

### *Chapter III*

# Recovering from Managerial Crisis (1986–1994)

#### **Establishing Managerial Principles and Daikin Management**

The period from 1986 to 1994 saw truly tumultuous international changes, including the collapse of the Berlin Wall, the unification of East and West Germany, the collapse of the Soviet Union, and the end of the world's Cold War structure. Shortly before that, in September 1985, the finance ministers of five countries— France, Germany, Japan, the United Kingdom, and the United States—met to discuss the highly appreciated U.S. dollar. They reached an agreement, the Plaza Accord, which subsequently led to a rapid appreciation of the yen in Japan from the end of 1985. Once into 1986, concerns emerged about the negative effect a strong yen would have on exports, and the Japanese economy entered a peri-

od of temporary economic adjustment. But there were international expectations for an expansion of demand in Japan, and in that context the Bank of Japan lowered the official discount rate and the central government introduced other policies to stimulate demand in Japan. As a result, from 1987 the economy made a 180-degree turn, and business expanded quickly. The four leaders in the new business situation were land, housing, the stock market, and other forms of individual consumption and private-sector demand. An economic situation called the “assets inflation” developed. With the backdrop of this rapid expansion in domestic demand, Japan’s economy came to be called a “bubble economy,” and the highly favorable economic situation continued until the early 1990s. Daikin’s business results, meanwhile, supported by an expansion in the domestic demand for air conditioning equipment, grew rapidly. The chemical products business, in contrast, was sluggish, mainly because of difficult issues the company faced related to restrictions on the emission of fluorocarbons, a lawsuit in the U.S. related to the dumping of fluororesins, and a violation of COCOM regulations. Daikin termed these issues its “triple ordeals,” and while responding to them it tackled the matter of essentially reforming the physical make-up of its chemical business. As a result of those efforts, the company returned vigor to its sluggish chemical business and realized further growth.

Daikin prepared “Vision 95,” its new business plan, in 1990. The company worked vigorously according to the plan for recovery of its chemical business and construction of a global system for its air conditioning business. By the year 1992, smack in the middle of the Japanese “bubble” economy, Daikin had achieved three main business goals: an all-weather organization, emphasis on technology, and strengthening of group management. What made such business development possible was the rapid growth

of the company’s air conditioning business. Daikin introduced reforms in that business during the recession following the Plaza Accord. It built a strong business base at that time, and together with the ensuing turn-around of the Japanese economy and the rapid domestic growth that followed, the company comfortably handled increased demand. Daikin also rebuilt a firm business foundation for its chemical business, which grew into a most important component in the company’s subsequent growth. Although Daikin achieved an all-weather managerial structure by 1992, the ten years from 1993 were called the “lost decade,” a long period of depressed business, which told the company its business structure was not as solid as it thought. Daikin later came to realize that the organization it established during the bubble economy was like a house of cards, and it thus had to tackle basic reforms to its managerial structure from 1994 on. Simultaneously, the company was also scheduled to review the Vision Management Plan established during Minoru Yamada’s tenure as president.

Together with the globalization of Daikin’s air conditioning business, the make-up of the employees in the group of overseas-related companies became internationalized. Even in Japan, as the company grew larger its workforce quickly expanded and diversified, including new college graduates and those who joined the company midway through the year. As a result, the company came to be comprised of a mixture of employees with differing cultural and educational backgrounds. Even for Japan, Daikin stood out for its mixture in the workplace made up of employees of different ages and backgrounds. Not only managers, of course, but all levels of ordinary employees had to embrace a common awareness, and the company had to establish clear management principles and behavioral guidelines. With that backdrop, Daikin

established a new set of management principles in May 1990. The previous principles guiding the company dated from 1958, and were expressed in three points: “absolute credibility,” “enterprising management,” and “harmonious personnel relations.” At the time, those principles were sufficient for guiding the employees. Under the new business environment in the 1990s, however, ten new guiding principles were established with the focus on “people,” and each principle had specific, detailed behavioral guidelines. The ten management principles, expressed as follows, outlined the type of company Daikin aimed to be, and they guided the employees specifically in terms of the behavior expected of them inside the company.

1. Daikin should be a company trusted by society
2. Daikin should be a company offering various opportunities to its employees
3. Daikin should constantly be growing and developing
4. Daikin should grow together with its individual employees
5. The foundation of management should be harmony among high-spirited employees
6. The foundation of management is responsive labor-management relations
7. Fair personnel affairs, and a flexible organization
8. Three essentials for business managers: Sensitivity, courage, and creative leadership
9. Development as a group
10. Activities as a good corporate citizen; activities based on corporate ethics; and formation of a network of people

President Minoru Yamada once said, “The regular business activities of management in a company are most in line with the

company’s basic philosophy when its employees appreciate that philosophy the most and that is also the best time to have that thinking spread widely throughout the company.” Such thinking expressed Yamada’s wish to have all Daikin employees thoroughly appreciate the company’s guiding principles. And in response to the Daikin Group’s global development, an English language version of the guiding principles was prepared and distributed around the world. The employees of the overseas group of Daikin companies were then urged to read and appreciate the company’s basic philosophy and its behavioral guidelines.

Included among the company’s ten management principles are six items that directly express respect for the individuality of each employee, a reflection of President Yamada’s beliefs. He played a leading role in establishing personnel policies that emphasized respect for all employees. And to realize true fairness in dealing with employees, he felt a strong necessity to support a system in which the company clearly rewarded employees who made greater efforts to contribute to the company’s growth. He believed that personnel in the company were “people who came together for some reason” and he supported policies that treated employees well. On a related note, in 1989 the company increased the separation pay of employees, increased the scholarships granted to children left after an employee’s death, reviewed the system and conditions for employing handicapped persons, and introduced a system for rehiring employees after they retired at the age of 60. All those steps let the employees feel pride and an attachment to the company. It was truly a Japanese-style employment system that the company built and improved over the years. It responded to the Japanese life cycle by providing stability in employment and allowing employees to relax concerning their continued employment. Daikin was among the earliest Japanese com-

panies utilizing such a system for evaluating the capabilities of employees. It was exactly because Daikin strongly enforced “management centered on personnel” that it was able to build a “group of people filled with vitality.” That same spirit remains unbroken in Daikin to this day.

During the years covered in this chapter—1986–1994—Daikin’s business scale expanded quickly and globally. Sales of 276 billion yen for the period ending in March 1989 for Daikin alone reached 368 billion yen for the period ending in March 1992, which was 30 percent growth in three years. Among total sales, those for air conditioning accounted for over 70 percent of the total, constantly maintaining an annual profit of 9–12 percent. The company continued its globalization during this period, with aggressive investments particularly in European countries and Thailand. The company focused its investments on its chemical operations in the U.S., investing heavily on establishing a production base there. In the period covered in Chapter 2 (1972–1987), we saw Daikin make desperate efforts to recover from the blow caused by the two Oil Crises and to catch up with the rapid technological progress seen in Japan. The nine years in this chapter (1986–1994), however, cover a period of favorable business based on the “bubble” economy, a period during which Daikin experienced solid growth. Both the Chemical and Electronics Equipment businesses faced several unstable factors at the time, but active overseas investments became possible and Daikin was able to take its first steps forward as a global enterprise.

In aiming to become a “company that always continues to grow and develop,” as expressed in its corporate philosophy, Daikin actively invested in R&D and new facilities. Around this time, for example, the company aggressively invested in establishing the MEC Laboratory, new air conditioners production facilities at

Kanaoka Factory, Rinkai Factory, Kashima Plant and Shiga Plant. It also invested heavily in its air conditioning equipment delivery centers and to increase the number of its air conditioning agents. Looking only at the company’s investments in directly related companies, total investments in 56 domestic and overseas companies for the period ending in March 1988 were 3.2 billion yen. For the period ending in March 1993, those investments jumped to 66 companies and 23.9 billion yen, a roughly eight-fold increase in a five-year period.

To cover the investments it made at that time, Daikin secured external funds in various ways. In the 1980s, several major financial moves, such as the issuance of convertible bonds and warrants overseas had become much easier than previously after the financial Big Bang. The first corporate bonds the company issued were warrants valued at 50 million Swiss francs, issued in 1982. Later, the company undertook an active program of corporate public relations activities aimed at investors in the Euro market. Its efforts focused on raising capital under favorable terms. One especially favorable move was the issuance in 1987 of warrants worth 100 million Euro dollars. Taking into consideration the difference in exchange rates at the time of maturity, the company actually paid minus interest on the funds it raised at that time. As a result of that fund-raising activity, shareholders’ equity ratio in Daikin rose from the 20 percent level it had remained at up to 1985 to 42 percent in March 1989.

Around this time, several outstanding factors contributed to the strengthening of Daikin’s financial structure. One factor that contributed significantly toward bolstering the company’s financial structure was the increased efficiency of the assets the company’s various business divisions controlled. Also, promoting the domestic air conditioning division’s collection of the fee in cash

owed to it significantly lowered the company's trade receivables. As an aside, the scale-down method of trade receivables used at that time was later also used effectively by Daikin's air conditioning business in China. It contributed substantially to the company's construction of a solid foundation in the Chinese market. As a company in the manufacturing industry protecting its main business line, Daikin also demonstrated a sound business sense by avoiding the attraction of investments in financial markets and real estate at the time of the "bubble" economy, an attraction to which other Japanese companies succumbed.

At the same time, Daikin energetically tackled investments in advanced technology, the main pillar of the company's favorable business results. For some time, Daikin was especially well-known for its accomplishments in the machinery industry, particularly with air conditioning equipment, and its work in the chemical industry with fluorocarbon and fluororesins. During the 1980s, Daikin also entered the electronics industry. And with future growth in mind, the company felt the need to tackle the development of all-out advanced technology. At that point, on the occasion of the "The International Exposition —Tsukuba, Japan, 1985," Daikin began preparing to open a Tokyo Research Center in Tsukuba City, located in the northern part of the Kanto Plain. Five years later, in 1990, Daikin opened the MEC—standing for Mechanics, Electronics, and Chemistry—Laboratory. Besides developing new products based on advanced technological information it collected, the MEC Laboratory also developed the necessary technology related to sensors and optics, developed new products using ultra-thin fluororesin membranes, and included the challenge of combining these MEC research themes in its goals. There were limitations to what the MEC Laboratory could realistically expect to accomplish, however, and eventually it

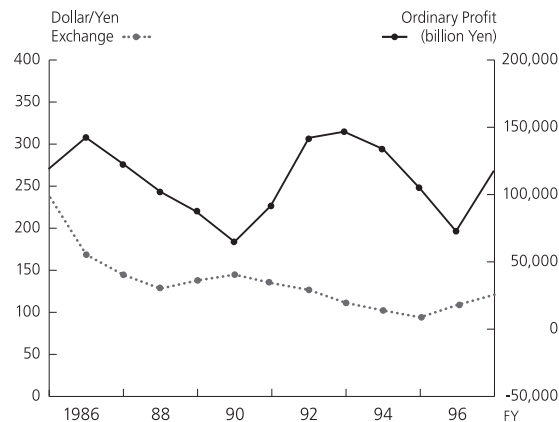


*MEC Laboratory*

placed the main focus of its activities on medical-related research, an area of expected growth at the time. But it was difficult to achieve results in the medical field in a short period of time, and it was not a field in which Daikin could utilize its existing technical foundation. Although the MEC Laboratory developed products such as a meter for measuring blood glucose level and a device for measuring immunity, in the end the reorganization of the research system became a task later in Daikin's history.

The burst of the economic bubble quickly worsened Daikin's business environment, and sales turned stagnant in its mainstay domestic air conditioning division. Coupled with the rapid appreciation of the yen from 1993 and a record-breaking cold summer that year, total sales began decreasing rapidly after peaking in the period ending in March 1992. The company subsequently faced a severe decrease in business performance. For the fiscal year ending in March 1994, for example, it recorded a deficit in ordinary profits. Including the investments made to rebuild the company's business because of the "triple ordeals" the Chemicals Division faced, and the increased advance investments made during the period of the bubble economy, it was difficult for Daikin to respond to sales in the domestic market that were sluggish beyond anyone's expectations. Overall, the excessive weight of fixed costs

Yen Exchange Rate and Current Account Balance



reduced management's flexibility. And serious problems with lower management practices caused a delay in the company's recognition of the impaired business environment.

In 1992, President Minoru Yamada created the slogan "Let's use the headwinds we face as an opportunity for new growth," and ordered a strengthening of the company's basic structure and reforms in the earnings structure in the three areas of technology, production, and management. Besides reduced inventories, a reduction in or reassignment of the part-time labor force and seasonal workers, and more efficient expenditures, capital investments were made on a priority basis or were reduced in size, resulting in a 40 percent decrease in overall expenditures compared to the previous year. Next, in 1993, a Management Issues Deliberative Council was established, comprising a small number of top managers plus related directors, to tackle the structural reform of unprofitable business operations. Two prime targets of structural reform were the robotics division and new applications of the oil hydraulics business.

Meanwhile, the summer of 1993 set records for being cold,

and the demand for air conditioning equipment dropped noticeably. The yen rapidly strengthened around the same time to almost 100 yen to the dollar. At that level, the strong yen dealt Japan a double punch. Domestic consumption was at a low level after the burst of the economic bubble, and the stronger yen weakened the Japanese business environment further. In that situation, Daikin introduced its "Vision 95" business plan, promising expanded growth and enforcing an emergency project for overcoming the crisis it faced. It would do this in four ways: 1. Create and expand the value added of the overall Daikin Group, and develop new businesses and peripheral businesses to bolster its profitability; 2. Bolster the system for developing global businesses; 3. Relocate the company's capital, personnel, and other managerial resources; and 4. Bolster management of the Group's capital.

In the context of the negative business circumstances, the company issued an Emergency Message in President Yamada's name asking all employees to appreciate the difficult managerial situation, to continue doing their best for the company, and to expect adjustments to the standard rules for reducing company-wide expenses. That marked the start of efforts to reduce expenses further. All-out reform of the company's managerial make-up was not an easy matter, however, and President Yamada's tenure ended with a response along the lines of the Emergency Message.

### Domestic Air Conditioning Business Turns Favorable, and Overseas Developments

The "bubble economy" that continued in Japan for almost four years, from 1987 to the spring of 1991 saw a tremendous surge in individual spending and unprecedented investments in plants and facilities by corporations. Daikin benefitted from both the consumption boom related to its air conditioning business and

the boom in plant and equipment sales. In its mainstay packaged air conditioning business it experienced annual growth of 18 percent, far higher than the industry's average annual growth of 10 percent. It not only greatly increased its share of that market segment but also did well in riding the wave of consumption in the room air conditioning business. In 1991, Daikin had 26 sales companies, 113 sales outlets, and a total of 2,217 sales personnel. Sales that year for air conditioners and freezers were 27.9 billion yen, double the sales in 1987. The air conditioning production volume at the Shiga Plant increased greatly during the same period. Production of room air conditioners, in particular, was 2.2-fold the production in 1987, reaching 700,000 units/year.

The summer of 1987 was extremely hot in Japan, and sales expanded so rapidly that service capabilities could not keep up with demand. Daikin had always taken great efforts in maintaining its service capabilities, and at this time it put its own service stations into order and asked its dealers for their cooperation in building an efficient service network. But even that network could not respond sufficiently to the rapidly increased workload. To resolve the service problem Daikin introduced a temporary system for the dealers who cooperated in servicing customers by paying them incentives according to the increase in the number of service calls they handled. Also, Daikin hired large numbers of new employees to reinforce the staff of service engineers. The company also opened new service stations, with priority given to covering the Tokyo capital region and the Kansai area, the two areas where demand was increasing the fastest. By around 1992, the speed of response to service requests improved considerably. Daikin also needed to improve the quality of service by raising the technical skills of the service engineers and thoroughly teaching them proper manners for dealing with customers. In that situation, Dai-

kin opened the Daikin AC Service Engineering College, including in the curriculum engineering skills, servicing administration, and courses for obtaining various official qualifications, as well as a course on how to handle customers. Thus began the training and education of field engineers capable of providing guidance to dealers and others. In order to respond effectively to the trend toward products using more electronics and inverters in systems, fault diagnosis technology and service tools were also developed for service engineers. The tools, which included a service checker for "VRVs" and cleaning devices for ceiling-mounted cassette-type air conditioners, contributed to raising the efficiency of service operations.

In response to the increased sales during the bubble period, one move Daikin made was to bolster its production system. Initially, it did so by extending the hours of operating the existing equipment. At the Shiga Plant, for example, a system of two shifts was introduced (2 shifts per day; 16 hours of equipment operation) to increase production capabilities. On the other hand, because the Kanaoka Factory in the Sakai Plant was located in the city area, Daikin had to promote a low-noise environment, before introducing a two-shift system that included a night shift. In Japan at the time there was a serious shortage of labor, and many companies hired large numbers of workers to prepare for the future. Daikin, however, remembering what it learned during the oil crises increased its workforce only by utilizing part-timers and other non-full-time workers. In 1987, there were 1,264 employees in the direct department of the Air Conditioning Manufacturing Division of which contract workers accounted for 31.5 percent of the total. By 1991, the total number of workers increased to 2,864, over double the 1987 figure, and contract laborers, such as part-timers, came to account for 56.2 percent of the total. Meanwhile, there was

a noticeable shortage of parts from suppliers. Daikin took actions such as early preparation of production plans and early ordering of parts, depending on the production capabilities of the parts manufacturers. The company took further steps in that difficult situation, such as sometimes placing orders for the same parts with more than one company, establishing parts depots, or using replacement materials. If there were still shortages, emergency measures were introduced, such as having management at higher levels negotiate a solution.

As an essential solution to increase its production capabilities, Daikin had to bolster its production equipment quickly. In that context, the company began construction of the No. 2 Factory in the Rinkai Factory of the Sakai Plant. Using state-of-the-art technology, new and powerful lines went into operation in 1990 for producing "SkyAir" outdoor units and in 1991 for producing scroll compressors at the No. 2 Factory in the Rinkai Factory in 1988. For all commercial air conditioning equipment, Daikin's total investments in manufacturing facilities for the period 1988–91 were 23.7 billion yen, equivalent to all the company's capital investments over the previous 14 years. For residential air conditioning equipment as well, new and powerful lines with higher rates of automation were built in the Shiga Plant in 1989. In order to support operations at the Kanaoka Factory, in the second half of the 1990s the production of "SkyAir" indoor units was shifted from there to the Shiga Plant and production capacity at the Kanaoka Factory was bolstered. Investments in manufacturing facilities for residential air conditioning equipment for the three-year period totaled 11.4 billion yen.

Daikin introduced factory automation at the newly constructed No. 2 Factory in the Rinkai Factory as it aimed to build a computer integrated manufacturing (CIM) system. The system would

use computers in a production management system and data communications network to synchronize the production of varied products and their parts. Daikin aimed to have the highest rate of automation among companies in its industry by widely applying robotics that its Robot Systems Department developed. Daikin realized the benefits of automation by modularizing easily assembled parts. Also, developments such as automated warehouses, a picking system, driverless transportation between processes, and the use of auto loaders on machine processing lines to systemize the transport of parts resulted in high-speed, continuous operation lines free of workers. The use of automated compressor lines, such as the one initially introduced in the Rinkai Factory, spread later to the Shiga Plant for producing indoor and outdoor units for small room air conditioners. Use of automated lines then followed on lines producing indoor and outdoor units for small room air conditioners at the Shiga Plant and "SkyAir" outdoor units at the Rinkai Factory. By 1991, automation at the company's factories reached 90 percent of total operations.

Years later, Daikin itself criticized the efforts made during the period of the bubble economy to automate its factories, saying those efforts caused excessive investments in plant and equipment and made it difficult to respond to changes in market needs. At the time, however, the shortage of labor was critical and was expected to worsen further. Additionally, demand was increasing rapidly, and factory automation made it possible to respond to both situations. A side effect was that Daikin was able to maintain its market share. Actually, automation contributed to reducing production lead-time by about 50 percent, and labor productivity almost doubled. Also, as process management became more sophisticated, complaints about products during their first year on the market dropped to one-fifth their former level, and product



quality also improved.

Because the variety of air conditioning products became more diversified and production output of both packaged and room air conditioners increased rapidly during the period of the bubble economy, regular maintenance checks on production equipment became increasingly important in order to realize stable production. At the production sites, however, attention was concentrated on extending the operation time of machinery, and gradually less attention was being paid to regular maintenance checks of equipment. In order to cover that weakness, the Shiga Plant introduced “TPM” activities from 1987. “TPM” had two meanings: one was “Total Production Maintenance,” and the other was “Total Preventive Management.” TPM used five checkpoints to raise the awareness of employees concerning the care and maintenance of equipment and to develop human resources possessing high skill levels. The points included autonomous maintenance, individual improvement, early-stage management, planned maintenance, and training and education. Three goals were set for the project: 1. establish an efficient production system; 2. develop human resources; and 3. realize a pleasant working environment. To achieve those goals, all employees participated in activities aimed at improving the structure of their workplace and raising both productivity and the overall efficiency of production equipment, at the same time realizing a reduction in both equipment-related accidents and total downtime. Those activities developed personnel who came to know the equipment well and could maintain it at sufficiently high levels to enable it to produce high-quality products.

In the distribution process as well, the “bubble” economy saw the rapid development of more diversified and sophisticated needs, and customers began requesting immediate delivery of



*Soka Delivery Center*

small lots. The capital region market, located quite far from Daikin’s assembly operations, expanded especially quickly, strongly urging the company to improve its delivery function. As one result, Daikin built a large intelligent delivery center capable of handling shipments quickly in Soka City, located 20 kilometers north of Tokyo. The Soka Delivery Center opened for operation in August 1990. It used bar code readings for inventory control, automatic materials handling equipment, and centralized computer controls. The sophisticated equipment enabled the center to sort shipments into small lots. Making use of the expertise gained at the Soka Delivery Center, Daikin next opened the Sakai Rinkai Delivery Center in April 1992 to service the greater Kansai area, centered on Osaka and Kobe.

Early 1992, however, saw the collapse of the bubble economy and a rapid cooling off of the air conditioning market. Combined with the negative effects of a stronger yen, 1992 turned out to be Daikin’s worst year ever for air conditioning sales. The company was just beginning to invest in strengthening its sales capabilities when it was struck by a weakened demand for air conditioning and lower market prices. The company’s share of the packaged air conditioning market, meanwhile, which had risen steadily over the previous ten years, stopped rising and then started falling, an



*Automatic Materials  
Handling Equipment  
Inside Soka Center*

extremely serious situation for Daikin. Although all in-house units of the Air Conditioning Production Headquarters moved to upgrade their sales, their efforts to reduce production and delivery costs could not respond sufficiently to the sharply reduced production volumes. Price decreases were also larger than Daikin's expectations, and even in the following year, 1993, the company could not halt its declining business results.

The torrid summer of 1994 saw temperatures in Japan at the highest levels ever in the 135 years of keeping records at the Meteorological Agency. Business was so good that the industry's sales of air conditioners were up 154 percent from 1993 figures. Daikin's shares of sales, however, were down in both the packaged and room air conditioning markets. Around the same time, the company's Chemicals Division overcame its "triple ordeals" and its profits covered the sluggishness in the air conditioning business, thus keeping the company's overall results from falling into deficit. The company was unable to improve the results in its key air conditioning business, however, and sales remained sluggish. Although recovering from that situation became a serious issue for Daikin, major reforms for responding to it were carried over into the next period of the company's history.

Daikin moved to acquire certification for meeting the ISO



*Daikin Europe N.V.  
being Expanded*

9000 quality management standards of the International Organization for Standardization (ISO) for improving the structure of its Air Conditioning Manufacturing Division. The ISO 9000 series are international quality standards the EU established, modeled after Japan's quality management manual. At the time Daikin began moving toward certification, the number of other Japanese companies also moving to acquire certification was increasing. Daikin's commercial air conditioning manufacturing division recognized the ISO 9000 series as a well-planned and well-organized system for promoting quality assurance, and in 1991 the company began conducting activities at its Kanaoka Factory aimed at acquiring certification.

After the company prepared a quality management manual and thoroughly trained and educated the employees, the Kanaoka Factory became the first production facility in Japan's air conditioning equipment industry to obtain ISO 9001 certification. Acquiring certification brought the secondary effect of increased trust in Daikin by government agencies and large-volume customers. After the success of the Kanaoka Factory, the Air Conditioning Manufacturing Division had the Shiga and Yodogawa plants acquire ISO 9001 certification one after the other, and the Rinkai Factory acquire ISO 9002 certification. By 1995, Daikin Eu-



*Factory's Inside after  
Transfer of Production*

rope (DENV) and Daikin Industries Thailand (DIT) also acquired ISO 9002 certification.

In 1993, on the occasion of another round of yen appreciation, DIT prepared a plan for expanding its local production. At the same time, Daikin began promoting the transfer of production from Japan to DIT of non-inverter type small room air conditioners and small RC compressors. The finished products would then be exported to Japan, their final market. DIT's efforts for acquisition of ISO 9002 certification were especially noteworthy because it signified a shorter production lead time and made DIT's quality management stable as a global production base. In 1993, Daikin began to transfer the production of several other items to DENV from Japan, including the outdoor units for medium- and large-size room air conditioners, and the outside units of multi-room air conditioners for use in buildings. The actual transfer will be discussed in the next chapter of this book but the efforts Daikin was making around the same time to acquire ISO certification provided strong leverage for a smooth start to overseas production.

Daikin's overseas sales of air conditioning equipment were dealt a severe blow when the yen appreciated following the Plaza Accord. In that situation, the company had to introduce remedial measures quickly in order to reconstruct its overseas sales system.



*Daikin Industries  
(Thailand)*

The yen, however, which moved between 240 and 250 yen to one dollar in 1985, jumped quickly at the end of 1987 to 120 yen to one dollar. Daikin formerly selected high-priority overseas countries for introducing capital, personnel, and strategic products. Measures introduced up to that point, however, were ineffective. One of its main aims starting in 1988, therefore, was to aim for a structure that would be profitable even at 120 yen to one dollar, and to achieve this, it switched to a strategy of identifying particularly important countries. The five most important markets it identified were Australia, Europe, Hong Kong (prior to its return to China), Indonesia, and Singapore, and Daikin subsequently prioritized reconstruction of its operations in those markets. In countries where Daikin was already conducting operations, meanwhile, such as the U.S., China, Malaysia, Thailand, and some others, it started reconsidering how its businesses were progressing there. In the U.S., in particular, Daikin realized that its separate-type room air conditioner did not fit well in the market. Also the company was fighting a difficult lawsuit in Miami, Florida. In addition, profitability worsened excessively because of the rapidly strengthened yen. As a result, the U.S. became the largest negative sales country in the International Sales Division. One result was that in 1988 Daikin decided to pull out of the U.S. market tempo-



*Opening Ceremony  
of DIT*

rarily, and at the end of September it liquidated Daikin U.S. Daikin had already closed its operations in Kuwait, Malaysia, and the Philippines, and now it pulled completely out of the U.S. market.

In Australia, Hong Kong, Singapore, and Thailand, meanwhile, markets considered ultra-important, Daikin switched its business format from payment based on yen to payment based either on the local currency or the U.S. dollar, thus assuming the risk associated with money exchange. At the same time, though, Daikin raised its product prices considerably, and began reconstructing its sales system in various ways, such as by developing sales agents it called “air conditioning professionals.” The company also introduced various policies in a strong effort to expand the sales and service capabilities of its agents, including holding classes to bolster service technology, the transfer of know-how for managing the shops of the air conditioning professionals, bolstering publicity, and promoting invitations to visit Daikin’s Head Office and tour the company’s plants.

In 1987, at a company-wide development conference, there were discussions about preparing a global production strategy for maintaining the company’s cost competitiveness. Three new policies emerged from those discussions: 1. Align the company’s overseas production bases to enable them to produce air conditioning

products with the same quality and functions as products made in Japan; 2. Transfer technology to the overseas production bases to raise them to the same technical level as in Japan; and 3. Depending on the circumstances, produce products overseas that can be exported to Japan. Based on those policies, the first overseas production base Daikin established was Daikin Industries (Thailand) Ltd. (DIT). Besides the Newly Industrializing Economies (NIEs), Daikin also considered countries such as Indonesia, Malaysia, and other countries in Asia and the Middle East as locations for global production bases and decided on Thailand because of its previous experience in establishing a production base there. In February 1990, Daikin thus established Daikin Airconditioning (Thailand) (DAT). Daikin moved production for the Thai market from Siam Motor to DAT, and separate from DAT established DIT as a wholly owned subsidiary. The new company was positioned in Daikin’s air conditioning division’s strategy as a global production base, and DIT exported its total production to global markets. When Daikin completed construction of DIT in December 1990, the plant’s annual production capacity was 180,000 room air conditioners and 250,000 rotary compressors. From January 1991, the plant also began producing separate-type room air conditioners.

In a major change of plans for its business in Europe, Daikin switched sharply to an aggressive strategy starting in 1988. The company’s overseas activities originally began in Europe and the company developed a strong business foundation there early on. Daikin was especially aggressive in the second half of the 1980s in assisting and providing leadership to its local company for bolstering and expanding its sales network. There was much activity in Europe, including Great Britain, in the second half of the 1980s as the region prepared for unification with the EC in 1992. Besides

expectations for a greatly expanded market, import restrictions were gradually being strengthened. Multiple Japanese corporations had already been accused of dumping activities, and a stronger need emerged for initiating local production activities. In that situation, Daikin positioned DENV's Ostend Plant as a key production base in Europe. In order to bolster the plant's production capacity, Daikin introduced its DE Project in 1990. In the first phase of the project the company shifted the production of all medium- and small-size indoor units for room air conditioners and wall-mounted type indoor units from Japan to DENV. The DENV plant was then expanded, new equipment was installed, and in March 1992 the all-out production began of outdoor units for split systems. In that overall process, with the aim of turning DENV into the top air conditioning manufacturer in Europe, the company introduced the Production of Daikin System and responded to European specifications by increasing the percentage of parts and raw materials procured locally. Next, from November 1993, Daikin introduced the second stage of its DE Project. It shifted production from Japan to DENV of large-size outdoor units for room air conditioners, "VRV" systems for homes, and the "SkyAir" series

At the same time that Daikin expanded and improved DENV's production capacity it also bolstered and reorganized the local sales network. In the late 1980s, demand was increasing in London for using "VRV" systems in small and medium-size commercial buildings being renovated. In that situation, Daikin designated London as an area for expanding that type of equipment for use in buildings. Through DENV, Daikin concentrated on providing distributors with sales experience it accumulated in Japan, including ways to approach electric power companies, the hosting of seminars aimed at large installation contractors, and technical training courses for installation and maintenance services. Daikin

had a three-year start on other companies in the sales of "VRVs", and its total sales in London expanded remarkably as a result of its sales promotion activities. Those expanded sales contributed greatly to the International Sales Division turning profitable in fiscal 1988, registering a profit of 2.4 billion yen. Its income on sales was 12.4 percent, the largest among Daikin's divisions.

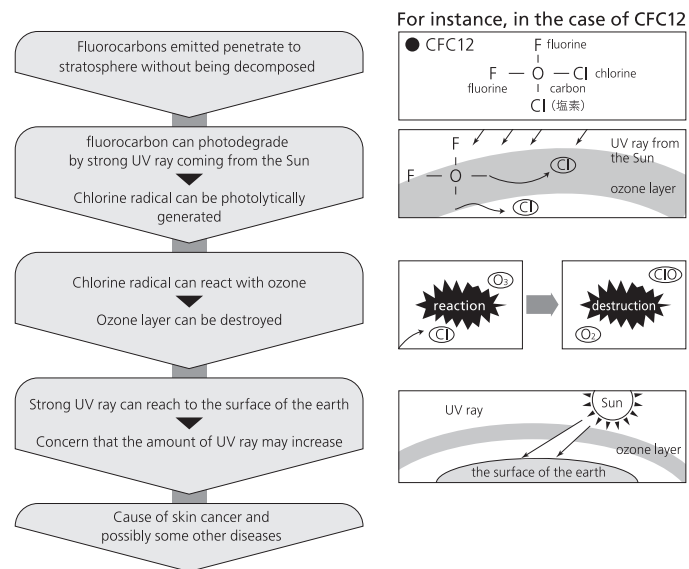
Using the success in London as a springboard, Daikin introduced similar projects for expanding the sales of "VRVs" to other countries in Europe. France was a priority market in Europe. After Julien et Meige Ltd., the parent company of Daikin's distributor Megatherm, went bankrupted, Daikin bought Megatherm and reorganized it. In 1992, Megatherm was made a wholly owned subsidiary of DENV, and in the following year Daikin changed Megatherm's name to Daikin Airconditioning France S.A.S. The company then began aggressively selling "VRV" systems. Daikin also became more aggressive in selling in the countries of Asia, in Australia, and in the Caribbean countries, thus successfully developing global markets.

### **Three Trials of Daikin's Chemical Business**

The year from 1987 to 1988 was a truly tumultuous year in which several major problems emerged that shook the very foundation of Daikin's business. At the time, the Chemical Division's main product was fluorocarbon, a chlorofluorocarbon (CFC). CFCs were specified in the Montreal Protocol signed in September 1987 as harmful substances that contributed to depletion of the earth's ozone layer. Daikin, therefore, quickly had to develop a substitute substance with little negative effect on the ozone layer. In November 1987, the U.S. government filed charges against Daikin for dumping fluororesins.

Next, in August 1988, Daikin was investigated in Japan for

### Theory of Prof. Roland Regarding Destruction of Ozone Layer by CFC12



suspected violation of the rules of the Coordinating Committee for Multilateral Export Controls (COCOM). And in December, the Japanese government charged Daikin with violation of the Foreign Exchange Law and the Foreign Trade Control Law. Daikin responded to a forced search by the government related to violating COCOM rules and faced administrative punishment, so it quickly had to develop a replacement fluorocarbon product less harmful to the earth's ozone layer, and to prepare basic measures to counter the dumping charges filed against it. Looked at another way, however, these three "trials" were faced with an overall company response and thus became the occasion for introducing major changes in Daikin's managerial structure. In that sense, therefore, the three trials were game-changing.

Of the triple ordeals the company faced, the CFC regulations and dumping charges, which required long-term, drastic respons-

es, will be discussed in detail a bit later in this chapter. Discussed here first is the suspected violation of COCOM rules, which required a quick and proper business decision.

Japanese companies first paid wide attention to COCOM rules domestically from April 1987 after Toshiba Machine Company violated those rules. COCOM was established in 1949, at the beginning of the Cold War, to isolate the Soviet Union by placing an embargo on the export of strategic materials and technology to East Bloc nations mainly from the member nations of NATO. Although Japan joined COCOM at its establishment, Japanese companies had only a weak awareness of COCOM rules because Japan's science and technology in the postwar years were mainly dependent on imports for realizing rapid industrialization. It was in that background that the Toshiba Machine incident occurred. After that incident surfaced the Ministry of International Trade and Industry (MITI) began promoting measures to provide administrative guidance for Japanese industry to establish internal systems for adhering to export-related rules and regulations. Daikin also reviewed its system for controlling strategic materials on which regulations were based to prevent their export to East bloc nations. In April 1988, Daikin established company-wide rules related to the control of exports and presented them to MITI. Just four months later, in August, MITI questioned Daikin on suspicion of violating COCOM rules regarding the export of Halon 2402 by the Chemicals Division to the Soviet Union for use as a fire-extinguishing agent aboard fishing vessels. Daikin originally developed Halon 2402 in 1963 as a fire-extinguishing agent. Although it was regulated under COCOM rules, it was being exported to the Soviet Union from 1979 because it fell in a special category of products that could be exported if the 17-member nations of COCOM approved it. Later, together with the Soviet Union's inva-

sion of Afghanistan, exports of Halon 2402 were once again regulated. Low-purity Halon 2402 products, however, remained outside the COCOM regulations, and Daikin developed a low-purity product that it exported to the Soviet Union beginning in February 1982. By July 1987, it had exported about 1,400 tons of low-purity Halon 2402 to the Soviet Union.

After receiving administrative guidance from MITI, Daikin's department in charge of Halon 2402 discovered that for several years impurities had not been added to lower the product's chemical purity, resulting in the export of products with a high degree of purity. In July 1987, the production department revised the production and inspection methods and once again began exporting low-purity Halon 2402 from August. The Chemicals Division first learned of the error at the MITI hearings. In September 1988, the division head submitted a report to President Minoru Yamada explaining in detail what had happened. Yamada immediately established an ad hoc committee to investigate the incident and clarify the existing circumstances. Daikin filed a report with MITI in October 1988 acknowledging the fact that its exports of Halon 2402 had been improper. As a result, MITI filed a suit through the Osaka Prefectural Police Headquarters in December charging Daikin and the company that exported the products with violation of the Customs Law, the Foreign Exchange Law, and the Foreign Trade Control Law. The prefectural police subsequently searched Daikin's Head Office and Yodogawa Plant, placing Daikin in a difficult situation.

President Yamada publicly announced that Daikin acknowledged the COCOM violation, and that the company was awaiting an appropriate legal decision concerning the incident. Managing Director Noriyuki Inoue and General Affairs Department Manager Tadashi Shibai explained the incident to the media at a press

conference. President Yamada attended the press conference and apologized to the public. Also announced, in accepting responsibility for the incident, were the resignation of Executive Vice President Yoshihiko Kubouchi and a 10 percent reduction in President Yamada's salary for three months. Daikin also fully cooperated with the police in their investigation to verify the facts of the case. In February 1989, the sales section manager and inspection section manager of the Chemicals Division, the two persons most directly linked to the incident, were arrested for suspicion of violating the Customs Law and the Foreign Exchange Law. In March, prosecutors filed official charges against Daikin and the sales section manager.

Although the incident was considered unintentional, the content of the charges reflected a low level of awareness of COCOM regulations held by the related departments and individuals in Daikin, as well as poor management of internal operations. The Osaka District Court deemed Daikin and the sales section manager guilty in October 1989.

After the charges were confirmed, President Yamada wrote a personal letter in March to all managers in Daikin in which he expressed his determination to establish an internal system to prevent the reoccurrence of such disgraceful incidents. The first step was taken in April, when the company established a new Trade Control Office to control all exports. In June, a large number of shareholders attended the regular shareholders meeting and questioned President Yamada and other company officers about the incident for several hours. Yamada answered all questions sincerely and in great detail, finally gaining the understanding of the shareholders.

Also in June, MITI administered disciplinary measures by prohibiting Daikin from exporting any products or components—

not only prohibited items—to countries included in COCOM regulations for a period of six months beginning in July 1989. The measures covered not only products and components exported through affiliates and trading companies but also re-exports via capitalist countries and OEM products and components that Daikin supplied to other companies.

In the short period of only one week before the disciplinary measures took effect, Daikin carried out additional detailed countermeasures to prevent the reoccurrence of such incidents. The company contacted its domestic and overseas business partners, for example, and asked them to cooperate in the prohibition of exporting Daikin products to socialist countries. It also printed labels in Japanese and English explaining the export prohibition and attached them to all products and components shipped from its plants. In addition, all outstanding orders and business discussions currently underway were reviewed closely and contracts that infringed on the export prohibition measures were cancelled. Daikin also repurchased inventories from its overseas business partners. Thereafter, Daikin contracted directly with delivery companies to have products in each order delivered to customers.

Besides the disciplinary measures, Daikin also suffered social sanctions. Organizations such as the central government and related agencies, and prefectural and municipal governments, removed Daikin from their list of designated companies for periods ranging from one to three months. Some suppliers also informed Daikin they were halting their supply of semiconductors to the company. Since it would be impossible to produce either air conditioning or electronic equipment without semiconductors, Daikin promised the suppliers it would strengthen its internal system of controls. The company was finally able to convince them to continue supplying their products. With guidance from MITI, Daikin

then bolstered its internal system of trade control. At the same time, the company introduced a system of basic education for all officers and employees of Daikin and its affiliates to familiarize them with COCOM rules and to raise their level of awareness of the importance of strict compliance with rules and regulations. It obtained MITI's approval of its revised internal systems in August 1991. During the interim of about three years, company-wide efforts continued to prevent a reoccurrence. Those efforts succeeded not only in raising an awareness of the importance of compliance among employees but also in establishing a sophisticated system for controlling exports and the system's all-out operation.

Another of the triple ordeals that Daikin's chemical business faced was the matter of fluorocarbon regulations. In 1974, Dr. Mario J. Molina and Professor F. Sherwood Rowland of the University of California published findings from research they conducted suggesting that chlorine compounds from chlorofluorocarbons (CFCs) might live long enough in the atmosphere to destroy the ozone layer and thus negatively affect the ecosystems of plants and humans. That research eventually led to the introduction of international regulations restricting the consumption of CFCs as substances that contribute to depletion of the atmosphere's ozone layer. Specified CFCs such as CFC11, 12, and 113 contain the ingredient chlorine. They are highly stable and easily reach the stratosphere without breaking down. As the pioneer in the CFC field in Japan and as Japan's leading manufacturer of CFCs, Daikin was producing those three specified CFCs. CFC11 was used mainly as an auxiliary blowing agent to improve the processability of polyurethane (PU) foam. CFC12 was used as a refrigerant in refrigerators and automobile air conditioners, and CFC113 was used as a cleaning agent across a wide spectrum, including for electronic components, metals, and plastics, and in dry cleaning. The de-



mand for these CFCs grew rapidly in line with Japan's economic growth, and Daikin added equipment at its Yodogawa Plant and Kashima Plant to increase their production.

Since CFCs were substances essential for supporting the industrially advanced societies in the developed countries, and were widely used in areas from home appliances to industry, some 20 companies in Japan, the U.S., and Europe producing CFCs cooperated with institutions conducting research and surveys for clarifying how CFCs affect the global environment by together contributing a total of \$26 million to support their activities. In 1977, after observations by NASA of the U.S. confirmed that depletion of the ozone layer was advancing, the U.N. Environment Programme (UNEP) established the Coordinating Committee of the Ozone Layer (CCOL) for periodically assessing depletion of the ozone layer with the aim of preserving it. As a result a basic agreement, the Vienna Convention for the Protection of the Ozone Layer, was adopted in March 1985. Two years later, in September 1987, an international agreement called the Montreal Protocol on Substances that Deplete the Ozone Layer, was adopted. It determined the specific content of regulations.

In 1988, one year after adoption of the Montreal Protocol, the Japanese government circulated the Law Concerning Regulations on Specific Substances for Protection of the Ozone Layer and established a system of licensing for the volumes of specific CFCs and Halons that could be manufactured and consumed. In 1990, the government expanded the regulations to cover other substances and decided to halt production and consumption of all specified substances by 2000. Once into 1992, the government further decided that by the end of 1995 all production and consumption of specific CFCs would be halted and total volume restrictions would be set on substitute CFCs. Since Daikin was not only

a manufacturer of CFCs but also a major consumer of CFCs as a manufacturer of air conditioners, it faced two difficulties: one was to reduce the volume of CFCs it consumed in its plants; the other was to develop new, substitute CFCs. The results of the efforts it subsequently made would determine whether its Chemical Division would continue to exist or not.

In exerting efforts to reduce the volume of CFCs consumed, in compliance with CFC regulations, the first major task was to reduce the volume of specific CFCs consumed in production processes. In August 1989, when CFC regulations first took effect, the Air Conditioning Manufacturing Division, Chemicals Division, Oil Hydraulics Division, and Service Division all prepared plans for reducing the volume of CFCs consumed in their operations, thus initiating Daikin's company-wide approach to complying with the regulations. In machine processing and on the assembly lines, the conservation of CFCs began with improvements introduced in their various processes. CFCs were prevented from leaking from cleaning equipment, for example, and devices were installed for recovering used CFCs. On the other hand, however, the demand for CFCs continued to increase rapidly, requiring consecutive production increases and making it extremely difficult to reduce overall volumes. It was only after a series of innovations, such as developing alternate production methods, making cleaning unnecessary, and using non-CFC cleaning agents, that Daikin was able to realize substantial CFC reductions.

The Oil Hydraulics Business Division and the Special Equipment Business Division had both used specific varieties of fluorocarbon for removing oil prior to processing surfaces and for cleaning components, and they promoted the shift to using alkaline as a cleanser, making cleaning unnecessary, or using HCFC141b as an alternative cleanser. The Oil Machinery Business Division in

1992, and the Special Equipment Division by 1993, halted all use of CFC11. In 1994, they also stopped using trichloroethane. The Chemical Division, meanwhile, used fluorocarbon as a solvent, as a polymer stabilizer, and as a granulating medium. Although Daikin halted fluorocarbon's use as a solvent in 1993, its use in manufacturing processes related directly to most of the company's business divisions. Daikin's outside suppliers and subcontractors, meanwhile, stopped using fluorocarbon no later than 1994. Substantial investments were needed to replace fluorocarbon, but Daikin benefitted in terms of overall lower costs and favorable effects on technology.

As the leading manufacturer of CFCs in Japan, Daikin felt a strong social responsibility to develop CFC substitutes. In December 1988, in the context of the company's Chemicals Division facing its triple ordeals mentioned earlier, Managing Director Noriyuki Inoue was appointed director in charge of the company's chemicals business, and he initiated efforts needed to enliven the chemical business. He was the eldest son of Professor Yoshiyuki Inoue, head of the Agricultural Department of the University of Kyoto, and the person most responsible for Daikin employing college graduates with degrees in chemistry in the postwar period. Noriyuki Inoue, however, graduated from college with a humanities degree, and he knew next to nothing about chemistry, not even the chemical symbols. Once he became the director in charge of Daikin's chemicals business, however, he took action to have the department develop an inexpensive substitute for fluorocarbon ahead of other companies, which would give Daikin the chance to make great progress. He tackled that project energetically from early 1989, organizing the project team for the development of CFC substitutes, including strategy and research functions. From then until 1993, the Chemicals Department invested

10 billion yen to develop new CFC substitutes such as HCFC142b, HFC134a, and HCFC141b. Even while Daikin was developing substitute products, however, regulations were bolstered further toward total prohibition of all CFC/HCFC substitute substances as well, and Daikin began moving quickly toward developing new substitute substances that had zero ozone depletion potential (ODP). Those efforts marked a switch toward developing HFCs. At any rate, Daikin was the first company in the industry to move toward developing new refrigerants.

The first commercially successful CFC substitute was HCF-142b, which replaced CFC12. HCFC142b is an intermediate fluororesin, and Daikin already had the technology to produce it. In 1988, based on that technology, Daikin began the joint development of the HCFC142b refrigerant with Dow Building Solutions Co., a subsidiary of Dow Chemical. Daikin began operations inside the Yodogawa Plant and Kashima Plant for total annual production of 6,000 tons of HCFC142b.

Daikin sold HCFC142b as a foaming agent for polystyrene, practically monopolizing the Japanese market. Daikin also sold the product to styrene foam manufacturers such as BASF and Rockwool in Europe. Next, in 1989, Daikin developed the world's first non-CFC-type cleaning agent, called fluorine alcohol, and in 1991 successfully developed HFC134a, another substitute for the refrigerant CFC12. Since fluorine alcohol or HFCs contain no chlorine, it was possible to continue producing them even after the government placed restrictions on CFC substitutes. Daikin positioned HFCs as most important development themes and concentrated its resources on producing them. As a result, it was the first company in the world to succeed in mass producing the refrigerant HFC134a.

The principal market for the new refrigerant was automobile

air conditioners, an area where Daikin's market share was low up to that point. Daikin thus went all-out in sales approaches to Japanese automakers such as Toyota, Nissan, Honda, and others, and quickly came to hold the largest share of that market. Next, in 1993, Daikin developed HCFC141b, a substitute for CFC11, as a foaming agent for polyurethane. The company also continued to search for a substitute substance for HCFC22, a CFC substitute consumed in large volumes in air conditioners, and in 1993 began operating a pilot plant producing HFC32 and HFC125.

Daikin also had to develop new air conditioning models to handle the new refrigerants. The company announced its intention to halt the manufacture of air conditioning using specified CFCs and set the year 1993 as the final year. It then moved forward with developing new products using substitute refrigerants, and preparing production facilities and a recovery system. Actually, Daikin halted the production of models using specified CFCs at the end of 1992. For air conditioners already sold, Daikin proposed that its customers switch to the new models and moved to replace the compressors and refrigerant on the customer's premises. Daikin was also at the forefront of air conditioning manufacturers around the world in developing air conditioning equipment using HCFC22 and new substitute refrigerants such as HFC32, HFC125, and others.

Originally, there were 30 or more companies manufacturing fluorocarbons worldwide. By 1995, however, as production and consumption restrictions became increasingly stringent, the number dropped to ten companies. In the end, after development of HFCs, only six companies worldwide were still producing fluorocarbons. The fluorocarbon issue actually marked the first crisis for Daikin related to fluorocarbons since the company began producing them in 1933. Still, with the backdrop of the world-scale com-

petition to develop HCFCs and then HFCs, Daikin secured an advantageous position, ensuring its future in those businesses. Before long, Daikin cleared the turning point for becoming the number two fluorocarbon producer in the world behind DuPont.

The third ordeal the Chemicals Division faced was a suit filed by DuPont charging Daikin with dumping fluororesins. With Sumitomo Corporation and Gunze Sangyo as its export agents, Daikin began exporting fluororesins to the U.S. in 1971. By the early 1980s, Daikin was exporting a full line of outstanding products, including Daikin "Polyflon" PTFE M12, with electrical characteristics superior to the products of other companies, and Daikin "Neoflon" FEP for use with plenum cable, and began aggressively selling them to users in Europe and North America. As Daikin gradually expanded its markets the competition with DuPont turned especially keen concerning Daikin "Polyflon" molding powder (polytetrafluoroethylene molding powder—PTFE-M). Daikin's exports of PTFE-M reached 25 percent of its total production of that product. After the Plaza Accord, however, the yen's exchange rate rapidly appreciated from 240 yen to one US dollar in September 1985 to 120 yen to one US dollar at the end of 1987, and Daikin's conditions for competing with DuPont turned severe.

With the intensified competition tied to the higher yen, in November 1987 Du Pont filed antidumping charges in the U.S. against Daikin related to PTFE-M. Certification of dumping charges requires proof that: 1. a product is being sold at unfairly low prices; and 2. that a domestic U.S. company is suffering damages. The Department of Commerce handled the first charge, and the International Trade Commission (ITC) investigated the second charge. At a hearing held in December 1987, Daikin was found guilty of both charges. Immediately after being informed of the original charges, Daikin began studying countermeasures. On the first

charge, Daikin avoided arguments that would require having to reveal cost prices. And on the second charge, Daikin did everything possible to prove that U.S. industry was not suffering damage caused by Daikin's product prices. At the time, however, the general business situation in the U.S. had worsened, and in August of the following year it was officially announced that U.S. industry was suffering damages from Daikin's products. As a result of that ruling, it became impossible for Daikin to continue exporting PTFE-M12 and other "Polyflon" products to the U.S.

Many negative issues emerged related to fluorocarbon, but the production of fluoro-resin, which had no negative effect on the ozone layer, became the foundation for Daikin's fluorocarbon business. At the time, however, Daikin was in danger of losing its position in the U.S. market, the world's largest market for fluorocarbons. Success in the U.S. was thus a life or death situation for Daikin's fluorocarbon business. Actually, the U.S. accounted for roughly half of the entire world's demand for fluorocarbons. In that context, Daikin had for some time embraced the dream of having a plant in the U.S., and it felt it had to act quickly to make that dream a reality.

In September 1988, Daikin liquidated Daikin U.S. and withdrew from the U.S. air conditioning market. In order to prepare for reentering the U.S. market at a later date, however, the company needed a new base of operations for conducting market surveys and for servicing the air conditioning equipment already in use. In that situation, in October 1988 Daikin opened a New York Office in Manhattan and began preparing a new business strategy for the U.S. market. The company sent Director and Office General Manager Yuzuru Kometani, and six other persons, three each from the Chemicals Division and the Air Conditioning Division, to New York. The first three collected information on the chemical



*Interior of New York Office (above),  
Located in the Seagram Building (right)*

industry in the U.S. and surveyed possible sites for a local plant. The other three liquidated Daikin U.S. and conducted market surveys to prepare for establishing a new Daikin U.S. to conduct future sales activities. They also studied the feasibility of local production in the U.S. Daikin thus took its first steps toward global management.

The Chemicals Division established Daikin Chemical America (DCA) in 1989 inside Daikin's New York Office. One of DCA's first duties was to build sales and service systems and to conduct a feasibility study for identifying an appropriate plant site and candidate companies to become its partner. It listed ten companies as possible partners and in the end two ideas emerged: one was to purchase a plant; the other was to form a joint venture with Minnesota Mining and Manufacturing (3M). Daikin negotiated with various companies concerning both possibilities, and in the end decided it did not want to purchase a plant. It then turned to 3M around the middle of 1989 and entered into serious negotiations about establishing a joint venture. At the time, 3M was a leading manufacturer of fluoro-resins and it was looking for a partner with superior technology in the area of raw materials, including the production of monomers. Daikin, meanwhile, favored 3M because

the two companies were not competing in the area of PTFE, and because its managerial style resembled Daikin's own style, with a corporate culture that emphasized taking good care of employees and a stance of emphasizing the development of new products. Those factors were central to Daikin's decision to choose 3M as a partner.

The final figure for building a plant in the U.S. was expected to total more than 20 billion yen, a figure over half of the Chemical Division's annual sales. The Division had already invested substantially in developing a new refrigerant but it had no previous experience in making investments of this size. The overall business environment for Daikin was favorable, however, with sales proceeding especially well in its mainstay air conditioning business. In the end, President Minoru Yamada's enthusiasm regarding the joint venture and the local plant project led to a mood of support for the investments. Daikin's board gave approval to move forward with both projects.

Following negotiations between Daikin and 3M, it was agreed that Daikin would produce tetrafluoroethylene polymers and PTFE, and the joint venture would produce R22 and hexafluoropropylene monomers. In December 1990, President Yamada of Daikin and Executive Vice President Hamery of 3M signed a basic agreement at 3M Headquarters in St. Paul, Minnesota. Then, in January 1991, Daikin established the wholly owned subsidiary Daikin America Inc. (DAI), and DAI and 3M established the joint venture MDA Manufacturing Inc. Director Yuzuru Kometani of Daikin assumed the presidency of both companies. DCA, meanwhile, was absorbed by DAI, thus bringing together manufacturing and sales. Next, DAI acquired 400,000 m<sup>2</sup> of land bordering on the plant of 3M in Decatur, Alabama, for building a new plant, and began construction in January 1991.



*Daikin America Inc.*

Building a plant in the U.S. was a new experience for Daikin. Still, even though the plant's basic design included somewhat more automation than the Kashima Plant in Japan, it was well within the range of Daikin's previous plant-building experience. Because of the differences in standards and in materials and material quality, however, Daikin met problems related to the "Americanization" of design details and equipment spec sheets. Clifford Adams, a former plant manager of Pennwalt Corporation in the U.S., was hired as plant manager and was trained in Japan for seven months to have him understand Daikin's corporate principles better and provide him with expertise related to Daikin's style of management. Workers were then hired in stages. Including managers and supervisors, Daikin hired over 100 persons. Depending on their job responsibilities, they underwent long-term training either locally or in Japan. When the plant's construction was completed in 1993, Director Tatsuo Sueyoshi, the strongest promoter of building the plant, traveled from Japan to observe the construction and oversee trial operation of the plant. Besides the employees hired locally, veteran Japanese employees of the various processes and departments were sent from Japan to provide technical guidance. In this way, by September 1993, trial operation of the tetrafluoroethylene polymer plant was successful. Business



*Polytetrafluoroethylene Plant (top)  
Lightening Ceremony (left)*

operation of the plant then began in February 1994.

In August 1993, without waiting for completion of that plant's first-stage of construction, Daikin decided to build a moltenresin plant in the same location for producing "Neoflon" FEP/ETFE. Building that plant quickly was in response to a rapid increase in demand in the U.S. for cabling used for computer LANs. At one point, construction and start-up operations moved forward simultaneously at a high pitch at six different plants inside the Decatur Plant. The method used was to have Japanese employees sent from Japan head the start-up operations at most of the plants and then gradually turn over operations to local employees. By the end of 1995, after the plants were fully operational, almost all the Japanese employees returned home. President Daiji Naito, however, remained in Decatur.

Daikin received the full cooperation of plant General Manager Clifford Adams and 3M in operating the plants, including the en-



*Decatur Plant of  
Daikin America Inc.*

vironmental response, and received full local support and advice, such as from Alabama state authorities, for hiring new employees. The company emphasized localization of its operations, including building a direct sales system utilizing American sales personnel that DAI hired, and responding in great detail to user needs through DAI's technical service center, thus making DAI widely known as an American company. Various efforts were also made to deepen the understanding of Daikin as a Japanese company by DAI's employees and residents in the local community, such as by holding regular employee meetings, introducing the Japanese custom of the summer Bon Odori Dancing Festival, and establishing a program for local high school students to visit Japan and stay at the homes of Daikin employees.

DAI's corporate principles included: (1) working closely together with the company's customers, with both parties growing; (2) providing outstanding technical services; (3) taking the steps needed to make the company's plant welcome in the local community; and (4) increasing the level of stability in product quality. All four principles were carried out in the company's business activities. In that background, DAI turned profitable in 1996, a year earlier than expected. That was a smooth start for Daikin's production activities in the U.S. Also in 1996, the development of new

refrigerants began providing smooth results, and the overall Chemical Division turned profitable. The Division thus recovered to become important once again, contributing to Daikin's profits together with the Domestic Air Conditioning Division.

Daikin's first entry into the U.S. with a production base was thus successful, and through company-wide efforts the Chemicals Division also overcame the triple ordeals it faced. The lengthy struggle changed the business structure of the Chemicals Division, and it gradually became a global business. It can be said that it was because the Division did not play as important a role as it plays today among the company's business divisions, it was able to accept and overcome the bold challenges it faced. At the same time, behind the all-out approach to make the most of the company's core technology and aggressively meet the challenge of new business areas was a corporate culture born of the sense of solidarity that emerged from top to bottom inside the company and took firm root.

### **Reduction of Working Hours, and Social Contributions**

During the period of the bubble economy, the international community began criticizing Japan for its overly favorable balance of payments and—viewed as supporting that balance—the fact that Japanese worked too hard. Japanese workers, too, began thinking more about how to use the free time they gained as the affluent society gradually became a reality. Based on an advisory from the ILO, the Japanese Trade Union Confederation (RENGO), the national center for Japan's industrial federations, began moving from 1989 toward realizing a reduction in working hours to 1,800 hours/year plus additional days off. For 400 years, ever since the Edo Period, the beginning of Japan's modernization, working diligently was considered a virtue and Japanese workers grew accustomed

to long hours. But now a reduction in working hours was finally becoming a main trend of the times.

Although a reduction in working hours was a topic in labor-management talks in Daikin from the early 1980s, the company's business was expanding rapidly and the trend was toward longer working hours to respond to that expansion. In 1990, annual working hours per employee in Daikin reached 2,273 hours. In 1991, labor and management agreed to have Daikin follow the social trend and reduce total working hours. That actually was 16 years since the last time working hours were reduced in 1975 because of the effects of the first Oil Crisis. Specific discussions focused on setting and achieving a goal of 1,800 working hours. A flexible working system suited to each workplace was introduced, though the total yearly working hours were kept constant. A system of working days and hours matched to the work load (9 hours/day in the busy season, and 7 hours/day in the off season) was adopted for the production lines in the air conditioning manufacturing divisions and a flextime system was adopted for all the deskwork sections, which formerly applied only to employees in the R&D departments. As a result, work efficiency was improved and the number of total working hours was reduced. In 1992, workers became almost obliged to take five straight days off of paid vacation time. Including the two weekends surrounding the five days, that meant a total of nine straight days off. Mid-level managers were asked to take the lead in taking vacation time off, and by changing the atmosphere at the workplace the company aimed to make it easier for employees to take paid vacation time due to them. This aggressive approach led to a considerable reduction in the number of working hours in Daikin in 1992 and 1993. In 1993, annual working hours reached 2,000 hours and in 1994 they reached 1,920 hours. Even that figure, however, was still far



*President Yamada at Initial Meeting of Okinawa Business Leaders' Forum in 1990*

from the ILO's recommended 1,800 hours.

Daikin began tackling the in-house cultivation of a spirit for contributing to society, and before long was being recognized for the activities it undertook. President Minoru Yamada often said, "Nothing is more important to human beings than the people they meet in their lives." He also said, "Personal relations are based on a moral fiber that makes human beings considerate of others and makes them never betray another's trust in them." An event symbolic of that spirit is Daikin's sponsorship of the officially sanctioned "Daikin Orchid" Ladies Golf Tournament held in early spring every year in Okinawa Prefecture. The origins of this tournament date to 1988. Daikin became its sponsor through a business forum held regularly between business leaders in the Kanto region around Tokyo and those in Okinawa Prefecture, organized with President Sohei Nakayama of the Industrial Bank of Japan in the center. The tournament is held in early March as the first tournament of the year in the Japan Ladies Tour. Golf courses in northern Japan are still covered in snow at that time, and other parts of Japan are still cold. Okinawa Television Broadcasting broadcasts the tournament throughout Japan to golf enthusiasts eagerly waiting for the official start of the golf year in Japan.

The "Daikin Orchid" was an unusual competition for Japan, held between amateur and professional golfers, and business

leaders and professional female golfers were invited to play. Daikin employees, motivated by President Yamada's philosophy of being sincere in everything one does, supported the tournament with great hospitality. As a result, the tournament was evaluated highly by business leaders and professional female golfers, who became the driving forces for continuing the tournament. The strong hospitality that marks the tournament relates not only to the Daikin employees involved in conducting it but to the entire company. In fact, that hospitality became a mark of Daikin's employees who place great importance on their relations with people. The tournament also raised the morale of all Daikin employees.

President Yamada was interested in much more than corporate sponsorship of a golf tournament. He served as director, for example, of the Okinawa Business Leaders' Forum for many years after it was established in 1990. Two days before the "Daikin Orchid" Golf Tournament started, business leaders from the Kanto and Kansai regions and Okinawa met together at a Forum Conference to discuss a wide range of topics and to exchange opinions. Discussions included proposals for stimulating business activities on Okinawa, sponsorship of various forums that contributed to development of the local communities, and support for cultural events.

Okinawa suffered tremendous damage during the Second World War. After the war, the U.S. occupied Okinawa until 1972, and the prefecture's development fell drastically behind that of the Japanese mainland. With the aim of gaining a deeper understanding of the situation in the prefecture's local communities, President Yamada felt an obligation to provide support to Okinawa and essentially took the lead in establishing and promoting the Okinawa Business Leaders' Forum. The role the Forum plays



in helping Okinawa establish its self-reliance and development, and promotion of the prefecture's industry, is like a "spiritual bridge" connecting the mainland to Okinawa. In that sense, Okinawa society and business leaders on the mainland evaluate the Forum highly.

As a recreation facility for employees, Daikin opened "Daikin Eau de Ciel Tateshina". At the time, it was quite an outstanding facility compared to the health and wellness facilities of large Japanese corporations. It was built on a plateau in Nagano Prefecture and opened in 1991. The facility's design concept was to realize a facility that "provided mental rather than physical affluence," and the basic policy was to open it not only to employees but also to residents of the local community. President Yamada was considerate of people, and the facility put to best use his ideals and good sense. He believed that "A company's growth is the sum total of the growth of the individuals inside the company." As an extension of such beliefs, Yamada gave it its French name, Daikin Eau de Ciel, which in English means "water of Heaven." In contrast to many of the corporate wellness facilities in Japan that have a poor reputation among young employees and suffer from reduced usage, the Eau de Ciel became popular among Daikin employees and the occupancy rate stayed steadily at 75 percent. In 1993, the facility won the Design Prize of the Architectural Institute of Japan, considered the most prestigious architectural design award in Japan, an expression of the high social evaluation of the facility.

Daikin began showing increased interest in environmental matters after depletion of the earth's ozone layer turned into a social problem. A Company-Wide Environmental Measures Committee had been established previously and was active in promoting anti-pollution activities. Daikin decided to upgrade that committee and have it promote measures for preserving the glob-

al environment. For that purpose, the company established the new position of director-in-charge of global environmental issues and a Global Environment Department, and in 1993 established a Charter on Global Environmental Preservation. Based on rules in the Charter, a company-wide system was established for responding actively to the CFC issue, providing products and services with minimal negative effect on the environment, and promoting the development of technology useful in preserving the environment. Next, in 1994, as a specific plan for behavioral guidelines, four main items were outlined for improving the environment. They included halting all in-house consumption of specified CFCs and trichloroethane, reducing the in-house volume of energy consumed, reducing the volume of waste material emissions, and taking stronger steps to recycle products. Daikin then established company-wide environmental improvement items and targets to be achieved by the year 2000. In addition, the company began publishing an annual Environmental Report starting in 1998.

In 1993, Daikin was the majority shareholder in establishing Daikin Sunrise Settsu, Ltd. (DSS), as a third-sector—that is, non-profit, non-government—company, a large-scale project for a Japanese company to conduct social contribution activities. The Japanese Diet passed the revised law for promoting employment opportunities for disabled persons in 1976, and companies were obliged afterward to have persons with disabilities account for a certain percentage of their total labor force. Medium-size and larger companies that did not achieve the percentage applied to them had to pay a penalty fee. At the time, disabled persons comprised 0.35 percent of Daikin's total labor force, a figure higher than the national average, but it still did not reach the 1.5 percent mandated by law. In 1989, the mayor of Settsu City, where the Yodogawa Plant is located, contacted the Yodogawa Plant and



*Daikin Sunrise Settsu (top)  
Scene of Daikin Employees at Work  
in Daikin Sunrise Settsu (left)*

requested Daikin's cooperation in establishing an organization for employing persons with severe disabilities. After considering various factors, such as continuous, long-term, stable employment, potential profitability of the venture, and a minimal workload on the disabled workers, Daikin worked closely with Settsu City and established DSS. The main business of the company, which began operating in 1994, was the assembly of components for lubrication equipment for the Oil Hydraulics Division of the Yodogawa Plant. Of the company's 22 employees, 16 were disabled persons. The company started in business with annual sales of 260 million yen.

The main corporate philosophy of DSS is "To provide a pleasant working environment in which persons with severe disabilities can find purpose in their jobs and work free from anxiety." DSS was the second such company in Osaka Prefecture and twenty-third in all of Japan. The Osaka prefectural government desig-

nated DSS a model business for employing handicapped persons. As time passed, DSS gradually added a variety of parts for assembly and increased its production volume. In 1999, it wrote off the last of its accumulated deficit. The company received several awards, including the Labor Minister Award for improving its worksite. In 2003, of a total of 47 employees, 43 were handicapped. Annual sales that year increased to 1.4 billion yen. In 2002, DSS was also the first company in the Daikin Group to obtain ISO 14000 certification.

The percentage of handicapped persons in Daikin's total workforce was 1.33 percent in 1993 and 1.65 percent in 1994, meeting the legal requirement of the time. In 2003, the percentage surpassed 2 percent, thus reaching the top level in Japan. In the interim, DSS won several awards for its work with the handicapped, including the Asahi Shimbun Cultural Foundation's "Disabled Persons Employment Award." The activities of DSS, however, did not stop at merely providing employment for the handicapped. It also promoted handicapped persons to responsible positions such as section chief and shop steward, thus providing them with greater economic independence and growth. Mutual exchanges between DSS and Daikin employees also served to broaden the awareness of ordinary employees concerning handicapped employees through mutual exchanges and by giving all employees the opportunity to participate energetically in volunteer activities at the local community level, in society-at-large, and on the international stage. As a corporation, Daikin showed great understanding of the social contribution activities of individual employees, and, believing there is true significance in those activities, promoted formation of a corporate culture that aggressively supported them.

The year 1994 marked the 70th Anniversary of Daikin's



*Members of Kansai Economic Council Visit Chancellor Helmut Kohl (Daikin President Yamada is third person from right)*

founding. With the burst of the bubble economy, the company's business declined when it had just begun to implement basic measures to recover from the negative business situation. The company felt that it was moving strongly toward recovery in what it felt was an approaching favorable business period. To celebrate its founding, therefore, Daikin hosted a commemorative program in Japan that included an announcement concerning a new program of social contributions inside the company. Besides activities related to the National Museum of Fine Art, Daikin published "The 70-Year History of Daikin Industries (1924-1994)" and began construction of the Akira Yamada Memorial Museum. Six months later, on May 1, 1995, Chairman Minoru Yamada passed away at the age of 73. Chairman Yamada was especially active in Kansai financial circles, including roles as Vice Chairman of the Kansai Economic Council, Representative Director of the Kansai Branch of the Japan Committee for Economic Development, and Vice Chairman of the Kansai Productivity Center.