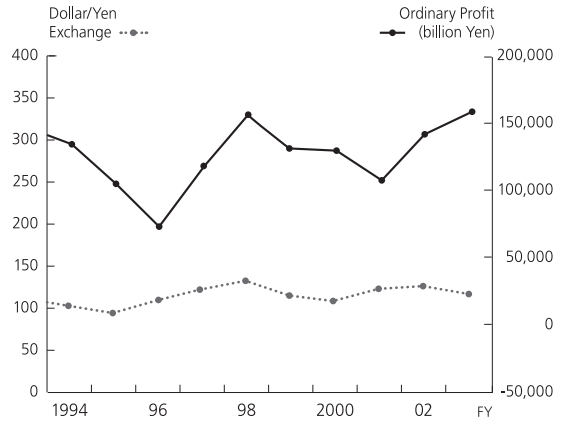
Chapter IV

Challenging Globalization (1994–2000)

Series of Reforms

After Daikin's chemical business overcame the crisis it faced, the company's air conditioning business also recovered and subsequently experienced substantial growth. Business declined in 1993, however, and Daikin came to face new difficulties. From late 1990 to early 1991, the bubble economy in Japan burst, and from 1993, in the background of a stronger yen, the country entered a difficult recessionary period. In particular, the burst of the bubble economy caused a major decrease in the value of assets, which then caused a sharp drop in personal consumption. After that situation became prolonged, Daikin's air conditioning business, which had shifted toward individual consumption, was negative-

Yen Exchange Rate and Current Account Balance



ly affected. The yen, meanwhile, continued to strengthen, moving to 100 yen per dollar between 1993 and the first half of 1995. In fact, at one point the yen greatly appreciated to near the extraordinary 80-yen mark. Economic observers at the time had said that if the yen moved higher than 100 yen to $1.00, many Japanese companies would lose their international competitiveness. Even Toyota, one of Japan's foremost corporations, said 80 yen was the highest level at which it could compete effectively in overseas markets. In Daikin, air conditioning products and chemical products accounted for, respectively, 17 and 22 percent of its total exports. The negative effect of the strong yen on those two industries was serious indeed. And, because many Japanese companies took advantage of the strong yen and opened overseas production operations in tandem, the domestic air conditioning market came to depend on overseas operations for the supply of components. As a result, product prices dropped rapidly. In the packaged air conditioning market, meanwhile, where Daikin held top position, there was a significantly sharp drop in domestic demand. That was in the context of the poor business situation. Daikin's domestic air conditioning business, including both room and packaged air conditioners, thus experienced a severe slump forcing the company to conduct fundamental reviews of the business structures of both its domestic and export businesses. It was also forced to review its managerial strategy.

Chairman Minoru Yamada (left) and President Noriyuki Inoue

In June 1994, amidst that business crisis, Daikin announced top management changes. President Minoru Yamada, the company's third president, moved into the chairman position. Yamada steered the company safely through two oil crises, overcame the "three ordeals" of the chemical business, and stuck rigidly to his belief in not laying off personnel despite the company's severe business circumstances. On the occasion of Daikin's Seventieth Anniversary, however, Senior Managing Director Noriyuki Inoue, director in charge of the Personnel, General Affairs, and Chemicals divisions, and the person mainly responsible for recovery of the Chemical Business, became Daikin's fourth president. In his final greeting before leaving office, President Yamada clearly voiced his thoughts regarding the company's circumstances. "Almost all Japanese companies are facing the largest and most im-

portant transition period since the end of the war." To the company's new leaders, he said: "Be fully confident and express clear policies." To ensure available personnel resources, he recommended "building an internal environment for enabling the company's outstanding human resources to develop themselves further." He continued, saying: "In order to build a new Daikin, let us be decisive and courageous, and at this turning point let us rid ourselves of past shortcomings we might still possess."

In his first in-house greeting, President Inoue said he would continue the basic stance of pursuing Yamada's business philosophy of trusting the company's employees. "Let us build mutual relationships of strong trust, believing in the potential and outstanding qualities of our employees." But in order to change the company's business structure to face the challenges in the current period of change, Inoue said it was necessary to create new values for building a more aggressive style of management. As a basic management principle for Daikin, President Inoue then introduced a new policy he called "Fast & Flat management." Specifically, that policy pinpointed three urgent tasks: 1. speeding up the R&D of technology, and taking the initiative ahead of other companies; 2. establishing global business strategies by product, constructing a 4-pole global system; and 3. in order to defeat the company's competition during a period of rapid change in the business environment and markets it is necessary to promote strong management leadership for realizing speedy decision-making and to manage a flat and flexible internal organization.

Daikin faced an urgent need to reorganize its mainstay air conditioning business. Operations at the Chemical Division's plant in the U.S., meanwhile, had just begun, and the company felt a serious need to speed up its global strategy. The first step was to review the strategy originally introduced in 1993 to promote

emergency projects in the air conditioning business in Japan. Fortunately, increased air conditioning sales during the hot summer of 1994 in Japan contributed greatly to restructuring the company's overall business. In the U.S., meanwhile, operations started smoothly at the newly constructed fluororesins plant. In the fall of 1995, when it became obvious that the company's emergency projects were progressing smoothly, President Inoue reflected on the causes of the company's hit-or-miss measures up to then. He realized that they were not attributed only to changes in the general external environment but also to a managerial approach that could not properly decide on clear policies for the divisions' issues and to a delay in cultivating new businesses indispensable for building the next-generation of business. Based on a reflection of that fact, the company began formulating a new strategic management plan.

The new management plan, called "Fusion 21," set four main business tasks for Daikin to accomplish in order to establish a foundation to enable the company to take a great leap forward in the twenty-first century. The first task was to reform the corporate structure to allow the company to respond flexibly to changes occurring as global society passed through a period of transition. Second was to set high business goals from a global perspective and develop detailed strategies to realize those goals. Third was to develop peripheral areas of business where the company could benefit from its core technology and core markets. And fourth was to establish a flat management system to promote speedy decision making. The word "fusion" in the management plan contained multiple ideas, such as short- and long-term goals being established side-by-side; manufacturing, sales, and R&D being integrated to develop global business; the development of business by combining the wisdom of everyone in the company from top

management to the newest employee through the sharing of information; and solidarity among the domestic and overseas companies in the Daikin Group.

In specific terms, Daikin set reforms for each of its Strategic Business Units (SBU). Because the previous approach of defining a strategy for each SBU was unable to respond properly to the business changes taking place, Daikin decided to develop more detailed strategies, including the position and managerial needs of each business unit. Daikin also divided the strategies into three levels: 1. short-term strategies spanning over a one- to three-year period; 2. a five-year approach up to the year 2000 for business development; and 3. long-term (10 years) reforms viewed from a global market viewpoint. First was preparing a detailed strategy, and outlining clear and specific goals for implementing it. Second was to set clear long-term and mid-term sales targets in both the air conditioning and chemical businesses for Japan, Europe, North America, China, and Asia. Third was to set a sales target of 100 billion yen in new business areas, including those currently being developed, such as oil hydraulics equipment for motor vehicles and semiconductor-related equipment. The fourth basic target was an overall lowering of costs, to be achieved by closing unprofitable businesses, slimming down the indirect divisions, and building a business structure that would be unaffected by exchange rate fluctuations. The final target was to achieve fast and flat managerial decisions while contributing to resolving problems related to the earth's atmosphere.

After the bubble economy burst, many Japanese companies adopted business policies centered on "selection and concentration." Even in that context, the Fusion policy was introduced relatively early on. While Daikin carried out "Fusion 21", however, the Japanese economy failed to demonstrate any noticeable improvement. In 1997, the government also raised the consumption tax from 3 to 5 percent, the summer was relatively cold, and the Asian currency crisis broke out. One result of those events was that Daikin's air conditioning business faltered once again. Also in 1997, Chairman George David of United Technologies Co., the parent company of Carrier Corporation, the world's leading air conditioning manufacturer at the time, visited Daikin in Japan. In a meeting with President Inoue, he said one of his dreams was to see Daikin and Carrier joined together in the future as a single air conditioning company. Then, in a takeover bid (TOB), he proposed that United Technologies become a silent partner in Daikin. In line with Daikin's corporate principle of autonomous management, however, President Inoue immediately declined David's offer. As a result, President Inoue felt a strong need to raise Daikin's current aggregate value so that TOBs could not be made so easily, and felt an additional strong need to emphasize the Daikin Way in business.

Daikin's business situation at the time saw domestic sales of air conditioners, the foundation of the company's overall business, languishing. Even favorable sales of fluororesins and new refrigerants, as well as good overseas sales of air conditioners, barely allowed the company to record increases in revenue and profit. President Inoue recognized that the poor business performance of the air conditioning business was not a problem solely of the domestic air conditioning sales or air conditioning manufacturing divisions but had to be tackled by the entire company. In that backdrop, Daikin established Task Force K903 in February 1998, and the entire company subsequently tackled reforms in the air conditioning business.

The direction of those reforms was decided in November 1998 and with the years from 2000 to 2002 as a target period seven

reforms were introduced, aimed at a basic restructuring of the company's business. The content of the reforms was as follows: (1) a workforce reduction of 1,000 employees by reducing the number of new employees; (2) turning the R&D and IT divisions into separate companies, and outsourcing Head Office administrative functions; (3) reform of the wage structure, and further promotion of a system of compensation based on performance; (4) basic strengthening of the financial structure; (5) promoting strategic alliances in the air conditioning business; (6) drastic reconstruction of the domestic air conditioning business; and (7) drastic reconstruction of the oil hydraulics business.

Next, Daikin introduced the "Fusion 21D" (21 Dash) management plan in February 1999. It was a revised version of the "Fusion 21" plan originally introduced in 1996. A main feature of "Fusion 21D" was its emphasis on overall management, including an all-out move toward consolidated financial reporting and reform of the company's financial structure through management that emphasized cash flow. During the 1980s, Japanese companies were quite successful in applying the so-called Japanese style of management to their operations. Once into the 1990s, however, after the burst of the bubble economy, companies around the world began globalizing their operations. Japanese companies also quickly had to introduce management systems that embraced global standards. Besides introducing international accounting standards, for example, it was necessary to bolster consolidated management in order to improve the overall management of group companies. Also, by improving its capital efficiency, the company's financial structure would be strengthened, thus tying to a higher international credit rating. Appropriate IR activities, meanwhile, would contribute to an international society having greater trust in Daikin. Daikin would also respond to

environmental issues by meeting International standards and obtaining ISO 14000 and other certifications. Additional specific measures in the management systems included achieving greater transparency in the company's business operations and emphasizing compliance.

Daikin promoted a response to global standards while remaining true to its unique management principles. In particular, as a fluorochemical manufacturer, Daikin had to emphasize group-wide tackling of environmental issues, and to go all-out if it wished to establish a code of corporate ethics. For that purpose it was necessary to strengthen the bond among the group companies, particularly in the context of the corporate principles it established in 1990 that expressed respect for the independent management of each group company. There was a need, based on the existing relationship of mutual trust among the companies, to strengthen their ties in specific ways. As a step in that direction, the First Daikin Group Conference was held in 1995, bringing together the presidents of the main subsidiaries—centered on Daikin sales affiliates—and the directors of Daikin Industries. The participants at the conference established a "Code of Behavior for Autonomous Management." Beginning in 1996, Daikin made the Group Conference more meaningful by also inviting managers from overseas affiliates to attend, enabling all the participants to understand better the group's actual market situation regarding globalization and borderless business. Discussions at the Group Conference emphasized helping overseas affiliates understand the English translation of the company's corporate principles. In such ways, Daikin reinforced the business structure of the group companies and promoted all-out consolidated management.

Another structural reform was introduction in 1999 of an advisory council system. Although some Japanese companies had

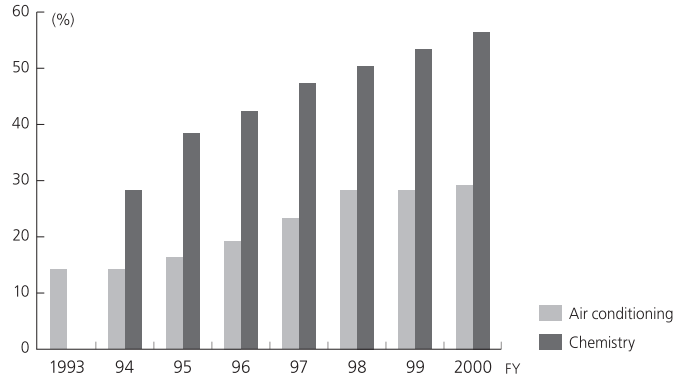
begun to introduce American-style executive management systems at the time, Daikin had only 25 directors, a relatively small number, and rather than introducing a new system it decided instead to enliven top management within the existing system. True to itself, therefore, Daikin elected members to an advisory council system and organized lectures and get-togethers as venues for Daikin officers and managers to learn from the experience and expertise of elite Japanese business leaders it appointed as advisers. In 1999, with the aim of strengthening the company's competitiveness in various business fields, Daikin emphasized a system of management control for pursuing the market principle, and introduced a virtual-company system to clarify the principle of individual responsibility. At the same time, President Inoue embraced the strong belief of deceased Chairman Minoru Yamada and emphasized the people-centered aspect of the company's operations. He thus searched for ways to improve the company's wage system based on performance. In these ways, the Daikin Way gradually took clear form in the company's management.

Fortunately, the Japanese economy bottomed out in 1998 and then began to recover. Daikin's two mainstay businesses—air conditioning equipment and chemical products—both almost completely met their year 2000 performance goals set in the management plan adopted in 1996. The company moved forward quickly in establishing manufacturing bases for its air conditioning business in Europe and China but was still unable to reenter the U.S. market. Although in monetary terms the company's new businesses and the oil hydraulics business did not achieve their goals, air purifiers and parking systems—the former a new business and the latter an oil hydraulics business—both began expanding. Among unprofitable businesses, meanwhile, Daikin withdrew one after the other from the robot business in 1995, from the electronic carpet and fan heater businesses in 1997, and from VP (vacuum pumps) businesses, such as dry pumps, in 1998. During the prolonged recession in the 1990s, many other Japanese companies also revised the diversified business structure they established during the bubble economy. They concentrated on the range of functions in which they could use the same technology or sales capabilities simultaneously to realize a cost advantage over the competition. This was called "selection and concentration" based on economy of scope. Daikin also promoted reforms in its business structure following the same principle, concentrating its resources on its core businesses and core technology.

Parking System for Apartment Projects (left) Mold Polishing Robots (right)

Fast and flat management, meanwhile, contributed toward carrying out the Fusion Strategic Management Plan. It helped to realize a slim management structure, and the company grew more than originally expected. Consolidated sales in 1994 of 384 million yen increased by 40 percent in 2000 to 532 billion yen and operating profit for the same period increased over six-fold from 6.5 billion yen to 39.8 billion yen. Operating profit on sales was 7.5 percent, much higher than the average for all Japanese companies, drawing Daikin closer to becoming a global company. As a result of energetic efforts, overseas operations also expanded, and over-

Overseas Business Percentage of Total Business



seas sales came to account for 32 percent of the company's total sales. Daikin thus took its first steps toward becoming a truly excellent global company.

Shift toward Emphasis on Strategy of Three Pillars of Air Conditioning Business

Daikin's domestic air conditioning business performance declined from 1992, mainly because of poor sales during a cool summer. The summer of 1994 was especially hot, however, and domestic sales were brisk. But then the company faced a new problem: it discovered that its product supply system was not in good order. That situation led to a loss in share for both room air conditioners and packaged air conditioners, forcing Daikin to face the worst possible business situation. And as if that were not enough, depressed air conditioning sales, which previously had accounted for 70 percent of total sales, were the main cause for the company's overall operations to fall into the red for the first time since 1976. President Inoue, meanwhile, who assumed the presidency in 1994, knew that Daikin's business results would not improve if the air conditioning business were not revitalized. He thus put to effective use his previous experience in having Daikin's chemical business overcome a crisis it faced, and set two targets for recovery of the air conditioning business: one was to establish clear business targets to achieve; the other was to instill a sense of crisis among the employees responsible for achieving those targets. The department managers in the four departments related to the air conditioning business met to discuss the content and direction of the targets being considered.

At the convention held in November 1994 for distributors and dealers handling Daikin air conditioning and refrigerating equipment, Chairman Yamada admitted that Daikin had fallen behind other companies in recent years by not being able to provide sufficient new products and the necessary product quality and services, and he promised that the company would rebuild its air conditioning sales and service systems. Tasked with that promise, President Inoue said that Daikin would return to the starting point of "there being no Daikin without its business partners," thus expressing his determination to tackle recovery of the former strong relationship of trust that existed between Daikin and its business partners. In terms of the air conditioning business, the company studied reforms of its internal structure from 1993, and in October 1994, four months after President Inoue took office, the company introduced a basic "Plan for Reform of the Air Conditioning Business." These decisions were made quickly under President Inoue's fast and flat management policy. The new business plan marked a major strategic shift for the company. First of all, in the three major business areas of room air conditioners, packaged air conditioners, and central air conditioning systems, Daikin formerly held core competence only in packaged air conditioners and that was the area the company emphasized the most. Although the company at one point seriously considered withdrawing from

the room air conditioning market, it ended up adding them and central air conditioning systems, thus marketing three main types of air conditioners. With that product line-up, Daikin then moved to expand its total air conditioning market share. Second, the company shifted from 2-pole sales, consisting of the domestic market and overseas markets, to a 4-pole strategy covering Japan, Asia, Europe, and the U.S. As a new policy, Daikin had its technical personnel also conduct marketing of central and packaged air conditioners, and changed its sales system of room air conditioners in response to the expanding "distribution revolution." In introducing such reforms in the air conditioning business, Daikin aimed at reinforcing the image of "Daikin, the global company" and "Daikin, the overall air conditioning specialist."

Daikin cited several reasons for emphasizing the marketing of three main types of air conditioners. First, in order to develop into a world-class specialist in the manufacture of air conditioning, Daikin's initial step would be to offer technical superiority, thus making it important to develop new room air conditioner technology. Second, it was important to build a structure for servicing central air conditioning systems, which could also be applied in other areas as well. And third, the markets for room and central air conditioning systems were both predicted to expand globally, and Daikin had to take advantage of that predicted expansion by utilizing its growth potential. In the context of new policies, the first step Daikin took was a substantial restructuring of its Air Conditioning Production Headquarters, turning it into three separate headquarters: Home Air Conditioning, Universal Air Conditioning, and Central Air Conditioning. Product planning, profit management by product, and the development and production technology divisions were placed under those three production headquarters. Daikin also established an Air Conditioning Production Strategy Office, a Compressor Development Center, and a Mechanical Technology Research Center. After those moves, the company then tackled organizational reforms in the area of sales, beginning with the reconstruction of domestic sales routes. It also moved to bolster its Overseas Sales Department, which will be discussed later under the section related to global strategy. For now, let us review Daikin's rebuilding of its domestic sales system.

One of Daikin's strengths was using the routes of air conditioning dealers with expertise in air conditioning systems (air conditioner installers, other equipment installers, electrical work shops). Daikin called them professional dealers and they could be put to good use when a company was moving to develop itself globally. They served Daikin well when it was establishing the foundation of its sales competence. But large stores handling electric appliances were always at the forefront of severe price decreases in the past, and manufacturers tended to fall into situations where their products handled by those stores competed solely on price. In that context, Daikin withdrew from this sales route in the early 1980s, except for several stores with whom the company had close relations. For the all-out sales of room air conditioners, however, the large electric appliance stores were an indispensable sales route because they were in direct contact with consumers. From the summer of 1994, Daikin decided to compete on price and began redeveloping its business relationships with volume sales electric appliance stores. By 1997, Daikin began redeveloping its business ties with the leading electric appliance stores in all parts of Japan. Also, since the installation of room air conditioners required electrical work, Daikin developed influential wholesalers of electrical work materials and piping materials as air conditioning dealers. These wholesalers also had business

"SkyAir Super Inverter 60"

relationships with other air conditioning manufacturers, but Daikin strengthened its sales and service of new products, such as its commercial-use air conditioner "SkyAir Super Inverter 60" series, and was thus able to differentiate its products from those of other companies, develop dealers, and gradually increase its market share. Most of the increased share was attributed not only to the strengthening and improvement of the traditional air conditioning installers with expertise in air conditioning systems but also to the newly developed large electric appliance stores and wholesalers of electrical work materials and piping.

The setting of sales strategies for each sales route and the development of new products and putting into order of service and support systems to carry out those systems proved to be the impetus for the recovery of Daikin's air conditioning sales. From early 1995, the domestic Air Conditioning Sales Division began a sweeping reform of its sales and marketing systems as it aimed to make Daikin "No. 1 in total service capabilities." The first step taken was organizational reform of the sales system. In January 1995, the branches formerly under the Domestic Air Conditioning Sales Division were abolished and the sales companies formerly under

the control of the branches were given wholesaler, sales support, and service functions that the former branches had. In order to have the new system progress smoothly, the general manager of the Domestic Air Conditioning Sales Division visited retailers and franchise dealers to exchange opinions with them about how to operate the new system. A convention of the top managers from super dealers – those whose sales amounts were particularly large – was held for the first time in three years to improve communication. At the convention, managers from Daikin explained the company's sales policies and provided the dealers directly with information on new products and new technology. In that process, the air conditioning sales, engineering, and manufacturing divisions prepared unified responses to the super dealers' and installation dealers' questions and opinions. Daikin made great efforts to respond quickly by having the presidents of the sales affiliates and managers from the Domestic Air Conditioning Sales Division visit the major dealers directly to answer their questions and explain Daikin's policies.

The integrated relationship established between Daikin and the sales affiliates for expanding sales was called the "Daikin Air Conditioning Federation (DACF)." Under that new system, the sales affiliates took on wholesaler, sales support, and service functions and Daikin expected them to serve a role as manufacturer's sales affiliates. More than previously, Daikin wanted to make certain that DACF thoroughly understood the company's sales policies, and felt a need to build a system for sharing with DACF the opinions and information from the sales outlets and users. For that purpose, from March 1995 Daikin began distributing a regular videotape titled "Flash News from the Air Conditioning Sales Division," thus making it more certain that updated product and technical information was reaching the sales affiliates. In order to

respond promptly to inquiries from the sales affiliates, an email system was also developed that connected the Domestic Air Conditioning Sales Division to the sales affiliates in Japan. Also, the "Customer Service Centers" previously located in the branch offices were transferred to the offices of the sales affiliates. In October, meanwhile, the three sales affiliates not able to perform the new functions assigned to them because of their small size were integrated into one company, thus reducing the nationwide number of sales affiliates to 24 companies.

The sales affiliates were capable of responding precisely to requests from the sales outlets, and that capability clearly differentiated them from other companies. With the aim of becoming the No. 1 air conditioning manufacturer in total service capabilities, Daikin created a system to support the various technical services of the sales affiliates. In January 1995, the company established the Daikin Institute of Air Conditioning Engineering, and through it began to develop systems engineers with sophisticated technological capabilities in system design and installation management. The first students graduated in May 1995 and were transferred to the manufacturer's sales companies. A month before that, Daikin opened an Air Conditioning Business School aimed at raising the technical competence of all employees in the sales companies, wholly owned dealers, and the Domestic Air Conditioning Sales Division. In mature air conditioning markets such as Japan it is especially important in sales to obtain repeat orders. To support that goal, "Dream Teams" were set up in the sales companies. Members of the Dream Teams made regular visits to the wholly owned dealers to assist in preparing customer lists, visiting users, and performing air conditioner cleaning and inspection services. Also, in order to contribute toward increasing the levels of expertise and design and estimate capabilities, Daikin provided the sales affiliates with software to prepare proposals for repeat orders.

For commercial-use air conditioners, Daikin developed the Air Conditioning Network Service System ("AirNet") that eliminated wasteful operation by remote monitoring, coupled with a service system for immediately detecting malfunctions through an "AirNet" device attached to equipment located on the premises of users. In October 1993, Daikin established an "AirNet" Control Center (ACC) in the Abeno part of Osaka and in December 1995 established another ACC in Tokyo. The two ACCs not only created a support system for the "AirNet" service but also served as centers for expanding the service. Daikin also developed a unique air conditioning communications system that allowed control and monitoring of the operating condition of air conditioning systems and other building equipment through D-BIPS, an independent integrated building monitoring board. The system enabled the prediction and report of breakdowns. From April 1998, Daikin moved all out to develop a Facility Control System business that directly connected D-BIPS and the ACCs for supervising the management and maintenance of air conditioning systems and other equipment in buildings. Those were the first steps taken toward establishing a 24-hour, 365-day service system.

High-Cycle Production System and Development of "Ururu Sarara"

While developing new products in the late 1990s Daikin also introduced various experimental products. At the time, the general consumer mood in Japan was toward belt-tightening because of the burst of the economic bubble. The domestic air conditioning market had matured, however, and quality products continued to sell well. Japan's air conditioning manufacturers staked their con-

Global Mini-Split (GMS) E-Series Inverter

tinued existence on the development of new products with features such as higher-level performance, energy conservation, attractive pricing, and other outstanding features. As the only company in Japan specializing in the production of air conditioning equipment, Daikin was already well known for its outstanding technical capabilities. The company, however, made it possible to develop new products in response to market needs by introducing a system in which technical personnel involved themselves directly in marketing. Besides the "Super Inverter 60," a packaged air conditioner that provided overwhelmingly superior energy efficiency, Daikin also introduced the Global Mini-Split ("GMS") series of room air conditioners at prices lower than what other companies could offer. Also, a new Daikin product called "Ururu Sarara" became a representative hit product among room air conditioners because of its outstanding performance.

The first products tackled among packaged air conditioners were cassette-type units in the volume-production "SkyAir" series. The aim was to challenge the limits of cost reductions by developing a product at half the cost of previous models. From the development stage, plans called for achieving a 50 percent cost reduction through overseas procurement of parts while maintaining superior heating and cooling capabilities and quiet operation. Those targets were met and sales of the product began in 1995. In order to respond efficiently to the demand for repeat orders, meanwhile, Daikin took positive action regarding requests from customers to develop products that could be installed in a short time and reduce construction costs using the piping in existing installations. This was accomplished by developing an outdoor unit capable of using existing piping by improving the flexibility of the piping diameter so that existing piping could be used while replacing old air conditioners with new, larger-capacity, indoor or outdoor units. In March 1997, new models capable of using existing piping were marketed together with the existing "SkyAir" indoor units.

"Ururu Sarara" R Series

Around this time, society began to show greater concern for energy conservation. The government bolstered the regulations for CO_2 emissions, and Daikin began placing greater emphasis on developing energy conservation technology for use with air conditioners. For the first time, packaged air conditioners used a compressor motor fitted with a reluctance Direct Current motor, thus increasing operation efficiency by 25 percent at low speeds and 10 percent at high speeds. Many new functions were developed, including an outdoor Heat Divide-type heat exchanger to increase the heat efficiency, a first in the air conditioning industry. The "Super Inverter 60" series that Daikin put on sale in April 1998 consisted of 160 models capable of using existing piping for installation,

ranged in size from 5kW to 16kW.

As a result of these various reforms, starting in 1995 Daikin succeeded in increasing its market share in the air conditioning business for three consecutive years. The sales growth of the "Super Inverter 60" series of packaged air conditioners was especially remarkable. Starting in 1996, however, a business slump ushered in a rapid drop in prices, and Daikin's efforts to reduce costs could not keep up. In 1997, the company's business results declined drastically. Consolidated operating profit for fiscal 1997 decreased substantially to only 40 percent of the profits of fiscal 1996. Although profits for fiscal 1998 recovered to 60 percent of the fiscal 1996 level, consolidated sales stayed below those in fiscal 1996. Daikin thus faced the urgent task of improving its ratio of gross income on sales. With March 1999 as a target date for considerably expanding profits, the company introduced a second set of reforms, called Task Force K903, in February 1998. Eleven priority measures were introduced at that time for increasing profits in the domestic air conditioning business. Besides bolstering sales capabilities in order to increase sales, the company established a business structure that would produce a profit even if sales fell 80 percent from their current level. The general content of the reforms included reduced production costs, considerably decreased logistics costs, the activation and improved profit structure of the sales affiliates and dealers, and the early development of new products and products in new areas of business.

Daikin initially pursued production cost reductions from 1978, mainly through the Production of Daikin System (PDS). The manufacturing division felt great pressure to reduce costs further after business results worsened in 1997, and the division began to feel the need for an overall review of the PDS as used up to that point. Daikin promoted the widest possible use of computers to

achieve the maximum level of automation for continuous operation of its production lines and synchronization between sales and distribution. But the company could not respond flexibly to the post-bubble cooling off of consumption in the domestic market, a drop in Japan's international competitiveness because of the stronger yen, or the progress of the distribution revolution and continued collapse of prices. Speed and flexibility became important in production and preparation of a system for producing only products that would sell and only in the volumes that could be sold—just-in-time thinking—and keeping investments in facilities, people, energy, and other areas to the minimum levels needed. While closely following the just-in-time approach, Daikin built a system that rid production of excesses in every area of the company, including personnel, parts, and the production of different models on the same line. The company also asked its suppliers to start delivering frequent shipments of small lots of parts. After the reforms were introduced, the resultant production plan was based on a schedule of production volume 18 weeks in advance. Decisions on the model mix and on firm orders to suppliers were made three days in advance, and steps were taken to introduce a high-cycle production system that would considerably shorten the cycle from receipt of orders to ex-factory shipment, from 15 days to only three days. Daikin accomplished those high-cycle production system in 2002. Because of the large number of different models being produced to meet the diversified needs of customers, and because sales fluctuated widely by season, with production volume at peak season being three times that during off season, the high-cycle production system was not easy to realize. Workers were trained to multi-task in order to provide widespread support between production lines; commonality of parts was promoted; flexible lines responded to changes in production volume; and fi-

nal assembly was conducted using production cells. The production system Daikin developed, modeled after the Toyota approach of producing small volumes of many products, responded to sales of a changeable models and changeable volume.

In order to expand sales through the large electric appliance stores sales route it was necessary to develop unique and outstanding products to prevent competitors from catching up. It was also necessary to develop low-priced products for the volume zone of sales. Around this time, a price revolution occurred in Japan as the economic recession following the burst of the economic bubble was prolonged. In the distribution area, meanwhile, as large-scale retailers and chain stores grew in size they developed overwhelming sales capabilities and the ability to negotiate better prices. In the air conditioning market, room air conditioners were being sold for lower prices and the price difference between them and home electric appliances disappeared. On the one hand, the market share of the large electric appliance stores increased steadily, until it accounted for over half of all sales, and on the other hand the market position of general retailers dropped noticeably. During the hot summer of 1994, in particular, general retailers ran out of products while large electric appliance stores offered a rich line of products and their sales increased tremendously. Still, because Daikin began developing the large electric appliance stores sales route much later than its competitors, that route accounted for only 35 percent of the company's total sales. In that situation, Daikin moved to bolster its relationship with the large appliance stores. The company, however, did not have low-price, small-size products in the volume zone and it was thus an urgent task to develop products that would sell in the large electric appliance stores sales route. Daikin's name was not well known in the room air conditioning market, and it was urgent that the company develop

a new product suitable for handling by the large electric appliance stores that would raise the company's corporate image.

Daikin's air conditioning business results declined considerably in 1997. The company's Manufacturing Division came to face a critical situation with the development and sale of small-size air conditioners. At one point Daikin even seriously considered quitting the small-size air conditioning market and selling the Shiga Plant. Instead, however, the Manufacturing Division tackled the all-out rationalization of production operations for small-size room air conditioners, realizing that failure would mean withdrawal from that market and loss of its mainstay factory.

From the design stage, Daikin aimed a new small-size air conditioner it was developing for worldwide release called the "Global Mini Split" (GMS). The company kept the product's target sales price low, reduced the number of parts, and procured parts at the world's lowest prices, thus keeping overall costs low as it aimed to produce a game-changing product combining multiple functions with a low sales price. Daikin also reduced wasteful processes and operations to the maximum extent allowable, thus greatly simplifying the manufacturing process. By utilizing its high-cycle production system, Daikin succeeded in achieving lower production costs. Daikin finally marketed the product in September 1999.

Development, meanwhile, moved forward from 1996 on a new air conditioner that automatically added humidity when used for heating. It was to be completely original, but it was 1999 before the technical direction of the product became clear. Development of the humidifier unit actually began in April 1999. In the air conditioning market at the time, however, if new products were not put on sale by October they would not be in time for the next season. Development of this product thus required a crash

program to meet the October deadline. There were particularly difficult hurdles to overcome in developing the device that drew in humid air from the outside and sent it through an insulated hose to the indoor unit. Also, engineers did not notice that the ventilation fan was noisy until the prototype stage. It thus took until the end of August to resolve that and various other problems. When the product's specifications were about finalized, orders were sent to die makers as preparations moved toward trial production. Performance goals were simultaneously cleared and the final stage was development of the control system. Due to the untiring efforts of the development team the product was ready for production within the October deadline. Taking advantage of the "engineer spirit" in the product development division, the engineers worked diligently to develop the product and get agreement from the manufacturing and sales divisions in the process. This project is a good example of the effectiveness of Daikin's unique product development system in which the completeness of the manufacturing and sales systems is synchronized with success in developing new technology.

The mechanism for the automatic water supply unit used a zeolite rotor to carry humid air from the outside and then used heat from a heater to forward the air to the indoor unit, resulting in the world's first water-free humidifier mechanism (called "ururu"). Also, traditional air conditioners had the shortcoming of lowering the temperature too much when operating in the dehumidifying mode. Dakin engineers successfully overcame that shortcoming by developing a dehumidifying method for keeping the temperature constant (called "sarara") by reheating the air reheated by the condensed refrigerant radiation. That air was then mixed with dehumidified cold air to maintain the temperature at a reasonable level. In that way, Daikin successfully developed a

compact air conditioner fitted with a humidity control function. Besides cooling and heating comfort, the new product achieved the industry's highest energy conservation efficiency. As a step to contribute toward meeting the goals of reducing CO_2 to levels published in the Kyoto Protocol, the Japanese government began applying the Revised Energy Conservation Law from 2004 to room air conditioners. The energy efficiency performance of the "Ururu Sarara" unit cleared those standards prior to being marketed.

Because top priority was placed on the time schedule for the new product, and because high-quality materials were utilized to ensure the product's safety, the newly developed product could not avoid high planning and production costs, and a high selling price. In that context, an effective sales plan utilizing various ingenious ideas was needed to provide the strong impression that the "Ururu Sarara" was a game-changing product. A sales plan was formulated under a completely new system for Daikin. Up to that point, Daikin's main products had been commercial-use air conditioners, and the products had number designations, not names. It was thus necessary to create a name for the new product that would appeal to housewives, the main persons making the purchase decisions for home electrical appliances. The two final name candidates were "Index of Refreshing" and "Ururu Sarara," but the members of the sales planning project team were divided equally about the name and could not decide. The decision was then left up to Vice President Yasushi Yamada, and he chose "Ururu Sarara," the name the younger members of the project team favored. Daikin had just begun sponsoring television commercials again in 1996, after a four-year hiatus, and the first commercials were almost entirely devoted to "Ururu Sarara." Planning called for heavy emphasis on impressing viewers with the out-

"Pichonkun" Festival Car at Aomori Nebuta Festival

standing humidifying and dehumidifying features of the new product. Among the memorable images used on television were those showing drops of water entering and leaving the air conditioner. They were given eyes and mouths, and the onomatopoeic sound of water dropping to the ground gave rise to the character "Pichonkun" being associated with the product.

The "Ururu Sarara" R series was finally put on sale in October 1999. Up to then Daikin had mainly offered products aimed at business and professionals; the new product responded directly to the needs of the mass consumer market. Compared to general room air conditioners on the market, selling for about 190,000 yen, for a room 13 m2 in size, "Ururu Sarara" sold for 250,000 yen, 30 percent higher. But the product responded to the market need for high performance air conditioners and it was evaluated highly. It sold well from its introduction. The "GMS," meanwhile, a product priced so low that the competition could not match it, was not only competitive in price but also provided much greater energy efficiency—with lower annual electricity consumption costs—than the products of other companies, and sales in the large electric appliance stores route progressed extremely smoothly. Both the "Ururu Sarara" and the "GMS" products offered quite high

product quality levels, and they matched closely the extremely strong awareness of the need to conserve energy. Daikin's room air conditioning business, which suffered reduced income and profits in fiscal 1997 and 1998, turned toward recovery in fiscal 1999. In fiscal 2000, due to the success of these two products, Daikin's business recorded remarkable results.

Leap Toward becoming Global Company in Air Conditioning Business

1994 marked the all-out start of Daikin's global strategy. That was the year the company began operations at the Chemical Department's new plant in the U.S. and around the same time that the company's air conditioning business began procuring parts from overseas suppliers. That was also the year that Daikin announced its intent to enter the Chinese market. The company broke from the twin-axis trend of viewing markets as either domestic or overseas and established a quite different global strategy that differentiated markets by product and region. Then, in 1995, it introduced the "Fusion 21" strategic management plan, aiming to hold the number one share in the world's air conditioning market. To do that, Daikin became active in Japan, the ASEAN nations, Oceania, Europe, and China—the world's five major markets—to build self-supporting production systems. In the chemicals business, meanwhile, the company established market strategies in Europe and Asia to optimize its global operations, and began studying the possibility of establishing a production base in China. And in order to formulate a specific strategy and carry it out, in July 1996 Daikin established its Global Strategy Headquarter.

The first step Daikin took in its global strategy in the air conditioning business was to procure components from Thailand. The direct stimulus for that decision was to offset the yen's rapid

appreciation from 1993 and the collapse of prices in the domestic Japanese market related to the strong yen. Strategically, however, the aim was to build a cost structure that would prevent Daikin from losing out to other companies in the same industry, especially Matsushita Electric Industrial Co., Ltd., who had a plant in Malaysia. Daikin introduced its "Fusion 21" strategic management plan in 1995, thus ushering in a true global strategy. DIT in Thailand was originally established as a sub-plant of the Shiga Plant in Japan and Daikin repositioned it as a global production site in the Daikin Group. In order to supply low-cost room air conditioners and compressors not only to countries in Southeast Asia but to Japan, the Near and Middle East markets, and countries in Europe, Daikin put into order a system for increasing the production of those products. With packaged air conditioners, Daikin positioned DIT as a supplier to markets in Southeast Asia, and created a production system for DIT to supply those markets with "SkyAir" products and duct-type packaged air conditioners.

Meanwhile, in order to supply parts and materials from Southeast Asia at minimum cost to production sites in Japan, Europe, and China, Daikin established Daikin Trading (Thailand) Ltd. (DTL), in Bangkok in May 1997 to import and export air conditioning components. That same November, Daikin established Daikin Asia Servicing Pte. Ltd, (DAP), in Singapore as a center for handling service-related parts and components. In the ASEAN and Oceanic markets, DIT began functioning as a production hub for room air conditioners by 1997 and for packaged air conditioners by 2000. By turning Thailand into an international production center, Daikin Industry Ltd. (DIL) also increased its international production of components from 20 percent in 1998 to 29.1 percent in 2000, which contributed toward establishing a financial structure unaffected by exchange rate fluctuations, one of the goals of

the "Fusion 21" strategic management plan. Actually, at the time of the Asian currency crisis in 1997, "Fusion 21" ran into trouble with the drastic lowering of the value of the Thai baht and the cooling off of the ASEAN market. One result was that Daikin had to lower its growth target for the ASEAN market substantially. In that context, it became necessary to review the overall growth expectations for the air conditioning industry in Asia, a review that began with the setting of strategies by country.

In the summer of 1994, meanwhile, not long after President Noriyuki Inoue assumed office, Daikin shifted its policy 180 degrees and began considering entry to the Chinese market. In the early 1990s, however, when Daikin hesitated and then decided not to enter the Chinese market, the existing Chinese air conditioning manufacturers had already formed business ties with overseas capital, and it was not easy in 1994 for Daikin to find a potential business partner. Since 1995 was the year set for termination of the Chinese government's favorable tax incentives for importing production facilities, the time for Daikin to select a business partner had almost run out. In that situation, Daikin decided quickly on a joint venture with Yah Chong Sewing Machine Co. in Shanghai. The two companies, with Daikin holding a 60 percent share, then established Shanghai Daikin Yah Chong Airconditioning Co., Ltd. later renamed Shanghai Daikin Airconditioning Co., Ltd. The two companies agreed to build a plant capable of annually producing 30,000 units of "SkyAir" and other products.

From the summer of 1994, meanwhile, Daikin began negotiating with the Qing'an Group of Xi'an to establish a joint venture for producing compressors. Daikin had previously negotiated from 1985 to 1990 with Aviation Industry Corporation, the parent company of the Qing'an Group, to provide them technology related to rotary compressors. The negotiations, however, did not proceed

Shanghai Daikin Yah Chong Airconditioning Co. (top)
Starting Members of Company (left)

smoothly and were halted in 1990. Daikin negotiated with them again in 1995 about establishing a joint venture for producing scroll compressors. This time the two companies reached an agreement and established the joint venture Xi'an Daikin Qing'an Compressor Co., Ltd. (DIX), with Daikin holding 51 percent equity. DIX supplied compressors to DIS and by 2000 increased its annual production capacity to 150,000 units. Sales included units sold through the sales routes of local manufacturers.

Next, in 1997, Daikin reached an agreement with the Suns Group Co., Ltd., in Huizhou City, Guangdong Province, to establish a local joint venture for producing water chilling units, with Daikin holding a 70 percent majority share of the venture, called Huizhou Daikin Suns Airconditioning Co., Ltd. (HDS), renamed Daikin Central Airconditioning (Huizhou) Co., Ltd. (DCAH), in February 2005. The DIS and DIX plants both began all-out operations in 1997, and in November the HDS plant also began production. At the time, all the Japanese-affiliated air conditioning manufacturers were conducting joint-venture production in China, and an excessive number of room air conditioning makers caused problems tied to overheated competition. Credit transactions with dealers also caused serious problems. As a reflection of that situation, and to avoid direct competition with Japanese-affiliated manufacturers, DIS at first produced only packaged air conditioners. Rather than floor-type equipment, the mainstream products in China, DIS focused on sales of cassette-type air conditioners embedded in ceilings. It also accepted only cash transactions as it steadily developed sales routes. After the Chinese government began moving to adopt a policy of not approving new applications for producing air conditioning, however, Daikin quickly decided in 1996 to increase DIS's capital in order to expand its production capacity. In August 1996, Daikin received tentative approval to produce room air conditioners. It began all-out production from March 1998. DIS thus participated in the room air conditioner market with annual production at the 60,000-unit level.

After that, major changes occurred in the area of international competition. First, Toshiba Corporation and Carrier Corporation entered into business ties and began a sales offensive in the ductless air conditioning market. Second, South Korean and Chinese air conditioning manufacturers developed rapidly and expanded their market share in the low-price product range. Competition was not limited to price but also included service and logistics systems. Those problems and foreign exchange fluctuations forced manufacturers to respond promptly by region. In a situation where it was no longer possible to respond by tweaking its existing strategy, Daikin began the all-out challenge of becoming a global company by reviewing its former strategy and draw-

ing up a new medium-term global management plan.

One of the first steps Daikin took was to make its regional strategy more detailed by expanding its global approach from five to eight zones, responding all-out by economic bloc and by country, thus promoting an overall quicker market response. To differentiate itself from its competitors, Daikin introduced products such as "GMS" and other room air conditioners in the volume-zone, and differentiated products such as separate-type medium and large air conditioners, multi-room air conditioning systems, and "SkyAir" in the intermediate zone of room air conditioners and packaged air conditioners. The company also expanded its solution business, including building maintenance services, and bolstered its sales network, introducing measures that responded closely to the market situation in each country. In the Philippines, Daikin established the joint venture Daikin-Alen Airconditioning Inc. in May 1998 for manufacturing and selling air conditioning equipment. In April 2000, Daikin established the joint venture company Daikin Shriram Airconditioning Co., Ltd., for manufacturing and selling air conditioning equipment in India.

Daikin's second new strategy for meeting competition was the promotion of strategic alliances. In response to the mega-competition the company faced in global markets, and as part of its aim to become the world's No. 1 air conditioning manufacturer, it was important, of course, for the company to offer leading-edge products that considered the global environment. But it was likewise important to offer products in a timely manner around the world that responded to diversified market needs and to create not only the necessary manufacturing and sales systems but also a dependable service system. To make that possible, it was necessary to form ties with other companies on a global scale. One such strategic alliance was entered into with Matsushita Electric Indus-

Announcement of Business Ties with Matsushita Electric, Presidents Morishita (right) and Inoue

trial Co., Ltd. (MEI). MEI held the largest share of the domestic market for room air conditioners, and from early on had moved to expand its global operations centered on that product area. Daikin, meanwhile, was the top domestic manufacturer of packaged air conditioners, and it had developed strongly in that product area in overseas markets as well. With that backdrop, and to make best use of the outstanding features of both companies, Daikin and MEI entered into a comprehensive strategic alliance in November 1999. Four of the main areas covered in the alliance were the division of production on a global scale, joint product development and joint procurements, the study of joint R&D of essential element technology for compressors used in room air conditioners, and sales assistance from MEI for Daikin's scroll-type compressor. Since both companies already had domestic production and sales systems in place, they decided not to integrate capital or sales, basing their domestic ties wholly on mutual trust.

In Japan's manufacturing sector it had become normal for parts manufacturers and general assembly manufacturers to conduct long-term stable business transactions based on mutual trust, but there are few examples of two companies such as Daikin and

MEI, manufacturing the same kind of products on the same scale, entering into comprehensive ties. The ties were more than an alliance between two powerful companies each holding top product shares in Japan's air conditioning market. They were ties between two companies with their bases in the Kansai region, and there were mutual feelings of strong trust between President Noriyuki Inoue of Daikin and President Yoichi Morishita of MEI. Another important deciding factor was that the two presidents understood and appreciated the corporate culture of each other's company. The gentlemen's agreement between the two companies, such as to divide production, was a decision aimed at making the most of the individualistic qualities of each company, and maintaining the loyalty of the employees of both companies at a high level.

Daikin's third step in its all-out move to become a global company was reorganizing its sales affiliates in Europe. At the time of introducing the "Fusion 21" strategy in 1995, Daikin was third in the global air conditioning industry behind only Carrier Corporation and Trane Company. Daikin had made progress in moving the production of room air conditioners, the "SkyAir" series, and "VRV" systems to DENV, and its single-year business performance had finally turned profitable. DENV moved to strengthen its competitiveness in various ways, such as by bolstering its sales system, reducing costs, developing medium- and large-size chiller products, and restructuring its logistics system. As a result, in 1997 it was able to clear its cumulative loss, and in 1998—largely because of favorable weather conditions—the company's business performance turned profitable and it moved into second position in market share. With the ties between Toshiba and Carrier in mind, DENV then moved quickly to put its sales system into order.

In France, Daikin had capital ties with Megatherm Electronics Ltd., its sole distributor since 1987, and in 1992 it bought out the

Daikin Airconditioning Germany (DAG) (top) Get-Together to Celebrate Establishment of DAG (right)

company and in 1993 renamed it Daikin Airconditioning France S.A.S. (DAF). In the U.K., the only area with multiple distributors, Daikin set up the U.K. Office in 1993, and began moving toward establishing its own sales affiliates. In Germany, Daikin bought out the air conditioning sales division of Kuba Kaltetechnik GmbH, a subsidiary of GEA Happel, and in June 1998 established Daikin Airconditioning Germany GmbH (DAG) in Munich. In 2000, Daikin bought out ACISA, its sole distributor in Spain, and established Daikin Airconditioning Spain S.L. (DACS) in Madrid. In countries of the old COMECON region, meanwhile, where economic recovery was expected to lead to an increased demand for air conditioning equipment, Daikin set up Daikin Airconditioning Central Europe (DACE) in Vienna, Austria, to oversee all Daikin sales companies in central Europe. These various moves re-

sulted in a direct sales system being created in the major European markets.

Finally, based on the "Fusion 21" Strategic Management Plan, Daikin accepted the challenge of reentering the U.S. market. After conducting market surveys and confirming that duct-type air conditioners accounted for an overwhelming percentage of sales in the U.S., Daikin abandoned for the time being the idea of entering the market with ductless-type air conditioners. In July 1998, together with Modine Manufacturing Co.—a leading manufacturer of heat exchangers in the U.S.—Daikin established the joint venture Daikin Modine Inc. (DMI), and entered the unitary business. Modine's Rockbridge Plant in Virginia was revamped to allow annual production from 1999 of 5,000 rooftop-type air conditioners, combining heating and cooling functions. Because product development took more time than expected, production and sales did not begin until October 1999. Even then, a mistake in the marketing strategy led to initial sales of only small-size premium products, causing great difficulties in starting up the business. In order to remain in business, additional large investments were needed to develop products and reconstruct the sales network. There was also substantial risk related to competition Daikin would face from major U.S. manufacturers such as Carrier and York. In that situation, not much future potential was expected from the venture. As a result, the joint venture DMI was dissolved in April 2000, and Daikin and Modine mutually shared the cumulative loss. In that way, Daikin's second attempt to enter the U.S. market again ended in failure.

Global Strategy of Chemicals Division

The Chemicals Division prepared a Medium-Term Business Plan in December 1993 that emphasized improved revenues, a 4-pole development of global business, and the development of new business areas based on superior technology. Plans originally called for having the Decatur Plant begin operations in February 1994. During 1993, however, Daikin was forced to respond to the rapidly appreciating yen, which reached 100 yen to $1.00, and faced the equally urgent task of responding to a sluggish domestic market as users of fluororesins and fluoroelastomer shifted their manufacturing bases overseas. The new business plan aimed at further cost reductions and at speeding up the development of overseas markets.

At the time, along with the banning of specified CFCs, the worldwide fluorocarbon industry was being reorganized. In that backdrop, Daikin aggressively promoted the development and sale of substitute CFCs, aimed at substantially increasing its market share. When specified CFCs were banned in 1996, Daikin was the leader in the domestic market for fluorocarbon because of its development of CFC substitutes. Daikin held a 40 percent market share, a large increase from the 28 percent share in 1989 prior to the banning of specified CFCs. That share firmed up Daikin's position as the leading company in the industry. Viewed by main products, the Chemicals Division increased its market share substantially to 91 percent for HFCC142b, used as a foaming agent for polystyrene and polyethylene, 60 percent for HCFC141B, used as a foaming agent for polyurethane, and as a cleaning agent; and 35 percent for HFC134a, used as a refrigerant in car air conditioners and refrigerators. Special note should be made of Daikin's successful entry into the huge automobile market. Daikin also had business ties with National Refrigerators Inc. (NRI) for selling HFC134a in the U.S. refrigerator market.

For resins and rubber products, the Chemicals Division moved to develop new applications and new markets, with the

Division's manufacturing, sales, and research departments working closely as a team to break away from merely developing products to keep up with DuPont. With "Neoflon" FEP (Fluorinated ethylene and propylene copolymer), "Neoflon" ETFE (Ethylene tetrafluoroethylene copolymer), and "Polyflon" PTFE (Polytetrafluoroethylene), in particular, Daikin expanded the production facilities at DAI, and production began there from September 1995 of FEP and ETFE. Production capacity was bolstered further at DAI for PTFE.As one application, ultra-expansion technology was developed in 1990 and an air filter unit called "Neurofine" was put on sale in 1995 utilizing that technology. Since the product used expanded PTFE film as its filter material, no major shift from traditional glass filters occurred. Afterward, Daikin reduced costs by manufacturing the filter in-house and developed applications in business areas where high performance was required, such as in clean rooms for producing semiconductors. Other new businesses included final-stage products based on unique development activities, such as "Zeffle", a weatherproof fluorine varnish, and "Lezanova" golf gloves and golf shoes made of fluorine-impregnated natural leather.

As a result of that energetic structural transition, Daikin's chemicals business recorded a turnover of total assets of 1.07 and operating profit of 15.1 percent, figures that far exceeded the average in Japan's chemical and synthetic resin industries. In fact, those figures brought Daikin close to the levels of DuPont and 3M, representative multinationals with high earnings. In global market share as well, compared to DuPont's roughly 30 percent share, Daikin's share was just under 20 percent, thus allowing Daikin to move a step ahead on the world's number two groups of companies—ICI/Asahi Glass, 3M/Dyneon, and Elf Atochem (today's Arkema). The Chemicals Division's contribution as a main pillar

of Daikin's overall business also increased. On a consolidated basis, the Chemicals Division maintained steady growth from fiscal 1996 onward. In fiscal years 1997 and 1998, in particular, when the company's air conditioning business was sluggish, the chemical business had an operating profit percentage of 60 percent, thus supporting the company's overall profits.

In the context of the Chemicals Division's favorable business performance, Daikin formulated a plan called "Growth Strategy for the Chemicals Business" in November 1998. It marked the start of an expansion policy with the goal of catching up with DuPont, the world's top corporation in the chemical industry. Two specific goals in the new growth strategy were an increase in the production capacity of resins for hot melt resins and a global expansion of business. Daikin's global expansion in the chemicals business started with the U.S. market and then moved to China and Europe.

In the early 1990s, Daikin waited patiently for a chance to build a foothold in the Chinese fluorochemicals market. Because the company was having trouble finding an appropriate partner, it decided in 1998 to reduce its aim to produce coating materials, and acquired land for building a plant in the outskirts of Shanghai. Prior to building a plant, however, and for establishing production and sales systems in South China, the main location of potential customers for purchasing coating materials, Daikin established Daikin Chemicals (Hong Kong) Co., Ltd. (DCHK), in August 1997. DCHK then commissioned China Paint Co., China's largest manufacturer of painting materials, to produce all its paint, and began to sell the coating materials and provide technical services in South China. Next, in March 1999, construction of the plant for Daikin Fluoro Coatings (Shanghai) Co., Ltd., was completed, and the company began producing and marketing fluororesin paints. Preparations thus moved steadily forward with Daikin's determined

Daikin Fluoro Coatings (Shanghai)

development of the chemical business in China.

Daikin then moved forward with establishing an all-out production unit as the second step of its chemicals business plan in China. People's Republic of China Ministry of Chemical Industry (ChemChina), meanwhile, had begun developing the idea of establishing a fluorochemical base in Chanshou City in Jiangsu Province. With strong support from ChemChina, Daikin then moved forward promoting strategic ties in the fluorochemical industry. Next, in 1998, Daikin and China National Chemical Construction Corporation (CNCCC), an organization directly under ChemChina, agreed to work together to develop wide-ranging operations in the fluorochemical business. In February 1999, Daikin opened an office in Chanshou, and began planning to build a plant. Prior to that, in April 1998, Daikin and CNCCC jointly established Daikin CNCCC Chemical Trading (Shanghai) Co., Ltd. (DCCTS), for the import from Japan and sale of products as pre-marketing activities prior to the start of commercial operations at the Chanshou Plant. DCCTS established a sales network for exclusive sale of Daikin products and to develop new markets in China. In these ways, Daikin steadily carried out its chemical business in China.

In Europe, meanwhile, Daikin established Daikin Chemical

LAN Cabling Using FEP

Europe (DCE) in 1992 in Dusseldorf, Germany, and began offering technical services. From 1994, DCE's focus shifted more toward sales and the company operated as a dealer. In 1998, Daikin established Daikin Chemical Netherlands (DCN) as a production center for fluoroelastomer pre-compounds. DCN imported raw rubber from Daikin's Yodogawa Plant in Japan and began pre-marketing on Europe's compound market. Finally, it established Daikin Chemical France (DCF) in the outskirts of Lyons, for the production of fluoroelastomer, thus completing an integrated production and sales systems in Europe.

In the U.S., Daikin began commercial production of PTFE from 1994, and FEP and ETFE from 1995. Fiscal 1990 marked the third year of operations, and the company moved into the black. In that context, Daikin in 1997 announced its Second Stage Plan in which it would aim to turn its U.S. operations into a comprehensive fluorochemicals company. FEP was used in LAN cabling, and was used extensively in the U.S. as the IT market expanded. FEP sales, in fact, contributed significantly to the first year of positive business results for DAI. From around 1997, however, demand decreased rapidly and a need arose to develop additional sales routes quickly. Sales were especially competitive for PTFE because it was a general-use plastic. There was thus an urgent need to improve

Daikin and DuPont Sign Cross-Licensing Agreement

the product's profitability. In order to secure the world No. 2 position in the fluororesins market, it was also necessary to increase the existing volume of business and introduce new products, such as repellent agents. In that situation, DAI introduced polymerization facilities to its Decatur Plant, and from early 2001 began producing repellent agents for commercial use. In order to bolster its production and development capabilities, DAI established the American Research Center. DAI also moved energetically to create new markets through product development, to enter into new strategic alliances, and to expand its sales system. After writing off its cumulative losses in 1998, DAI made concentrated plant and equipment investments and succeeded in maintaining a high level of income.

During this period, an explosion and fire broke out at the Decatur Plant in the U.S., killing three employees and injuring one. To DAI, which had marked 2.42 million hours of continuous operation since the start of operations without an accident requiring the production lines to be shut down, the shock was enormous. While doing everything it could for the affected employees and their families, DAI immediately conducted an investigation into

Content of Agreement between Daikin and DuPont (1997)

	DAIKIN	DUPONT
HFC32	Plant starts operations; supply to DuPont	Purchase from Daikin
HFC134a	Operations of plant halted at Kashima	Mitsui-DuPont supplies Daikin
HFC125	Conversion of HFC134a plant	Purchase from Daikin of refrigerant to sell in Japan and Asia
HCFC141b	Purchases ODP production rights from Mitsui-DuPont and increases production	Purchase

*ODP = Ozone Depletion Potential

the specific cause of the accident in order to introduce safety countermeasures and conduct exhaustive training of the employees to prevent similar accidents from occurring in the future. DAI halted the production lines for about three months, and then gradually started production again from August.

In the fluorocarbon business during this same period, companies competed fiercely to develop new substitute refrigerants. In order to reduce expenses related to R&D and to capital investments, the companies entered into strategic alliances for using each other's patents or products. As a result of energetically promoting strategic alliances in the area of substitute refrigerants, Daikin entered into an alliance with DuPont in February 1997 for mutual supply of HFC32/HCFC141b and HFC134a, and cross-licensing related to HFC407c, 410a, and 404a. Specifically, Daikin and DuPont entered into global ties concerning new refrigerants. Based on those ties, Daikin successfully acquired sales rights for HFC410a in Japan and Asian countries, 407c in Asian countries, and 404a in Japan, Asian countries, and the U.S. The ties with DuPont made it possible for Daikin to supply all new refrigerant products to customers in Japan and Asian countries. DuPont, on

the other hand, became the only company able to supply all products around the world.

Besides the cross-licensing ties between the two companies, Daikin expanded other business with DuPont and at the same time actively entered into business alliances with companies such as Allied Signal and Atochem for supplying products, licensing, and other activities. Fluorocarbon restrictions, meanwhile, based on the Montreal Protocol of 1987, seriously affected Daikin's business at the time. Daikin immediately turned afterward toward developing a new refrigerant to replace fluorocarbon, and rather than being affected negatively the new product helped the company expand its market share. As a result, the banning of fluorocarbon led directly to Daikin and DuPont sharing the worldwide market for refrigerants.

Business Restructuring and Business Withdrawals

The largest of the businesses from which Daikin withdrew during this period was the robot systems business. Daikin originally entered the robot business by developing robots to automate its internal operations. The company began external sales of some products in 1989, such as an automatic die polishing system. After the burst of the domestic bubble economy, however, the needs of companies for automation equipment changed. Daikin's robot sales grew sluggish, and profits worsened. The overall robot industry in Japan at the time saw two straight years of double-digit drops in revenue from the robot business, and demand decreased in the context of a mature domestic market and a decrease in new investment as more Japanese companies shifted production overseas. The larger robot manufacturers were also suffering from a decline in profitability. In that situation, Daikin was unable to create a future vision for its robot business, especially since it had not

been able to develop unique markets of its own. It positioned its robot business as an unprofitable venture, and in 1993 decided to rebuild the business and make it more efficient. Those efforts, however, were not successful.

The robot systems business contributed toward realizing major production increases by promoting the automation of air conditioning production during the economic bubble years when labor was short. Even after Daikin withdrew from the robot systems business in October 1995, the mechatronics technology the company cultivated previously was put to good use in related in-house divisions. There was thus no need to disperse the group of engineers in the robot systems division, including those recruited from the outside. Instead, Daikin reassigned them to new projects such as market research for developing new products using mechatronics, and developing high-performance hydraulics products by applying robotics technology.

Daikin decided in 1998 to withdraw from the Medical Equipment (ME) Business Division, and began negotiating to sell off the division's two main product lines. The first product Daikin originally developed in 1987 was the small-size blood glucose meter "Antsense". Daikin established its ME Business Division in 1990 and in July 1991, the company started to market the product, having obtained approval from the Ministry of Health and Welfare. Not long after introducing the product, however, customer complaints related to the bio-sensor, the product's "heart," kept the company busy. Despite those problems, the product succeeded in gaining a 9 percent market share in 1996, which turned it profitable. But afterward competition with the products of other companies turned increasingly severe. Meanwhile, Daikin purchased the basic patent of a British company, and in 1995 developed and marketed the optical immunoassay equipment called "Evanet",

aimed at professionals. The product used a specific reagent to detect coagulation in the bloodstream and B-type hepatitis. Since it was a product aimed at professionals, Daikin consigned sales to Sankyo Co., Ltd. Sankyo sold it through a medical products route to hospitals and medical professionals but it was unable to secure sufficient sales.

The ME Business Division was unable to reach its sales goal of 10 billion yen in the year 2000, and had no outlook for recovering its cumulative losses and turning profitable. With that backdrop, Daikin decided to withdraw from the ME business. In line with that decision, negotiations began for selling off the division's two main product lines. In March 2000, Daikin sold off the "Evanet" line to Nissui Pharmaceutical, a manufacturer of drugs and health food products, and in July 2000 it sold off the "Antsense" line to its franchise dealer Sankyo. Daikin closed the ME Business Division in September 2000 but did not second or transfer division personnel to other companies. The ME engineers and others in the division were transferred elsewhere inside Daikin where they could best use their abilities.

Around that same time, the oil hydraulics and defense systems businesses were troubled by shrinking markets after the burst of the economic bubble in Japan. Daikin responded quickly to those problems and fortunately avoided the closing of related operations. Unlike the robot and ME businesses, where Daikin did not have in-depth experience, the company had a firm technical foundation in both the oil hydraulics and defense systems businesses, allowing it to anticipate the direction in which to rebuild them. The oil hydraulics business, in particular, was affected by a sharp drop in the building construction business, which had expanded rapidly during the bubble period. In addition, the domestic industrial machinery business began to introduce electric or pneumatic machines and the oil hydraulics field contracted. Finally, with the burst of the economic bubble, construction equipment manufacturers increased the volume of business conducted in-house. Hydraulics equipment manufacturers thus came to face a life-or-death situation. In that situation, Daikin's oil hydraulics equipment business, which depended greatly on business in the domestic market, was forced to reorganize its operations. It emphasized two areas for attention: first, it would aim for the top share of the domestic industrial machines field; and second, it already decided on all-out entry into Asian markets. It was not able to make great progress in the 1990s, however, and the oil hydraulics equipment business continued to languish.

In terms of the Defense Systems Division, demand from the Defense Agency accounted for over half of its business in a market that previously was not affected much by economic fluctuations. It was also a market that saw great business shifts related to the government's defense policies and to circumstances inside the companies supplying the Agency with raw materials and components. In aiming to stabilize its business, therefore, Daikin moved to develop technology that would let it grasp its customers' needs and developed aggressive order-taking abilities. In doing so, the company was able to differentiate itself from its competitors and in 1995 succeeded in independently winning an order for tank shells used in training maneuvers. The locations for such training were often near civilian housing and roads used by local residents, making it next to impossible to conduct maneuvers using live shells. In that situation, Daikin developed shells for use in shooting practice that acted almost the same as live shells until it was on the way to its target. It was designed so that it never travelled outside the training area, and after being propelled more than a set distance it "melted down" harmlessly.

Oxygen Inhaler "LiteTec"

Daikin also developed a container made of fiber reinforced plastic (FRP) composite that utilized plastic processing technology, and began marketing it in 1996. One product developed using this container was an oxygen inhaler container for use at home. Two other products Daikin developed and marketed for this container were a large-size oxygen cylinder for use by firemen, and an ICU apparatus for use with small animals. There was a pet boom, and sales expanded in the market for sophisticated medical equipment used with pets. In January 1995, at the time of the Hanshin-Awaji Earthquake, the older buildings in Daikin's plant for producing defense systems were severely damaged, and the company quickly moved to erect new structures. At that time, Daikin also introduced new production lines with increased capabilities, resulting in significantly reduced production costs, and allowing Daikin to develop new markets apart from the Defense Ministry.

Corporate Social Responsibility and Improved Business Results

Daikin's business results in 1993 were in deficit. From 1994, however, both sales and ordinary profits (on a consolidated basis) turned favorable. Then, in fiscal year 1999-2000, the company experienced the largest business expansion in its history. 2001 sales results were also positive, ending up at about 540 billion yen, with ordinary profits of over 40 billion yen. The ten years after the economic bubble, called the "Lost Decade," were difficult years for Japan, and Daikin's favorable business results were thus worthy of attention. As mentioned, however, Daikin's favorable business results could not be achieved smoothly. The company suffered from stagnancy in its air conditioning division, and although it tackled basic business reforms, it once again fell into difficult times in the second half of the 1990s. It finally started to recover after the release of "Ururu Sarara" products. In place of the generally poor results of the air conditioning division, the favorable chemicals business division supported the company's business results. The chemicals business results in the U.S. were especially favorable, and in the year 2000 overseas business accounted for over 50 percent of the company's total business. For Daikin in the second half of the 1990s, its chemicals business assumed the lead as the company took its first steps toward becoming a global business.

In terms of environmental problems, meanwhile, Daikin faced its fluorocarbon problem around this time, and the company gained a stronger awareness of the importance of preservation of the global environment and strengthened its environmental countermeasures.

Daikin established its first environmental management rules in 1981. They were aimed at having the company's business operations comply with Japan's laws related to pollution and the environment. After fluorocarbon emerged as a problematical substance, Daikin became even more aware of the importance of protecting the environment: in 1992, the company established a Global Environment Department; and in 1993, the company announced "The Charter on Global Environmental Preservation." After the

Rio Summit (United Nations Conference on Environment and Development) held in June 1992, society-at-large began showing greater interest in environmental issues. In 1994, the International Standards Organization (ISO) developed its ISO 14000 series of quality standards for environmental management. During fiscal 1996, all of Daikin's domestic production facilities, starting with the Sakai Plant, were certified for the ISO 14000 series. Next, in 1997, Daikin's most important overseas group companies at the time—Daikin Europe (DENV), Daikin Industries Thailand (DIT), and Daikin America (DAI)—all obtained ISO 14000 series certification.

In 1998, Daikin published its first "Environmental Report." Next, in 1999, the company held its first Group Environment Conference, with participants from nine domestic and nine overseas subsidiaries. The conference marked Daikin's first step toward constructing a group-wide environmental management promotion system. Environmental accounting is an excellent tool for clarifying the expenses needed for carrying out environment-related measures and evaluating their positive results, and for promoting execution of those measures. In that context, Daikin systematized its environmental accounting from 1999. The Air Conditioning Manufacturing Division, meanwhile, introduced a life-cycle assessment system starting in 1995 for assessing the environmental impact generated in every process, from procurement of raw materials used for manufacturing, to use by customers, and disposal. That assessment led to efforts for reducing the environmental impact related to products. From 2000, Daikin took even further steps to reduce the environmental impact by publishing Green Procurement Guidelines for prioritizing the procurement of parts and materials that reflected a consideration of the environment.

In terms of the emission of chemical substances by corporations in Japan, in November 1999 the Law for Pollutant Release and Transfer Register (PRTR) was a factor. According to that law, corporations were obliged to measure the volume of chemical emissions from their facilities and to report the figures to the related government office. Daikin was already regularly monitoring its chemical substances emissions from 1996 in the Chemicals Division and from 1998 in the Commercial Air Conditioning Manufacturing Division and Residential Air Conditioning Manufacturing Division. The company then moved to promote the new law to construct a common-use system in the group companies for surveying and compiling the necessary information.

Gradually, society-at-large began evaluating the posture that companies adopted toward the environment. From 1999, eco investment funds were introduced in Japan that invested only in companies that considered the environment, and the funds attracted much more capital than anyone expected. Nikko Securities included Daikin in its eco investment fund, which meant that society recognized the company's environmental stance.

Daikin also included aggressive IR activities in its "Fusion 21D" Strategic Management Plan, and actively conducted those activities with the aim of winning a favorable international reputation. In 1997, with the backdrop of the company's chemicals business in the U.S. being assertively expanded, and its global strategy being forcefully developed, corporate information meetings were sponsored in Boston and New York. In 1998, the Chemicals Business sponsored a similar meeting at the Tokyo Branch Office, and from 1999 President Inoue began inviting journalists to get-togethers. Those various moves were in preparation for the issuance of unsecured debentures worth 10 billion yen, and journalists evaluated them highly. The Securities Analysts Associa-

Party Following Daikin's 70th Founding Anniversary Ceremony

tion of Japan presented the company in September 1999 with its Award for Excellence in Corporate Disclosure. Even afterward the company continued to conduct ambitious IR activities, including sponsoring in 2000 a financial information meeting of its air conditioning business aimed at shareholders and investors.

Daikin announced a new project in 1994 as a link in celebrating its 70th founding anniversary. The project was support for the National Museum of Art, Osaka (NMAO). In March 1996, Daikin established the Daikin Foundation for the Promotion of Modern Art, and announced financial support for exhibitions at the NMAO, creative activities, and academic research related to modern art. Late Chairman Yamada of Daikin proposed putting into order a permanent support system for the NMAO because it was the only national art museum in Osaka. When it came time to rebuild the dilapidated museum, it was relocated from the Senri Expo Park to the Nakanoshima area in the center of Osaka. The new NMAO opened on November 9, 2004, and quickly became a popular cultural spot.