Before Integration
Up to October 2001

The Start of a New History Leading to the 21st Century

In February 2001 Hitachi, Ltd. announced that its instruments business and semiconductor manufacturing equipment business would be spun off as separate companies, which would then be absorbed by Nissei Sangyo Co., Ltd. At the same time, the Clinical Testing Systems Sales Group of Hitachi Medical Corp. merged with Nissei Sangyo, and on October 1 Hitachi High-Technologies Corp. was born.

Announcement of i.e.HITACHI Plan in November 1999

計測器事業
半導体装置事業

日立、日製産業に移管へ

製販一体で競争力強化

February 22, 2001, Nihon Keizai Shimbun article reporting the transfer of Hitachi's instruments business and semiconductor manufacturing equipment business to Nissei Sangyo.

Launch of i.e.HITACHI Plan to Strengthen Consolidated Sales

On October 1, 2001, Hitachi High-Technologies Corp. was born. Let's take a look back at the history leading to this event.

Following the collapse of the Japanese asset price bubble at the start of the 1990s, Japanese enterprises were in dire need of management reform as they faced globalizing markets and the rise of emerging economies.

In November 1999 Hitachi, Ltd. announced a medium-term business plan called the i.e.HITACHI Plan. It proclaimed the need to carry out qualitative and structural reforms aimed at strategic utilization of the resources of the Hitachi Group and making Hitachi the "Best Solution Partner" for customers. With this strategy as a basis, efforts were made to strengthen consolidated sales through a process of reorganization, review, and collaboration within the Hitachi Group. Hitachi High-Technologies Corp. came about as part of this process, with the aim of strengthening and expanding business in the nanotechnology field. In February 2001 Hitachi, Ltd. announced that its instruments business and semiconductor manufacturing equipment business would be spun off as separate companies, which would then be absorbed by Nissei Sangyo Co., Ltd. The Clinical Testing Systems Sales Group of Hitachi Medical Corp. was added subsequently, and on October 1 Hitachi High-Technologies Corp. was born.

During this time several new Hitachi Group companies were established, including Hitachi Kokusai Electric Inc. (formed through the merger of Kokusai Electric Co., Ltd., Hitachi Denshi, Ltd., and Yagi Antenna Co., Ltd.), Hitachi Home and Life Solutions Co., Ltd., Hitachi Industrial Equipment Systems Co., Ltd., and Hitachi Displays, Ltd. Nevertheless, Hitachi High-Technologies attracted great interest as the first integrated enterprise in the Hitachi Group to combine the functions of a trading company and a manufacturing company.

Strengthening the Nanotechnology Business

The establishment of Hitachi High-Technologies was an effort to put into practice a basic strategy for further strengthening and expanding the unified operation of the business groups of Hitachi, Ltd. and their associated companies in order to bolster the nanotechnology business, including growth fields such as semiconductor manufacturing equipment and biotechnology products.

The nanotechnology sector was marked by rapid technological advances and increasingly tough global competition, so it was essential to put in place a business and operational structure capable of responding rapidly. Hitachi, Ltd. dealt with this

challenge by spinning off its Instruments Group and Semiconductor Manufacturing Equipment Group as separate companies, which were then merged with Nissei Sangyo, a trading company within the Hitachi Group specializing in high technology, to form a new company. Subsequently, in order to consolidate the domestic and international sales operations of the clinical testing equipment business of the former Instruments Group, the sales operations of Hitachi Medical Corp. for this category of products were also transferred to the new company.

This business integration and the new company's establishment were announced in February 2001 and formally ratified at the general shareholders' meeting of Nissei Sangyo in June. Then, on October 1, Nissei Sangyo's name was officially changed to Hitachi High-Technologies Corp.

Building a Unified System for Development, Manufacturing, Sales, and Services

The Instruments Group and Semiconductor Manufacturing Equipment Group of Hitachi, Ltd. were engaged in the commercialization of products such as semiconductor manufacturing and testing equipment, medical testing equipment, and electron microscopes for fields such as semiconductor devices, materials, medicine, and biotechnology. Their technology was world-class in the clinical testing field, comprising products such as automated blood analyzers; the electron microscopy field; and the semiconductor manufacturing equipment field, which included testing equipment for use on semiconductor device production lines. Hitachi could point to notable innovations in cutting-edge technology fields, such as semiconductors, medicine, and the life sciences, and fierce competition demanded constant efforts to develop new world-leading technologies. Unification of strategy and operations would be essential to the Hitachi Group in meeting the needs of customers in the nanotechnology sector.

The Instruments Group, Semiconductor Manufacturing Equipment Group, and Nissei Sangyo all earnestly wished to create a system unifying "manufacturing, sales, and services." Customers ranged from established manufacturers to startups all over the world. To provide optimal solutions to each of them it would be necessary to fuse the strengths in technology and products of Hitachi, Ltd. with the sales prowess of Nissei Sangyo by building a unified system for development, manufacturing, sales, and services. Unifying "manufacturing, sales, and services" would make it possible to speed up decision-making, boost management efficiency, achieve speedy product development anticipating market changes and customer needs, and offer customers optimal solutions. What's more, concentrating resources and utilizing them more effectively would help create new business opportunities in fields such as the life sciences. These developments would pave the way to the emergence of the world's top company in the nanotechnology sector.

However, the economic climate was not promising at the time of Hitachi High-Technologies' establishment. In the aftermath of the collapse of the asset price bubble in 1991 the Japanese economy was experiencing a long-term slump and persistent deflation. The bursting of the IT bubble in the United States, which had been an important driver of the world economy, and the onslaught from emerging economies such as China combined to create a forbidding prospect. From immediately after its establishment Hitachi High-Technologies would have to overcome a variety of tough challenges.

Corporate advertisement appearing in *Weekly Toyo Keizai* (October 6, 2001, issue)

Outline of New Company

- **Company name**
  Hitachi High-Technologies Corp.
- **Head Office**
  24-14, Nishi-Shimbashi 1-chome, Minato-ku, Tokyo, Japan
- **Representative executive officers**
  Yoshiro Kuwata, Chairman
  Noriaki Higuchi, President
- **Capital (at time of establishment)**
  ¥7,938 million
- **Employees (at time of establishment)**
  7,945 (consolidated basis)

Head Office Building

Outline of the Four Organizations that Combined to Create Hitachi High-Technologies

A Hitachi Group Trading Company Specializing in High Technology: Nissei Sangyo Co., Ltd.

Outline of Company at Time of Integration

- **Company name**
  Nissei Sangyo Co., Ltd.
- **Head Office**
  24-14, Nishi-Shimbashi 1-chome, Minato-ku, Tokyo, Japan
- **Representative executive officer**
  Noriaki Higuchi, President
- **Capital**
  ¥5,438 million (current as of September 30, 2000)
- **Employees**
  3,097 (consolidated basis, current as of September 30, 2000)
- **Sales**
  ¥725.3 billion (consolidated basis, fiscal year ending March 31, 2000)

The company that eventually became Nissei Sangyo was established on April 12, 1947, as Hinode Shokai Co., Ltd., in Minato-cho, Chuo-ku, Tokyo, as a direct affiliate of Hitachi, Ltd. selling electrification equipment to farming and fishing villages. The company's name was changed to Nissei Sangyo Co., Ltd. in October. Nissei Sangyo sold and exported Hitachi products and procured materials for Hitachi. In 1949 the company started handling scientific equipment, and in the 1960s it was put in charge of sales of industrial instruments and electrical machinery. Nissei Sangyo was listed on the second section of the Tokyo Stock exchange in 1971.

The company achieved considerable success exporting products such as electronic equipment, electronic parts, and automated biochemical analyzers. Among its notable achievements were OEM contracts to supply computers to the German firm BASF and VCRs to Sears in the United States.

At the time of the merger, Nissei Sangyo's business activities ranged from scientific equipment and semiconductor manufacturing and testing equipment to information systems, industrial systems, semiconductors, and advanced materials, while also spanning the nanotechnology and life sciences fields.

COLUMN

Marketing Collaboration that Made Hitachi Automated Blood Analyzers the World's Top Sellers

Hitachi's first product supply contract in the overseas market for scientific instruments came in 1978 when an agreement was reached with Boehringer Mannheim (now Roche Diagnostics) of West Germany, one of the world's leading producers of laboratory reagents, regarding the sale of automated blood analyzers.

This deal allowed innovative products developed at the Naka Works of Hitachi, Ltd. (now the Naka Manufacturing Division of Hitachi High-Technologies) to be sold along with appropriate reagents as a package deal, and thanks to the international sales network of Boehringer Mannheim it opened up a truly global market.

Then, in 1980, the new model 705 automated blood analyzer came onto the market, following the above-mentioned agreement. This product can be said to had laid the technological foundation for the automatic analyzers now in use. In total, 3,500 units were produced, of which some 70% were exported. The agreement with Boehringer Mannheim was an auspicious beginning, an important first step toward the international business expansion of Hitachi High-Technologies today.

Finalizing the sales contract (1978)

Model 705 automated blood analyzer

Measuring and Scientific Instruments Contributing to R&D and the Automation of Factories and Laboratories: Hitachi, Ltd. Instruments Group

Outline of Group at Time of Integration

- **Group Head and CEO**
  Katsuji Yamashita
- **Employees**
  3,886

In August 1960 the Instruments Division of Hitachi, Ltd. was made independent of the Electrical Division, and on February 21, 1961, the Naka Works was separated from the Taga Works, becoming an independent facility specializing in measuring instruments.

In the area of measuring instruments, the Instruments Group supplied transmitters and electromagnetic flowmeters to industrial facilities such as power plants, manufacturing plants, and water treatment plants. They also supplied meters and instrumentation systems to chemical plants and other industrial customers, contributing to the automation of factories and industrial systems.

In scientific instruments, the Instruments Group had a proven track record internationally with products such as electron microscopes, spectrophotometers, liquid chromatographs, and NMR-CT systems. In the medical field they attained the top share of the world market for automated biochemical analysis equipment. They pioneered the use of scanning electron microscopes (SEMs) for industrial applications, commercializing the world's first SEM length measurement system for inspecting circuit patterns on semiconductor wafers in 1984. Hitachi continues to dominate the market for this product category to this day. The Instruments Group has an impressive record in the bio-life sciences field as well, with leading products such as DNA sequencers.

COLUMN

Length Measurement SEMs that Revolutionized Inspection in the VLSI Age

The 1980s brought the age of "submicron" VLSI devices with process line widths of less than 1μm. Optical testing equipment was reaching the limits of its usefulness in the inspection of such ultrafine semiconductor devices.

The Naka Works of Hitachi, Ltd. (as it was then known) possessed many years of experience in the field of scanning electron microscopes, and it embarked on the development of a length measurement SEM specifically for use in semiconductor testing. The S-6000 was commercialized in 1984. The first unit produced was delivered to the Device Development Center, which develops and manufactures computer elements for Hitachi, Ltd. Starting the next year a large number of units were delivered to the production line of the Musashi Works.

The overwhelming performance advantages of the length measurement SEM were widely acknowledged, and orders streamed in from semiconductor fabs in Japan and overseas. Soon this product line had captured over 80% of the world market. Today Hitachi High-Technologies continues to be the top manufacturer of length measurement SEM systems.

S-6000 length measurement SEM

Outline of Group at Time of Integration

- **Group Head and CEO**
  Toshihiro Sanematsu, Senior Executive
- **Employees**
  380

At the Cutting Edge of Nanotechnology: Hitachi, Ltd. Semiconductor Manufacturing Equipment Group

Hitachi's move into semiconductor manufacturing equipment from 1980 onward had as its foundation the technological advances achieved through work in areas such as optical devices, electron microscopes, and ionizing technology. In 1981 a Semiconductor Manufacturing Section was established at the Kasado Works, and development work on ion beam mixing machines get underway at the Kokubu Works.

In 1985 a facility for producing semiconductor manufacturing equipment was completed at the Kasado Works, and in 1988 the world's first microwave etching machine was exhibited at SEMICON Japan. It was honored in the Nikkan Kogyo Shimbun's Best 10 New Products Awards of that year. In 1994 a low-temperature dry etching machine received the International Trade and Industry Minister's Award.

Subsequently, the semiconductor manufacturing equipment–related operations were separated from the Power and Electric Machinery Group and moved to the newly formed Semiconductor Manufacturing Equipment Group in 2000.

COLUMN

Etching Machines that Contributed to the "Hinomaru" Semiconductor Era

The Kasado Works of Hitachi, Ltd., recognizing that its mature chemical equipment products would reach their peak in the 1970s, decided to utilize ultra-high-precision technology from their work on measuring instruments to develop semiconductor manufacturing equipment, assisted by the Central Research Laboratory.

Technical development work on reactive sputter etching and microwave plasma etching began in 1976, and in 1982 the RE-504A dry etching machine was released.

The RE-504A was put into service on the mass production lines of Hitachi, Ltd., which lead the industry with the development of 64K DRAM chips in 1980. It played an important role in achieving even more ultrafine VLSI devices. Hitachi, Ltd. suddenly captured the top share of the world market for 64K DRAM, and this led the way to Japan's eventual dominance of the global semiconductor industry.

Later, the RE-655A reactive sputter etching machine was completed and made its debut at the Musashi Works, where it contributed to the successful mass production of microcontrollers, logic chips, and other VLSI devices.

RE-504A dry etching machine

Toward a Clinical Testing Systems Business Combining "Manufacturing, Sales, and Services": Hitachi Medical Corp. Clinical Testing Systems Sales Group

The company that eventually became Hitachi Medical Corp. was established in 1949 as a seller of spinning machinery. In 1954 it changed its name to Hitachi Roentgen KK and embarked on the business of marketing medical equipment. With its merger in 1969 with Osaka Roentgen, Ltd. the company became a manufacturer of medical equipment with both manufacturing and sales functions. In 1973 the company name was changed to Hitachi Medical Corp. As the Hitachi Group company responsible for the medical equipment business, Hitachi Medical engaged in the manufacture, sale, and servicing of products such as X-ray CT machines and MR imaging machines.

The clinical testing systems business (which was eventually transferred to Hitachi High-Technologies) had taken over Japanese domestic sales of automated blood analyzers for clinical testing from Nissei Sangyo in 1973. It was also responsible for Japanese domestic sales of clinical testing equipment (automated testing modules for blood, urine, cell cultures, etc.) developed and manufactured by the Instruments Group of Hitachi, Ltd. The personnel of the Clinical Testing Systems Sales Group were therefore experts in supplying optimal equipment for increasingly complex biochemical testing applications.

Outline of Company at Time of Integration

- **Company name**
  Hitachi Medical Corp.
- **Head Office**
  1-14, Uchikanda 1-chome, Chiyoda-ku, Tokyo, Japan
- **Representative executive officer**
  Hiroshi Inomata, President
- **Capital**
  ¥13,884 million (current as of September 30, 2000)
- **Employees**
  3,188 (consolidated basis, current as of September 30, 2000)
  (Of which, employees of the Clinical Testing Systems Sales Group: 30)

COLUMN

Completion of Automated Medical Examination System for Hitachi General Hospital

In 1972 Hitachi Medical Corp., in collaboration with the then Instruments Division of Hitachi, Ltd. and others, completed an automated medical examination system as part of the Hitachi Medical System Automation Planning (HIMESAP) project of Hitachi General Hospital, a hospital owned and operated by Hitachi, Ltd.

At the time this was Japan's first on-line system that, by reducing the amount of time required for each test, enabled patients to be examined and receive a physician's guidance based on a full set of test results, all in a single day.

The automated medical examination system attracted a constant stream of interested observers from Japan and overseas, and it thus functioned as a real-life demonstration. From 1973 onward Hitachi Medical was in charge of domestic sales of automated analysis machines. They achieved an impressive record of orders for 400/500 and 706/706D series machines from large hospitals and clinical research centers throughout Japan, continuing to maintain the top domestic market share in this product category.

706/706D automated analysis machine