

Chapter 6

Challenge of
Management Reform,
and Globalization
(1979-1992)

1. Management Reform, and Development of Strategic Businesses

Toward period of belt tightening

In 1975, just as the Japanese economy seemed to have safely maneuvered its way through the effects of the first oil crisis, it experienced its first minus growth since 1945. Although the economy shifted toward recovery from 1976, led by exports, most corporations, in greater or lesser degree, came to face a need to tighten their belts and reduce the burden on management. Because it had not fully recovered from the recession caused by the oil crisis, Oki Electric ran head on into a management crisis. At that point, in April 1978, President Masaaki Yamamoto became chairman and Executive Vice President Masao Miyake took office as president.

Although President Miyake left Nippon Telegraph and Telephone Public Corporation (NTT) to join Oki Electric only a little over a year before assuming the company's presidency, he quickly won the hearts of Oki Electric's employees because of his wealth of business experience and excellent ability to judge people and situations. After joining Oki Electric he noted that the company did not have a clear corporate strategy and thus was not able to take advantage of its abundant managerial resources. As president, he therefore emphasized that two main conditions were required for revitalizing the company: the first was to improve the company's strategic planning capabilities; the second, premised on the first, was to introduce radical reforms.

President Miyake outlined five points to help the company's employees understand what sort of reforms were needed: first was a need to closely follow developments in the field of electronics technology; second was a need to improve and strengthen the company's marketing function; third was a need to pull together the company's overall technological capabilities; fourth was a need to put into order a production system more fitting for the electronics age; and fifth was



Masao Miyake

a need to prepare a corporate strategy continually able to respond quickly to change. These five points of reform were destined to be tasks President Miyake's successors would also tackle. In effect, he pointed out the most essential problems facing Oki Electric as a corporation.

The first reform measures placed human resources and internal organizations under the president to enable him to draw up a future vision of the company. Back in December 1977, following the advice of Masao Miyake while he was still executive vice president, a President's Office and a Policy Board had been established. The mission of the Policy Board, comprising the president and other members of the Executive Committee and members of the President's Office, was to discuss basic policy and come up with an overall corporate strategy.

President Miyake bolstered the functions of the President's Office to enhance its planning capabilities still further. A dozen or so of the sharpest young middle-management employees were assigned to the office, where previously there had been only three employees. They began to analyze the company's existing situation. After six months of investigation, study, and brainstorming, the President's Office prepared a comprehensive plan and presented it to the Policy Board for review. With President Miyake demonstrating strong initiative, the Policy Board studied the plan, placing emphasis on not being afraid of failure but instead moving forward in a spirit of willingness to challenge whatever problems the company faced. Very quickly the decision-making style of Oki Electric was beginning to change substantially.

Management reform plan

The staff in the President's Office had turned their strong wish for Oki Electric's renewal into a bold reform plan and presented it at the Policy Board meeting on August 15, 1978. The plan clarified the reasons for the company's worsened business situation and introduced a set of crisis-resolving measures. Product portfolio management (PPM) techniques were applied, for example, to classify the company's product line into 69 units that were then examined individually for profitability. The results of those examinations revealed the truly serious state of Oki Electric's business, with only 13 of the 69 units shown to be returning a profit. Three principal factors were identified as causes of the company's worsened profitability picture: (1) the company's basic business concept lacked the idea of keeping total costs in mind while pursuing profit; (2) a lack of rigorousness in the company's business structure because of the heavy dependence on ties with NTT; and (3) tardiness in responding to changes in the external business environment, i.e., a failure to introduce rationalization measures.

Based on this analysis, three main steps were decided. First of all, emergency crisis avoidance steps would be taken to reform management by focusing the company's efforts on important products and markets, withdrawing unprofitable products from the market, integrating production facilities, and improving the efficiency of personnel expenses. Next, a corporate philosophy would be clarified and thoroughly implemented, allowing the development of key products within 2-3 years that would support the company's profits on a par with switching equipment. To accomplish this, the marketing and engineering divisions would have to work closely together to develop products and a market strategy. Emphasis was also placed on the need to lower costs enough to allow Oki Electric products to win out in competition. The third step would be adoption of a Strategic Business Unit (SBU) organization. Taking these three steps would allow construction of a management system that would keep overall costs in mind and have all business units accept their responsibility. It was felt that successful implementation of the three steps would pave the

way for the company's rebirth.

By its final year, starting in April 1981, the plan for improving the company's business structure aimed at four principal achievements: (1) to establish a foundation through switching equipment for ensuring the continued existence of the company; (2) to prosper with data terminal equipment; (3) to minimize losses in the transmission system business while maintaining and utilizing related technology; and (4) to minimize losses in the semiconductor business through economy-oriented investment. The company introduced emergency measures—steps to “halt the hemorrhaging”—to eliminate deficits in several business fields. It was also decided to withdraw from certain areas of business, although the only two withdrawn from were numerical control (NC) and electric wave applications. In short, the analyses derived from PPM techniques were not adopted exactly as is.

One major sacrifice made to accomplish Oki Electric's new start needs mentioning. On October 11, 1978, President Miyake announced a rationalization plan that included a call for voluntary retirement by 1,500 employees. The plan resulted in a workforce reduction of some 1,350 persons. Another aspect of the plan called for integrating production and technical facilities. The Tokyo Plant, for example, was integrated with the Honjo Plant, and the Shinagawa Plant was closed in June 1982. Some technical facilities, meanwhile, were concentrated in the Shibaura section of Tokyo while others were distributed regionally.

As another link in business reform, the company introduced the SBU system in April 1979 and carried out a far-reaching reorganization. The SBU system was a matrix organization, having, horizontally, three business divisions and departments separated by function, and, vertically, SBUs headed by SBU general managers. Sixteen SBUs were set up, arranged by either product or business area. Each SBU was made into a profit center and was headed by an SBU general manager. Also, each SBU had a mission and a clear strategy based on instructions the president issued. The duties of the general managers heading the SBUs included market research, market analysis, sales promotion, customer negotiations, drawing up profit and product plans, drawing up market strategies, sales promotion, and customer

negotiations. Rather than issuing direct orders, the general managers promoted the success of their business units through coordination with line personnel.

The idea was new of using a matrix organization—integrated vertically in SBUs and horizontally through existing business divisions and functions—and the general managers had the exceptionally important task of strategically developing the business of each SBU. Together with setting up the SBUs, and to make it possible for all units to calculate profits equitably, the company introduced a new system of profit evaluation in October 1978. Once the SBU system was set up, each SBU general manager turned enthusiastically toward preparing medium-term business plans. The Policy Board reviewed and integrated those plans into a three-year management reform plan scheduled to begin in April 1979 and end by the end in March 1982.

Digitization of telecommunications networks

The 1970s saw people talking more frequently about the advent of the information-oriented society. NTT opened up its first telecommunications lines in 1972, making data communications possible. Up to then, only telephones could be connected to ordinary subscriber lines, but the new service made it possible to connect other terminal devices, such as facsimile machines. NTT introduced its second stage of new services in 1982, thus making possible the sharing of circuits for data processing.

In September 1978, NTT announced its Information Network System (INS) plan for digitizing all telecommunications networks, making it possible to reduce rates and to provide various services via a single network. In effect, digitization promised to eliminate the boundary between telecommunications and information processing.

Oki Electric's most important business at this juncture was its switching business with NTT. The strategy built into the company's 1978 management reform plan was "to secure the company's continued existence through the switching business." Two of the SBUs established in the reorganization at that time were an electronic switching

SBU and a crossbar-switching SBU. The former, in fact, was the company's core SBU; PPM techniques positioned electronic switching as the "star" product. Products in the crossbar-switching SBU, meanwhile, were formerly the company's core products. Management, however, recognized that they were losing their position as the foremost "cash cow," and they were gradually being phased out.

Digital switching systems were developed the same way as earlier switching systems. From 1977, NEC, Hitachi Ltd., Fujitsu Corp., and Oki Electric—the "four exchange manufacturers"—began developing digital telephone switching technology jointly with NTT. In 1982, Oki Electric delivered the first trunk and line switch (TLS) units for the model D70 digital switching system to the Yodobashi Software Center in Tokyo.

In 1979, Oki Electric put on sale its Centennial Series aimed at the private sector market for private branch exchanges (PBX). A system for mass-producing the Centennial Series was set up in the Honjo Plant, and in 1980 the company introduced a plan for doubling the sales of this series. Around this same time, the principal domestic suppliers began competing fiercely to firm up their share of business from NTT as it prepared to open its procurements to overseas manufacturers.

Competition in the PBX market intensified after digital PBXs appeared. Although the "four exchange manufacturers" had previously accounted for 90 percent of the PBX market, other companies entered the market, such as electrical machinery manufacturers han-



Model D70 digital switching system

ding business information systems and computer manufacturers, leading to the intensified competition. In June 1982, Oki Electric put on sale the iX Series of digital electronic exchanges. These exchanges allowed the direct connection of diverse peripherals, such as telephones, facsimiles, various data terminals, and image transeiving equipment, for building complex networks. In 1984, using Oki Electric's iX 300 digital exchange, Matsushita Electric Industrial Co., Ltd. completed its MEITS integrated network connecting 70 offices in Japan through a leased line.

Fame as minicomputer manufacturer, and new products for private sector

Oki Electric products became so well received in the minicomputer market that the company's name became synonymous with "minicomputers." The OKITAC System 50 series, in particular, not only earned a good reputation in the general minicomputer market but financial institutions also used them widely as the core processor in their information systems. In 1982, Oki Electric put on sale the OKITAC System 50V series. The 50V was used as the processor in the OKITAC-2300 banking information system. At any rate, Oki Electric's minicomputer division played a critically important role in developing and providing the processors essential for the company's system products. Taking advantage of its superiority in the minicomputer field, Oki Electric entered the promising office computer mar-



*OKITAC System 50V
minicomputer*

ket in 1976 with the OKITAC System 9. As the personal computer (PC) and workstation markets developed, however, the role of office computers steadily became so unclear that in April 1987 Oki Electric halted development of an advanced System 9 model and related application software.

In May 1980, Oki Electric put on sale its if800 series of PCs. Right from its start, Oki Electric developed PCs for overall business use, and its all-in-one type model 20 in the if800 series was highly applauded as a pioneer product in developing the Japanese business computer market. Sales of the if800 series proceeded smoothly. In 1980, sales were 3,400 units, and in 1981 they increased to 15,500 units. Based partly on this success, Oki Electric began all-out exports of the if800 series to the U.S. from April 1982. Later, when it developed 16-bit PCs, the company switched to IBM-compatible machines. NEC, meanwhile, introduced its PC-9801 in 1982, which very quickly became the de facto standard PC in Japan. A market structure emerged in which it became difficult to stimulate a shift in demand away from the 9800 series even when other computer makers introduced higher-performance PCs.

Around this time, Oki Electric added a facsimile business unit to its SBU system. The unit's mission was to develop private sector demand and become a key SBU in improving the company's business structure. The principal advantage of Oki Electric's facsimile SBU was its superior thermal sensing technology. Because it was a late-comer in the facsimile market, the company adopted a strategy emphasizing the sale of medium-speed machines it produced on an OEM basis. In 1979, the OKIFAX 8300 series that met the G3 standard, the international standard for high-speed facsimile machines, was added to the product line. The OKIFAX 5800 and OKIFAX 8400 were added to the product line in 1980, thus giving the company a complete line of seven medium- to high-speed machines. Expectations were high that the facsimile SBU would break from the position that PPM analysis placed it in as a "problem child" and emerge as one of the "stars" leading the company in profits. Competition was severe in the private sector, however, and the facsimile SBU recorded a loss in the fiscal year ending in March 1982. Oki Electric began its

all-out export of facsimiles to the U.S. during this period, based on long-term OEM agreements. It developed a facsimile specifically for overseas markets, based on the OKIFAX 7800—a small, thermal-type, desktop machine—and sold it under the 3M brand. This machine sold well and paved the way for Oki Electric's development of the U.S. facsimile market.

The company's first plain paper facsimile, the OKIFAX OF-101, was put on sale in September 1984. Less than five years later, in March 1989, the OKIFAX OF-1100i, an ISDN-compatible G4 machine, was marketed. Around this same time, Oki Electric moved energetically to develop the domestic facsimile market. On a monetary basis, exports of facsimiles in 1989 accounted for 80 percent of the company's total facsimile business. It was thus necessary to avoid trade friction as well to increase the domestic share to about 50 percent of the total. Development of domestic facsimile demand, however, did not proceed as well as expected.

The company's competitiveness in overseas markets, meanwhile, decreased because of the yen's appreciation, and the overall facsimile business reported a loss. Some suggested shifting production overseas at that time, but the reality of local production in the U.S., the company's largest overseas market, was not inviting. In the end, Oki Electric's overseas production of facsimile machines had to wait until 1996 when it was begun in the company's printer plant in Scotland.

Decision to invest in 64K DRAMs

In the business reform plan announced in August 1978, the semiconductor business was defined as a business in which the "loss should be minimized through economy-oriented investments." In PPM analysis, in fact, the semiconductor business was considered somewhat problematical. This meant that although profits could not be expected for a while, future prospects were bright. Semiconductors were thus ranked as a target worthy of investment. In April 1979, two new SBUs were established, one for integrated circuits (ICs) and the other for components. A clear goal was thus set to turn semiconductors

into one of the three main pillars of Oki Electric's business.

Although Oki Electric shipped its first 16K DRAMs in 1978 and was pushing forward with development of 64K DRAMs, the makeup of the company's chip business at the time was 88 percent logic and 12 percent memory chips. Sales of logic products were thus overwhelming large. Among the logic chips, moreover, ASICs for use in watches comprised 58 percent and those for use in communications comprised 14 percent of total sales. In 1978, Oki Electric's ASICs for watches accounted for a 20 percent share of the world market.

The semiconductor business offered several options for the future. During the process of jointly preparing with McKinsey & Co. a business strategy for semiconductors, Oki Electric was advised to emphasize CMOS products among its logic ICs, to focus on made-to-order rather than mass-produced products, and to expand sales through direct sales rather than through agents. The business situation both inside and outside the company, however, was extremely uncertain. Inside the company, it was difficult to concentrate human resources in the semiconductor SBU because of the rationalization policy and holding down on new hirings. But if sales through made-to-order products were to be expanded, it was necessary to slot in more engineers and sales personnel than were currently available. From the perspective of Oki Electric's financial capabilities at the time, therefore, this option could not be considered viable. In looking at the market environment, meanwhile, the demand for ICs, particularly those for computers, increased sharply once into 1979. In that year alone, the world market for ICs increased by 70 percent versus the previous year. This increase marked the beginning of the rapid growth of the market for memory chips. In that situation, President Miyake decided it was time to shift from a defensive to an offensive posture, and approved construction of a new plant for housing the facilities needed to mass-produce 64K DRAMs.

In August 1979, a field survey was conducted of a site in Miyazaki Prefecture, Kyushu. Nine months later, in May 1980, a ground-breaking ceremony was held. The first stage of construction covered a ground area of 130,000 square meters, including a wafer process plant (M1 Plant) with floor space of 7,100 square meters, an assem-



*Miyazaki Oki
Electric Co., Ltd.*

bly and testing plant with floor space of 2,800 square meters, an energy center with floor space of 1,100 square meters, and other facilities. Total investments were 13.8 billion yen, comprising construction costs of 5.7 billion yen and plant and equipment costs of 8.1 billion yen. A subsidiary company was established, Miyazaki Oki Electric Co., Ltd., (capital: 200 million yen), to manage and operate the new plant.

Miyazaki Oki Electric succeeded in a test run of 64K DRAMs in May 1981, and began all-out production from August. Oki Electric began marketing 64K DRAMs just as they replaced 16K DRAMs and the market had begun growing. In 1981, the company won a 6 percent share of the 64K DRAM market in volume (13 million units). Oki Electric also set up an overseas sales network for semiconductors. It established Oki Electric Europe GmbH (OEE) in Germany in August 1973, for example, and established Oki Semiconductor Inc. (OSI) in October 1980 by spinning off the semiconductor division of Oki Electric Overseas Corp. (OEO) and making it an independent company.

Avoidance of management crisis, and start of M-100 Campaign

Following the 1979 Islamic Revolution in Iran, war erupted between Iran and Iraq in September 1980. As oil exports from the Middle East decreased sharply, crude oil prices skyrocketed to double their

previous prices. This was the so-called second oil crisis. It caused the economic environment to change drastically: oil prices increased, and the yen's exchange rate fluctuated widely. Alarmed about possible inflation, the Bank of Japan raised the official discount rate several times. Despite this external situation, however, which was not necessarily favorable, Oki Electric's operating performance recovered rapidly. Net sales improved in the fiscal year ending in March 1980, increasing 21 percent year-on-year. Together with the increase in net sales, the sales-to-cost ratio decreased, and the company recorded net income of 3.1 billion yen.

In the fiscal year ending in March 1981, influenced negatively by the second oil crisis, the business situation in Japan started showing strong signs of stagnation. Still, although consumer prices rose because of increased oil prices, the overall influence of the second oil crisis on Japan was relatively minor when compared to the effect felt in other countries. By keeping the rate of wage increases within the range of the growth rate of labor productivity, the increase in wage costs was held down, thus contributing toward preventing inflation.

Oki Electric's net sales for the fiscal year ending in March 1981 were up 12 percent year-on-year, and net income increased to 3.99 billion yen. All three main divisions—telecommunications, information processing, and electronic devices—saw increases in both orders and sales. In the information processing area, sales of online terminals for financial institutions were especially favorable. The electronic devices business, centered on sales of integrated circuits, also saw substantial growth.

With the recovery in its business performance, the company increased its capital investments between 1979 and 1981. Total capital investments in the fiscal year ending in March 1982 were 26.9 billion yen. Investments in semiconductors, centered on plant construction costs in Miyazaki Oki Electric, accounted for 57 percent of the total. Investments were also substantial in the information processing and telecommunications areas. President Miyake felt strongly that he did not want Oki Electric to become a manufacturer making only the "boxes" for high tech products without having its own technology. That strong feeling urged him to make the major decision of invest-

ing substantially in semiconductors.

In this backdrop, the Executive Committee decided on June 10, 1980, to adopt and promote the M-100 Campaign, a movement aimed at increasing net sales by 10 billion yen. To implement the plan for improving its business structure, meanwhile, Oki Electric was energetically making capital investments. Many areas of the company's business needed investment attention, starting with ICs and other electronic components and including R&D into new products to meet private sector demand, marketing, and the modernization of facilities. It was estimated that total investments would cost about 10 billion yen per year. The thinking behind the M-100 Campaign was that the employees themselves could provide the money needed through vigorous sales efforts.

November 1981 marked the one-hundredth year since Kibataro Oki established Meikosha, the company to which Oki Electric traces its roots. Over those one hundred years, Oki Electric had grown to become a foremost manufacturer of telecommunications equipment with leading-edge electronics technology as its basic business.

2. Toward Further Drastic Management Reform

Part II of management reform plan starts

On the occasion of entering its second century in business, and to reform its management practices still more drastically, Oki Electric announced Part II of its management reform plan in April 1981. Numerical targets were set for the fiscal year ending in March 1987 of net sales of 420 billion yen and pre-tax profits of 25 billion yen.

Oki Electric's operating performance for the fiscal year ending in March 1982 saw smooth growth as net sales increased 15 percent year-on-year. And although net profits decreased to 3.3 billion yen, sales of information processing equipment increased, supported by

favorable sales of online terminals for financial institutions, and sales of ICs and other electronic components increased substantially. A dynamic long-term management reform plan thus was introduced in the background of a steady increase in sales from the fiscal year starting in April 1979 onward. The central challenge in Part II of the management reform plan was early development of a new business area equal in size to the company's stagnant main business sector dealing with government and other public offices and financial institutions. The plan's goal was to enable the company in the plan's final year to break completely from its traditional dependence on demand from the government and public sectors.

The new management reform plan outlined three points:

1. To create a clear corporate vision, the plan called for establishing a long-term technological vision commensurate with the company's business growth while adopting the specific business goals mentioned previously;
2. To accelerate the development of a new core business, the plan called for firming up the key markets that provided the main source of the company's profits while quickly establishing the new core business and making it a strong pillar of the company's overall business; specifically, the new business would focus on office-related business in which the company could make the maximum use of technology it had cultivated in the telecommunications, information processing, and LSI (and components) fields; and
3. To strengthen the company's ability to promote its business, the plan called for realizing the functions of the SBU system, activating the organization and its human resources, distributing the company's resources equitably and using them more efficiently, and emphasizing a review of the SBU system to pinpoint why it could not sufficiently achieve the goals expected of it.

Two main features differentiated Part II from the original management reform plan. First of all, Part II not only adopted PPM analysis by SBU but also separated markets into broad categories and studied their positioning and measures for dealing with them, such as the "further development of main markets." Second, it promoted a shift to meeting demand in the private sector and to emphasizing the de-



Namio Hashimoto

velopment of an integrated office equipment business. Oki Electric thus focused on the newly emerging office automation (OA) equipment market. And through an all-out reform of its business practices, it prepared to pave the way for taking a great leap forward in its second century of business.

Although President Miyake assumed the initiative in formulating and putting into effect Part II of the management reform plan, he fell sick just as the plan was being put into effect. Without seeing his wish for Oki Electric's renewal fulfilled, President Miyake passed away on June 19, 1982.

President Miyake's successor, Namio Hashimoto, assumed office in May 1982. After entering Oki Electric, President Hashimoto worked for many years in the data equipment business. During the time he was senior managing director, he expended particularly great efforts in getting the company's private sector business off the ground. In his inaugural address as president, he clearly outlined to the company's employees a policy of carrying out Part II of the management reform plan and bolstering the company's management foundation further. President Hashimoto saw the company facing three principal tasks in the fiscal year starting in April 1982. The main task was establishment of the OA business division. Besides being a forceful response to the challenges of a new market and new products, he viewed establishment of this new division as an opportunity to review the company's organizational structure. The other two tasks were a rebuilding of the company's production system as one step toward improving company-wide efficiency, and investing in the electronic device (ED) business, which could determine the very future of

the company. President Hashimoto felt that by connecting the vectors of the entire company these tasks could be accomplished and the way to a bright future would then be opened.

In April 1983, a partial review of the SBU system was carried out. Although each division was already considered a profit center, a new system was introduced that made each SBU manager a sub-profit center. The responsibilities and authority of both were clearly defined, with the division mainly concerned with reducing product cost and the SBU manager mainly concerned with the development of new products. Under Part II of the management reform plan, moreover, Oki Electric's affiliated companies were reorganized into groups. In January 1983, the 31 domestic affiliates in the group were divided—depending on their particular role—into four sub-groups called A, B, C, and D. The aim of this regrouping was to promote the self-management of each affiliate.

Third-generation online system of financial institutions, and OKITAC-2300 series

Part II of the management reform plan contained the comment that the company would prosper with information processing equipment. The core SBU to which this comment applied was the one handling banking terminals (banking systems). In the fiscal year ending in March 1980, this SBU ranked first in sales and profits; PPM analysis considered it a “cash cow.” For use by the sales branches of financial institutions in the second-generation online system, Oki Electric had developed the OKITAC-1300 and OKITAC-1200 terminals. These models attracted many new customers to Oki Electric, and expectations were high for the banking terminal business to firmly maintain both its position as the company's basic business in the information-processing field and its profit-earning capabilities.

Once into the 1980s, the environment for the online systems of financial institutions began changing drastically for two main reasons. First, a need emerged to conduct work operations unimagined during the design of the second-generation online system. Because of

the gradual introduction of financial liberalization, securities-related operations by banks were starting, money market certificates were being sold, and bank cards were being used. Second, the development of IC technology, and technical innovations for networks, effectively removed restrictions from systems development and enabled the construction of advanced online systems.

The role of the new sales branch system in the third-generation online system was not merely to oversee the input and output of data for account transactions. Sales branches became more active in much wider areas, including data processing and the input and output of information. In short, the new sales branch system functioned as the nucleus of the OA system. Oki Electric offered the OKITAC-2300 banking information system as a new branch integration system. Its main feature was its widespread adoption of leading-edge technology, such as the distribution and improvement of the terminal controller functions, use of a loop, and introduction of network architecture.

Oki Electric met the coming of third-generation online systems with the well-received OKITAC-2300 banking information system. The company gained valuable experience in this area of building advanced systems when it installed a third-generation online system for the Fuji Bank. This experience proved to be invaluable in promoting the company's banking terminal business.

The first concrete step toward taking action regarding the OA business area mentioned in Part II of the management reform plan announced in 1982 was establishment in July 1982 of the OA business division. The main challenge offered the new division and its several business units—telecommunications terminals, facsimile machines, and OA equipment (PCs, word processors, and office computers)—for the fiscal year starting in April 1982 was to close the year with a profit. The OA business unit was the central unit then, and although it was also preparing to commercialize a new series, it was still not showing a profit. A major business target of the Part II management reform plan was expansion of the demand for OA equipment, centered on PCs. But Oki Electric's marketing capabilities in the private sector had limitations, especially concerning distribution

routes via agents and others. The company was not able to quickly expand the sales of consumer-oriented products. As a result, an interim target was set of approaching customers who might place relatively large-quantity orders at one time.

Overseas business and depreciation of yen

Although Oki Electric's printers had a good reputation in the marketplace, the evaluation of its printer business in the management reform plan introduced in 1978 was severe. Because the data equipment (unit product) SBU that dealt mainly with printers was operating at a loss, the business strategy outlined for the SBU was to aim for a return to profitability by cutting costs enough to make OEM production viable.

From around mid-1979, however, printer exports to the U.S. increased, and the SBU printer business recovered. The favorable turn in the printer business was directly related to introducing the MICROLINE 80 at the National Computer Conference in New York City, the world's largest computer show, in June 1979. As a small impact type dot printer for use with PCs, the MICROLINE 80 garnered much attention at the show.

Printer sales continued at a favorable pace, in the context of the depreciated yen and a high-tech boom in the U.S. In June 1984, cumulative ex factory shipments passed the 1 million unit mark. Oki Electric's printers were said to have accounted for about a 20 percent share of the overall U.S. printer market at the time. As stated in "Scenario 1990" announced in July 1984, to be discussed shortly, it was



*MICROLINE
small dot printer*

important to maintain the position of the printer business as one of the main pillars of Oki Electric's overall business. Printers were also designated as core products for expanding the company's exports.

Between 1983 and 1984, however, several problems emerged that led to a slump in Oki Electric's printer business. For example, the company fell behind overseas in shifting to 24-pin heads, necessary for providing high printing quality. Also, Oki Electric printers had a reputation for being compact and light, and they came to be compared unfavorably to the "heavy tank" products of competitors. Not long afterward, like a bolt from the blue, the Plaza Accord, an agreement to drive down the value of the dollar, was announced in September 1985. The yen appreciated rapidly afterward, causing a sudden decline in Oki Electric's export competitiveness, and a sharp drop in the profitability of the company's printer business.

In Part II of the management reform plan, the reconstruction of Oki Electric's overseas business was listed as a major theme, derived from the management task of expanding demand in the private sector. A goal was adopted of increasing overseas sales to 100 billion yen (one-third of total net sales) in the fiscal year starting in April 1986. Among the various overseas locations, the U.S. market was expected to account for 50 percent or more of total overseas business. A marketing plan was drawn up that included a reorganization of Oki Electric's subsidiaries in North America, expanded sales of printers and PCs, the stabilization of IC products, and entry into the TD switching system market.

In the background of President Ronald Reagan's economic program (Reaganomics), the yen depreciated versus the U.S. dollar. All through the first half of the 1980s, the situation for exports from Japan remained favorable. Although the U.S. economy experienced negative growth in 1982, its GNP growth in 1984 was 6.8 percent, which brought about unprecedented business prosperity. In that situation it was easy to export to the U.S.

Early in 1983, Oki Electric's efforts to develop its overseas business took on concrete form. In the U.S., Oki Electric Overseas Corp. (OEO) moved forward with plans to produce car telephones in Atlanta, Georgia. In Southeast Asia, sales subsidiaries were established



*Atlanta Plant in
Georgia, U.S.*

in Hong Kong and Singapore. Oki Electronics (Hong Kong) Ltd. (capital: HK\$700,000), established as a wholly owned subsidiary of Oki Electric, was tasked with marketing 64K DRAMs in Southeast Asian countries. Oki Electronics (Singapore) Pte. Ltd. (capital: S\$500,000), also established as a wholly owned subsidiary, tied up with a local sales company, Digiphonic Systems Pte. Ltd., to market PBXs and telex terminals.

Next, in March 1984, five of Oki Electric's subsidiaries in the U.S.—Oki Data Corp., Oki Semiconductor Inc., Oki Electronics of America Inc., Oki Systems Engineering Inc., and Oki Electric Overseas Corp.—were merged to establish Oki America Inc. (OAI). The aim of the merger was to establish an organization that could respond quickly and flexibly to the rapidly changing market environment and to the need for increasingly sophisticated and compound products. OAI established four divisions for promoting its business in North America: Okidata, Oki Semiconductor, Oki Telecom (integrated business of OEA and the car telephone business of OEO), and Oki Systems Engineering.

In the situation where the yen depreciated versus the U.S. dollar, Oki Electric's business performance clearly improved. Net sales in the fiscal year ending in March 1984 reached 300 billion yen and net profits increased to 5.4 billion yen. As a percentage of the company's total business, exports also increased from 16 percent in the fiscal year ending in March 1982 to 29 percent in the fiscal year ending in March 1984. Net sales continued to grow in the fiscal year ending in March 1985, increasing 19 percent year-on-year to 361.8 billion yen.

Exports accounted for 31 percent of that total.

In the background of an improvement in its business performance, Oki Electric began another round of vigorous capital investment. The fiscal year ending in March 1985 saw an energetic investment plan, with each division requesting an expansion of its business. At the end of the fiscal year ending in March 1984, the budget for capital investment was fixed at about 40 billion yen, up 40 percent year-on-year. At the end of March 1985, however, that budget exceeded 50 billion yen. Of that amount, 30 billion yen was earmarked for semiconductor-related operations, mainly at Miyazaki Oki Electric. Reflecting on that period, President Hashimoto said, "I issued instructions to hold down the investment budget but I had no idea how high it might eventually go." Actual capital investments for the fiscal year ending in March 1985 were 51.3 billion yen, the highest ever for Oki Electric.

Once into the 1980s, the company issued a number of convertible bonds in Japan and overseas. From around 1983, the funds from those bonds contributed to the company's financial reform, especially to a recovery in the equity capital ratio. The company issued Swiss franc-denominated convertible bonds every year from 1981 to 1985, and issued U.S. dollar-denominated convertible bonds in September 1984. Oki Electric thus responded to the increase in capital investment by procuring funds globally, both at home and abroad.

Stability needed in semiconductor business

The main problem with the semiconductor business was its instability. An IC boom in 1979 resulted in a 46 percent increase in net sales versus the previous fiscal year for Oki Electric's semiconductor business, and the business recorded a profit. Although net sales were also up in the next two fiscal years, however, the business recorded losses in both years. The principal reasons for the losses were that semiconductor prices plummeted, with the prices for 64K DRAMs typically dropping about 50 percent in 1981 alone.

Just as it seemed that matters could not be any worse, disaster

struck the company. On October 3, 1982, a major fire broke out at the Miyazaki Oki Electric Plant. All production was halted, and it was difficult to estimate how long it would take before normal operations could be resumed. Although the fire was a new experience for the company, countermeasures were quickly introduced. Because the wafer process was unusable, for example, it was decided to use facilities at the Hachioji Plant west of Tokyo. Employees operating the wafer process in Miyazaki were immediately seconded to Hachioji. The products that passed through the wafer process in Hachioji were shipped back down south to Miyazaki for the assembly and testing processes. It was a logistics headache, but it worked. For order deadlines that Oki Electric could not meet, it placed rush orders with other companies in the same business.

It took a total of 80 days from the outbreak of the fire—from October 3 to December 21—before integrated production at Miyazaki Oki Electric was fully restored. Major effects of the fire, however, continued afterward. The negative effect on the profits of Oki Electric's semiconductor business was serious, of course, as was the effect on the semiconductor market supply/demand balance. In particular, the fire caused a shortfall in the supply of 64K DRAMs.

Oki Electric's investments in the semiconductor business were enormous, and the risks were substantial. In a situation of limited financial resources, top management knew the matter of what portion to allot to semiconductors was a question that might well determine the company's future. Investing in semiconductors was a difficult decision for top management to make. In the management reform plan, the company's semiconductor business was defined as requiring "minimal investment." But in June 1981, this assessment was changed substantially. It had become necessary, with the future of the company at stake, to invest aggressively in the semiconductor business and to quickly establish a foundation that would enable the semiconductor business to develop into one of the main pillars of the company's overall business.

In the medium-term management plan introduced in the fiscal year starting in April 1983, capital investments of 20 billion yen were approved for building a second plant in the main Miyazaki Oki Elec-

tric Plant. When to move forward with this project had been a pending item of some concern. The medium-term plan also set a semiconductor net sales target of 150 billion yen for the fiscal year ending in March 1987. In drawing up the management plan, careful consideration was paid to measures for realizing stability in the company's IC business and maintaining a balance with other projects. Out of that came measures for expanding the company's DRAM business. The memory IC business proceeded favorably in fiscal 1983. Then, between 1983 and 1984, the demand for semiconductors increased in the U.S. In the context of that expanded market, the prices for 64K DRAMs increased. At the same time, Oki Electric was able to reduce its costs through the beneficial effects of mass production and the improvement of yield. This combination of factors led to a favorable turn in the profitability of the company's IC business. And as the company's overall business performance improved, it became more aggressive in its semiconductor business strategy.

“Scenario 1990”: Becoming an excellent company

In his New Year's greeting at the beginning of 1984, President Hashimoto said he wanted to see Oki Electric become a company with sales of 1 trillion yen. Specifically, a net sales target of 500 billion yen was set for two years later, in the fiscal year ending in March 1987, and a target of 1 trillion yen for six years later, in the fiscal year ending in March 1991. This ambitious long-term sales plan was dubbed “Scenario 1990.” It positioned Oki Electric as one of few companies in the world that could offer both the type of communications technology that AT&T possessed and the type of information processing technology that IBM possessed, thus placing it at the shortest possible distance for offering products to a highly information-oriented society. In that context, the range of products Oki Electric could provide included all areas of components, devices, and systems. Terminal business, such as printers, would provide the profits needed to invest in the systems business. As well, the components and content so necessary for the terminal and systems businesses would

be supplied by the software business and—centered on ICs—the components business.

Scenario 1990 aimed at company-wide expansion but expected the OA and semiconductor businesses to expand at relatively higher rates than the company's other businesses. It was also assumed that the emphasis in the OA business would shift from facsimile machines as the main product to OA equipment, such as PCs, which would become profitable. In the information processing business, printers and other terminals were expected to increase their share of the overall business. Overseas operations, meanwhile, were forecast to increase from 29 percent of net sales in 1983 to 43 percent in 1990. As will be related later, however, revisions had to be made to Scenario 1990 due to sudden changes in the international situation, beginning with the Plaza Accord of September 1985.

Together with Scenario 1990, President Hashimoto also introduced company-wide quality control (CWQC) activities. He concluded that a firm management foundation focused on product quality was necessary to support the substantial growth expected in the future. The means for assuring product quality was CWQC activities. President Hashimoto believed that quality control begins with basic training and education, and with the revitalization of QC activities by small groups. He promoted company-wide management from the fiscal year starting in April 1985.

In March 1985, together with introduction of Scenario 1990, Oki Electric put into effect the largest reorganization since introducing the SBU system in April 1979. The main changes were: breaking the previous four business divisions into 11 small divisions; providing each division with planning, engineering, and production sections; turning the original four business divisions into four business groups containing and administering the 11 small divisions; and establishing a new Computer & Network Systems Division. Although the SBU system was abolished together with the reorganization, the 11 divisions inherited the thinking that each business unit was responsible for formulating strategies and then promoting and evaluating them.

Scenario 1990 had as one of its goals 381 billion yen worth of output from the semiconductor business in the fiscal year ending in

March 1991, with ICs accounting for 300 billion yen of the total. The aim was to enable the semiconductor business to grow steadily and become a pillar of profit for the company. Together with setting this goal, the company also aggressively planned to establish business bases in Japan and overseas. Five bases were to be set up domestically, with the base in Hachioji, west of Tokyo, as the central base. Overseas bases would be established in the U.S. and Europe.

In the backdrop of a policy of energetic capital investments, the expansion of the Miyazaki Oki Electric Plant was approved. The second plant (called M2), completed in May 1984 at a total cost of 20 billion yen, contained facilities capable of microfabrication technology at the two-micron class. Production capacity was 5 million units per month. This investment gave Oki Electric a sufficient supply capacity of 256K DRAMs and 1M DRAMs. Other capital investments at this time included construction of a new VLSI Research Center in Hachioji, completed in the summer of 1985.

From mid-1984, however, the demand for memory ICs dropped because of a depression in the high-tech area in the U.S.; the fiscal year ending in March 1986 saw a 15.5 percent drop in sales compared to the previous year. From April 1983 to March 1985, Oki Electric's semiconductor business rode a wave of prosperity. Then, just as it was preparing to expand, its main market fell into recession. As a result, the entire semiconductor industry languished in 1985 and 1986.

Construction of Numazu and Takasaki plants and Systems Development Center

In 1980, Oki Electric built the Numazu Plant in Numazu City, Shizuoka Prefecture, for producing sonobuoys and underwater sonar transmitter-receivers. Additional facilities were built in the plant in April 1984, and the technical and production departments were transferred there. As a result, an integrated system was completed, from development and design to manufacture and inspection of electro-acoustic system products. The Shizuoka Oki Electric Service Engi-

neering Department, which provided repair services for electro-acoustic systems, was added later, thus completing a base for developing the electro-acoustic systems business.

The electro-acoustic systems business dealt mainly with sonar and sonobuoys for the Defense Agency. The excellent acoustic technology of Oki Electric contributed greatly in this area. It was applied to private sector demand as well, such as for marine surveys. In 1988, sound-related systems of Oki Electric were loaded aboard the Shinkai 6500, a submersible research ship of the Japan Marine Science & Technology Center. This submersible was capable of dives to a maximum of 6,500 meters, the deepest in the world at the time. Great expectations were held for it in investigating deep-sea marine life and clarifying earthquake mechanisms in the Japan Deep.

In the context of marine technology being in the limelight, the operations of the Oki Marine Laboratory were spun off in June 1987 to form a new company, Oki Seatec Co., Ltd., with capital of 30 million yen.

In November 1985, construction of a new technical center was completed inside the Takasaki Plant complex. It was eight stories high, and had total floor space of about 20,000 square meters. The center had an integrated system from product development to manufacturing, complete with departments for product development and design technology and production technology for information processing systems products. In October 1986, construction of a System Development Center for developing and producing software prod-



*System Development
Center*

ucts was completed in Warabi, Saitama Prefecture. The software and computer development departments for the information processing business were located in the center.

Liberalization of electronic telecommunications business

The telecommunications business in Japan, an NTT monopoly since 1952, faced an historic turning point in April 1985. That was when the public corporation was privatized and renamed Nippon Telegraph and Telephone Corporation, making it Japan's largest joint-stock corporation. NTT subsequently established many subsidiaries and aggressively expanded into new business areas, such as mobile communications.

Liberalization led to a large number of newcomers entering the telecommunications market. The three Type 1 common carriers offering services using their own facilities—DDI Corp., Japan Telecom Co. Ltd. (JT), and Teleway Japan (TWJ)—began offering toll communications services. The appearance of these three New Common Carriers (NCC) introduced competition to the telecommunications market.

Together with liberalization of the telecommunications market, a wave of liberalization also swept over the telecommunications equipment market. After earlier trade frictions with the U.S., NTT had begun opening its procurements—previously centered on the “four exchange manufacturers,” NEC, Hitachi Ltd., Fujitsu Corp., and Oki Electric—to overseas manufacturers. The governments of Japan and the U.S. discussed these procurements and reached an agreement in December 1980 to have NTT improve its procurement procedures. After privatization, NTT began shifting toward nondiscriminatory procurements, including those from foreign manufacturers. Concerning terminal equipment, the system of ordering through NTT was abolished, and manufacture and sales were left to the suppliers. Liberalization of the telecommunications market came to exert a major influence on Oki Electric's business situation.

3. *Appreciation of Yen, and Bubble Economy*

Yen's appreciation after Plaza Accord, and countermeasures

On September 22, 1985, the finance ministers of five nations (the Group of Five) announced the Plaza Accord at the Plaza Hotel in New York City. Following that announcement, the Japanese yen began appreciating rapidly versus the U.S. dollar on the Tokyo foreign exchange market, moving from 242 yen on September 20 to 141.35 yen on October 19. As the exchange rate of a major currency, the yen's appreciation at this time can only be described as exceptionally rapid. The yen's appreciation affected Oki Electric because an exchange rate of 180 yen to the dollar had been set internally for the six-month period starting in April 1986. In May 1986, President Hashimoto spoke as follows about the exchange rate: "In the present situation," he said, "with the yen appreciating to over 160 yen to the dollar, we must be prepared for deficit operations in exports."

The yen's rapid appreciation brought about deteriorated profits from exports. As well, a worsening of the recession in the semiconductor industry that began in the fiscal year starting in April 1985 caused heavy losses in the company's semiconductor business and negatively affected the company's overall operating performance. Although net sales in the fiscal year ending in March 1986 were down only slightly to 361.6 billion yen year-on-year, recurring income was down 92 percent to 1.39 billion yen.

In April 1986, President Hashimoto announced three goals for the year, and requested company-wide efforts to meet all challenges and attain the goals. The three goals were to assure product quality at the level the market demands, to strictly observe deadlines for developing new products, and to expand markets by strengthening the company's sales capabilities.

In October 1986, Oki Electric underwent a reorganization aimed at embodying President Hashimoto's three goals and creating a strong management structure capable of withstanding the rapid changes in the business environment. The reorganization had two main features:

one was keeping the basic system of small divisions; the other was reorganizing the domestic sales divisions in order to respond more effectively to the demands of system proposals. This was done by separating the domestic sales divisions—except for electronic devices—by market rather than product. Other features included integration of the OA Systems Division into the Information Processing Business Group and establishment of a Compound System Division, a Research and Development Group, a Communications Technology Research Center, and a Semiconductor Technology Laboratory.

The semi-annual financial report for the period ending in September 1986 recorded Oki Electric's first minus in operating profits since 1949, and recorded a heavy 7.7 billion yen operating loss. For the fiscal year ending in March 1987, although booked orders were up 4 percent to 362.8 billion yen year-on-year, net sales were down slightly to 361 billion yen, and recurring income showed a deficit of 7.4 billion yen. The main causes for the deficit were heavy losses in the semiconductor business and a worsening of profitability in exports and in the OA business.

In response to the worsening business situation caused by the yen's appreciation and the resultant recession, a Committee on Improving the Business Structure was established in December 1986 and a reform plan was prepared. The plan for improvement of the business structure divided the company's business into three domains as follows, and outlined the basic direction each would follow.

1. The structure for unit product business (data equipment, facsimiles, car telephones, electronic devices) would be downsized, a review would be made to focus on models and markets, and there would be an all-out reinforcement of profit-earning capabilities.
2. The systems business (exchanges, radio transmission, OA systems, banking systems, compound systems) would be maintained and strengthened as the company's core business.
3. The IC business would see less dependence on the unstable memory business and a strengthening of efforts in the ASIC business where potential exists for stability and high growth.

This plan for improving the company's business structure focused on downsizing to avoid the crisis caused by the yen's rapid

appreciation. Even before the positive effects of the plan were realized, however, domestic demand began expanding from the middle of the fiscal year starting in April 1986, and the company's operating performance began recovering.

With introduction of the above plan, reforms were also carried out in the employee qualification and wage systems. Although a shift to a human resources system that emphasized personal growth based on ability was already being studied from 1984, an all-out shift to new employee qualification and wage systems was carried out from April 1988. Two principal changes were made to the qualification system. First, more classification grades were added to redress the tendency for employees to concentrate on certain qualifications and to remain overly long in certain classification grades. Second, the applicable range of interview examinations for management level employees was extended and greater emphasis was placed on promotions based on merit. Concerning the wage system, merit-based pay—related closely to the qualification system—was recognized as being the main basis for wages.

Installation of President Nobumitsu Kosugi

In 1986, with the recession caused by the yen's appreciation providing the momentum, the Japanese economy shifted from growth based on exports to growth based on domestic demand. Lower import prices tied to the yen's appreciation stimulated consumption, and capital investments also recovered in 1987. In fact, a period of prosperity called the Heisei boom began in 1987. Oki Electric's operating performance recovered rapidly once into the fiscal year starting in April 1987. Booked orders increased to 431.5 billion yen, up 19 percent year-on-year, and net sales increased by 15 percent to 416.2 billion yen. Net income for the year was 4.1 billion yen. Supporting the growth in sales were a recovery in the semiconductor market, stable semiconductor prices, and favorable sales of telecommunications equipment, such as switching equipment.

As the managerial environment was improving in these ways,



Nobumitsu Kosugi

Namio Hashimoto, who had served as president for six years, assumed the position of chairman in June 1988. His successor as president was Vice President Nobumitsu Kosugi. President Kosugi had worked in the sales division throughout his career in the company. Included in his experience was a period of being in charge of sales to NTT. He was general manager of the President's Office under President Miyake, and as a board member he participated in drawing up plans for the company's future. In his inaugural address, President Kosugi set two main business goals for fiscal 1990: to record recurring income of 25 billion yen or more, and to create an even firmer management foundation.

Supported by a robust domestic demand, Oki Electric's operating performance recovered. But President Kosugi recognized that the favorable business performance was more the result of external factors rather than because internal changes had taken full effect. In his New Year's greeting at the start of 1989, therefore, he announced that a profitability improvement plan would be introduced. The main pillars in the plan were improved profitability from a review of private sector demand and overseas business, an acceleration in the development of key products, improved systems engineering and software capabilities, and sufficient improvement in cost and product quality to provide greater competitiveness. A medium-term management plan to run from April 1989 to March 1992 was also drafted to identify management problems the company faced and to offer solutions. President Kosugi regarded this period as a turning point and an opportunity for Oki Electric, and he said he held great expectations for the employees to become proactive.

Recovery of semiconductor market, and Japan-U.S. semiconductor agreement

The semiconductor market turned toward recovery from 1986, and demand expanded rapidly in 1987 and 1988. One of the themes in Oki Electric's medium-term management plan starting from March 1986 was to increase sales and improve profitability with minimum investment. As a result, a proposal to build a new production line for cutting-edge devices was put on hold. Once into 1987, however, the U.S. semiconductor market recovered remarkably, and demand for 256K DRAMs began increasing dramatically, stimulated principally by a robust demand in the PC industry. The expanded demand for DRAMs then led to a round of aggressive capital investments by Oki Electric. For memory products, the development of 4M DRAMs was promoted while a new production facility in Miyagi Oki Electric was scheduled to mass-produce 1M DRAMs. The all-out development of 16M DRAMs would begin from September 1988. Concerning logic products, meanwhile, the company would place emphasis on ASIC products, hoping therefore to realize a balanced development of the IC business.

The demand for DRAMs continued to expand rapidly in early 1988. Following publication by the U.S. Department of Commerce



Miyagi Oki Electric Co., Ltd.

of a fair market value, DRAM prices stabilized and DRAM production increased. In Oki Electric, approval was granted for construction of a third production plant (M3) inside the Miyazaki Oki Electric Plant for mass-producing 4M and 16M DRAMs. Next, in April 1988, Miyagi Oki Electric Co., Ltd., was established with capital of 80 million yen, and a production plant (S1) was built there. At the end of January 1989 the plant shipped 300,000 1M DRAMs. At the time, the start-up of mass production at Miyagi Oki Electric in such a short time exceeded the norm for the industry. The new plant used 6-inch wafers and microfabrication technology of 1 to 0.8 micron class and had a monthly output capacity of 1 million cutting-edge 1M DRAMs. From the fall of 1989, the Miyagi Plant began mass-producing 4M DRAMs, and also succeeded in trial production of 16M DRAMs.

From around 1986, it became increasingly necessary to have overseas production bases in order to develop the semiconductor business further. In the background were two main factors: one was the worsened profitability of exports because of the yen's appreciation from September 1985; the other was the appearance of limitations in the quantitative expansion of exports because of Japan-U.S. trade frictions related to semiconductors. The serious semiconductor recession of 1985 brought the trade issue to the surface, and not long afterward the U.S. Semiconductor Industry Association (SIA) filed a lawsuit calling for impartial access to Japan's domestic market. Negotiators in the Japan-U.S. semiconductor trade talks that began in August 1985 finally reached an agreement on July 31, 1986, and a five-year semiconductor trade agreement went into effect the following month. Despite the agreement, however, trade frictions continued between Japan and the U.S. concerning semiconductors. Oki Electric bore the full brunt of the trade dispute. In March 1987, Microtechnology Corp. of the U.S. filed a complaint charging that Oki Electric and Hitachi Ltd. were dumping 256K DRAMs in Hong Kong. After that, semiconductor trade regulations became stricter.

Urged by this drastic change in the external environment, Oki Electric decided in June 1989 to establish overseas semiconductor production bases. The company had little economic incentive at the time to produce semiconductors overseas and viewed overseas pro-

duction as playing a complementary role to domestic production. At any rate, the company decided to build a plant in Oregon in the U.S. The sales subsidiary Oki Semiconductor Inc. was already located in Sunnyvale, California, and Oregon was close enough to California for readily exchanging information and personnel. The area in Oregon, home to many high-tech industries, was called Silicon Forest.

The opening ceremony for Oki Semiconductor Manufacturing, Oki Electric's first overseas semiconductor production facility, was held on May 30, 1990. The plant was located in an industrial complex in Tualatin, Oregon. A one-story structure of 5,400 square meters was built on a spacious land area of 240,000 square meters, with careful consideration paid to matching the architecture with the natural green surroundings. Plans called for starting operations with the assembly and testing processes for 1M DRAM chips but aiming eventually for an integrated plant to include wafer processes.

Following the U.S., Oki Electric built its next overseas plant in Thailand. In January 1990, Oki (Thailand) Co., Ltd., was established as a wholly owned subsidiary of Oki Electric. From October 1990, construction began on a plant located in the Rojana Industrial Estate in Ayutthaya, about 40 kilometers north of Bangkok International Airport. Opening ceremonies were held in July 1991. As an assembly and testing facility, this plant was charged with assembling 1M DRAM and other memory chips and various logic products.

Meanwhile, Oki America, Inc. (OAI), in response to the increasing globalization of the semiconductor market, decided in June 1989 to build R&D bases in New York and California. These bases were expected to play a role in activities related to international standardization, the planning of new products, and the exchange of technology with other companies and universities.

Development and production of digital switches

From the fall of 1984, Oki Electric launched a system for mass-producing digital switches. In preparing this system, over 2 billion yen was invested in the Honjo Plant to promote the first-stage flex-

ible manufacturing system (FMS) plan. The plan called for introducing about 100 robots into the plant by the end of 1984. This investment was made partly based on the forecast that competition with foreign products would also occur in the switch market after NTT's privatization. From 1987, after the Honjo Plant investment, Oki Electric began preparing a system for independently developing digital switches for public networks. One of the first steps was establishment of a Switching Systems Engineering Division. NTT's purchasing policies were changing and Oki Electric could not rest easy expecting that the joint research system used up to then would continue. It had to bolster its technological capabilities, undertake independent research, and alter its sales approach to NTT to one of making suggestions for products.

Oki Electric's D70 automatic exchange was well accepted overseas and domestically. In August 1985, for example, an order for about 6 billion yen worth of D70 automatic exchanges and an optical transmission system was obtained from Empresa Hondureña de Telecomunicaciones (HONDUTEL), a public corporation in Honduras. The Republic of Honduras planned to expand its telecommunications network by setting up digital exchanges (three stations) in Tegucigalpa, the nation's capital, and two other large cities. In total, the three exchanges would accommodate 30,000 circuits. The plan also called for installing an optical transmission system for repeating in Tegucigalpa. Oki Electric had delivered telephone switches and a microwave communications system from 1963, and HONDUTEL had evaluated the company's technological competence highly, which resulted in Oki Electric later receiving this order for D70 digital switches.

With development of digital information communications technology, the PBX evolved into a compound communications system capable of transmitting not only voice by telephone but also data and images, thus playing a central role in corporate networks. In May 1986, Oki Electric put on sale its iOX 1000 series of PBX models. This series was the central system for the Oki Digital Information Network System (ODIN). It was a digital composite exchange with network functions that tied voice, data, and images through commu-

nications lines, LANs, and VANs. Next, in 1987, Oki Electric developed the packet switch iOX 3000 series and an electronic mail system, the iOX 5000 series, capable of store and forward switching. This completed serialization of the principal equipment needed in a network for complying with the advanced information and communication system—Information Network System (INS)—that NTT was proposing.

In 1990, Oki Electric marketed the iOX 100 series, a small to medium capacity office information exchange system, as the first in its class to adopt the OKITRON- μ C communications OS that conforms with CTRON specifications. New services such as ID accounting, electronic telephone directory, and telemarketing became possible by connecting the iOX 100 to a computer and utilizing its information processing capabilities and database functions. Moreover, by connecting the iOX 100 to an integrated services digital network (ISDN), such as INS Net 64, it became capable of responding to multimedia communications.

Oki Electric also exchanged technology in mutually strong fields with its partners in strategic alliances, always moving to gain a competitive advantage in the network age. In 1991, for example, the company worked jointly with Hewlett Packard (HP) to develop an integrated PBX-computer system. This system fused Oki Electric's iOX series PBX with HP's computers. In the joint project, Oki Electric was in charge of the development, sale, and support of application software.



*iOX 7000 multimedia
network node*

NTT began offering a new service in the fall of 1984, the leasing of high-speed digital transmission lines. In line with that new service, Oki Electric developed and marketed a multimedia multiplexer digital OMNIMAX for transmitting various information, such as voice, images, and data, in large volume, at high speeds, economically.

In 1992, Oki Electric put on sale the multimedia network node iOX 7000 series, compatible with frame relay, a high-speed data transmission technology. This node was a multimedia multiplexer that adopted a cell relay system and enabled a significant improvement in the utilization efficiency of high-speed leased lines. It could be used as the core of a corporate intranet.

Development of mobile communications business

Oki Electric entered the mobile communications business through joint research with Bell Laboratories of the U.S. to develop products for the North American market. In 1983, Oki Electric won a contract from AMPS Co., a company in the AT&T group that specialized in car-mounted telephone services, for supplying it with car telephones. It had been decided that by the end of 1983 a car telephone service using cellular phones would be started in major cities in the U.S., starting with Chicago. Oki Electric was already highly respected by having successfully delivered mobile phones for testing and commercial-use mobile phones to Bell Labs.

In January 1984, Oki Electric completed construction of a plant in Suwanee, in north metro Atlanta, Georgia, for producing cellular car telephones and analog electronic switching systems. The new plant was built with floor space of 5,100 square meters in the Ginet Industrial Estate, about a 20-minute drive from downtown Atlanta. Until it built this plant, Oki Electric exported car telephones to the U.S. from its Honjo Plant. From 1984, however, a cellular car service was introduced in over 20 cities in the U.S., including New York and Los Angeles, and the demand for car-mounted telephones was expected to expand. Oki Electric had the second largest cellular market share in the U.S. after Motorola, and to avoid trade frictions while continu-

ing its business growth it built the plant in Georgia.

In April 1989, Oki Electric concluded a contract with Martin Dowes Communications of the U.K. and began supplying it with mobile cellular phones. Back in Japan, meanwhile, New Common Carrier (NCC) service began with several companies entering the market. Oki Electric's orders and shipments related to this new service proceeded smoothly. Around this same time, Oki America Inc. began supplying mobile telephones from its plant in Atlanta to AT&T under an OEM agreement. After introduction of the Oki Phones 900 in December 1990, production at the plant in Suwanee doubled to 400,000 sets a year and continued at full capacity. The demand for mobile telephones in Europe was met by exports from the Honjo Plant. Besides the U.K., these telephones were also exported to Italy and Spain. Because it was half as small and weighed half or less than competitive products, and because it allowed a maximum duration of 70 minutes of consecutive conversation, Oki Phones 900 earned a reputation for being convenient and reliable.

Intensification of competition in banking systems business, and development of ATM series

In the banking systems business, Oki Electric had developed steady business from regular customers with its OKITAC-2300 series. Competition intensified, however, during the period of the bubble economy. The medium-term management plan for the fiscal year starting in April 1988 listed two major challenges the company had to overcome in order to realize net sales of 100 billion yen in the fiscal year ending in March 1992: one was increasing the company's share of, and realizing stable growth in, the systems business for financial institutions; the other was avoiding a deterioration of profits from sales offensives by host computer manufacturers. As computers moved more toward open systems, computer manufacturers began to enter the banking terminals market. This trend negatively affected Oki Electric's business of providing systems for financial institutions. In that situation, the company set the difficult goal of maintaining its 25 percent

share of the market for banking terminals. It was also necessary to develop new systems, and to change the company's business approach to one where it offered solutions to its customers.

The goal set in the medium-term management plan that began in April 1989 of achieving net sales of 100 billion yen in the fiscal year ending in March 1992 was achieved one year early when net sales of 110 billion yen were recorded in the fiscal year ending in March 1991. The reason was that a peak was reached in sales of third-generation online systems to regional banks, credit banks, and other financial institutions, as well as to NTT, government offices, and other public offices. Other goals in the medium-term plan were still not met, however, such as reconstructing the strategy for providing solutions and realizing thoroughgoing cost cutting. The environment surrounding the banking business thus remained severe.

Oki Electric introduced the ATM series AT-100, AT-200, and AT-300 between 1982 and 1989 for use in the branches of financial institutions. These machines were developed in response to the demand from financial institutions as they streamlined their branch operations. The AT-100 series, introduced in 1982, had both automatic teller and automatic transfer functions. It was also the first ATM in the world with a banknote circulation function, allowing deposited banknotes to be immediately used for making payments.



AT-100 ATM

Next, the AT-200 series, introduced in 1986, was multifunctional, allowing, for example, transfers, the use of IC cards, the handling of coins, and the issuing of bankbooks. Finally, the AT-300 series, introduced in 1989, offered enhanced processing capabilities in response to nonstop operation and tighter security precautions that accompanied implementation of the five-day workweek of financial institutions and extended hours of ATM operation.

Development of LED printers, and development of business in Europe

Upon entering the 1990s, Oki Electric realized that although it had outstanding technology for dot matrix printers the market demand was shifting clearly toward non-impact type printers. In that situation, it thus had to discover new technological advantages in the printer business. The company decided to use its own LED (light emitting diode) technology and to clearly differentiate its LED printers from laser beam systems.

After marketing the photo printer model OPP-6024 in 1987, a printer that used LED as its light source, Oki Electric introduced the OL400/800 series in 1989 for sale in overseas markets. The MICROLINE 801PS with postscript capabilities was introduced to the domestic market in 1990.

As the yen continued to appreciate after the Plaza Accord, the profitability of printer exports worsened. It became clear that unless



*MICROLINE
801PS+F printer*

Oki Electric came up with an effective international strategy its printer business might not be able to avoid decline. As well, the possibility emerged of trade frictions with some European countries related to the company's printers.

In that backdrop, Oki Electric elected to manufacture printers locally in Europe. In July 1987, Oki (UK) Limited was established in Scotland as a base for producing information equipment. The first dot printers were shipped from the plant in February 1988. The headquarters plant, located in Cumbernauld, about 20 kilometers north-east of Glasgow, had a monthly production capacity of 20,000 units. Oki (UK) manufactured and supplied all the Oki dot matrix printers for the European markets. Initially, parts were supplied to Oki (UK) from Japan. By April 1988, however, just two months after shipments began, parts procured locally came to account for 40 percent of content. The localization percentage was gradually increased afterward.

In 1990, Oki Electric purchased the data business division of Technitron Corp., a trading company specializing in information processing equipment. In doing so it absorbed the sales subsidiaries of Technitron in seven European countries—Denmark, Ireland, Italy, the Netherlands, Norway, Sweden, and the U.K. This new sales network covered 80 percent of printer sales in Europe. The sales subsidiaries in the seven European countries were placed under the control of Oki Europe Ltd. (OEL), Oki Electric's sales subsidiary in the U.K. OEL was thus in charge of the sales of all information equipment in Europe.

Bubble economy, and its collapse

Because of the “money glut” during the bubble economy, the price of stocks and land increased at an accelerated rate. In the stock market, the Nikkei average on the Tokyo Stock Exchange almost tripled between January 1986 and the end of 1989. On December 30, 1989, the Nikkei average closed at an all-time high of 38,915 yen. During the same period, land prices for commercial property in

most of Japan's large cities roughly tripled.

In the medium-term management plan introduced in the fiscal year starting in April 1988, formulated as the bubble economy was heading for its peak, President Kosugi emphasized that as a key company in the information and communications systems businesses it was essential for Oki Electric to bolster its profit-earnings capabilities, its financial structure, and its managerial base. To do so, the plan emphasized the strengthening of four business domains, classified by market characteristics: (1) the first systems business (switching, transmission systems, and electro-acoustic systems); (2) the second systems business (financial systems, compound communications systems, and information systems); (3) mass-produced products (facsimiles, data equipment such as printers, and cellular phones); and (4) electronic devices (ICs and electronic components).

Specifically, the strategy in the medium-term management plan called for positioning the systems business as a key domain. As such, the company's business foundation had to be firmly established and its profits increased by raising its market share. The mass-produced products business, meanwhile, was recognized as an essential business domain for the company's growth, and it would thus have to be expanded. Prior to that, however, that business needed structural reforms to make it profitable. The electronic devices business would continue to support the systems business, and its stability would be promoted by door-to-door sales of leading-edge devices outside the company.

Although Oki Electric's operating performance improved, in the background of the booming economy, the mass-produced products business reported losses in the fiscal year ending in March 1989 for facsimiles, printers, data equipment, OA equipment, and cellular phones. Profits from compound communications systems were thin, and information systems reported a deficit. After the yen's appreciation, Oki Electric's profit structure clearly came to depend on the traditional switch business and the unstable IC business.

Still, each business domain expanded in the context of the flourishing economy. Accordingly, Oki Electric's capital investments turned aggressive from April 1988 to the height of the bubble economy in

the fiscal year ending in March 1992. The funds required for these capital investments were procured by issuing convertible bonds worth 40 billion yen (September 1989), bonds with subscription warrants issued overseas worth 300 million U.S. dollars (September 1989), and yen-denominated straight corporate bonds issued in the Euro market worth 20 billion yen (November 1990). With these funds raised from capital markets, the company's owned capital ratio rose during this period. As a result, its globalization also progressed steadily.

For the fiscal year starting in April 1989, President Kosugi promoted a company-wide movement called "Challenge '91," aimed at revitalizing the entire company. Quantitative goals set for the fiscal year starting in April 1991 were net sales of 700 billion yen or more, net profits of 35 billion yen or more, and an ROS of 5 percent or more. Also, President Kosugi set a qualitative goal of having Oki Electric contribute to society as a key information/communications company. He appealed directly to the company's employees to develop their company from a global perspective into a highly reliable company.

In early 1991, the bubble economy contracted rapidly. Actually, land prices came down and stock prices began dropping rapidly from the beginning of 1990. The yen also depreciated at the same time, giving a triple blow to the economy. In a period of only two months, a capital loss of 88 trillion yen in current stock prices occurred. As a result, one-quarter of the nation's GNP was blown off when the bubble burst. Around this same time, in August 1990, Iraq invaded Kuwait, and the Gulf War broke out. There was thus anxiety about oil supplies. In addition, the Bank of Japan announced an increase in the official discount rate, dragging stock prices down further. After the bubble economy collapsed, various scandals emerged related to financial institutions, such as compensation for losses and dummy deposits. Compensation that a securities company paid to specific customers for stock losses caused general distrust and exerted a negative influence on stock prices. In August 1992, the Nikkei average on the Tokyo Stock Exchange recorded its lowest price of 14,309 yen.

The collapse of the bubble economy, as symbolized by the spiral drops in land and stock prices, affected corporate activities in various

ways. Land and stocks are assets, of course, and a drop in their prices served to reduce consumption. Also, an increase in the cost of capital tended to invite curtailed investments in plant and equipment. The drop in stock prices dealt a direct blow to management in that it eliminated an unrealized profit in stocks mutually held by corporations and turned it into an unrealized loss. GNP growth in 1991 was 2.9 percent in real terms, certainly not a figure that suggested a serious recession. Reflecting back on the period, however, one can see the gradual entrance into a period of recession for which no end could be seen.

Oki Electric's operating performance trended downward during the fiscal year ending in March 1991. Net sales increased in the fiscal year ending in March 1991 to 582.1 billion yen, up 5 percent year-on-year, but recurring income was down 17 percent to 20.1 billion yen, caused mainly by a worsening of profits in the semiconductor business. Net income was 8.9 billion yen, down a large 40 percent year-on-year. Net sales were up slightly to 585.5 billion yen in the fiscal year ending in March 1992 but recurring income was 1.2 billion yen, down 94 percent year-on-year. Net income was also down by 84 percent to 1.4 billion yen.

Faced with a situation where the company's operating performance was deteriorating rapidly, President Kosugi directed that an action program be quickly drafted regarding problems with the company's profit structure that must be tackled immediately. From September 1991, full-scale planning was promoted to prepare a profit structure improvement program. This program was included in specific measures the company introduced early in the fiscal year beginning in April 1992 in the "Restructure 1992" plan.

From the spring of 1992, profits showed signs of further decline. The debt incurred because of the aggressive capital investments made during the years of the bubble economy now haunted the company in the form of an increase in fixed costs that weighed heavily on profits. Oki Electric's financial results for the interim period ending in September 1992 recorded a drastic recurring income deficit of 19.3 billion yen. The IC business reported heavy losses caused by a recession in the semiconductor industry. Sluggishness in the sales of banking

terminals, such as ATMs, meanwhile, was especially serious because of the worsened business situation that financial institutions faced. It was obvious that the accounts settlement for the fiscal year ending in March 1993 would be unprecedentedly severe.