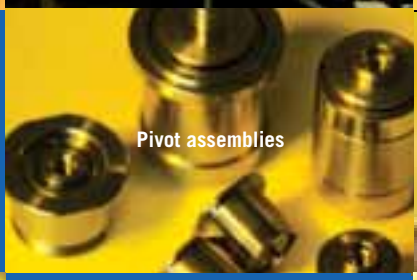
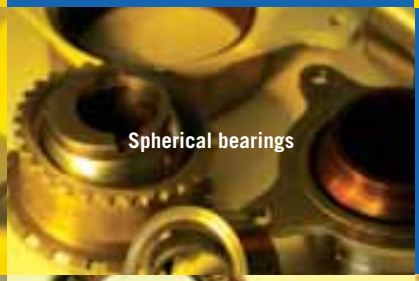
Minebea Up Close

Electronic Devices and Components
Rotary Components

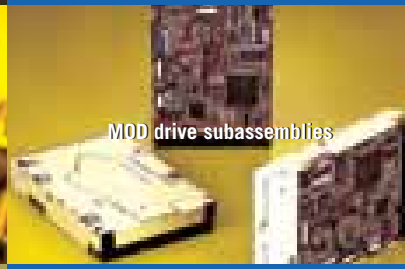
Machined Components
Bearings and Bearing-Related Products

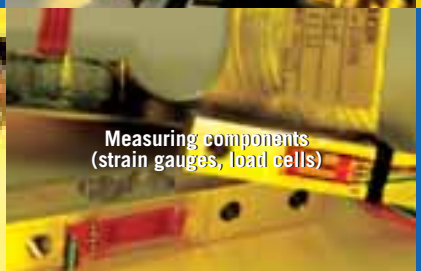




Other Electronic Devices and Components

Other Machined Components





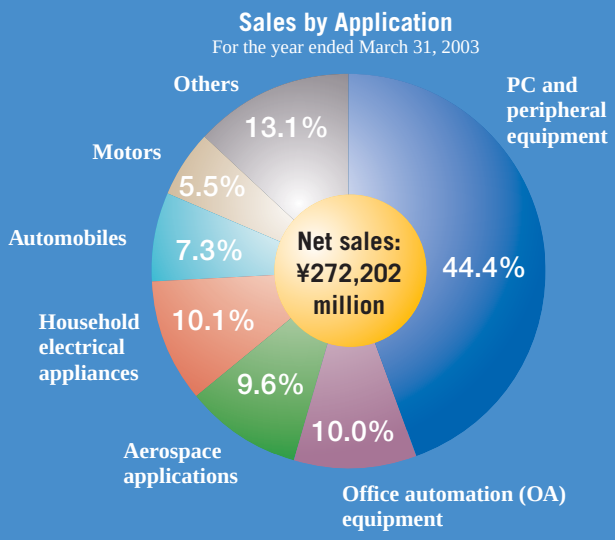
Principal Products

Applications

Minebea is the world's largest manufacturer of small ball bearings, up to 22mm in external diameter, and has a global market share in excess of 60%. The Company also manufactures a broad range of small motors and other electronic components for which it also enjoys a significant competitive advantage.

Bearings, the core product group in Minebea's Machined Components business segment encompasses standard ball bearings; integrated-shaft ball bearings and RO bearings, for high-end applications; and fluid dynamic bearings, which deliver outstanding quietness and robustness. The Company is positioned to respond swiftly and accurately to customers' needs for quality, manufacturing costs and supply for all of these products. Minebea is also a leading global manufacturer of bearings for highly demanding applications, such as rod-end and spherical bearings, which are used primarily by the aerospace industry.

In addition to mainstay HDD spindle motors, Minebea's Electronic Devices and Components business segment includes fan motors and stepping motors, which maximize the ultraprecision machining and mass production technologies Minebea has accumulated as a manufacturer of small bearings and have given the Company outstanding competitiveness in the electronics market. This competitiveness is also evident in other products in this segment, including PC keyboards and measuring components.



Miniature and Small-Sized Ball Bearings

Each ball bearing comprises an outer ring, inner ring, balls, retainers, shields and snap rings. Essential to high-precision motors and other rotary components, ball bearings determine rotational accuracy. The average motor contains two ball bearings. Minebea manufactures more than 8,500 different types of miniature and small-sized ball bearings, most of which have external diameters of 22mm or less.

RO Bearings

RO bearings are high-precision bearings developed by Minebea for use in HDD spindle motors. Each RO bearing features two raceways on the inside of the outer ring and one each on the shaft and the inner ring fitted on the shaft, essentially combining the functions of two bearings in one. In addition to preventing misalignment and minimizing Non-Repeatable Run Out (NRRO), RO bearings facilitate more compact motor designs.

Fluid Dynamic Bearings

In a fluid dynamic bearing, a thin layer of oil or other lubricant is injected between the shaft and sleeve. The structure of the bearing features a rotating shaft, which generates a hydrodynamic force, causing the shaft to float. The noncontact construction of this bearing makes it particularly suited for improving rotational accuracy and enhancing quietness and robustness. The ultraprecision machining and mass production technologies Minebea has cultivated as a manufacturer of ball bearings also ensure a sharp competitive edge in terms of quality and manufacturing costs of fluid dynamic bearings.

Integral-Shaft Ball Bearings

An integral-shaft ball bearing has two raceways on the shaft, allowing the integration of the inner ring and shaft of two ball bearings. This facilitates more precise rotation than is possible with two independent ball bearings, making integrated-shaft ball bearings particularly suited to applications such as cylinder units for video cameras.

Pivot Assemblies

Pivot assemblies are fitted into the base of actuators to position HDD magnetic heads. Minebea enjoys the top share of the global market for these components. Standard pivot assemblies combine one or two ball bearings between a shaft and a graded sleeve.

Journal Bearings

Journal bearings are used in helicopters, primarily in the main rotor axes, and landing gear for fixed wing aircraft.

Rod-End Bearings

Used in aircraft components, such as wing flaps, engine and wing mounts and hatches, rod-end bearings function as joints. These bearings are also used extensively in helicopters, trains and automobiles.

Precision Machined Parts

These parts combine bearings and other machined components and are used primarily to join aircraft parts together.

Markets

When Minebea started out, it primarily supplied bearings for use in aircraft instruments and dental handpieces. The advent of the videocassette recorder (VCR) in the 1970s, OA equipment in the 1980s and PCs and information and telecommunications equipment in the 1990s, however, spurred market expansion and demands for ever-higher performance, a trend that boosted demand for Minebea's ball bearings, small motors and other ultraprecision components.

In addition to continued growth, these markets are expected to see demand rise for products that offer increased energy efficiency, safety and convenience. Accordingly, demand for precision motors and control sensors is rising, particularly from manufacturers of automobiles, information and telecommunications equipment—such as cellular phones and mobile devices—and digital household electrical appliances. Accordingly, Minebea expects new opportunities to maximize the competitive edge afforded by its ultraprecision machining and mass production technologies to enhance its responsiveness and cultivate customers in these important markets.

Hybrid-Type Stepping Motors

PM-Type Stepping Motors

These motors rotate at fixed angles by digitally controlled electronic pulses and are used in the paper-feeding devices of printers, copy machines, facsimiles and similar equipment. Hybrid-type stepping motors combine a rotor with a permanent magnet (PM) and a magnetic body and use ball bearings. PM-type stepping motors use a PM as a rotor and contain no ball bearings.

Fan Motors

Fan motors are used to cool the inside of PCs and other OA equipment by directing heat outside. In September 2002, Minebea concluded a strategic joint development and consignment production agreement with Matsushita Electric Industrial Co., Ltd. The integration of the two companies' technologies will facilitate the development of high-performance and highly cost-competitive fan motors.

PC Keyboards

Frames, key switches, membrane sheets and other key components are manufactured in-house. Minebea supplies keyboards on an OEM basis to leading global PC manufacturers for use in desktop and notebook PCs. The Company also markets multimedia keyboards under its own brand name.

HDD Spindle Motors

HDD Spindle Motors with Fluid Dynamic Bearings

HDD spindle motors are what cause the disks in HDDs to rotate. The precision of HDD spindle motors determines the capacity and speed of HDDs, making these components critical to HDD performance. Accordingly, HDD spindle motors must offer superior performance in terms of rotational speed and low NRRO. Minebea manufactures ball bearings, including RO bearings, and fluid dynamic bearings for HDD spindle motors in-house, giving it a sharp competitive edge in this key market.

Lighting Devices for LCDs

Minebea manufactures lighting devices for LCDs used in cellular telephones, personal digital assistants (PDAs) and other applications. These lighting devices involve front and back lights, both of which comprise white light-emitting diode (LED) chips with micro-order prisms, facilitating unparalleled brightness and quality.

Speakers/Speaker Boxes

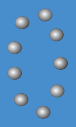
Minebea capitalizes on its pressing and plastic injection-molding technologies to manufacture speakers. Speakers are also fitted into speaker boxes and supplied as units to leading global audio equipment manufacturers on an OEM basis.

Ultraprecision Machining Technologies

Miniature and Small-Sized Ball Bearings: The Origin of Minebea's Ultraprecision Machining Technologies

The raceway roundness of the inner and outer rings for ultraprecision ball bearings manufactured by Minebea for use in applications requiring high precision, such as VCR cylinders and pivot assemblies for HDDs, is less than 0.05 micron. One micron is 1/1,000th of one millimeter—a particle of cigarette smoke is between 0.01 mm and 1.0 micron. Minebea's ability to mass produce ultraprecision machined products is the root of its competitive advantage.

An approach to production that ensures consistently superior-quality products from Minebea's 10 mass production bases worldwide

Snap Rings	Shields	Retainers	Inner Rings	Balls	Outer rings
Snap rings are C-shaped steel wires used to affix metal shields to outer rings.	Shields are fitted onto outer rings to prevent foreign matter and dirt from penetrating and lubricants from escaping. Materials commonly used to manufacture shields include metal, rubber and resin.	Retainers are used to separate the balls housed between the inner and outer rings and keep them in place within the raceway. Retainers are usually made of metal or resin.	The inner ring has a raceway on the outside in which the balls roll. Inner rings are made from chrome or stainless steel.	Balls—usually between five and 13, although the number varies depending on the type and size of bearing—are housed between the inner and outer rings. The most prevalent materials are chrome and stainless steel, with ceramics also popular.	The outer ring of a ball bearing has a raceway on the inside, in which the balls roll, and grooves on the top and bottom which hold protective shields. Outer rings are made from the same materials as inner rings.
					
Pressing	Pressing	Pressing	Cutting ↓ Heat treatment ↓ Grinding ↓ Super finishing	Cold forging ↓ Polishing ↓ Super finishing	Cutting ↓ Heat treatment ↓ Grinding ↓ Super finishing

Ultraprecision machining technologies and mass production of superior-quality products

The level of precision in each ball bearing production process is an essential factor in determining the quality of the finished product. Minebea conducts all processes in-house, as well as manufactures the dies, jigs, tools and production and assembly equipment used therein. This ensures consistently superior-quality products from Minebea's 10 mass production bases worldwide.

A global network of ball bearing production facilities

Vertically Integrated Manufacturing System

Minebea's vertically integrated manufacturing system maximizes its ultraprecision machining technologies

The level of precision in each production process is an essential factor in determining the quality of the finished product. Minebea's vertically integrated manufacturing system enables it to conduct all processes in-house—design and development; manufacture and maintenance of dies; production of pressed, plastic-injection molded, diecast and machined parts and ferrites; and final assembly. This system facilitates mass production of Minebea's ultraprecision components.

Vertically Integrated Manufacturing System

Assembly and testing

●**Assembly and Testing**
Minebea has installed large-scale automated assembly lines at its mass production bases worldwide. For ball bearings, in particular, Minebea designs, develops and manufactures all equipment used in its assembly lines at its parent plants in Japan, thereby ensuring a stable supply of superior-quality mass-produced products.

In-house production of parts

Pressing | Plastic-injection molding | Diecasting | Machining | Magnet formation | Surface treatment

Production of dies, jigs and tools

●**Dies**
Minebea designs and manufactures its own dies, facilitating in-house production of pressed, plastic-injection molded and diecast parts. Minebea also produces its own jigs and tools, enabling it to ensure dies are serviced and maintained to its highly exacting standards.

Development of products | **Development of materials** | **Development of mass production technologies** | **Development of dies, jigs and tools** | **Development of maintenance technologies**

Development, design, analysis and quality control

●**Development**
Minebea's parent plants in Japan and subsidiary PMDM in Germany are in charge of product design and development. As well, R&D centers located within Minebea's mass production bases in Thailand and Singapore conduct chemical analysis, cleanliness evaluation and environmental testing of products.

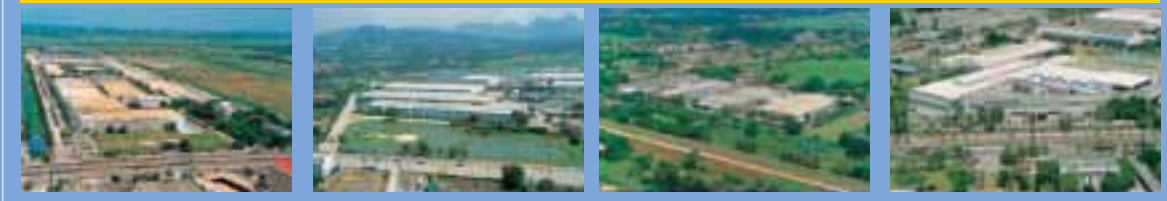
Mass Production Technologies

Minebea's vertically integrated manufacturing system facilitates the use of its mass production technologies

Responding swiftly and effectively to the increasingly diverse needs of customers requires unparalleled superiority in terms of supply capabilities and manufacturing costs. All of Minebea's mass production facilities worldwide operate under the same vertically integrated manufacturing system. Productive, organic links between facilities—especially those in Thailand, China and Singapore, which account for approximately 80% of the Minebea Group's production, the parent plant in Japan and global R&D bases—ensure the effective integration of Minebea's vertically integrated manufacturing system and mass production technologies.

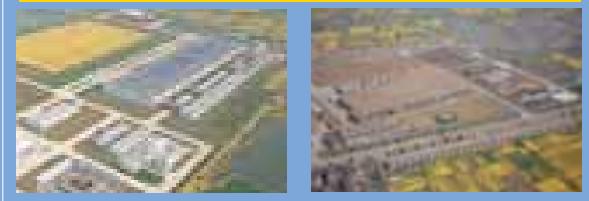
Mass Production Facilities

Thailand



Vertically integrated production of ball bearings, small motors, PC keyboards and other products; accounts for approximately 60% of the Minebea Group's production and is its largest mass production facility

China



Vertically integrated production of ball bearings, fan motors and measuring components; the Minebea Group's latest and most advanced plant

Singapore

Vertically integrated production of ball bearings; the Minebea Group's first mass production facility overseas

R&D Facilities

Thai R&D Center

Analysis of HDD-related and other products

Motor Development Technology Center (Germany)

Design and development of small motors

Technical Center (U.S.A)

Quality evaluation and testing of ball bearings and other components for automotive applications

European Electronics Technology Center (Germany)

Development of electronics technologies and related products

Parent Plants

Karuizawa Manufacturing Unit

Hamamatsu Manufacturing Unit

Research and Development

Minebea has established four R&D bases worldwide to, respectively, promote the development of intellectual assets—a key to competitiveness; facilitate the sharing and use of these assets within the Group; enable a smooth transition from development to mass production; and conduct forward-looking R&D. Recently, Minebea absorbed its R&D Headquarters into the newly established Engineering Headquarters, a step that will reinforce technology sharing among Minebea Group companies, encourage forward-looking R&D—contributing to the cultivation of new core competencies—and strengthen coordination between R&D and production groups.

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Bearing-Related Products, Small Motors

Precision Motors Deutsche Minebea GmbH (Germany)

HDD spindle motors and other small motors

- Product development
- Engineering
- Production of prototypes
- Quality evaluation

R&D Centers (Thailand and Singapore)

Ball bearings, fluid dynamic bearings, pivot assemblies, HDD spindle motors, hybrid-type stepping motors, fan motors and other products

- Quality evaluation
- Cleanliness evaluation/ management
- Development, production and evaluation/ management of lubricants

Karuizawa Manufacturing Unit (Japan)

Ball bearings, fluid dynamic bearings, rod-end and spherical bearings, pivot assemblies, HDD spindle motors, hybrid-type stepping motors, fan motors and other products

- Product development
- Engineering
- Development of production technologies (mass production)
- Production of prototypes
- Quality evaluation

NMB Technologies Corporation Technical Center (USA)

Ball bearings, motors and other products

- Quality evaluation for automotive components

New Hampshire Ball Bearings, Inc. (USA)

Rod-end and spherical bearings

- Product development
- Engineering
- Quality evaluation

NMB-Minebea UK Ltd. (United Kingdom)

Rod-end and spherical bearings

- Product development
- Engineering
- Quality evaluatoin

Electronic Components

Hamamatsu Manufacturing Unit (Japan)

PM stepping motors, DC brushless motors, DC spindle motors, MOD drive subassemblies, magnetic heads for FDDs, lighting devices

- Product development
- Development of magnets and other materials
- Engineering
- Development of production technologies (production of prototypes)

PC Keyboards

NMB Technologies Corporation (USA)

PC keyboards

- Quality evaluation

Mechatronics Division (Japan)

PC keyboards

- Product development
- Engineering
- Quality evaluation

Development of Electronics Technologies and Related Products

European Electronics Technology Center (Germany)

Speakers

Minebea Technologies Taiwan Co., Ltd. (Taiwan, China)

Speaker boxes

- Engineering
- Production of prototypes

Speaker Division (Japan)

Speakers

- Product development
- Engineering
- Quality evaluation

Measuring Components

Measuring Components Division (Japan)

Strain gauges, load cells and other measuring components

- Product development
- Engineering
- Production of prototypes
- Quality evaluation

Fasteners

Fujisawa Manufacturing Unit (Japan)

Fasteners

- Product development
- Engineering
- Quality evaluation

Defense-Related Special Parts

Omori Manufacturing Unit (Japan)

Defense-related special parts

- Product development
- Engineering
- Quality evaluation

Minebea has always placed a high priority on environmental protection and continues to take steps to enhance the environmental soundness of its operations worldwide, thereby ensuring that its facilities are welcomed by local communities. All of the Company's manufacturing facilities have obtained ISO 14001 certification, the International Organization for Standardization's standard for environmental management systems.

1991 | 7
Minebea organizes the Anti-CFC Committee with the aim of phasing out the use of specified chlorofluorocarbons (CFCs) and ethane as cleaning agents.

1992 | 3
Minebea represents Japanese corporations in Thailand at the Japan–U.S. Stratospheric Ozone Protection Conference, where it displays a proprietary washing technology that uses purified and deoxidized water rather than specified CFCs or ethane.

1993 | 4
Minebea becomes the first bearing manufacturer in the world to completely eliminate specified CFCs and ethane from all production processes.

(Note: Minebea installed its water-based washing system at all of its plants, at a total cost of ¥5.0 billion, enabling it to terminate use of approximately 145 tons of specified CFCs and 325 tons of ethane monthly worldwide.)

The Anti-CFC Committee is replaced by the Environmental Protection Committee.

| 7
Minebea displays its water-based washing technology at the Ozone Layer Protection Seminar, sponsored by Japan's Ministry of International Trade and Industry (the present Ministry of Economy, Trade and Industry).

| 8
Minebea formulates its own "Charter for Environmental Protection."

| 10
Minebea's Thai subsidiaries and the parent company receive the Stratospheric Ozone Protection Award from the U.S. Environmental Protection Agency (EPA).

Stratospheric Ozone Protection Award

1995 | 10
Goro Ogino, then president of Minebea, receives the U.S. EPA's Stratospheric Ozone Protection Award for individuals.

1996 | 4
Minebea Electronics & Hi-Tech Components (Shanghai) Ltd. establishes the Shanghai–Minebea Environmental Protection Fund, aimed at protecting the quality of the water in Lake Daishan-hu and the lake's surrounding environment, becoming the first foreign-capitalized company in Shanghai to establish an environmental protection fund. (As of June 2003, the fund is Rmb 11.0 million, approximately US$1.3 million.)

| 7
Minebea finalizes plans to obtain ISO 14001 certification, the ISO's standard for environmental management systems, at all its plants and begins construction of an environmental management system.

1997 | 4
The Karuizawa Manufacturing Unit—the principal parent plant—and U.K. subsidiary Rose Bearings Ltd.'s Lincoln plant become the first bearing production facilities to obtain ISO 14001 certification.

| 9
The Minebea Group is selected as winner of the U.S. EPA's Best-of-the-Best Stratospheric Ozone Protection Award.

| 10
All of Minebea's plants in Thailand obtain ISO 14001 certification simultaneously.

| 12
Minebea Electronics & Hi-Tech Components (Shanghai)'s two plants obtain ISO 14001 certification.

1998 | 1
All of Minebea's plants in Singapore obtain ISO 14001 certification.

| 2
German subsidiary PMDM obtains ISO 14001 certification.

| 6
Goro Ogino, then president of Minebea, receives the City of Shanghai's Shanghai Environmental Protection Award, in recognition of his contributions to environmental preservation in the city.

Japanese subsidiaries NMB Electro Precision, Inc., and Minebea Onkyo Co., Ltd. (R&D Center), obtain ISO 14001 certification.

| 8
The Hamamatsu Manufacturing Unit, the parent plant for electronic components, obtains ISO 14001 certification.

| 10
The Fujisawa and Omori Manufacturing units obtain ISO 14001 certification.

1999 | 1
The Kyoto Manufacturing Unit obtains ISO 14001 certification.

| 2
Rose Bearings Ltd.'s Skegness plant obtains ISO 14001 certification.

| 6
U.S. subsidiary New Hampshire Ball Bearings, Inc.'s Peterborough plant obtains ISO 14001 certification.

| 11
U.K. subsidiary NMB (U.K.) Ltd.'s Inchinnan Keyboard Printing plant obtains ISO 14001 certification.

2001 | 5
The Shanghai–Minebea Environmental Protection Fund is increased to Rmb 11.0 million (approximately US$1.3 million), from Rmb 7.5 million (approximately US$900 thousand).

| 7
U.S subsidiary Hansen Corporation obtains ISO 14001 certification.

| 11
U.S. subsidiary New Hampshire Ball Bearings, Inc.'s Chatsworth plant obtains ISO 14001 certification.

2002 | 8
U.S. subsidiary New Hampshire Ball Bearings, Inc.'s Laconia plant obtains ISO 14001 certification. All Minebea Group plants worldwide are now ISO 14001-certified.

Takahashi Foundation

The Takahashi Foundation, named in memory of Takami Takahashi, founder of the Minebea Group, was established in 1992 in celebration of the 10th anniversary of the Minebea Group's operations in Thailand. The Foundation began with a fund of 20 million baht (approximately US$500 thousand), contributed by Minebea Group companies in Thailand. In 2002, the fund was increased to 60 million baht (approximately US$1.4 million), to commemorate the Minebea Group's 20th anniversary in Thailand.

The Takahashi Foundation offers support to impoverished students studying science and technology-related subjects. Since 1993, scholarships have been awarded to more than 500 students in educational institutions nationwide. The Foundation also contributes to students at primary school level by initiating a nutritional lunch fund project to ensure the good physical and mental health of needy students.

In addition to supporting the Takahashi Foundation, Minebea Group companies in Thailand have set up a scholarship program for local students in Lop Buri and Ayutthaya provinces, both home to major Minebea plants.

Takahashi Foundation students on a Minebea plant tour

Local Industrial Support Programs

In line with the Thai government's policy of industrial localization, local manufacturing subsidiary Minebea Thai Ltd. supports the BOI Unit for Industrial Linkage Development (BUILD) program by contracting local subcontractors to supply it with parts and components.

Amateur Baseball Association of Thailand

In January 1992, Minebea Group companies in Thailand, in cooperation with the Baseball Federation of Asia and the International Baseball Association, played a major role in establishing the Amateur Baseball Association of Thailand with the objective of introducing and promoting baseball in Thailand.

Baseball game during the XIII Asian Games Bangkok (ASIAD 98)

Shanghai–Minebea Environmental Protection Fund

In April 1996, Minebea Electronics & Hi-Tech Components (Shanghai) established the Shanghai–Minebea Environmental Protection Fund with the aim of helping preserve the quality of the water in Lake Daishan-hu and the environment of the surrounding area. The fund is the first of its kind to be set up by a foreign firm in China.

In May 2001, Minebea Electronics & Hi-Tech Componets (Shanghai) increased the Shanghai–Minebea Environmental Protection Fund to Rmb 11.0 million (approximately US$1.3 million), from Rmb 7.5 million (approximately US$900 thousand). This was done in commemoration of the July 2001 50th anniversary of Minebea's founding. Accrued interest from the fund is used to finance a variety of activities. To date, the fund has assisted efforts to plant cherry tree saplings along nearby Highway No. 318, build green belts in adjacent areas and install chemical toilets in local residences. In May 2001, the fund also donated saplings to the Shanghai Sapling Center. The saplings will later be supplied to the city of Shanghai for use in greening programs in the city.

Minebea President Tsugio Yamamoto at a ceremony to commemorate increasing the amount of the Shanghai–Minebea Environmental Protection Fund, in May 2001

Sapling donation ceremony at the Shanghai Sapling Center

1951 | 7 Nippon Miniature Bearing Co., Ltd., Japan's first specialized manufacturer of miniature ball bearings, is incorporated in Azusawa, Itabashi-ku, Tokyo.

1956 | 10 The Company relocates its headquarters to Nihonbashi-Kabuto-cho, Chuo-ku, Tokyo, and its factory to Aoki-cho, Kawaguchi, Saitama.

1959 | 6 A new plant is established at Aoki-cho, Kawaguchi, Saitama, to serve as the Company's integrated headquarters and factory.

1962 | 11 A representative office is set up in the United States to cultivate the U.S. market.

1963 | 3 A factory is established in Karuizawa, Nagano. Some operations are relocated to the Karuizawa Manufacturing Unit.

1965 | 7 The Kawaguchi Factory is closed and its equipment is conveyed to Karuizawa. The Company's headquarters is shifted from Kawaguchi, Saitama, to Miyota-machi, Kitasaku-gun, Nagano.

1967 | 3 A representative office is set up in London to promote business in Europe.

1968 | 9 Subsidiary Nippon Miniature Bearing Corporation (the present NMB Technologies Corporation) is established in Los Angeles, California.

1971 | 4 Sales subsidiary NMB (U.K.) Ltd. is established in the United Kingdom.

| 5 The Company's stock is listed on the first sections of the Osaka and Nagoya stock exchanges.

| 9 The Company acquires the U.S. firm Reed Instrument Corp. (the present Chatsworth Plant of New Hampshire Ball Bearings, Inc.) from SKF, Inc., of Sweden and commences production in the United States.

1972 | 2 Manufacturing subsidiary NMB Singapore Ltd. is established in Singapore. (Production begins in 1973.)

1974 | 9 The Company acquires Shinko Communication Industry Co., Ltd., a major strain gauge manufacturer listed on the second section of the Tokyo Stock Exchange.

1975 | 1 The Company acquires U.S. company IMC Magnetics Corp., a listed manufacturer of small precision motors.

| 7 The Company acquires a leading fastener producer, Tokyo Screw Co., Ltd. (the present Fujisawa Manufacturing Unit), and an electromagnetic clutch manufacturer, Shin Chuo Kogyo Co., Ltd. (the present Omori Manufacturing Unit), both of which are listed on the second section of the Tokyo Stock Exchange.

1977 | 9 The Company acquires Hansen Manufacturing Co., Inc. (the present Hansen Corporation), which is, at the time, the motor manufacturing division of Mallory Corp., a U.S. multinational.

| 10 Sales subsidiary Nippon Miniature Bearing GmbH (the present NMB-Minebea-GmbH) is established in Germany.

1980 | 3 The Company acquires the Singapore factory of Koyo Seiko Co., Ltd., and establishes Pelmec Industries (Pte.) Ltd. to manufacture small-sized ball bearings.

| 8 Manufacturing subsidiary NMB Thai Ltd. is established in Thailand. (Production begins in 1982.)

1981 | 1 The marketing division of the Company is spun off as subsidiary NMB (Japan) Corporation, which is charged with integrating marketing operations for all manufacturing companies in the Minebea Group.

| 10 The Company absorbs four of its manufacturing affiliates—Tokyo Screw Co., Ltd., Shinko Communication Industry Co., Ltd., Shin Chuo Kogyo Co., Ltd., and Osaka Motor Wheel Co., Ltd.—and changes its name to Minebea Co., Ltd.

1982 | 9 Sales subsidiary NMB Italia S.r.L. is established in Italy.

1983 | 3 The Company acquires a cooling fan manufacturer, Kondo Electric Works Ltd. (the present NMB Electro Precision, Inc.)

1984 | 8 Two manufacturing subsidiaries, Minebea Thai Ltd. and Pelmec Thai Ltd., are established in Thailand.

Minebea is Incorporated as a Small Factory in Tokyo

Minebea was incorporated in Itabashi-ku, Tokyo, in 1951, as Nippon Miniature Bearing Co., Ltd.—Japan's first specialized manufacturer of miniature ball bearings. Initially, the Company had 10 employees. In 1956, Minebea relocated to Saitama. With the aim of substantially expanding its production capacity, in 1963 the Company built a new, large-scale factory in Karuizawa, Nagano, that later became the Karuizawa Manufacturing Unit. In 1965, the Company shifted all production to the Karuizawa Factory. In subsequent years, the Company's operations expanded rapidly, reflecting rising demand and the increasing diversification of its product lineup. Because most production processes were still manual, the Company's payroll increased significantly. Prompted by the realization that it would be unable to secure employees in Japan—a consequence of rapid growth in Japan's manufacturing sector and its own relatively low profile—Minebea decided to build its first overseas factory, in Asia.

First Overseas Production Base is Established through U.S. Acquisition

In the latter half of the 1960s, approximately 70% of the ball bearings manufactured at the Karuizawa Factory were exported to the U.S. aerospace market and accounted for approximately 40% of the U.S. market for aerospace-use ball bearings. With the aim of protecting domestic bearing manufacturers, the U.S. government introduced legislation prohibiting overseas firms from supplying defense-related products. In response, in 1971 Minebea acquired a local subsidiary of Sweden's SKF—the world's largest bearing maker—and launched production in the United States.

Mass Production is Launched in Singapore

Singapore's ample labor force, status as an English-speaking country and official efforts to encourage foreign investment prompted Minebea to choose the country in 1972 for its first overseas mass production facility. The Singapore Factory began operating in 1973 and continued to serve as Minebea's principal facility for mainstay products until late in the 1970s, when the flood of foreign firms operating in the country and the imposition of restrictions on the use of non-Singaporean laborers again prompted concern over secure employees and the hunt for another country in which to establish a mass production base.

1985 | 3 The Company acquires New Hampshire Ball Bearings, Inc., a listed U.S. ball bearing manufacturer.

| 9 The Company acquires the Miami Lakes operations of Harris Corporation, a U.S. manufacturer of switching power supplies.

1986 | 5 The R&D center and subsidiary Minebea Electronics Co., Ltd., are established in Asaba-cho, Iwata-gun, Shizuoka.

1987 | 5 Manufacturing joint venture Thai Ferrite Co., Ltd. (the present Power Electronics of Minebea Co., Ltd.), is established in Thailand.

1988 | 2 The Company acquires Rose Bearings Ltd., a U.K. manufacturer of rod-end and spherical bearings.

| 3 Sales subsidiary NMB Technologies, Inc. (the present NMB Technologies Corporation), is established in the United States to coordinate sales and marketing of Minebea's electronic devices.

Manufacturing joint venture Minebea Electronics (Thailand) Co., Ltd., is established.

| 12 Manufacturing subsidiaries NMB Hi-Tech Bearings Ltd. and NMB Precision Balls Ltd. are established in Thailand.

1989 | 1 Marketing subsidiary NMB France S.a.r.l. (the present NMB Minebea S.a.r.l.) is established.

1990 | 10 Papst Minebea Disc Motor GmbH (the present Precision Motors Deutsche Minebea GmbH), a joint venture with Papst-Motoren GmbH & Co. KG, is established in Germany to manufacture HDD spindle motors.

| 11 Rose Bearings Ltd., in the United Kingdom, commences production of ball bearings at its Skegness plant.

1992 | 2 The Company absorbs Sorensen Ltd. and reestablishes it as Minebea Electronics (UK) Ltd., a manufacturer of switching power supplies in Scotland.

1993 | 8 Joint venture agreement with Papst-Motoren GmbH & Co. KG of Germany is cancelled. The Company acquires all outstanding shares in Papst-Minebea-Disc-Motor GmbH and changes the company's name to Precision Motors Deutsche Minebea GmbH (PMDM).

10 Sales and R&D subsidiary Minebea Trading Pte. Ltd. (the present Minebea Technologies Pte. Ltd.) is established in Singapore.

1994 | 4 Manufacturing subsidiary Minebea Electronics & Hi-Tech Components (Shanghai) Ltd. is established in China.

1996 | 8 A vertically integrated ball bearing production facility—Minebea's largest to date—commences operations in Shanghai.

| 10 U.K. subsidiary NMB (U.K.) Ltd. establishes a new plant in Inchinnan, Scotland.

1999 | 3 The Company commences quality evaluation and testing at the NMB Corporation Technical Center in the United States.

| 7 U.S. subsidiaries NMB Corporation and NMB Technologies, Inc., merge to form NMB Technologies Corporation.

2000 | 3 The Company acquires Kuen Dar (M) Sdn. Bhd., a Malaysian speaker box manufacturer.

2001 | 2 A controlling interest in Actus Corporation, a furniture and interior decor product sales subsidiary, is sold to TRS Co., Ltd.

2002 | 8 Huan Hsin Holdings Ltd., of Singapore, and Shen Ding Pte. Ltd.—a joint venture between Minebea and Huan Hsin—establishes PC keyboard manufacturing subsidiary Shanghai Shun Ding Technologies Ltd. in China.

Minebea establishes sales company Minebea (Hong Kong) Ltd. in China.

| 9 Minebea establishes sales companies Minebea (Shenzhen) Ltd. and Minebea Trading (Shanghai) Ltd. in China.

Production Begins in Thailand

Minebea's reasons for selecting Thailand for its second overseas mass production base included the country's abundant supply of workers, the professionalism of Thai employees at its Singapore Factory, the Thai government's efforts to attract component manufacturers and its Buddhist traditions and history of friendly relations with Japan. Realizing that if it took the same approach in Thailand as it had in Japan and Singapore, it would eventually face the same problems securing employees and expanding production capacity, Minebea chose to locate initially in rural Ayutthaya. Since then, the Company has established three additional plants in rural areas. Thailand is currently Minebea's largest mass production base, accounting for approximately 60% of Group production.

Minebea's Thai Operations	(Year ended March 31, 2003)
Net sales:	¥152,705 million
	(As of March 31, 2003)
Cumulative investment:	¥161,884 million
Total site space:	1,466,032 meters^2
Total factory floor space:	372,309 meters^2

Operations Begin in China: The Market of the Future

To expand its production capacity and take advantage of the growing Chinese market—especially for information and telecommunications equipment and household electrical appliances, which use ball bearings and small motors, as well as to better serve customers shifting production to China, in 1994 Minebea established a subsidiary and commenced operations in Shanghai. Building on its accumulated global expertise, in 1996 the Company completed a state-of-the-art facility that is the world's largest production facility for miniature and small-sized ball bearings and Minebea's second largest mass production base. Minebea plans to further expand the base in the years ahead.

Minebea's China Operations	(Year ended March 31, 2003)
Net sales:	¥27,454 million
	(As of March 31, 2003)
Cumulative investment:	¥53,671 million
Total site space:	495,834 meters^2
Total factory floor space:	90,203 meters^2

Organization

(As of June 27, 2003)