufactures capsules from liquid and not solid materials. The surface tension of the liquid is used to make a near perfect sphere in continuous production. Thereby, a capsule is formed that has a hard outer shell and liquid center. The 1 to 7 millimeter in diameter liquid center is encapsulated by a gelatin, and then dipped in glycerin from top to bottom. After drying, this glycerin casing hardens and forms a seamless mini-capsule. This is a technology which only a few companies in the world possess.

While this containment technology was first developed in Europe and the United States, unique applications of this technology have been developed in Japan to match needs of the local market. Consequently, containment technology developed within Japan won the Nakai Award (Presented to companies for superior manufacturing technological developments) in 2013.

Continuous granulating equipment Granuformer forgoes the conventional batch type production format and allows for continuous production of granules, allowing mass production to be conducted

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in a more time effective manner. This capability allows the cost of pharmaceutical manufacturing to be reduced and eliminates the need for new manufacturing processes. Both of these capabilities are called for by the policies of the United States Food and Drug Administration. Freund's technology entails the continuous running of conventional chemical processes. While continuous running of chemical processes to manufacture liquid or gas products is easy, it is extremely difficult for solid products and Freund is one of the few companies to realize this difficult manufacturing process. Commercial applications of this drug formulation process were begun in Europe and the United States, but they have yet to start in Japan.

Development of drug formulating equipment for emerging markets has been completed. Unnecessary functions of the most up-to-date version of High Coater FZ have been eliminated to create a new version for emerging markets. Furthermore, the highly detailed specifications required by clients in Japan have been reviewed, and functions which were deemed to be unnecessary in emerging markets were eliminated to reduce the price of this machinery. Furthermore, ongoing efforts to tailor equipment to match the needs of local emerging markets will be conducted while at the same time maintaining competitive capabilities.

Freund's Main Facilities

<p>☆ Freund Hamamatsu Technology Development Research Center, Japan</p> <ul style="list-style-type: none"> • Focus upon cutting edge product development as a R&D company • Provide samples, application testing to clients • Patents for over 300 intellectual properties held
<p>☆ Freund Turbo (Japan)</p> <ul style="list-style-type: none"> • Freund Corporation's granulating, coating technologies complement Turbo's pulverizing, sorting technologies to create new applications of powder processing for the medical, pharmaceutical product realms • Strengthen collaboration with Freund Vector
<p>☆ Freund Vector (United States)</p> <ul style="list-style-type: none"> • Development capabilities of Freund combined with the design, manufacturing capabilities of Freund Vector to develop products matching the local markets • Deploy business into Central, South Americas, Europe, Middle East, Asia

(Note) Freund Pharmatec (Ireland) was sold in February 2016

World Leading Drug Formulation Technology

The food and chemical plant in Hamamatsu manufactures spherical granules. The ability to produce near perfectly round spheres is a unique core competence of Freund. Spheres are processed

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to facilitate them with the ability to maintain sustained-release (Gradually melt to maintain effectiveness).

Pharmaceutical excipients are based upon the main raw material of sugar used as an outer coating for pharmaceutical products. The nucleus of granulated sugars is octahedron in shape, and they grow in size like snow balls.

The spherical granules come in sizes of between 710 to 850, 500 to 710, 355 to 500, 200, and 100 microns (Micro-nanometers) in size. Sizes below 300 microns are ideal for orally disintegrating tablet because they do not have a rough texture when ingested without water. Freund has developed Granulol F as an excipient used in orally disintegrating tablets to achieve a perfect balance between hardness and ease of dissolving, as has been long required by the market. Consequently, this product is expected to act as support for new drug formulation designs.

Aside from this, another method employs crystal cellulose to be added to lactose. Lactose is shaped like a spear, is low in calories, and inexpensive. Furthermore, they are easy to mix with medicines because they have no nucleus and are small in size. Freund has taken anticipatory steps to conduct research to achieve commercialization of this application. Lactose is now the most commonly used excipient. DFE Pharma of Europe is the largest manufacturer of lactose based pharmaceutical products in the world, and Freund imports products from this company.

Along with the advance of the aging society, the need for small diameter tablets that are easy to swallow with sustained release to allow for prolonged drug efficacy is on the rise. Therefore, drug formulation technologies which match this market need are also required. There is no need for nucleus and the key is to come up with near perfectly round forms. The ability to make near perfectly round forms can only be accomplished by a company with advanced and unique technologies like Freund, which leads the world.

Cellulose is added to lactose to act as a starch. Freund boasts of technology which does not require starch and allows for forming agents to be created from 100% lactose alone. There are instances where drugs do not respond to starches.

Freund's main pharmaceutical excipient product Nonpareil is close to a perfect sphere form, and represents the world's leading technology. Therefore, there are numerous proposals to use Nonpareil in scientific research.

Nonpareil 108 is a round form of Mannitol (Bar shaped crystal) that is made in extremely small sizes of 100 microns. Because of its extremely small size, it does not have a rough texture when ingested and matches the need to make medicines easier to swallow for the elderly. It also allows for medicines to be swallowed without water. Mannitol's limited reaction with drugs and refreshing feeling leads to increased usage. Nonpareil does not have any competitors globally.

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Maltitol Granule and Isomalt Granule have been developed as food use direct compression excipients. Direct compression excipients can be used to efficiently manufacture tablets. Until now, there were no granulated products that had the appropriate flow property and formability for use in direct tableting. However, Freund developed a granulated product that solves this problem.

This new product has good flow property and is very stable at the time of compression. Maltitol Granule tablets are also strongly resistant to moisture absorption and deterioration in hardness. Isomalt Granule can be easily adjusted for use in tablets which have low formability such as glucosamine.

Efforts are being conducted to collaborate with companies in the United States, with a collaboration being formed between Freund Vector and Dow Pharma and Food, a subsidiary of Dow Chemicals. Research is being conducted for polymer powder coating techniques using Vectors' drug formulating equipment Granurex. This research is investigating the potential for coating using 10 micron polymers instead of liquids to 1) dramatically shorten the production process, and 2) reduce the bitterness of drugs and the sense of roughness when dissolved by saliva in the mouth.

Internal manufacture of pharmaceutical excipients and food quality preserving agents is being raised. Currently, about 60% to 70% of excipients and 10% to 20% of food quality preserving agents are manufactured within the Company. However, Freund will endeavor to raise in-house manufacture of both products. Excipients are required for both new and generic drugs, and they become long selling products once adopted by pharmaceutical companies. Collaboration with Shin-Etsu Chemical Co., Ltd. is conducted for excipient applications to leverage Freund's superior drug formulation technologies, and Shin-Etsu Chemical's superior excipients diversification capabilities and marketing in the United States.

While the manufacture of machinery and equipment is outsourced, chemical and food products are manufactured internally. In addition to alcohol type (Antimold Mild), deoxidant type (Negamold G) food quality preserving agents are manufactured. While Freund only has one manufacturing line for food quality preserving agents, they are considering addition of capacity to handle increased production internally with the possibility of adding a third manufacturing facility.

Second Place in the United States, Brazil

Freund Vector is ranked second within the United States market overall, and it ranks as the top manufacturer of fluid bed equipment. While it boasts of strong market position of second place in both the United States and Brazil, its position within Europe is not as strong. However this suggests that the potential for growth in the European Community and neighboring countries is strong. Freund Vector opened a facility in Milan, Italy in November 2014.

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Sales are conducted directly in the United States and divided into four geographic sales regions. Because the bulk of Freund's business is derived from repeat customers, efforts to increase the number of geographic sales regions may prove to be ineffective but the marketing capability still needs to be strengthened. Within the sales force, Freund Vector maintains one sales person each for South America and Europe and relies upon sales agents in the local markets. The sales agent in Brazil has been effective in growing Freund's presence in the local markets. And while the use of sales agents reduces the profits derived from sales, this structure is deemed to be the most effective at this point in time. Consequently, Freund will take steps to strengthen its own marketing capability for both South America and Europe.

While the bulk of Freund's business 10 years ago was derived from the United States, exports to this region are on the rise. Exports to South America and Europe now account for about half each. Shipments of products to generic drug manufacturers in Brazil are a large part of the shipments to South America. And in Europe, products are sold to clients in countries such as Ireland, Iceland, Turkey, Israel and others where competition from Freund's German competitors is not as fierce.

Chosen as "Global Niche Top 100 Company" by Ministry of Economy, Trade and Industry

Freund was chosen by the Ministry of Economy, Trade and Industry as a "Global Niche Top 100 Company" in 2014. The criteria for selection included 1) balance between global market share and profits, 2) originality and autonomy, 3) ability to respond to risk, and 4) sustained ability to maintain global market share. Nittoku Engineering Co., Ltd. (Precise coil manufacturing automated winding equipment), Komori Corporation (Commercial use offset printing equipment), Aida Engineering Ltd. (Servo drive press equipment), Tsudakoma Co., Ltd. (Jet type weaving equipment) and Freund Corporation (Pharmaceutical and food use granulating and coating equipment) were chosen for this award. This award serves as additional proof of the Company's unique position.

3. Medium Term Business Plan: Strengthen and Cultivate Overseas Markets, Cultivate Overseas Markets

Reflecting on the Previous Medium Term Business Plan

While the Sixth Three Year Medium Term Business Plan benefitted from the tail wind of the boom in generic drugs within Japan, delays in overseas development of TABREX and cultivation of overseas markets caused Freund to fall shy of its numerical targets.

Fiscal year February 2017 was the third and final year of the Sixth Medium Term Business Plan and

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targets for sales, operating profit, overseas sales ratio, operating profit margin and return on equity of JPY23.0 billion, JPY2.3 billion, 40%, 10% and 8% respectively had been established. But in actuality, Freund achieved sales, operating profit, operating profit margin and return on equity of JPY21.1 billion, JPY2.0 billion, 9.6% and 9.0% respectively during the term.

Overseas sales ratio stood at 26% due to the acceleration in machinery orders within Japan caused by the large increase the Government's generic drug usage targets from 60% to 80%. Consequently, Freund chose to concentrate its management resources upon the business within Japan. At the same time, Freund Vector encountered weak conditions in South and Central Americas, Europe, and Turkey. While the United States was able to offset some of these weaknesses, it was not enough to boost the overseas sales ratio.

While targets were not achieved in the last term and final year of the Sixth Three Year Medium Term Business Plan, Freund was able to attain record high earnings. Furthermore, while new product market launches were delayed by one year, these new products are expected to contribute largely to the current Medium Term Business Plan.

New Five Year Medium Term Business Plan Overview

(Corporate Philosophy)	Paving the Way to the Future through Creativity
(Management Vision)	Freund Group will contribute to the future treatments and health of people around the world, and create, cultivate technologies that support rich lifestyles, safety and security of foods
(Corporate Image)	Value: ONE FREUND Number One (Creating Extraordinary Value) Become the number one company in various realms, businesses Only One (Adopting the Client Viewpoint) Become the "Only One" company to effectively serve clients, society Be One (Networking) Creating a united Group
(Basic Strategy)	Responding to client needs with technological capabilities, creating a management structure able to achieve sustained growth in profits
(Management Targets)	Sales: JPY30.0bn, Operating Profit: JPY3.0bn, Operating Profit Margin: Over 10%, ROE: Over 8%

Japanese Generic Drug Market Active

The generic drug boom during the first one to two years of the current Medium Term Business Plan,

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which covers a period of five years, is expected to continue, but is expected to subside thereafter. Therefore, the main point of the current Five Year Medium Term Business Plan is how Freund can grow new business realms to offset a slowing in the generic drug related business.

Generic drug manufacturers have boosted their capital investments in recent years. This trend has been spawned by the Japanese Government efforts to restrain growth in medical spending by raising the generic drug usage target to 80% by 2020.

An increase in size of drug formulation equipment is progressing in response to the growing need for mass production. For example, there is a trend for flow bed equipment capacity to expand from the previous level of between 120 and 200 kilograms to 300 kilograms. In light of these trends, capital investments of generic drug manufacturers are expected to grow until 2018 as the rate of generic drug usage is expected to continue to rise. From that point onwards, generic drug manufacturers are expected to turn their attention to business opportunities in overseas markets. Furthermore, increases in the ratio of their overseas manufacture point to the potential for increased usage of Freund equipment.

The demands for high quality levels are no different for generic drug manufactures than new drug manufacturers. And while price negotiations are difficult, Freund leverages its superior quality and services to achieve appropriate pricing for its products.

The problem of achieving a balance of being able to handle increases in the amount of work and any subsequent rebound after the demand has abated is a critical issue. In response to this issue, Freund has adopted a strategy of using a “fabless” structure where it does not have its own production facilities. Therefore, it is able to respond to increases in demand through expansion of capacity of its outsourcing manufacturing partners and addition of new cooperating outsourcing partners.

The expansion in orders is expected to continue for the foreseeable future, and the Company is expected to carefully select which orders it chooses to take on during this period. Beyond this, collaboration with Freund Vector is expected to be strengthened, and diligent efforts will be made to cultivate overseas markets.

New Five Year Medium Term Business Plan

Freund has established the concept of “One Freund” (Number One, Only One, Be One) as a key theme for its new (Seventh) Five Year Medium Term Business Plan starting from the coming term, and seeks to achieve sales, operating profit, operating profit margin and return on equity ratio of JPY30.0 billion, JPY3.0 billion, 10% and over 8% respectively by fiscal year February 2022. This reflects an average compound annual growth rate of 9.3%.

The new Medium Term Business Plan has been lengthened to cover a period of five years in

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response to the move to reduce pharmaceutical product pricing and outlook for restraint in capital investments in the future despite the current ongoing boom in generic drugs.

Main Strategies by Business Segment

	Pharmaceutical Products	Industrial, Lifestyle Related
Machinery	<ul style="list-style-type: none"> Expand tablet printing machine sales Expand development, sales of inspection equipment Commercialize continuous manufacturing equipment Expand business in India, China 	<ul style="list-style-type: none"> Expand development, sales of lithium battery machinery Develop new materials equipment Expand sales of high speed fluid bed granulation equipment for foods
Chemicals	<ul style="list-style-type: none"> Integrate sales for machine, excipients Expand sales of excipients globally Cultivate market for excipients in India 	<ul style="list-style-type: none"> Cultivate ASEAN markets for food quality preserving agents

In this new Medium Term Business Plan, a new vision for management has been created based upon a goal of “contributing to the future of medicine and the health of people around the world, and cultivating technologies to support rich lifestyles and safety of foods”.

The concept of “One Freund” calls for Freund to 1) achieve “Number One” top position in each of its business realms through “creation of special value”, 2) becoming of the “Only One” partner of its customers by “fully understanding customers’ view point”, and 3) realizing “Be One” unity of the entire Freund Group through active "networking”.

The three main directives of the new Plan include 1) further strengthening of efforts to develop new products, 2) increasing the synergies between machinery and chemical products, and 3) expanding sales channels in the global market.

Main Overall Strategies

- Corporate Culture Reform Promotion Project
- Establishing services as 3rd cornerstone of business including machinery, chemical and foods
- Investing in promising business realms
- Strengthen technology development capability, output capacity, overseas laboratories
- Cultivate next generation of leaders, global human resources
- Fundamental reforms of business processes for development of management systems
- Improving the supervisory levels as a Tokyo Stock Exchange First Section listed company
- Fortify ESG, promote CSR in line with the United Nations Global Compact (10 Principles)
- Promote IR activities including constructive communicaitons with investors, shareholders in line with disclosure policies

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The current five year Medium Term Business Plan is based upon the outlook for a weakening of the boom in generic drugs within Japan and is created in two steps, including the first three year and second two year periods. The three main directives of the Plan mentioned above will be implemented during the first three year period, and the anticipated decline in machinery orders resulting from the termination of the generic drug boom will be covered by other anticipatory measures to ensure the continued growth of the Company.

In the near term, President Iwao Fusejima recognizes the importance of these three directives. First, efforts will be implemented to promote the diffusion of the tablet printing machine TABREX Rev., which has been launched in the market during the second half of the previous term. Second, a stable supply structure for pharmaceutical excipients will be established from a global supply chain standpoint. And third, the Freund Group will strengthen its overseas marketing capability.

Five Year Medium Term Business Plan Key Performance Indicators

(¥mn, %)

	2014.2		2017.2			2022.2	
	5th Plan		6th Plan			7th Plan Final Year Target	
	Sales	OP	Sales	OP	(Revised)	Sales	OP
Machinery	11,004	1,242	14,914	1,750	1,430	21,340	2,260
Freund (Parent)	7,081	1,032	9,946	1,537	963	13,540	1,460
Freund Vector	3,892	169	4,727	388	388	6,600	500
Freund Turbo	782	-8	1,641	79	79	2,400	300
Chemical, Food	6,612	379	6,249	748	611	8,660	740
(SG&A Expenses)		-335		-456			
Total	17,616	1,286	21,164	2,041	2,041	30,000	3,000
		7.3		9.6	9.6		10.0

(Note) Revised data reflects the allocation of SG&A expenses (Approximate)

Data for the 7th Plan reflects the allocation of SG&A expenses

Epoch Making New Tablet Printing Equipment TABREX – Highly Competitive Products

The second generation TABREX Rev. tablet printing machine was launched in July 2016. We attended an exhibition (Interphex Japan) in June where we saw and listened to explanations of the new machine and were able to confirm its superiority.

The new machinery is compact in size, but boasts of large improvements in performance with a capability to respond to demands for increases in output. Capacity can easily be increased by using machinery in module format and increasing their numbers. The machine has been kept to a compact size because it employs a guideless transport mechanism that does not use guides. In addition, the yields of the printing function have increased dramatically due to improvement in the accuracy of the optical inspection function. Moreover, the ink used comes in a cartridge format that allows for easy

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replacement of ink and contributes to reductions in loss of ink.

The new TABREX machinery costs about JPY100 million and is capable of printing 100,000 tablets per hour. Cartridges cost about several JPY100,000s of yen, and color ink cartridges are available. Freund leads the industry and has created a “stock type business model” where they can derive sustained income from sales of cartridges. Strong orders are also anticipated.

TABREX is also expected to be a product that can compete in the global market as well. Therefore, product development and marketing structures will be further strengthened.

While all of the first generation TABREX machines introduced until now are still in operation, efforts were conducted for the development of the second generation machine during 2015. And while there are seven companies within the industry making similar machinery, the second generation TABREX machine is highly differentiated from competitors’ equipment. Highly skilled development staff have been hired from outside Freund to work on the development of TABREX, and they have contributed to an increase in the development capability of Freund overall. A team of engineers with particular strengths in mechatronics and semiconductors have been assembled and have been highly effective in the development process.

The new machine allows for printing directly to iodine tablets, which had proven to be a technological challenge until now. While iodine tablets are difficult to distinguish from other tablets visually, the ability to clearly print on these tablets will reduce the risk of mistaken administration. While coating tablets before they can be printed on increases the price of their manufacture, it is not yet clear whether or not printing made directly to the surface of the tablet will remain intact or not.

While initial versions of this machine were developed through collaboration between Okabe Kikai Kogyo Co., Ltd. and major pharmaceutical manufacturing companies, the addition of Freund’s revolutionary drug formulation ink (pharmaceutical excipient) technologies have contributed the development of this most advanced machine in the world.

The character legibility of the new tablet printing machinery has improved dramatically compared to conventional machines. This new machine uses dot-on-demand (DOD) ink jet printing format to print characters that are four times finer than conventional methods. In addition, this new machine allows for printing on both sides of tablets and parallel printing for secant and non-secant applications. Patent applications for this printing technology have been submitted.

One of the main points of superiority of TABREX is the light resistance quality and the easy of handling of the cartridge package for ink. Furthermore, this ink cartridge will lead to sustained income after the sale of the printing machinery.

Highly Competitive TABREX

The leading quality performance of TABREX makes it superior. Conventional printing equipment can produce 300,000 tablets. Consequently, use of three machines in parallel applications could satisfy conventional capacity demands. The new second generation equipment allows for 1) reductions of wasted ink due to its modular format, 2) elimination of separate inspection equipment due to internalized ability to conduct external inspection, 3) easy replenishment of ink by simply replacing a cartridge, and 4) easy disassembly and assembly (15 minutes) due to the use of a simple mechanical system.

TABREX REV also uses a new technology that allows for printing over engraved marks on tablets which cannot be duplicated by competitors. Also, the edges of the tablet can also be printed and invisible printing can be conducted. Invisible printing uses special ink that is invisible to the human eye under normal light but can be seen when special lighting is shone on the printed tablet. This technology can be used as a method to prevent falsification of products.

Compared with conventional equipment, TABREX is becoming the industry standard with its ability for mass production. Sales of tableting equipment will also contribute to sustained sales of ink, which can become another significant contributor to profits.

Sales efforts will also be made to sell TABREX in overseas markets. Falsified products are estimated to account for more than 10% of the market in Europe and represent a loss of about JPY1 trillion. TABREX equipment will allow for each tablet to be printed with a unique identification number. Therefore, Freund Vector will assume responsible for marketing this product in Europe and North America. TABREX is highly effective because it has been developed internally and is compact in size. Moreover, it can be expected to contribute largely to profits as it is a high value added product.

Capital Investment, Research and Development Expenses

(¥mn, %))

	2011.2	2012.2	2013.2	2014.2	2015.2	2016.2	2017.2	5 Year Plan
Capital Investment	469	218	221	477	545	266	564	JPY2.8 billion expected over 5 years JPY1.2bn, JPY1.2bn for Machinery, Chemical & Food JPY0.4bn company wide
Depreciation	257	264	232	303	308	321	338	
R&D	355	390	435	464	592	687	640	JPY1.9 billion expected over 5 years
R&D / Sales Ratio	2.7	2.6	2.7	2.6	3.4	3.6	3.0	JPY1.2bn, JPY0.7bn for Machinery, Chemical & Food JPY1.5bn, JPY0.4bn for new product, component development

Development of New Products Other Than TABREX

The development team of TABREX leverages external human resources to develop new applications for mechatronics, and this team is expanding the realm of its product development capabilities. Consequently, Freund is expected to develop new products following on the heels of

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TABREX and make an announcement of this new product at the Interphex Japan Conference 2017 to be held in June.

This newly developed equipment is expected to be a high performance product outside the realms of the tableting, coating, and printing and will leverage technologies cultivated in the development of TABREX. This is a product in a new business realm for Freund and it is expected to see demand on a global basis.

Revolutionary Continuous Granulating Machinery Development

Continuous production capability of formulations is garnering attention for its ability to 1) respond to small lot manufacturing to match needs of individual customers, 2) increase efficiency by reducing manufacturing time and 3) improve design quality.

GEA developed a continuous production machine and it has begun being adopted by pharmaceutical manufacturers in Europe from 2015 to 2016. The guidelines for continuous production are being solidified as modular and full line equipment applications are being tried. It has already received approval from the United States Food and Drug Administration and is expected to receive approval in Japan shortly. Freund and Powerex Corp. are both promoting development.

The merits of continuous production include 1) flexibility in the control of production volumes, 2) the ability to use the same equipment after research and development is conducted for actual manufacturing, and 3) offers reductions in capital investments and other resources. At the same time, some of the main concerns surrounding the introduction of continuous production equipment include the quality and cost of products manufactured, the ability to respond to various regulations and others.

Currently, there are applications where certain products are better suited for continuous production and batch production in striking a balance between drug unit pricing and production volumes. Because both options can provide a set volume through continuous production, the ability to develop new products on an anticipatory basis is a key.

With regard to continuous production, new equipment is under development and commercialization is being promoted. The most difficult aspect is the mixing process for drugs and excipients. In order to mix both successfully, both need to be of similar quality depending upon the drugs being manufactured and consequently a high level of knowhow is required. An inability to achieve high quality levels in the initial stages of manufacturing can lead to defective products being manufactured in the continuous production process. Therefore, development is being undertaken in this realm.

Freund will form alliances with other companies to conduct joint development of continuous production systems for tablets. The newly developed systems will not use batch processing, but instead use granulating, drying, tableting, coating and printing processes on a continuous basis. All

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of these processes will be created in cooperation with other companies involved with tableting. This continuous production system will duplicate the integrated manufacturing structures of chemical plants for drug formulation processes functions.

Freund developed the granulating equipment Granuformer to replace conventional batch production and realize continuous production for granules, and launched sales in 2014. Raw powder materials are mixed with binders in two axis extruders to be turned into granules in a dome type vertical granulating machine. Uniform granules with minimal variation in granule size distribution can be manufactured using a newly developed spiral drying mechanism for continuous production and recovery in a cyclone mechanism after hot air drying is completed. And while GEA manufactures continuous manufacturing equipment, Freund's equipment is more advanced and leads the continuous production machinery industry.

Granuformer will be displayed at exhibitions in spring 2017 as part of marketing efforts to expand sales. Furthermore, collaboration with Freund Vector of the United States is expected to be strengthened for marketing of this product overseas.

Global Deployment of the Pharmaceutical Excipients Business

With regard to excipients, the decision to deploy this business globally has also been made and efforts to begin marketing excipients have already led to an increase in exports. Beginning with non-parallel, new excipients in niche realms are being leveraged to cultivate overseas markets.

In addition to the organizational restructuring performed in March 2017 for the machinery, cosmetics and management divisions, Japanese and overseas marketing divisions have also been newly established. Repeated marketing visits to the same clients for both machinery and cosmetic products are commonly made. Therefore a decision has been made to integrate the marketing efforts, which had been conducted separately.

In addition, the Japanese and overseas marketing divisions have been placed on the same floor so that coordinated marketing for both Japan and overseas markets can be conducted. The ability to coordinate marketing functions for both Japan and overseas markets is becoming increasingly important due to the recent aggressive moves by the Japanese generic drug manufacturers to enter overseas markets. Moreover, collaboration on marketing with Freund Vector and Freund Turbo has been strengthened more recently.

Pharmaceutical Excipients and New Product Development

Sales of new pharmaceutical excipient products were launched in October 2015. Freund has succeeded in developing a version of the Nonpareil 105 series with even finer granule size.

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Traditional granule sizes have ranged between 355 to 500 μm and 180 to 300 μm , but a new size of between 106 to 212 μm has been developed. Consequently, the rough texture of orally disintegrating tablets has been reduced a step further, and capsule sizes can now be reduced. At the same time, enteric and controlled release, and precise drug design can now be performed. This technology leads the industry and is expected to contribute to earnings.

Promote Internal Development of New Products in the Chemical and Food Business

Freund is marketing pharmaceutical excipients developed in-house to generic drug manufacturers, and they should become a stable source of earnings due to sustained demand if they are used by generic drug manufacturers. The Company has promoted efforts to internalize the manufacture of food quality preserving agents along with the merger of Freund Kasei Corporation and the move of the in-house plant to Hamamatsu.

At the same time, consigned manufacture of supplements has lost the momentum it had seen two years earlier. This slowing is attributed to the arrival of an adjustment period for Freund's dietary supplements.

Freund's granulating and coating technologies can be leveraged in the production of newer supplements. The effectiveness of supplements depends upon how high in quality and uniformity they can be manufactured, and how they are absorbed. The profitability of excipients and quality preserving agents manufactured in-house is higher than supplements manufactured on a consigned basis and they contribute to overall profits.

Freund currently manufactures over 10 different supplements. One of the strengths of the Company is its drug formulation technologies and applications of special coating technologies to protect important agents of these supplements from dissolving in the stomach to allow them to remain intact until they can reach the intestines. This superior sustained release control technology is a strength of Freund.

Freund manufactures on a consigned basis enclosed capsules that can deliver bifidobacteria safely to the intestine. Bifidobacteria in general is susceptible to degradation within the stomach and small intestine and most die in the stomach. Freund's capsule technology allows the bifidobacteria to reach the large intestines where they are designed to aid the healthy digestion process. Manufacturing is done on a consignment basis and contributions from this technology are expected to boost future earnings.

Lithium Battery Manufacturing Equipment Development, Market Cultivation

Lithium batteries are expected to become established as an independent industry. Machinery for

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the manufacture of electrodes sold to Korea and China are expanding. Consequently, Freund Turbo's business is expanding.

Lithium battery applications for tableting and coating technologies are also expanding, with demand for increased performance of particle coating of electrodes and miniaturization on the rise. These trends are expected to contribute to growth in demand for Freund's coating technologies. Lithium batteries are beginning to utilize industrial coating applications of pharmaceutical use machinery, and Freund is developing specialized equipment for these applications. Powder raw materials are surface treated using a coating process, and tests are being conducted currently.

Demand for Freund Turbo equipment in lithium battery applications is expected to grow. V Turbo new industrial use products utilize drug formulation equipment technology applications, but efforts to develop new products that are improved to better match lithium battery applications. Product development is being conducted through a collaboration between Freund and Freund Turbo, with Turbo assuming responsibility for marketing. Because of strong demand in China and Korea, efforts will be made to further strengthen marketing capabilities.

Cultivate Fine Chemical Machinery Market – Leverage Freund Turbo's Strengths

Freund Turbo also replaced its top management team in March 2014, with Iwao Fusejima becoming Chairman and Shuichi Watanabe, who used to work at a trading firm selling Freund Turbo products, being appointed as President. An office was established in Shinagawa in June 2014 as part of its efforts to strengthen its marketing structure and integrate its manufacturing and sales functions.

President Souichi Watanabe has led efforts to strengthen the marketing function, and achieve results from new product development. Pulverizing equipment has matched new needs in the market for toner and chemical products and are growing. Freund Turbo's ultrasonic screen type turbo cleaner is also expected to see strong demand in pharmaceutical product applications. This machinery uses a mechanism to eliminate foreign matter at ultrasonic speeds and was developed for pharmaceutical product applications. This product is also expected to be marketed by Freund Vector as well in the future.

Freund Turbo also boasts of strengths in fine chemical products commonly used as materials in cosmetics, toner, and lithium ion battery related applications. Granulating machinery process powders in sorting equipment to form solid materials, then processes them in mixing and pulverizing equipment to turn them into micron sized granules, and finally run them through dry mill equipment to be turned into ink. This process turns micron sized powders into nano sized granules. Freund Vector of the United States has begun selling Freund Turbo's Turbo Screener (Sorting equipment).

The over 300 tests of pharmaceutical products conducted at the Hamamatsu Technology

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Development Research Center per year, and testing of industrial use batteries (Machinery used to create materials used in automobile use lithium ion batteries) is also rapidly growing.

Plans to Launch A Service Business

Machinery maintenance service is one of the new businesses currently being considered for launch in the future. Nearly 10% to 15% of machinery business sales are repair parts and services. While Freund has not actively pursued the maintenance and service business, Vector of the United States has promoted efforts to conduct the service business. Within the next year, Freund expects to establish the foundations of a maintenance service business within Japan.

Cultivate the Global and Asian Markets

In North America, new developments are appearing with regards to both pharmaceutical and food related products. While demand in South America had stagnated in the past several years, a recovery is being seen in parts of Brazil. Freund will endeavor to raise its overseas sales ratio to 30%. With regards to the overseas manufacturing structure, Freund is considering the creation of a manufacturing structure within Asia as part of its current Medium Term Business Plan and with a view to the promising market of India.

A laboratory was opened in Milan, Italy to cultivate the European market. Similarly Freund deems that there is now a need for a similar laboratory in Asia to cultivate local markets. Furthermore, responses are being developed to answer the growing need for multiple function equipment in the Indian market.

The superior uniformity quality of the Granulex (Centrifugal rolling granulation and coating equipment) with both granulating and coating functions that eliminate the need for a separate granule sizing process is believed to match the needs of the India market.

In overseas markets, Freund has switched its distributing agents in both India and Korea, and is strengthening its collaboration with Freund Vector to cultivate business in the Asian markets. Moreover, measures to improve the coating equipment High Coater Original for emerging markets in Asia are being promoted.

With regards to cultivation of the India market, marketing for both equipment made in Japan by Freund and the United States by Freund Vector are being conducted, and orders have been received for manufacturing equipment made by Freund Vector. These orders reflect the characteristic of Freund Vector machinery being designed with global standards in mind.

In cultivating global markets, the anticipated strong growth in generic drug usage around the world must be considered. With regards to developing markets, demand for Freund's high end drug

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formulation equipment is expected to grow. There are some 2,000 pharmaceutical related companies within Japan, 5,000 in China (200 are publicly traded) and 20,000 in India (Only 100 are recognized by the United States Food and Drug Administration). Therefore, demand for Freund equipment is expected to rise along with growth in the construction of clean and highly precise manufacturing facilities in these markets.

The main markets in Asia are Korea, China, India and Taiwan, but other markets including Turkey and Indonesia are also becoming attractive. And while marketing for these markets is conducted from Japan, both equipment made in Japan by Freund Corporation and in the United States by Freund Vector are being sold, depending upon the needs of the customers in those markets.

Particular efforts to sell excipients will be made in Korea, China and India. Marketing will be conducted for unique products in cooperation with companies with strengths in chemicals.

Freund Vector Business Expansion

With regard to the laboratory of Freund Vector, the existing aging equipment is expected to be replaced with state-of-art equipment so that customers coming to the facility can test the highly improved efficiency of the newer equipment. Consequently, capital investments are expected to increase.

In addition, Vector is hiring engineers for business development that explore opportunities in new business realms. They have already been able to identify potential business candidates and are considering their commercialization.

Vector of the United States completed construction of facilities to house a new manufacturing line in January 2015. The assembly space is 1.6 times the size of existing facilities. Furthermore, the construction of this new facility is timed perfectly.

This new facility was originally planned as a response to capture growing demand from South America and Europe as Freund Vector exports products to Central and South Americas. This increase in demand from overseas is the result of transfer of manufacturing facilities by United States pharmaceutical companies to overseas and it is expected to contribute to a decline in sales within North America and a rise in sales within Central and South Americas. The sales agent in Brazil maintains test equipment and provides them to customers on a rental basis as part of its marketing strategy. However, the use of sales agents in Central and South America leads to reductions in profit margins.

A key issue for Freund Vector is its marketing capability. While it maintains both manufacturing and sales facilities at its headquarters in Cedar Rapids, Iowa, a one hour plane ride from Chicago, Illinois, it needs to strengthen its marketing capabilities to be able to service the numerous pharmaceutical product manufacturer facilities located in the eastern portion of the United States.

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Pharmaceutical Product Manufacturing Recovery in North America

There appears to be a trend for manufacturing to be brought back in-house within the United States and North America overall. United States pharmaceutical manufacturers had shifted production overseas, with products being imported back to the United States. But in order to raise the quality of pharmaceutical products, pharmaceutical companies are bringing production back to the United States to be manufactured in-house. Furthermore, pharmaceutical product manufacturers in India and China are also opening up manufacturing facilities in the United States. Consequently, Freund Vector is seeing increases in business opportunities.

As part of its sales services, Freund also provides rental of equipment, which is a service unique to Freund within the industry. This service allows customers to use their smaller machinery for between two to three months. Customers can conduct actual production using this machinery, which leads to purchases by 20% to 30% of the customers to which the machines have been loaned. In addition, sale of spare and repair parts for equipment has become another income stream for Freund. The lifespan of equipment is long at between 10 to 20 years, but during this period parts need to be replaced. Consequently, parts sales account for between 10% and 15% of total sales and profitability on parts is high.

Leveraging Strength of Collaboration with Japan

According to Freund Vector, 1) the competitive capability of products can be raised by leveraging the development capabilities of Freund within Japan, 2) there is ample room to reduce costs through reviews of design, 3) COMPU5 can be leveraged in applications within Japan, and 4) both the volume and quality of human resources need to be improved for expansion of overseas business.

The importance of Freund Vector in the global strategy of the entire Freund Corporation Group is growing, and integration of the Group's overall management function is also necessary. President Iwao Fusejima, who was an exchange student studying in Cedar Rapids and is also the Chief Executive Officer of Freund Vector, will demonstrate his leadership qualities in the management of both companies.

4. Near Term Earnings: Tablet Printing Equipment Orders Trending Favorably, Profits Expected to Continue to Achieve New Records

Extremely Favorable Conditions in Fiscal Year February 2017

Sales and operating, current and net profits rose by 11.2%, 51.6%, 50.4% and 10.7% to JPLY21.164,

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JPY2.041, JPY2.097 and JPY1.064 billion respectively during fiscal year February 2017. Also, operating profit margin and return on equity ratio of 9.6% and 9.0% respectively were achieved.

The relatively low growth in net profit is attributed to the payment of JPY250 million in retirement benefits for directors arising from the retirement of the founder as managing director, and the effect of this payment is expected to disappear from fiscal year February 2018.

Machinery Business New Orders, Order Backlog Trends

(¥mn, %)

	2013.2	2014.2	2015.2	2016.2	2017.2
Machinery					
New Orders	9,280 (-8.4)	10,067 (+8.6)	12,407 (+23.2)	13,112 (+5.7)	16,358 (+24.8)
Sales	9,914 (+3.5)	11,004 (+11.0)	10,941 (-0.6)	13,037 (+19.2)	14,914 (+14.4)
Order Backlog	5,271 (-9.3)	4,991 (-5.2)	6,682 (+33.9)	7,086 (+6.0)	8,561 (+20.8)

(Note) Figures in parenthesis are percent year-on-year change

With regard to the machinery business, strong capital investments of the generic drug manufacturers and subsequent record high levels of orders were recorded. Machinery business division orders rose by a strong 24.8% year-on-year. Industrial related sales rose by a large margin of 55.2% year-on-year. This strong growth is attributed to a large project for a food related application in the United States, and the start of some lithium ion battery related application work in Korea. Consequently, confidence of the Freund management is growing as applications for products outside of the pharmaceutical product realm in the food and battery market are growing.

Sales by Geographic Region

(¥mn, %)

	FY2/13 (Share)		FY2/14 (Share)		FY2/15 (Share)		FY2/16 (Share)		YY
Japan	12,800	78.1	13,233	75.1	13,056	74.9	13,547	71.2	(+3.8)
Overseas	3,596	21.9	4,382	24.9	4,367	25.1	5,480	28.8	(+25.5)
North America	948	5.8	1,503	8.5	1,599	9.2	2,190	11.5	(+37.0)
Europe	772	4.7	701	4.0	450	2.6	937	4.9	(+108.2)
Asia, Central South Americas	1,875	11.4	2,177	12.4	2,317	13.3	2,352	12.4	(+1.5)
Central South Americas					1,071	6.1	1,325	7.0	(+23.7)
Asia, Others					1,246	7.2	1,027	5.4	(-17.7)
Total	16,396	100.0	17,616	100.0	17,424	100.0	19,027	100.0	(+9.2)

(Note) YY represents year-on-year growth rates

Sales of Freund Vector in North America are trending favorably, and earnings steadily expanded. However, in yen terms sales and profits declined by 9.6% due to the influence of the strengthening of

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the yen from JPY121.1 to JPY109.5. Freund Turbo was able to grow sales, but higher costs including labor and development expenses caused profits to decline.

Excipient sales within the chemical and food business trended favorably. Fierce competition caused sales and profits of food quality preserving agents to decline. Sales of dietary supplements grew, but profits trended sideways due to lower profitability of products sold. Recent growth in highly profitable pharmaceutical excipients allowed profits of chemical products to grow by a large margin. New food supplements had been expected to decline, but the inability of clients to facilitate their own manufacturing functions led to continued orders for Freund and allowed sales to grow.

While the value of exports of the chemical and food business is still small, they grew by 37.3% year-on-year. Exports to India, Korea and Taiwan are growing and Freund maintains high expectations for future exports.

Earnings by Business Segment

(¥mn, %)

	Machinery	YY	Chemical, Food	YY	Adjustment	Total
2012.2						
Sales	9,582	(+18.4)	5,653	(+9.5)	-1	15,236
Operating Profit	907	(+46.3)	470	(+20.9)	-312	1,065
% margin	9.5		8.3			7.0
2013.2						
Sales	9,914	(+3.4)	6,482	(+14.7)	—	16,396
Operating Profit	1,172	(+29.2)	565	(+20.2)	-267	1,470
% margin	11.8		8.7			9.0
2014.2						
Sales	11,004	(+8.6)	6,611	(+2.0)	—	17,616
Operating Profit	1,242	(+6.0)	379	(-32.9)	-335	1,286
% margin	11.3		5.7			7.3
2015.2						
Sales	10,941	(-0.6)	6,482	(-2.0)	—	17,424
Operating Profit	1,108	(-10.8)	474	(+24.9)	-432	1,150
% margin	10.1		7.3			6.6
2016.2						
Sales	13,037	(+19.2)	5,990	(-7.6)	—	19,027
Operating Profit	1,189	(+7.3)	519	(+9.6)	-362	1,346
% margin	9.1		8.7			7.1
2017.2						
Sales	14,914	(+14.4)	6,249	(+4.3)	—	21,164
Operating Profit	1,750	(+47.1)	748	(+44.0)	-456	2,041
% margin	11.7		12.0			9.6

(Note) % margin represents ratio of operating profit to sales

During fiscal year February 2017, factors including 1) the disappearance of development expenses

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(JPY0.3 billion) for TABREX that occurred in the previous fiscal year and 2) the disappearance of losses of Pharmatec (JPY0.15 billion) due to sale of the company had a positive influence upon earnings, and contributed to both the machinery and chemical and foods businesses.

Change in Accounting Periods of Subsidiaries

During fiscal year February 2017, both Freund Vector and Freund Turbo changed their accounting period end from December to February, causing both companies to see an irregular accounting period of 14 months. While business activities are slow during the months of January and February, this change in accounting periods is estimated to have added some JPY0.7 billion in sales and several tens of millions of yen to profits. During the coming term, this change is expected to contribute to loss of a similar level of sales and profits.

Balance Sheet

	(¥mn. %)					
	2012.2	2013.2	2014.2	2015.2	2016.2	2017.2
Current Assets	10,554	11,084	11,331	12,782	13,053	14,938
Cash equivalents	3,035	3,617	4,600	4,870	4,042	6,982
Receivables	4,954	4,764	4,409	5,272	5,694	4,403
Inventories	251	210	202	296	330	404
Uncompleted products	1,219	1,497	937	931	1,511	1,712
Raw materials	403	394	535	543	590	649
Noncurrent Assets	3,787	3,886	4,219	4,495	4,153	4,162
Tangible assets	2,861	2,910	3,052	3,403	3,135	3,234
Investments, others	898	946	988	944	835	872
Total Assets	14,342	14,971	15,550	17,277	17,206	19,101
Current Liabilities	5,204	5,015	4,402	5,427	5,315	6,592
Payables	2,810	2,478	2,068	2,786	2,580	3,058
Prepayments	1,223	1,279	926	1,242	1,288	1,831
Noncurrent Liabilities	647	640	754	669	361	323
Net Assets	8,489	9,315	10,392	11,180	11,529	12,185
Capital adequacy ratio	58.3	61.4	65.8	63.6	67.0	63.8

(Note) Freund had no interest bearing liabilities as it maintains no loans payable

Strong Balance Sheet, Ample Free Cash Flow

With regard to the balance sheet, capital adequacy ratio declined slightly from 67.0% at the end of the previous term to 63.8% at the end of the current term. At the same time, cash position rose from JPY4.042 to JPY6.982 billion over the same period. Growth in orders and the change in subsidiary accounting periods contributed to a rise in prepayments from JPY1.288 to JPY1.831 billion.

The net cash inflow from operating activities rose by a large margin to JPY3.605 billion. And despite a net cash outflow from investing activities of JPY351 million, free cash flow turned from a net outflow in the previous term to a large net inflow in the current term. Freund is expected to use its cash flow for research and investment, overseas capital investments, capital collaboration within and outside of Japan, and for M&A activities.

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Unfinished products on the balance sheet grew due to the increase in orders and include orders to be filled during the coming term. Customers are required to make a prepayment worth one third of the value of their order for products at the time of their order. The majority of products are booked as sales at the time of their delivery. Sales for longer term projects of over two years are booked on a percentage of completion basis, but account for a small amount of Freund's overall sales.

Freund maintains a healthy balance sheet with zero debt. Furthermore, prepayments match the levels of inventories. Because Freund is a research and development based company, large capital investments are a requirement of its business cycle. Working capital can be paid for using internal funds and there is no need for external funding. And because Freund is able to secure adequate amounts of free cash flow, its ability to pay dividends is on the rise.

Cash Flow Trends

	2014.2	2015.2	2016.2	2017.2	2018.2(予)	
Operating Cash Flow	1,227	822	290	3,605	1,430	
Net profit after tax	574	895	642	1,655	1,500	
Depreciation	303	308	321	338	330	
Receivables	453	-781	-430	1243	-400	
Inventories	552	12	-620	-382	-500	
Payables	-113	345	-170	409	200	
Prepayments	-447	252	45	571	300	
Profit on sale of subsidiary			217			
Investing Cash Flow	-423	-240	-432	-351	-500	
Tangible assets	-264	-453	-304	-436	-500	
Free Cash Flow	804	582	-142	3253	930	
Financing Cash Flow	-226	-284	-331	-277	-400	
Dividends	-172	-215	-258	-215	-350	
Cash and Equivalents at Term End	4,107	4,548	4,042	6,982	7,512	

Freund Expected to Record another Year of Record High Profits in Fiscal Year February 2018

Freund's earnings estimates for fiscal year February 2018 call for sales to decline by 0.8% year-on-year to JPY21.000 billion, and operating, current and net profits to rise by 2.9%, 0.1%, and 31.5% year-on-year to JPY2.100, JPY2.100 and JPY1.400 billion respectively. These estimates are based upon a foreign exchange rate assumption of JPY100 per USD1.

Estimates for the coming fiscal year are deemed to be conservative, and consider the potential for change in the investment trends based upon a potential weakening the current boom in generic drugs. With regard to sales, withdrawal of supplements manufactured by Freund on an OEM basis by clients is expected to lead to a JPY1.0 billion decline in sales of the chemical and food business. Furthermore, the return from irregular 14 month accounting periods to normal 12 month periods for subsidiaries is expected to contribute to a JPY0.7 billion loss of sales. However, neither of these

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factors is expected to influence profits.

At the same time, Freund expects to receive orders for eight new TABREX machines, and sales of 10 machines in both the current and coming term are expected. Consequently, sales from these new TABREX machines are expected to amount to JPY1.0 billion per year. Furthermore, strong profitability on these machines is expected to enable Freund to achieve its estimates.

Freund will start full scale marketing to secure orders for the new TABREX machines. The Company targets orders of 20 units for the near term to be booked as sales over the next two years. Because each TABREX machine costs JPY1.0 billion, an ample amount of profit is expected to be derived from their sales and their contributions to overall profits is expected to be significant.

Earnings Estimates by Business Segment

	2014.2	2015.2	2016.2	2017.2	2018.2 (Est.)	2018.2 Co Plan	2019.2 (Est.)	2022.2 (Est.)
								(¥mn, %)
Machinery	11,004	10,941	13,037	14,914	16,000	15,410	17,000	23,000
Freund Corp.	7,081	6,887	7,784	9,446	10,700		11,000	
Freund Vector	3,892	3,905	4,686	4,727	4,600		5,000	
Freund Turbo	782	999	1,205	1,641	1,700		1,900	
Operating Profit	1,242	1,108	1,189	1,750	2,050		2,150	3,500
Operating Margin (%)	11.3	10.1	9.1	11.7	12.8		12.6	15.2
Chemical and Food	6,611	6,482	5,990	6,249	5,600	5,590	6,100	9,000
Pharmaceutical Excipients	1,971	2,135	2,132	2,357	2,600		2,900	
Food Quality Preserving Ag	1,916	1,952	2,004	1,951	2,000		2,100	
Dietary Supplements	2,723	2,394	1,853	1,941	1,000		1,100	
Operating Profit	379	474	519	748	800		900	1,300
Operating Margin (%)	5.7	7.3	8.7	12.0	14.3		14.8	14.4
Adjustments (Company wide administrative expense)	-335	-432	-362	-456	-550		-600	-800
Sales	17,616	17,424	19,027	21,164	21,600	21,000	23,100	32,000
Operating Profit	1,286	1,150	1,346	2,041	2,300	2,100	2,450	4,000
Operating Margin (%)	7.3	6.6	7.1	9.6	10.6	10.0	10.6	12.5
Overseas Sales	4,382	4,368	5,480	5,563	5,800		6,500	11,000
Overseas Sales Ratio (%)	24.9	25.1	28.8	26.3	26.9		28.1	34.4

(Note) Based upon Freund Business Plan data, Analyst estimates

Freund's earnings estimates for the coming term are deemed to be somewhat conservative. And while estimates represent JPY1.7 and JPY0.05 billion lower sales and profits than the previous terms estimates, the Company is expected to make up the difference by boosting sales of products with high profitability. The introduction of the new TABREX machines is expected to contribute to higher profits. While there are some concerns over the investment trends by generic drug manufacturers,

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the record high levels of order backlog suggest that Freund may be able to exceed its earnings estimates.

5. Corporate Value: Ability to Overcome Potential Weakness in Generic Drug Demand

Medium Term Growth Potential

Freund's goal of achieving sales and operating profit targets of JPY30.0 and JPY3.0 billion respectively in five years appear to be reasonable. However, the outlook for a decline in machinery orders in the wake of a decline in the boom in generic drugs in Japan calls for the need to carefully consider a strategy of to offset potential weakness. New products, new realms, and development of overseas markets are all expected to help the Company offset potential weakness, but quantifying how much each will contribute to earnings is difficult at the current point in time. Therefore, the adopting of conservative targets may be unavoidable.

The main issues for Freund are the same as before and include 1) new product development and 2) overseas market cultivation. If these two issues can be achieved successfully, the Company may be able to achieve sales and operating profit of JPY32.0 and JPY4.0 billion respectively in five years. However, the potential for a one off decline in demand arising from the completion of the generic drug boom must also be taken into consideration.

The Medium Term Business Plan covering the next three years to fiscal year February 2020 calls for investments by generic drug manufacturers within Japan to expand and then peak out. However, the expansion in machinery equipment orders is expected to be accompanied by a similar increase in pharmaceutical excipient sales. But because excipients are consumable products, their sales are expected to continue despite weakening in machinery orders. Furthermore, their contribution to profits is expected to increase along with growth in their sales.

A key issue for the Company is how far it can grow its presence in markets in Asia including India by the time the peak in generic drug related demand is seen. Therefore, the ability to come up with adequate new products responses will be a key factor in the raising of its overseas sales ratio, which will continue to be a key performance indicator.

Maximizing Global Management Capabilities

Freund expects to cultivate market opportunities by leveraging its cooperation with Freund Vector. Over the medium to long term, Freund will be responsible for cultivating business opportunities in Asia, and Freund Vector will be responsible for Central and South Americas, the Middle East, and

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other emerging markets, and for the global deployment of the pharmaceutical excipient business. At the same time, Freund Turbo will continue to focus upon lithium ion batteries and other high value added applications

Based upon its strong product development capability, efforts will be made to aggressively cultivate opportunities in global markets and measures will be conducted to strengthen its overseas functions. At the same time, Freund will increase its efforts to cultivate both Japanese and foreign human resources, hire mid-career professionals, make anticipatory investments.

The goal of achieving 10% operating profit margin now appears within reach. Freund boasts of a high capital adequacy ratio, but higher levels of operating profitability need to be achieved in order to raise return on equity a step further. At the same time, efforts will be made to raise the ratio of overseas sales, increase profitability of overseas businesses, leverage proprietary technologies to raise value addition of products, and reviews pricing of products.

In order to raise its position to become a top player in the global market, Freund needs to achieve further successes in cultivating opportunities in overseas markets over the long term. And because of the sustained strengthening of their capabilities, we rate the corporate value of Freund as “A”. (Definition of corporate value is described in the cover of this report)

A View to Freund’s Move to the First Section of the Tokyo Stock Exchange

Freund has paid a dividend of JPY20 per share, including a special JPY5 dividend to commemorate the 20th anniversary of its listing in fiscal year February 2017. The Company is expected to maintain a dividend payment of JPY20 per share in the coming term, and maintains a dividend payout ratio target of 30%.

In order to move its shares to the First Section of the Tokyo Stock Exchange, Freund needs to have a minimum number of 2,200 shareholders. As of end February 2017, the number of shareholders stood at 6,570. The two for one stock split conducted at the end of February 2016 increased liquidity. Consequently, Freund can now move to the First Section as its market capitalization exceeds the JPY25.0 billion minimum requirement. We anticipate Freund to make this move sooner or later.

Freund was awarded a prize during the fiscal year 2015 Superior Investor Relations Awards ceremony held by the Japan Investor Relations Association, in reflection of the Company’s diligent efforts to conduct proactive investor relations. In addition, Freund has also established the Merger and Acquisition Promotion Office under the direct management of President Iwao Fusejima. Also, a corporate social responsibility committee was launched from March 2016, along with efforts to improve the working conditions for employees.

While the portion of shares held by institutional investors is expected to rise, the maintenance of a

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strong individual investor base is also important. Because of the large number of shareholders holding the minimum lot of 100 shares, the shareholder benefit program (A JPY1,000 prepaid QOL Card given to shareholders with minimum trading lot) is also another attractive feature for shareholders in addition to the increase in dividends. The shareholder benefit program specifies that prepaid cards worth JPY1,000 will be given to shareholders holding the minimum of 100 shares for over one year, and JPY2,000 to those holding the minimum of 100 shares for over three years. This JPY1,000 prepaid card is equal to 0.7% in dividend yield terms. In other words, the actual dividend yield to shareholders holding 100 shares for over three years would be equivalent to 3.0%.

Freund is expected to focus even more of its efforts upon achieving the goals defined in its Medium Term Business Plan, and President Iwao Fusejima is expected to adopt an even more aggressive role as the leader of Freund. At the current share price as of May 2, 2017, the price to book ratio (PBR) and price to earnings ratio (PER) stood at 1.95 and 15.9 times respectively, and return on equity and dividend yield were 12.3% and 1.5% respectively. Despite the Company's conservative estimates for fiscal year February 2018, Freund expects to achieve another year of record high profits and a continued expansion thereafter. Freund may garner attention of the market based upon the strong growth in its earnings and return on equity of over 10%.

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