# CHALLENGE FOR THE NEXT STAGE



# **Management Philosophy**



Concentrate member companies' knowledge and expertise on the creation and development of businesses that concern air, water, and the planet in general, in the spirit of entrepreneurship that contributes to society

# **Business Overview**

## **Industrial Gas Business**

Air Water supplies a variety of industrial gases indispensable to the operations of a broad spectrum of industries, including the steel, chemical, automobile, shipbuilding, construction equipment, and paper and pulp industries. We utilize our distinctive "total gas solutions" system, which features both on-site gas supply via large-scale cryogenic air separation units, small- to medium-scale gas generators, and gas supply via VSU-centered liquefied gas tank trucks and cylinder shipments, to provide customers with a stable supply of industrial gas, which, in turn, wins us the solid trust of our users.



It has been 82 years since the establishment of Air Water. In that time, it has expanded from one business to the next, maintaining Industrial Gas and Medical Gas as its core businesses while branching out into the fields of Electronics,

## **Electronics Business**

Air Water supplies bulk gases, like high-purity nitrogen, specialty gases, specialty chemicals, related equipment, and a wide variety of other products and services to semiconductor, LCD, PDP, solar cell, and other manufacturers in the cutting-edge, electronics industry. Furthermore, our multifaceted business goes beyond an industrial gas framework and extends into such areas as supplying of advanced electronics materials that incorporate proprietary Air Water technology, such as power storage device electrode materials and ultra heat-resistant semiconductor substrates.



# **Chemical Business**

In our Coal Chemical Business, we utilize coke oven gas and tar (produced from the process whereby coke is manufactured to fuel steel works) to manufacture such products as purified gas, gas byproducts and carbon materials; in our Fine Chemical Business, we utilize advanced refining, synthesis, and oxidation technologies to produce organic hybrid compounds such as pharmaceutical and agricultural intermediates and electronics materials. We respond to user needs with high value-added products as well as the active development of materials and applications.



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## Visual Concept

The wide array of colors is representative of the individuality of each employee and the different characteristics of each business. The white background evokes a canvas, and the combination of individual colors creates the Air Water Group as well as portrays a new future for Air Water.



#### Forward-looking Statements (Business Risk Factors, etc.)

The forward-looking statements in this Annual Report regarding estimates of business performance and predictions of future developments reflect Management's judgments based on currently available information, but also involve potential risks and uncertainties. Actual business performance could be significantly different from the projections made herein due to changes in various factors. The primary potential risk factors are summarized below.

Significant changes in demand in East Asia, an important market for our major customers
Progress in passing on to the customer increased costs resulting from higher LPG and kerosene contract prices and rising crude oil prices
Increased transport expenses, including the costs of light oil, fuel oil, ocean freight, and air freight due to rising crude oil prices
Increased transport expenses, including the costs of light oil, fuel oil, ocean freight, and air freight due to rising crude oil prices
Increased raw materials costs for our medical gases and medical services resulting from revision of national insurance drug and medical examination reimbursement prices
Risks arising from a production problem, product defects, accidents, etc.
Risks arising from the failure of merger and acquisition activities or other investments to perform as anticipated
Risks arising from the failure to implement adequate measures such as business expansion and cost reductions in response to competition
Increased cost of compliance as a result of revised or newly implemented environmental laws and regulations
Risks disasters and other potential risks

Risks due to natural disasters and other potential risks

The financial statement information contained in this Annual Report is based on the accounting term for the year ended March 31, 2011, and for previous terms as indicated. All other content is based on information available on August 31, 2011, when the editing of the Annual Report was completed

Chemical, Energy, Salt Manufacturing, Magnesia, Food Products, Logistics, Aerosol, Mineral Water and Agriculture. Like the name implies, Air Water continues to push ahead with business activities that are as necessary to society and daily life as "air and water."

## Medical Business

As the top supplier of medical oxygen, Air Water utilizes its own infrastructure to ensure stable distribution of a variety of medical gases. These gases are used at medical facilities throughout Japan to support the "front lines of healthcare." Furthermore, Air Water contributes to the development of healthcare by offering advanced, comprehensive solutions unparalleled by other companies in areas as diverse as medical equipment and hospital facility construction; SPD, contract sterilization and other solution services; and even home care, nursing care and other local medical services



## Energy Business

Air Water's LP Gas and Kerosene Business boasts an overwhelming market share and brand strength throughout the Hokkaido region, offering meticulous service in a wide range of fields, including everything from domestic to industrial and commercial fields. The energy solution systems and know-hows cultivated over many years are being put to use to allow Air Water to start making real inroads into the eastern Japan region. Furthermore, we are developing business in the field of natural gas, such as natural gas pipeline distribution and LNG container development.



## Other Business

Air Water has a range of unique technologies and products in a variety of businesses, all of which contribute to the group's growth. These businesses include Air Water's Seawater Business, which boasts the top share in the domestic salt market and offers unique Magnesia Technology; Food Products Business, which offers high-quality raw ingredient-type frozen foods, hams and delicatessen products; Logistics Business, which provides advanced services utilizing systems and know-hows cultivated from the shipping of high pressure gas; and even Aerosol Business, Mineral Water Business and Agricultural Business

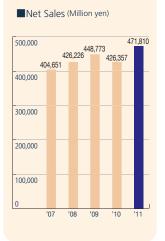


#### Consolidated Financial Highlights (Comparison between the past 5 fiscal years) AI

rears) AIR WATER INC. and Consolidated Subsidiaries, Years ended March 31

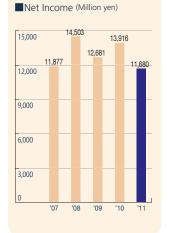
					Million of yen	Thousand of U.S. dollars (Note 1)	Increase (Decrease)
	2011	2010	2009	2008	2007	2011	2011/2010
Net sales	¥471,810	¥426,357	¥448,773	¥426,226	¥404,651	\$5,674,203	10.7 %
Cost of sales	359,560	320,758	344,317	324,910	307,557	4,324,233	12.1
Selling, general and administrative expenses	80,981	77,397	78,677	75,738	73,997	973,915	4.6
Operating income	31,269	28,202	25,779	25,578	23,097	376,055	10.9
Net income	11,680	13,916	12,681	14,503	11,877	140,469	(16.1)
Comprehensive income	11,293	—	_	_	_	135,815	—
Total assets	407,639	392,759	385,563	353,399	329,228	4,902,453	3.8
Total net assets	169,127	163,950	143,230	137,992	118,244	2,033,998	3.2
Cash flows from operating activities	32,576	44,593	27,884	21,664	30,648	391,774	(26.9)
Cash flows from investing activities	(34,766)	(25,820)	(39,999)	(36,033)	(17,213)	(418,112)	34.6
Cash flows from financing activities	(1,592)	(20,615)	22,784	9,801	(9,615)	(19,146)	(92.3)
Cash and cash equivalents at end of year	18,131	21,529	23,185	12,524	16,846	218,052	(15.8)
PER SHARE OF COMMON STOCK					Yen	U.S. dollars (Note 1)	
Net income - basic	¥61.24	¥73.64	¥68.56	¥79.29	¥72.59	\$0.74	(16.8)
Net income - diluted	59.56	70.03	68.49	78.63	64.98	0.72	(15.0)
Cash dividends applicable to the year	22.00	22.00	22.00	22.00	20.00	0.26	—
Net assets	822.05	789.89	715.60	689.41	641.95	9.89	4.1

Notes : 1. Translation into U.S. dollars has been made solely for the reader's convenience at the rate of ¥83.15 = U.S. \$1.00, the rate prevailing on the Tokyo Foreign Exchange Market on March 31, 2011. 2. Starting in the current fiscal year, "Accounting Standard for Presentation of Comprehensive Income" (ASBJ Statement No. 25, June 30, 2010) has been applied.

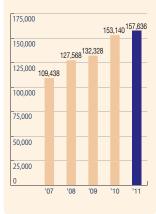


Operating Income (Million yen)

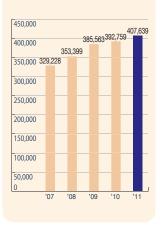




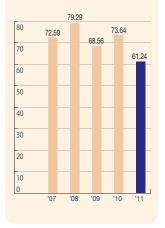




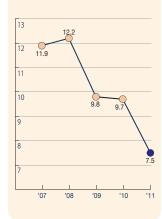
#### Total Assets (Million yen)



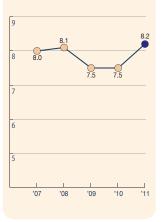
Net Income – Basic (Yen)





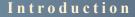






	Business Segment	Net Sales / Ordinary Income	Sales Ratio	Business Composition
Industrial Gas Business		Net Sales ¥130,871 million Ordinary Income ¥13,419 million	<b>28</b> %	<ul> <li>Tank Trucks and Cylinders (Regional industrial gas distribution)</li> <li>Welding (Welding and cutting)</li> <li>Mini On-site and Medium- and Small-scale Gas Plant</li> <li>VSU Network (Regionally distributed, (stationary type gas plants)</li> <li>Large-scale On-site</li> <li>Engineering and Maintenance</li> </ul>
Electronics Business		Net Sales ¥48,863 million Ordinary Income ¥3,581 million	<b>10</b> %	<ul> <li>Gas and Chemical</li> <li>Bulk Gas / On-site Gas</li> <li>Specialized Materials (Speciality Gas and Specialty Chemical)</li> <li>Environmental System / Gas and Chemical-related Equipment</li> <li>Electronics Materials</li> <li>Functional Resin BELLPEARL<sup>®</sup></li> <li>Semiconductor Substrate and Electronics Circuit Materials</li> <li>Chemical Products and Electronics Materials Specialized Trading Company (distribution and import and export)</li> </ul>
Chemical Business		Net Sales ¥78,467 million Ordinary Income ¥3,398 million	17%	<ul> <li>Coal Chemical</li> <li>Gas Purification and Gas Byproducts</li> <li>Carbon Materials</li> <li>Tar Distillation</li> <li>Fine Chemical</li> <li>Agricultural Chemical Intermediates</li> <li>Pharmaceutical Intermediates</li> <li>Electronics Materials</li> </ul>
Medical Business		Net Sales ¥66,879 million Ordinary Income ¥4,383 million	14%	Medical Gas Medical Equipment Medical Service Hospital Facility Construction
Energy Business		Net Sales ¥47,554 million Ordinary Income ¥2,733 million	10%	<ul> <li>LP Gas and Kerosene</li> <li>Life Support</li> <li>LNG Transport and Storage Tank</li> <li>Natural Gas Pipeline Distribution</li> </ul>
Other Businesses		Net Sales ¥99,176 million Ordinary Income ¥5,362 million	<b>21</b> %	Magnesia Salt Manufacturing and Environment Logistics Food Products Mineral Water Aerosol O-rings NV (metal surface treatment) ECOROCA®

Striving to achieve a three year plan that will allow Air Water to stay ahead of the curve in an era of drastic environmental change.



I would like to extend my sincerest condolences to the many individuals affected by the Great East Japan Earthquake which struck on March 11th of this year.

The Air Water Group was also significantly affected, sustaining damage at the Nihonkaisui Onahama Plant and other production facilities. This disaster has dealt a great blow to the business world and to people's lives, and it has vividly reminded me of the important responsibility that the Air Water Group has to society. With many gas production facilities in the affected areas

With many gas production facilities in the affected areas forced to cease operation, the Air Water Group immediately put to use its VSU-centered national distribution network to quickly establish a stable supply network of absolutely essential medical oxygen and noncombustible nitrogen to the affected areas starting the day after the disaster; in this way and in other ways, the entire Air Water Group has worked to support gas supply. We promise to ensure that society will continue to have a stable supply of industrial and medical gases at all times, and we will work to put in place an even stronger crisis-control system within the Air Water Group.

#### **Reflecting on FY2010**

The Japanese economy in FY2010 saw faster than anticipated recovery thanks in large part to exports, and prior to the earthquake in March, there was solid, ongoing improvement overall. The Air Water Group's industry-focused businesses, including Industrial Gas Business, Electronics Business and Chemical Business, all saw an increase in demand, primarily amongst major customers, and solid growth thanks to increased production in domestic manufacturing, particularly steel, and a recovery in equipment and construction investment, which had previously been slumping. Life-related Business, including Medical Business, which is fairly immune to economic fluctuations, also saw steady expansions in income.

As a result of all this, net sales for this period were 471.81 billion yen (110.7% year-on-year), operating income was 31.269 billion yen (110.9% year-on-year), ordinary income was 32.959 billion yen (113.6% year-on-year), and net income was 11.68 billion yen (83.9% year-on-year). Despite extraordinary losses incurred as a result of the earthquake and other factors, net sales, operating income and ordinary income were the highest they had ever been.

Air Water is working towards its "NEXT-2020/Vision for 1 trillion yen company," which has a long-term goal of reaching 1 trillion yen in net sales by 2020, and Air Water is currently implementing its "NEXT-2020 Ver.1" three-year plan. FY2010 was the first year of this plan, and the results show that Air Water surpassed its targets, even after an upward revision was made, and has already achieved its targets for the second year of the plan ahead of schedule.

#### **Outlook for FY2011**

Domestic manufacturing, which had been undergoing a steady recovery, experienced an inevitable temporary stall in production, particularly in the automobile industry, as a result of the earthquake and subsequent power shortages. Nevertheless, steel manufacturers, automobile manufacturers and the rest of Japanese industry have made faster than expected progress in restoring the supply chain. Within the Air Water Group as well, many of the disaster-affected production facilities are getting back on line and, with a few exceptions, are resuming normal operations.

Furthermore, demand from overseas, particularly from developing nations, is as strong as ever, and efforts to normalize production activities are expected to pick up speed.

Assuming this, we anticipate the final results for FY2011 to be 500 billion yen in consolidated net sales (106.0% year-on-year), 32 billion yen in consolidated operating income (102.3% year-on-year), 33.5 billion yen in consolidated ordinary income (101.6% year-on-year), and 17.5 billion yen in consolidated net income (149.8% year-on-year).

It is especially in times of severe change when Air Water's "All-Weather Management System" and "Order Rodentia Style of Business" show their strength. By responding actively and agilely to changes in the market environment, Air Water is securely underway with the second year of its "NEXT-2020 Ver.1" mid-term business plan and is safely on track to accomplish the goals of this three year business plan.

#### To Shareholders

Air Water's highest priority is to return a profit to its shareholders and, towards this end, has set itself the goal of providing stable dividends and a payout ratio of 30% on consolidated net income. Dividends to shareholders in FY2011 are expected to match those of the previous period at both the interim and year end: 11 yen per share for each period and 22 yen annually.

The earthquake has been a catalyst which is forcing Japan's economy and society to undergo significant transformation, and it is expected that the lifestyle of the average Japanese citizen will also inevitably change. I believe that it is extremely important for the sake of Japan's future to perceive these changes in a constructive way. And in order that Air Water can contribute to this change, we will advance even greater operational restructuring aimed at driving growth.

I am convinced that accomplishing the "Vision for 1 trillion yen company" can only be achieved via more thorough implementation of the two business models mentioned earlier. The Air Water Group will continue to contribute to both industry and people's daily lives through its business and, in line with its managing principles, strive for greater heights while establishing and developing business that is concerned with the planet as a whole.

It is my hope that as we strive towards these goals, we will be able to continue to count on your warm support and understanding.

> Hiroshi Aoki Chairman of the Board, Chief Executive Officer September 2011

H. Aake

Special

Column

# An ever-evolving "Giant Manifold"





Gas cylinder transport via automatic three-wheeled trucks. Cylinder loading was done completely by hand.

Daido Sanso's oldest liquid oxygen tank truck. Liquid oxygen was sold directly from a two-ton tank.



Kyodo Oxygen established at Wakayama steel works of Sumitomo Metal Industries. (current on-site Wakayama plant)



HOXAN established the industry's first stand-alone on-site oxygen distribution facility. (current on-site Wanishi plant)

#### Two companies born from "community needs" lay the groundwork for Industrial Gas Business.

#### 1929-1960

In 1929, eager members of the Sapporo Chamber of Commerce and Industry, who shared a grand vision of local industry development for the people, got together to establish a new company, Hokkai Sanso Co., Ltd.(HOXAN), which would produce ample quantities of medical oxygen for the purpose of saving lives as well as industrial oxygen for the purpose of fostering industry within Hokkaido. In 1933, a group of welding, cutting and other "oxygen-using" entrepreneurs looking to address the chronic supply shortage of industrial oxygen in Osaka got together to establish Daido Sanso K.K. in order to manufacture their own. These two companies established around the same time in the two totally separate regions of Hokkaido and Kansai developed oxygen gas-centered industrial gas business in the years prior to and during World War II. During the postwar reconstruction period, the steel manufacturing

During the postwar reconstruction period, the steel manufacturing and shipbuilding industries underwent rapid growth, which expanded the market for liquid oxygen mass production and transport. Daido Sanso was one of the first to capitalize on this growing demand, making a bold switch from gaseous to liquid oxygen in 1953 with the start of full-scale production of liquid oxygen at a new plant in Sakai. At the same time, it switched its sales system over to direct sales, laving the foundation for an integrated production and sales system.

Meanwhile, in 1955, Hokkai Sanso ventured into sales of household propane gas, a market still very much untapped at the time. It was Hokkai Sanso's "community first" corporate mindset which prompted this move from industrial gas into household gas – a move which bore fruit in the form of new business. From "shipping it there" to "making it there" – Keeping pace with heavy demand from heavy industry by establishing on-site distribution

#### 1960-1975

As Japan entered a period of rapid economic growth, the trend in industrial oxygen demand was toward ever greater mass consumption. Thus, in order to overcome the limitations on distribution created by transporting gas, the focus shifted from "shipping gas to where it is needed" to "making it where it is needed," thereby ushering in an era of "on-site distribution." Amidst this trend, Sumitomo Metal Industries, Ltd. established its own independent on-site oxygen distribution company, Kyodo Oxygen Co., Ltd., in 1962. This company utilized large-scale gas plants built on the premises of steel works to produce and directly supply oxygen, which is the "lifeblood" of such works, for blast furnaces; thus, "steel on-site" business was begun.

In response to this trend, HOXAN Corporation started up the industry's first stand-alone on-site oxygen distribution business (the Wanishi on-site plant) in 1967 jointly with the Fuji Iron & Steel Co., Ltd. (now Nippon Steel Corporation) Muroran Steelworks, which had been experiencing intermittent oxygen shortages and needed to have a stable gas supply. The Wanishi on-site plant also became a prolific source of oxygen and nitrogen for direct sale to customers.

And in 1969, Daido Sanso invested in the Senboku Oxygen on-site plant of Mitsui Toatsu Chemicals, Inc. (now Mitsui Chemicals, Inc.) to start up a liquid co-production on-site business. This decision by Daido Sanso, which was still a small liquid oxygen manufacturer at the time, was to lead to large-scale oxygen distribution throughout Japan and proved to be a major step on its path to becoming one of the largest industrial gas manufacturers in Japan.

Daido Sanso and HOXAN established
 Foundation of integrated production and sales system concept
 established

Kyodo Oxygen established
 On-site Oxygen Distribution Business started

# TRACKS OF BEXERO

The Air Water Group continues to grow as a "Giant Manifold" of allied companies comprising a variety of business connected with industry and people's daily lives. Looking back on Air Water's progress from its foundation up through the present, one clearly sees how the group has grown to become a manifold of abundant innovation.





The No.1 oxygen PSA installation geared towards electric furnace manufacturers. A forerunner of Air Water's "total gas solutions" system.

The first V1 generator, completed in 1984. This revolutionary system overturned conventional industry thinking that relied on centralized production and long-distance transmit transport



Electronics as a joint venture further strengthened development of gas distribution business geared towards the electronics industry.

business operator which achieves overwhelming brand strength in Hokkaido.

#### Tackling the challenges of new fields with diversified business operations and an innovative business model.

#### 1975-1990

HOXAN, which had already ventured into the Housing Field with sales of such products as household propane gas and the "BATH-ALL," Japan's first unit bath, further diversified its business by

Meanwhile, with large-scale demand for industrial gas growing year by year, Daido Sanso began strategic development of the "total gas solutions" system with the installation of an oxygen PSA system in 1983. Furthermore, Daido Sanso concluded a licensing agreement system, which adopted a unique process allowing a highly pure and stable supply of gas to be maintained, earned high praise as part of a revolutionary "mini on-site" business model. Daido Sanso further enhanced and expanded its product and proposal strength in the Chemical Business when it began investing in Tateho Chemical Industries Co., Ltd. During this period, Kyodo Oxygen developed a string of highly marketable products, beginning with direct sales of ELNACKS®

co-production of argon. This started it on a path of distinctive business development.

#### **Diverse business development** on a national scale picks up speed after the merger forming Daido Hoxan.

#### 1990-2000

•Start of strategic development of the "total gas solutions" system Innovative "mini on-site" business model created

·Birth of Daido Hoxan marks start of business on national scale ·Bolstering of a "community-based" style of business focused on carefully addressing local demand

Special

Column

# An ever-evolving "Giant Manifold"



The Air Water logo: an oval with a width-to-height size ratio of 10:9 representing the earth and Air Water's mission to use the earth's precious resources carefully.

Full-scale development of the Chemical Field got underway with the M&A of Sumikin Chemical: an example of one

of Air Water's largest M&A since its

foundation.



Research and Development Institute established in 2007 in Matsumoto City, Nagano Prefecture. This global research hub brings together the broad and diverse expertise of the Air Water Group. Advanced medical facility business developed through the M&A of three medical facility construction companies. A new business model emerges which is only possible thanks to the "Order Rodentia Style of Business."

## The birth and growth of Air Water Actively pursuing M&A and synergy to reach new heights.

#### 2000-

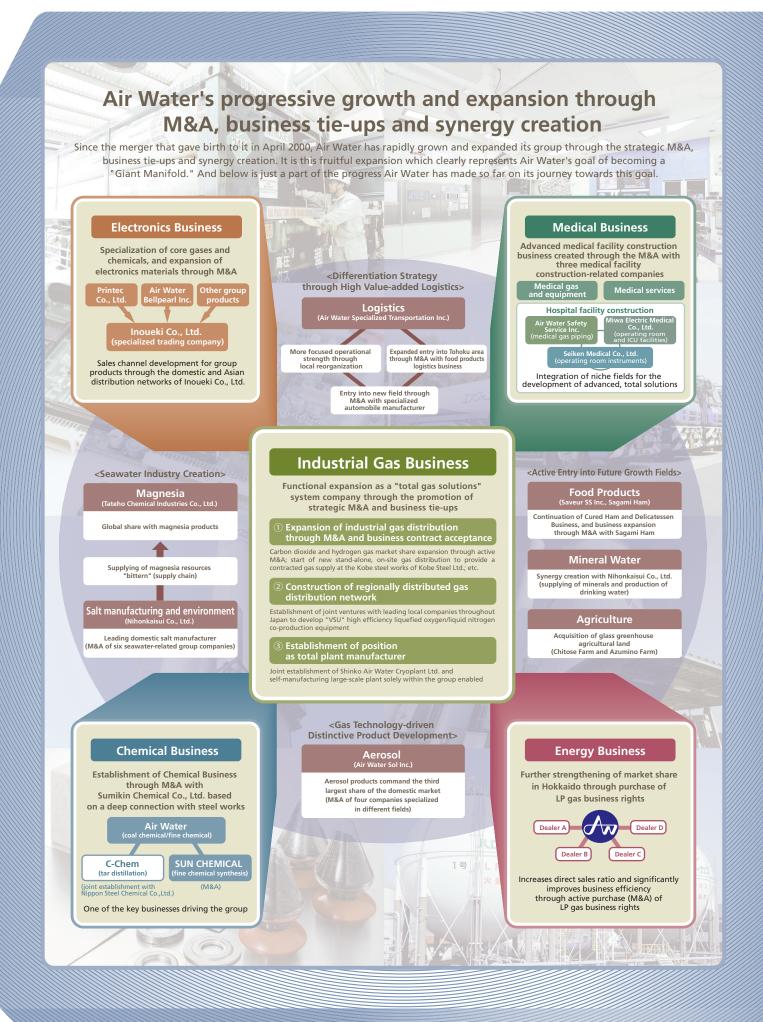
In 2000, Air Water was born from a merger of Daido Hoxan with Kyodo Oxygen. The combination of diverse, nationwide business, chiefly gas distribution, with on-site business at major steelworks established Air Water as a leading total gas manufacturer in the industrial gas industry.

Around this time, the trend in Japan's manufacturing industry, centering on the electronics industry, was the decentralization of production hubs, which signaled a limit to traditional mass, concentrated production at large-scale plants followed by long-distance transport to local areas. Amidst this trend, Air Water developed its "VSU" high-efficiency liquid oxygen/nitrogen co-production plant in 2003 to provide localized gas production suited to local needs and short-distance shipping. The "VSU" plant resolved the issue of energy efficiency for small-scale plants through advanced cryogenic air separation-related technological development, and a new business model was established which involved the expansion of a distributed supply network that could meet local demand locally.

Furthermore, beyond industrial gas, Air Water has sought to expand in a multitude of fields, including aerosols, food products, chemicals, hospital facility construction, seawater and electronics materials, through an active strategy of M&A and tie-ups. The result has been the establishment of two distinctive business models that have seen Air Water grow 230% over the ten years since the merger which created it. These two models are the "All-Weather Management System," which ensures stable profitability even in the face of fluctuations in the business environment, and the "Order Rodentia Style of Business," which ensures sustainable growth via small-scale yet highly profitable groups of businesses commanding large shares of their respective markets

Air Water has sought synergy and promoted business field expansion through the active pursuit of M&A and business collaborations to foster continued growth and new business opportunities for the group and its members. And the Air Water Group will continue to undertake a diverse array of initiatives as it sets its sights ever higher.

	2001	-2003	2004-2006	2007-2009	2010-2012
Business Strategies (Medium-	Busine	Mid-term ess Plan corporate structure	<b>Target 3600</b> Expansion of operations	<b>Renovation 330</b> Strengthening of profitability	<b>NEXT-2020 Ver.1</b> Construction of solid foundations for further growth
term Business Plan)	1. Shift to soluti 2. Improve corp		<ol> <li>Expand operations</li> <li>Improve operating profit margin</li> <li>Strengthen financial standing</li> </ol>	<ol> <li>Structurally reorganize business and strengthen profitability</li> <li>Use technology to foster business creation and innovation</li> <li>Bolster financial standing</li> </ol>	<ol> <li>Restructure revenue bases</li> <li>Build new growth strategies</li> <li>Tackle issues standing in the way of achieving the "Vision for 1 trillion yen company"</li> <li>Strengthen financial standing</li> </ol>
Shift in Net Sales	FY1999: <b>184.8 billion yen</b> (prior to merger)	FY2003: 265.2 billion yen	FY2006: <b>404.7 billion yen</b>	FY2009: <b>426.4 billion yen</b>	FY2012: <b>500 billion yen</b> (target)



# **INDUSTRIAL GAS BUSINESS**

# **Responding to the full range of industrial gas needs:** production, transportation, on-site, engineering and maintenance



#### Review of FY2010

Industrial Gas Business in FY2010 grew steadily against a backdrop of recovery in the domestic manufacturing industry. In particular, the steel industry, which is a major industrial gas user, saw total domestic crude steel production rebound to the 110 million ton level. This in turn required sustained high gas supply levels, which helped large-scale On-site Business geared towards blast furnaces to rebound to 90% or higher of what it was during its peak. Also, an increase in specialized glass production intended for export continued due to strong demand, and gas supply systems and plant capacity were bolstered as a result. In addition, there was solid demand amongst developing nations for construction equipment as well as increased demand geared towards shipbuilding, which showed itself to be recovering in terms of number of new vessels built. In terms of gas supply geared towards regional Japanese economies, VSU in each region operated at full capacity, providing a steady increase in revenue. Furthermore, Shinano VSU (Air Water's ninth VSU plant) began operation in March 2011, and together with Niigata VSU provides users in the disaster affected regions of Northeastern Japan with a steady supply of gas.

#### Outlook for FY2011

In FY2011, steel experienced a significant, temporary decrease in production as a result of the earthquake; however, recovery in the automobile industry and other industries is expected to enable steel to return to full operational levels in the second half of the fiscal year. In addition, specialized glass production is expected to remain at a high level. And while other domestic manufacturing has seen a temporary decline, it is expected to rebound to its pre-disaster levels around the beginning of autumn. Furthermore, in FY2010 both on-site plants in Kobe and Wanishi were replaced with cutting-edge high-efficiency gas plants, which will mean improved production efficiency. Concerning Air Water's VSU strategy, the tenth VSU facility is scheduled to begin operation in Hirakata City in Osaka Prefecture within the fiscal year, providing a further boost to the stability of the regional gas supply network. In addition, "RF tag introduction for strengthened security" and "increased container turnover" are being used to improve the high-pressure gas container management system in Air Water's gas cylinder business.

#### Cutting-edge on-site plants go on line in Kobe and Wanishi

At on-site plants installed for steelworks throughout Japan, aging cryogenic air separation plants are being replaced with cutting-edge high-efficiency plants. In FY2010, the on-site plants in Kobe (Hyogo) and Wanishi (Hokkaido), which are responsible for supplying steel plants with industrial gas, underwent renewal. In particular at the Kobe plant, which has supplied gas with three on-site plant system over the past 40 years, a cutting-edge large-scale plant has been put on line which greatly improves both stability of operation and production efficiency. Furthermore, in addition to gas piping distribution for steel plants, Air Water sells the liquid oxygen, nitrogen and argon which are co-generated at the Kobe plant to gas users in the Hanshin region.



#### Broadly answering the full spectrum of industrial gas needs as a comprehensive gas manufacturer

The primary strength of Air Water's Industrial Gas Business is its ability through the Air Water Group to provide a wide array of comprehensive functional solutions, including everything from gas production technologies, such as cryogenic air separation, PSA and membrane separation, container and storage tank technologies, such as CE, portable containers and cylinders, to transportation technologies, such as tank trucks and trailers, and even engineering technologies related to the design, development and construction of gas generation systems and container facilities. For many years now Air Water has pursued comprehensive gas business, putting its own nationwide

An integrated production and sales system for delivering gas to

every corner of Japan

Tank Trucks and Cylinders (Regional industrial gas distribution)

The starting point of Air Water's Industrial Gas Business is an integrated production and sales system which is rooted in the idea of "making and delivering our own gas to users." The solid distribution network that ties Air Water's gas production facilities and filling stations throughout Japan with its Regional Business Companies nationwide is utilized to provide a stable supply of various industrial gases to regional industries. From regional shipment of gas cylinders to distribution via PLC (ultra-low temperature liquefied gas containers) and gas cylinder bundles, which are suited to larger-quantity gas users, and even distribution via liquefied gas tank trucks capable of transporting large quantities of liquefied gas over long distances, Air Water works to stably and reliably supply gas to users in a manner which is optimally suited to the individual user's quantity and usage needs.

Air Water provides direct support for Japan's manufacturing industry by supplying core industrial gases (oxygen, nitrogen and argon) and other gases like carbon dioxide, hydrogen and helium from liquefied gas production facilities and filling stations nationwide to every part of Japan via a reliable distribution system overseen by Regional Business Companies.





Liquefied gas tank truck

distribution infrastructure to optimal use, as exemplified by the revolutionary business models brought about by the "V-series" and "VSU." From small- to medium-scale gas supply to large-scale gas supply in the form of large-scale gas plants installed at users' plants, Air Water is a comprehensive gas manufacturer capable of safely and reliably supplying industrial gas in a manner which is optimally suited to users' needs. Air Water uses its nationwide sales network, centering on its eleven Regional Business Companies, to construct a business structure which is constantly aware of the latest needs.

#### Unique production and development of welding gas for high quality welding and cutting

Welding (Welding and cutting)

In the field of welding, ELNACKS® shielding gas for steel plate welding boasts the highest market share within Japan. This high-quality, economical gas is produced via a unique production method involving the extraction of a highly pure direct mixture of argon and oxygen obtained from Air Water's cryogenic air separation plants. In addition, Air Water offers a variety of welding shield gases suited to user needs, such as AW-Shield Gas, which is an argon-based mixed gas for stainless steel and aluminum welding.

In the field of cutting, Air Water's business revolves around the Aqua Gas Generator used in the production of "aqua gas," which is an oxyhydrogen gas mixture developed by Air Water. Aqua gas is created from hydrogen and oxygen obtained through water electrolysis and mixed with propane; compared with traditional LPG cutting, aqua gas allows for higher-quality, more rapid cutting as well as reduced energy consumption thanks to the concentrated flame produced from the combustive characteristics of hydrogen. Demand for aqua gas is growing within high-rise building construction, bridge construction and other construction projects that increasingly utilize high-tension steel, specialized steel and other high-strength steel that have traditionally been resistant to gas cutting.



ELNACKS® argon welding gas

Fabrication utilizing aqua gas

#### Another Industrial Gas Business: "Gas Application System"

"Gas applications technology" is a field which seeks to find applications for the properties of industrial gases, and it has been receiving an increasing amount of attention in recent years. Air Water is actively involved in this field seeking to develop and expand such gas applications.

One such application is QuickSnow: a precision cleaning system that utilizes dry ice particles created from liquid carbon dioxide to blast a target object under dry conditions so as to provide high precision cleaning with minimal damage to the object's surface. This system has broad applications in semiconductor wafer, LCD glass and other cutting-edge electronics fields and is contributing to an expansion in Air Water's carbon dioxide supply business.

In addition to QuickSnow, a variety of new gas applications, such as the "Aqua Gas Generator, which has already become a core product in the field of welding, the "Indoor, Small-scale Liquid Nitrogen Generator," which utilizes pulse tube refrigeration technology, and the "Atmospheric Pressure Plasma Generator," which applies gas etching technology to the surface treatment of electronics materials, are steadily being developed, with the Research and Development Institute serving as the base for this work.



# INDUSTRIAL GAS BUSINESS

#### Distinctive system variations that ensure the essential stability of a gas supply

#### Mini On-site and Medium- and Small-scale Gas Plant

"Mini on-site" is a distinctive business model of Air Water that involves setting up a small- to medium-scale gas plant on-site at the user's production facility so as to provide them with a stable supply of gas. The core of this model is the "V-series" of small- to medium-scale cryogenic air separation systems that provide highly pure nitrogen and oxygen, which are essential to electronics and glass manufacturing. In 1984, Air Water utilized its unique technological advancements to successfully develop the V1 high-purity

nitrogen generator, which is now the standard for on-site distribution systems, particularly at electronics manufacturing plants, throughout Japan. As a stable distribution business model that departs from distribution via liquid gas tank trucks, the "V-series" further further expanded its offerings to include the V2, which generates oxygen, the V3, which co-generates nitrogen and oxygen, and the VH, which supplies hydrogen on-site.

In addition to these mini on-site systems, low-purity-type gas generation systems quite unlike cryogenic air separation-type systems, such as PSA-type oxygen generation systems optimized for electric furnaces, paper and pulp and PSA-type and membrane separation-type nitrogen generation systems essential to shipbuilding, construction equipment and metalworking were developed. This diverse lineup of products comprises a key part of Air Water's Industrial Gas Business.





VH Hydrogen Production Using Thermo-Neutral Reforming

Bringing forth a "locally produced, locally distributed" gas business

VSU Network Regionally distributed, stationary type gas plants

"VSU" was developed by Air Water as the industry's first high efficiency, compact liquid nitrogen/oxygen co-production plant. This revolutionary plant was inspired by the stable supply concept begun with the V1, and it incorporates cutting-edge technology with such novel ideas as twin turbines and vacuum insulation. VSU overturned the "large-scale production and long-distance shipping" conventional wisdom of liquefied gas distribution and, instead, provided validation for a new business model that emphasizes "production near those areas where there is demand." VSU ensures a stable gas supply to users as well as streamlined shipping costs and reduced CO2 emissions thanks to a "'just-enough' production and short-distance shipping" approach. And thanks to the regionally distributed nature of the VSU network, even if some plants stop operation due to a natural disaster or other occurrence, the other plants are able to provide a backup supply.

This mutual reinforcement is also being augmented by the creation of a new supply network that is centered on VSU and involves building strong partnerships with local industrial gas companies in the various regions of Japan. The first VSU went on line in Niigata in 2004, and this has been followed by eight other VSU plants in Kumamoto, Fukui, Aichi, Fukushima, Kanagawa, Ehime, Shizuoka and Nagano, and a tenth VSU plant is scheduled to start operation in Osaka in FY2011



Liquefied gas filling station

#### Construction of a unique, stable gas distribution model using the sorts of service solutions that only Air Water can develop

In the Industrial Gas Business, it is an absolute requirement that users be ensured a reliable supply of gas regardless of the situation or circumstances. Air Water, therefore, devotes all of its operating resources to ensuring that this overriding priority is met through an integrated Industrial Gas Business model. Having the Air Water Group handle all three elements of "production," "distribution" and "management" together engenders confidence that a stable gas supply is ensured, even in times of emergency. The development of these service solutions represents a distinctive business model that only the Air Water Group can provide.

Shinano Ekisan VSU

#### <Three constituent elements of the stable supply model>

#### ① Nationwide distribution network

Utilization of a core, nationwide network of liquefied gas production hubs and filling stations to distribute different industrial gases in a various forms - from tank trucks to cylinders

#### ② On-site gas generator

Provision of a constant, stable gas supply via gas generators, installed on-site at user plants, such as the "V-series" of mini on-site distribution systems

# ③ Operation and management /

Offering users completely hassle-free, service solutions, from gas supply facility repair and maintenance to safe and reliable operation and management

#### Direct delivery via piping from plants constructed on-site for users who need a large, continual supply of gas

Large-scale On-site

Large-scale on-site business is the core of Air Water's Industrial Gas Business. Large-scale gas plants are constructed on-site at the production facilities of steel, chemical, semiconductor, electronics, paper, pulp and other users who require a large, continual supply of industrial gas; these gas plants generate large quantities of oxygen, nitrogen and argon which are efficiently supplied to users via piping. These plants also play a major role as production facilities of liquid oxygen, liquid nitrogen and liquid argon for direct sales.

Air Water has a particularly strong connection to steel manufacturers, with the large-scale supply of oxygen that is required 24-hours a day for steel manufacturing blast furnaces being the primary area of expertise for Air Water's On-site Business. Currently, Air Water is working to further increase the productivity of its on-site plants, replacing them with cutting-edge high-efficiency plants that greatly reduce power costs and provide other advantages. This effort is being implemented at six plants in Wanishi, Kashima, Utsunomiya, Kobe, Wakayama and Kokura, and is also being expanded to all on-site plants in Japan



Wakayama No. 13 Plar





#### Integrated development of gas plant and gas-related equipment – from design and construction to safety management

**Engineering and** Maintenance

Air Water Plant & Engineering Inc. takes an integrated approach that includes everything from process development of industrial gas-related facilities and equipment, to the design, manufacture, construction, as well as quality and safety management. In addition to providing a variety of air separation system and gas generation system solutions, the company also strives to develop gas applications tailored to on-site needs. The development of advanced gas processing technologies, based on cryogenic air separation technology and absorption/refining technology, also contributes to sound technologies used in the creation of distinctive business models, including those like "V-series" and VSU, which are at the core of Air Water's Industrial Gas Business.

Also, Shinko Air Water Cryoplant Ltd. specializes in the process engineering of large-scale air separation systems and, in addition to playing a key role in supporting Air Water's on-site gas distribution business, provides solutions and engineering services tailored to a wide range of customer needs in the area of air separation system engineering.

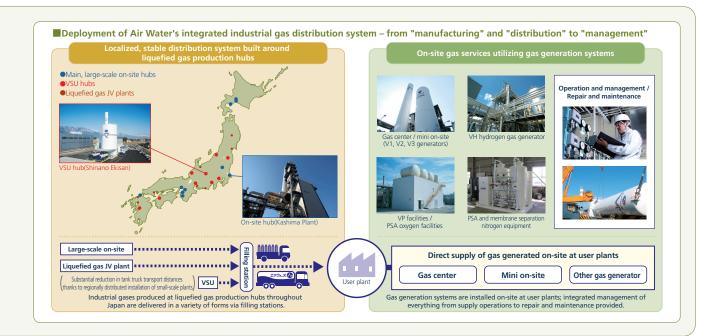
For the future, as Air Water works to expand its Industrial Gas Business overseas, it will also work to expand and strengthen its Engineering Business overseas as well, particularly in East Asia.

In addition, Air Water Maintenance Inc. provides the entire group with gas process repair and maintenance services, performing tasks ranging from equipment operation and management to maintenance inspections for all gas supply lines as well as to even providing backup gas storage capabilities, thereby ensuring a thoroughly reliable system in place, which in turn ensures peace of mind for users.









# **ELECTRONICS BUSINESS**

# Supplying industrial gas as well as a diverse array of other products and services to support the rapidly growing electronics market



#### Review of FY2010

In FY2010, electronic device manufacturers maintained a consistently high level of operation in response to the growth in demand for digital appliances and electronic devices geared towards automobiles, and this resulted in solid growth for Air Water in the Bulk Gas Field. Even in the Specialized Materials Field, increased production of CIS-type solar cells resulted in a significant increase in the volume of hydrogen selenide shipments, and steady growth was also seen amongst high value-added products, such as film formation materials for next-generation semiconductors and organic metals for LEDs. In the Equipment Field, the first model of Air Water's PFC Collection, Refining and Recycling System geared towards the overseas market was delivered to Thailand amidst an increase in environmental awareness amongst overseas electronics manufacturers. Furthermore, with the added positive effects resulting from new business linkages begun in FY2010 with Inoueki Co., Ltd., which specializes in trading chemical products and electronics materials, Air Water's Electronics Business saw a significant expansion in sales and income for this financial term.

#### Outlook for FY2011

In the Gas and Chemical Field, healthy growth is expected to continue for industrial gases geared towards smart phones and tablet terminal devices and for specialized materials geared towards CIS-type solar cells and LEDs. The Electronics Materials Field is also expected to see continued strong demand as a result of growth in emerging markets as well as growth in the solar cell, LED and tablet terminal markets. A priority issue for FY2011 is establishing Air Water in a secure manufacturer position within the Specialized Materials Field, thereby contributing to the creation of a well-balanced business portfolio. As part of this, joint production of hydrogen selenide is to start domestically in the autumn of 2011, helping to create a highly reliable supply chain via imports and domestic production. Also in the Chinese market, import routes for high value-added specialized materials are to be developed together with carrying out feasibility studies geared towards the creation of Air Water production hubs.

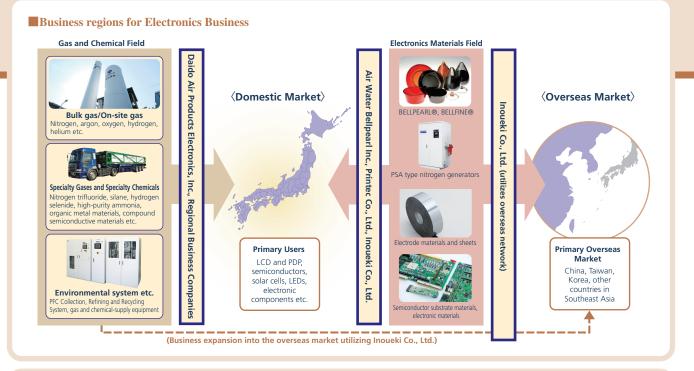
#### PSA-type nitrogen generator - Start of overseas marketing of new model ASP series

Air Water Bellpearl Inc. is cultivating new business in the overseas market for PSA-type nitrogen generators by redesigning its core domestic, energy-saving NSP series models as the new, internationally competitive ASP series.

The ASP series uses Air Water Bellpearl's BELLFINE® adsorbent, which offers rapid oxygen adsorption together with a high capacity for nitrogen and oxygen separation, as a molecular sieving carbon to provide a one-rank compact compressor that maintains nitrogen quality while providing excellent energy savings. Furthermore, by pursuing simplification of equipment functions, production costs have been reduced to offer users superior cost performance. This series is already being marketed in Asia primarily for its various nitrogen atmosphere creation applications, such as furnace mounting. For the future, Air Water will work to construct overseas production and maintenance hubs that can further strengthen Air Water's presence in the overseas market.



Energy-saving NSP series of PSA-type nitrogen generator marketed in Japan



#### Promoting strategic and globally focused business to foster new growth in the Air Water Group

Gas Business.

In response to the expansion in demand for nitrogen within the electronics industry, Air Water's Electronics Business was begun in the 1980s, together with the development of the V1 high-purity nitrogen generator, as part of Air Water's Industrial Gas Business; it has grown steadily along with Japan's electronics industry and now involves a broad scope of business that goes far beyond the framework of industrial gas. Air Water provides a diverse range of products and services centered on industrial gases, in particular high-purity nitrogen gas, but also incorporating specialty gases, specialty chemicals, related equipment and much more. Furthermore, Air Water uses its Business Compa-

Providing users with unrivaled "high value-added" thanks to a unique business model and supply chain

**Gas and Chemical** 

#### Bulk Gas/On-site Gas

It is essential to semiconductor, LCD, PDP, solar cell, electronic component and all other manufacturers in the electronics industry that they be constantly supplied with nitrogen gas. Air Water's unique mini on-site V1 high-purity nitrogen generators, and together with VSU and large-scale on-site plants, provide users with a highly reliable and stable gas supply. Through coordination with Air Water group company Daido Air Products Electronics, Inc., Air Water supplies "total gas solutions" which ensure the distribution of nitrogen and other industrial gases throughout Japan.

#### Specialized Materials (Specialty Gases and Specialty Chemicals)

Air Water imports specialty gases, such as nitrogen trifluoride and silane for use in semiconductor production, and specialty chemicals, such as semiconductor device film formation materials and compound semiconductive organic

metal materials, from leading overseas manufacturers, such as U.S.-based Air Products and Chemicals, Inc.; a stable supply of these gases and chemicals, rigorously checked for quality, is provided to users. Also in recent years, Air Water has begun production of ultra high-purity ammonia as well as hydrogen selenide and is working to expand its manufacturing capacity.



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PFC Collection, Refining and Recycling system

#### Environmental System / Gas and Chemical-related Equipment

In recent years there has been increasing interest paid to the collection and recycling of PFC waste gases, such as CF4 and SF6, which directly contribute to global warming; thus, Air Water has stepped up its efforts to sell its "PFC Collection, Refining and Recycling System,' actively promoting it not only domestically but also in Asia and the West.

Also, as a total gas and chemical supplier, Air Water provides specialty gas and specialty chemical supply systems as part of total support for users.

#### BN300 highly the semiconductor customers in Korea and Taiwan.

#### Chemical Products and Electronics Materials Specialized Trading Company (distribution and import and export)

Inoueki Co., Ltd., the chemical products and electronics materials specialized trading company, takes full advantage of the Air Water Group's operating resources, providing support for the group's growth by fulfilling the important function of being the "business antenna" for the group. Inoueki has had a particularly strong presence as an established trading house since 1661 in the Kyushu region, where Japan's semiconductor industry is concentrated, and it also maintains a network of sales hubs throughout East Asia. It is utilized by Air Water Bellpearl, Printec, and the various other Air Water Group companies to provide overseas sales development, raw materials procurement and a host of other functions.

#### Domestic and overseas development of high-quality electronics materials with **Electronics Materials** distinctive product lines and sales routes

nies and group trading companies to cultivate domestic and overseas markets

for its distinctive electronics-related materials, such as proprietary functional

resins and high value-added electronics materials, thereby contributing to the multifaceted development of the electronics industry. Within the stable and

mature market of Industrial Gas Business, electronics is expected to be a field

of significant future growth. And starting in FY2010, a separate business

segment was set aside in order to expand specialized business within Industrial

#### Functional Resin BELLPEARL®

Air Water Bellpearl Inc. has developed a broad range of business in terms of functional materials (BELLPEARL® resins and BELLFINE® activated carbon) as well as energy-saving, environment-friendly products that take advantage of these materials' properties (power storage device electrode materials and PSA

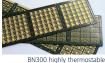
type nitrogen generators). In recent years, electrode materials and electrode sheets that make use of the electrical characteristics of BELLFINE® have been proposed, and in addition to adoption by capacitor and other power storage device makers in Japan, demand is also starting to come from manufacturers in Asia and the West.



#### Semiconductor Substrate and Electronic Circuit Materials

Printec Co., Ltd. has developed a range of distinctive electronics materials unlike anything else on the market, combining superior thermal control technology with polyimide epoxy resin technology; examples of these products include

the world's most heat resistant semiconductor substrate and a highly thermostable and high-flex flexible printed wiring board adhesive. Printec flexibly introduces these products into growth markets, like next-generation semiconductors and LEDs, as well as works with overseas partners to develop new



# **CHEMICAL BUSINESS**

Chemical products born from an abundance of coal chemical technology and utilized in a broad array of fields, including chemicals, agriculture and electronics



#### Review of FY2010

In FY2010, Coal Chemical Business saw an expansion in income as a result of increased supply volume for coke oven gas due to the steady expansion seen in crude steel production and as a result of continued high levels of production in the fields of gas purification and gas byproducts. In the Tar Distillation Field, overseas demand for needle coke increased and there was a significant recovery in equity method income for joint venture C-Chem. In the Carbon Materials Field, new product development for thermally expandable graphite "TEG" - a core product - was completed, and the production facilities for the hydrocarbon resin "FR" were enhanced. Fine Chemical Business saw growth in the field of Electronics Materials in the form of steady expansion in demand for the semiconductor sealing material "SK Resin." Also, in the Agrochemicals Field, Air Water increased its competitiveness in the global market by taking active advantage of its raw materials production and processing hubs in China, and in the Pharmaceutical Field, Air Water made progress on multiple large-scale projects.

#### Outlook for FY2011

The Kashima Plant was partially affected by the earthquake; however, it is recovering steadily, and the impact of the disaster will be little felt in the operational results for FY2011. The priority for FY2011 is strengthening Carbon Materials and Fine Chemical: areas where Air Water boasts unique technologies. With new product development having been completed for "TEG," the aim is to cultivate new demand for it as part of plastic flame-retardant applications as well as traditional automobile parts applications. Expanded demand for "FR," for which production facilities have been enhanced, is expected from emerging economies for use in automobile tires. In the field of Fine Chemical, research into resin materials for semiconductors is being bolstered so as to further enhance Air Water's strength in this area of the Electronics Materials Field, with efforts being invested into the development of a new Air Water brand product following "SK Resin." Also, in the field of Agrochemicals, Air Water is working to increase supply to overseas markets through the use of its Chinese production hubs, and in the field of Pharmaceuticals, Air Water is carrying out joint research with large pharmaceutical manufacturers in Japan.

# Development of non-halogen flame-retardant thermally expandable graphite creates expanded marketing possibilities

Air Water's "TEG" thermally expandable graphite, which is used in automobile and airplane seats, building material flame-retardant urethane foam and a variety of other applications, as the only such product in production within Japan, has been improved through the successful development and mass production of a non-halogen, high-temperature thermally expandable graphite, for which the temperature of initial expansion has been raised from 220°C to 285°C.

With the development of a special technique, it is now possible to maintain a high degree of expansion while permitting molding under even higher temperatures, and this has allowed TEG to find application in "engineering plastics" used as structural materials in automobiles, OA and electronic equipment - something heretofore considered difficult to achieve. Air Water will use this product to carefully address user needs with an eye towards new, growing demand.



#### Business regions for Chemical Business Production Plant Material Product Primary user ias hyproduct Purified gas (Steel works fuel) ·Diversified chemical rude benzene, ulfate of ammonia, etc • Diversified chemical manufacturer • Fertilizer manufacturer • Steel manufacturer Coking coal **Coal chemica** gas Chemical product (tar acid, etc.) Coke Chemical manufacture Coating materials manufacturer C-Chem product (needle coke, naphthalene) • Outside material • •Automobile manufacturer •Construction materials manufacturer Natural graphite hermally expandable raphite "TEG" Petroleum-based byproduct Tire manufacture Hydrocarbon resin "FR Carbon ma terials production plant teel works material Outside material Organic compound (quinoline) Agrochemical manufacturer Raw material for agrochemical Fine chemica Outside material Organic compound Pharmaceutical manufacturer harmaceutical intermediate MP plant N CHEMICAI Outside material ·Electronics device Organic compound manufacturer •Resin manufacturer ectronics material

#### Air Water as the "chemical synthesis technology professional" thanks to a strong relationship with the steel industry

Air Water's Chemical Business is grounded in a close relationship with steel manufacturers in the Industrial Gas Business. The two pillars of Air Water's Chemical Business are Coal Chemical Business, which manufactures purified gas and a variety of coal chemicals from the coke oven gas and coal tar which are created as byproducts from the process involved in making coke (which is used as fuel for blast furnaces at steel works), and Fine Chemical Business, which manufactures pharmaceutical and agricultural intermediates and electronics materials at various synthesizing plants within large steel works. Air Water's Chemical Business started full-scale operation in 2002 with the M&A of

#### Separating and refining the active ingredients in coke to create essential, high value-added products for the world Coal Chemical

#### Gas Purification and Gas Byproducts

Coke oven gas supplied from steel works is separated and refined in order to directly supply the steel works with the purified gas (fuel gas) essential to blast

furnace operation. Furthermore, the crude benzene, ammonium sulfate and other gas byproducts generated from the refining process are provided as raw materials for resins, solvents and agricultural fertilizer, etc. to manufacturers in a wide range of industries, including diversified chemical manufacturers.



#### Carbon Materials

The field of Carbon Materials is a unique product area involving applications of coal chemical technology. Thermally expandable graphite "TEG" is sold to carbon materials manufacturers as a packing material for automobile engines

and exhaust gas pipes, and the hydrocarbon resin "FR" is primarily sold to tire manufacturers as a rubber strengthener. These carbon materials products are essential to automobile production, and in both cases Air Water is the only domestic manufacturer. This contributes to the expectation of continued growth in the field of Carbon Materials.



#### Tar Distillation

C-Chem, which is a joint business venture with Nippon Steel Chemical Co., Ltd., has Japan's largest, and one of the world's

three largest, tar distillation capacities. C-Chem receives its raw materials from the Chemical Kashima Plant and turns these into a core product in the form of needle coke for electric furnace electrodes for domestic and overseas electrode materials manufacturers; it also provides chemical manufacturers with naphthalene, phthalic anhydride and a variety of other tar-derived products.



tion with the steel works. Air Water's Chemical Business, while a comparatively new business, has undergone rapid growth over the past several years, and it serves as an important business that makes up one corner of the Air Water Group's "All-Weather Management System."

chemical manufacturers affiliated with a large steel manufacturer. The Kashima

and Wakayama Plants both undertake this manufacturing, and they are both

located on the premises of large steel works, engaging in multifaceted business

development centered on stable production activities conducted in coordina-

#### Development of high-grade organic compound products via tar-derived aromatic compound technology

#### Fine Chemical

#### Agricultural Chemical Intermediates (Fine Chemicals)

In the field of Agrochemicals, Air Water is the top global manufacturer of agrochemicals and agricultural chemical interme-

diates using quinolines, isoquinolines and indoles as raw material, developing business not only in Japan but also in India, America and the EU. Raw materials derived from the tar produced by Japanese and Chinese steel works are being utilized to further increase Air Water's competitiveness in the international market.



#### Pharmaceutical Intermediates (Functional Chemicals)

In the field of Pharmaceuticals, Air Water utilizes its multipurpose synthesis plant (Kashima Plant), which features advanced production facilities that satisfy GMP standards, to handle the full spectrum of production needs for pharmaceutical raw materials and pharmaceutical intermediates. The number of OEM supply destinations, including large pharmaceutical manufacturers, continues to grow each year.



#### Electronics Materials (Functional Chemicals)

In the field of Electronics Materials, Air Water is developing "SK Resin" thermosetting phenolic resin, which is used in semiconductor sealing, as its own core brand. This top quality semiconductor sealing material commands a domestic market share in excess of 30%. And in February 2011 Air Water doubled annual production capacity to 600 tons, and in other ways has been working to respond to the large-scale demand that has arisen as a result of increasing high-grade needs in Japan and overseas.



"SK Resin" thermosetting phenolic resin

# **MEDICAL BUSINESS**

Developing comprehensive medical services, including stable medical gas distribution, to support the "front lines of healthcare"



#### Review of FY2010

The Medical Gas Field in FY2010 experienced strong growth due to such factors as the utilization of the VSU network to increase the number of new medical oxygen customers and an increase in MRI-use helium distribution. The Medical Equipment Field saw steady growth in business for infant/child ventilators and other equipment in response to the national government's plans to increase NICU throughout Japan; in addition, strong growth was seen as a result of renewed demand for hyperbaric oxygen chambers and expanded sales of cardiovascular medical equipment. Also, INOflow® inhalation gas pharmaceutical product for neonatal pulmonary hypertension treatment went on the market in FY2010, and of the 265 hospitals with NICU in Japan (as of FY2010), more than half have contracted to be supplied with it. In the Hospital Facility Construction Field, the addition to the Air Water Group of Miwa Electric Medical Co., Ltd., which commands the top market share in Japan for operating room and ICU facilities construction, has resulted in the establishment of an integrated ordering system for everything from medical gas piping to advanced medical facilities.

#### Outlook for FY2011

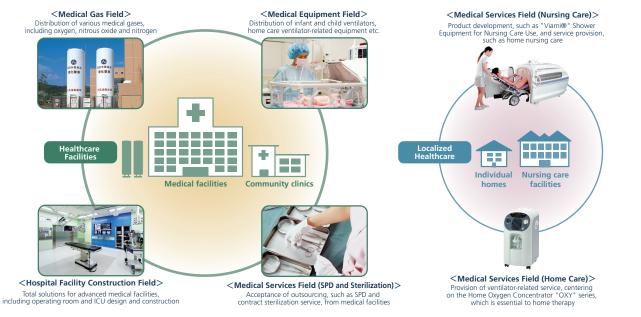
The start of operations in FY2010 at the Shinano VSU plant further strengthens Air Water's ability to reliably supply medical oxygen, thereby allowing Air Water to secure a greater market share through expanded regional sales. In the Medical Equipment Field, Air Water will continue to emphasize the infant, child and perinatal care fields by bringing new products to market as well as strengthening efforts to increase sales for INOflow®, such as by continuing the expansion from the previous fiscal year in the number of hospitals with which Air Water has contracts to supply INOflow®. In the Medical Services Field, Air Water will increase new orders by strengthening its SPD and hospital sterilization total solutions services. And in the Hospital Facility Construction Field, Air Water will begin a new "AM Project" in conjunction with two companies specialized in advanced medical facilities construction (Air Water Safety Service and Miwa Electric Medical) in order to be able to actively offer more comprehensive construction business that will secure the top market share for Air Water.

#### Use of Air Water's VSU network to supply medical gas following the Great East Japan Earthquake

A thoroughly reliable and stable supply of medical gases is particularly essential during emergencies. Following the Great East Japan Earthquake, the responsibility for providing this supply has been met by Air Water's network of VSU local production plants. Starting the very next day after the disaster, Air Water began supplying not only its regular medical facility clients but all hospitals in the affected areas with gas. With the Shinano and Niigata VSU plants working as the two "front-line bases," the sales offices and filling stations in each region helped drive Air Water's supply efforts, and by two days after the earthquake, a backup system for all users in the northeastern Japan region was established. Furthermore, the entire Air Water Group contributed towards the restoration of medical functions in the affected areas through such efforts as arranging truck shipments of medical relief supplies, like Home Oxygen Concentrators and power generators, from business centers throughout Japan – from Hokkaido to Kyushu.



#### Business regions for Medical Business



#### From medical facilities to localized healthcare, developing advanced total solution services

Because Medical Business is highly immune to economic fluctuations, it is one of the key business areas supporting the stable growth of the Air Water Group, Air Water seeks to comprehensively develop a total solutions Medical Business that is centered on medical gases essential to all medical facilities and includes the design and construction of gas distribution facilities, such as gas piping, as well as operating rooms and ICUs, the provision of various medical equipment, the acceptance of outsourced hospital services, such as supplying

consumable goods and performing instrument sterilization, and even the provision of home medical and nursing care services. This distinctive business model is unlike anything offered by other medical gas manufacturers. Air Water will continue to grow its Medical Business by providing more comprehensive healthcare solutions made possible through further cultivation of the medical equipment, facilities and services fields in the course of providing a stable supply of medical gases.

#### Establishment, as the top supplier of medical oxygen in Japan, of a stable and reliable distribution system using Air Water infrastructure

Air Water has supplied a variety of essential medical gases, including the three most commonly needed gases (oxygen, nitrous oxide and nitrogen) as well as sterilization gas and MRI-use helium gas, to the "front lines of healthcare" for more than half a century. A stable supply of medical oxygen, in particular, can be a life or death issue for patients, and Air Water has an ironclad system in place that involves a shipping infrastructure network linking up Air Water's many production and supply hubs, especially large-scale on-site plants and regional VSU productions plants, throughout Japan to ensure the supply of medical oxygen under all circumstances. Air Water has earned the trust of a wide range of users, from large-scale medical facilities to community clinics

#### Provision of equipment and services rooted in gas and centered on the infant, child and perinatal care fields

Air Water works with leading global medical equipment manufacturers to provide medical facilities with equipment strongly connected with medical gas, such as a hyperbaric oxygen chamber for which Air Water boasts a greater than 50%domestic market share, infant/child/perinatal medical equipment and cardiovascular equipment. Air Water demonstrates particular expertise in the advanced medical field of NICU (neonatal intensive care units), which has been growing in terms of facilities expansion and construction. And since FY2010, Air Water has also sold its gas pharmaceutical product INOflow® to customers in the field of NICU in order to expand its reputation as the "NICU experts."





**Medical Equipment** 



INOvent<sup>®</sup> nitric oxide preparation administration apparatus

#### Establishing Air Water's market position as a total healthcare supplier, from hospital services to localized medical services

#### **Medical Services**

Through SPD (hospital supply, processing and distribution) Business, which involves accepting contracted responsibility for the management of all disposable medical supplies within a hospital, and Sterilization Service Business, which involves the sterilization of medical equipment, Air Water helps hospital

staff to keep from being distracted by matters not directly related to providing healthcare. Air Water's sterilization services, in particular, are able to flexibly accommodate customer needs, thanks to specialized staff that are dispatched to hospitals to perform high-quality sterilization and which are backed up by ten contract sterilization centers located throughout Japan. Air Water also offers localized medical services, which include nursing care product rental and provision of equipment developed in-house, like "OXY" Home Oxygen Concentrator and the 'Viami®" Shower Equipment for Nursing Care Use.



**Hospital Facility** 

Construction

Becoming a more comprehensive advanced medical

facilities manufacturer - from design and construction to introduction - through strategic M&A

Air Water works in conjunction with Air Water Safety Service Inc., a pioneer in the construction of medical gas supply facilities and other medical facilities, Miwa Electric Medical Co., Ltd. a leading company in systems geared towards operating rooms and ICUs (intensive care units), and Seiken Medical Co., Ltd., a dedicated manufacturer of hospital facility equipment, to provide "one-stop solutions" for everything from advanced medical facility design and construc-

tion to equipment and system installation as well as repair and maintenance. Air Water will continue to pursue synergy driven by the interaction of each company's area of specialization to allow it to accommodate increasingly sophisticated healthcare needs

Also, Air Water has begun exporting its CE mark-certified (which permits the manufacture and sale of goods geared towards the EU) medical gas piping outlets (hospital bed outlets), and intends to accelerate the pace of its overseas business development.



Medical gas piping outle

# **ENERGY BUSINESS**

Developing community-based Lifestyle Solution Business centered on Air Water's LP gas and kerosene business and its commanding share of the Hokkaido market



#### Review of FY2010

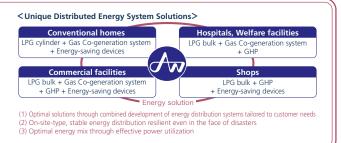
In FY2010, despite a reduction in sales for LP gas and kerosene as a result of warmer weather and a more economizing mindset amongst consumers, Energy Business saw solid growth overall thanks to such factors as increased direct-to-customer sales. There was an expansion in service to customers thanks to further regional niche development by the four area companies in Hokkaido (Central, Southern, Eastern and Northern areas) established in FY2010 as well as new composite distribution of LP gas and kerosene to existing industrial and medical business customers. Furthermore, measures were taken to expand business in eastern Japan, including increasing direct-tocustomer sales and launching environmental and energy saving products on the commercial market in the Tohoku region. Also, the first year sales plan for the hybrid hot water and heating system geared towards cold weather areas and uniquely developed as a new product by Air Water was achieved, creating new demand for gas, particularly in Hokkaido.

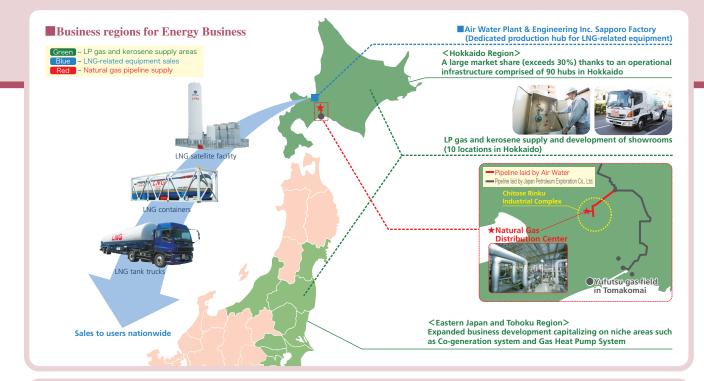
#### Outlook for FY2011

The strategic focus for FY2011 is full-scale entry into the Tohoku region as well as the rest of eastern Japan. Air Water is working to expand its distribution area southward from Hokkaido and northward from the Kanto region in order to actively grow the number of new LP gas customers. In addition, as part of the plan for growing the number of LP gas customers, Air Water is actively promoting a strategic business model which seeks to increase sales of Air Water's hybrid hot water and heating system as well as sales of a distributed energy system that capitalizes on the distinctive characteristics of LP gas. Amidst a reconsideration of the stability of distribution for electricity, city gas and other daily life energies in the wake of the Great East Japan Earthquake, Air Water is first seeking new business development for LP gas in Hokkaido as well as the Tohoku and Kanto regions, and is then working to restructure the field of LP gas, which has heretofore been considered "stable and mature business," as a "new growth business."

#### A distributed energy system suited to the challenges facing Japan

Following the Great East Japan Earthquake, a reconsideration of the national energy policy environment is taking place, focused on such issues as overdependence on one type of energy for daily living and the challenges of ensuring stable energy distribution. Amidst this, Air Water has begun offering its own, unique LP gas-focused distributed energy system. This system is part of the solution that Japan seeks, drawing on Air Water's many years of experience and know-how in fields ranging from LP gas bulk cylinder distribution to Gas Co-generation system and Gas Heat Pump system (GHP) in order to provide a stable, on-site energy supply no matter what the circumstances are.





#### Promoting transformation into a new growth business through a new proposition of energy solutions resilient in the face of disaster

Air Water's Energy Business started in 1955 in Hokkaido with sales of LP gas, and this business has grown steadily ever since. The core of Air Water's Energy Business is LP Gas and Kerosene Business, which has used solid brand strength cultivated over many years and numerous distribution hubs scattered throughout Hokkaido to develop into a community-based business. Air Water has applied the same clean energy distribution concept to the field of Natural Gas to further its unique business, such as Natural Gas Pipeline Distribution Business in the Chitose region, the manufacture and sale of dedicated LNG

(liquefied natural gas) containers and satellite storage facilities, and other business utilizing cryogenic technology developed from Industrial Gas Business. In the wake of the Great East Japan Earthquake, two of the challenges facing Japan are reconsideration of its overdependence on one type of energy as well as finding ways to reduce energy costs. Air Water, as an infrastructure company with a responsibility for ensuring stable distribution, has begun to address these challenges with solutions centered on a unique distributed energy system that capitalizes on the distinctive characteristics of LP gas.

#### Business development centered on Hokkaido for half a century, since the early days of the domestic LP gas market

LP Gas and Kerosene

Development of Air Water's LP Gas and Kerosene Business has centered on Hokkaido and has relied in large part on the "Hello Gas" brand; with a sales network comprised of 90 hubs throughout Hokkaido, Air Water commands an overwhelming share of the local market. In recent years, Air Water has focused heavily on providing customers with "optimal energy mix" solutions that combine LP gas with other forms of energy, and one way which this has found expression is through the strategic development of business centered on Air Water's hybrid hot water and heating system: a uniquely developed system that

combines an electric heat pump with a high-efficiency gas hot water heater. Air Water also is in the top echelon of industry companies in the fields of LP Gas Co-generation system and Gas Heat Pump systems (GHP), and it is parlaying this strength into new LP Gas Business growth using energy solutions centered on Air Water's distributed energy system.

#### Using strong relationships of trust with customers to provide them with 'new LP gas life" solutions

Air Water puts to use the distinctive characteristics of an LP gas business operator, which allow it to blend seamlessly into customers' lifestyles, to

develop community-based Lifestyle Solution Business, such as home reform solutions, LP gas-related equipment sales and installations services, mineral water sales, and welfare/nursing care equipment and elderly-focused services. Air Water uses its ten showrooms MIX in the major cities of Hokkaido, as well as other venues such as regional trade shows and sales exhibitions, to connect with customers and offer them new lifestyles that incorporate LP gas.



Life Support

Fureai Showroom MIX

#### Pioneers of reliable cryogenic technology derived from LNG Transport and Storage Tank industrial gas technology

Air Water is a pioneer in Japan in LNG transport and storage tank technology, and thanks to the cryogenic technology and know-how it has cultivated in the field of Industrial Gas, Air Water is able to develop and offer dedicated containers and monocoque tank trucks capable of transporting large quantities of LNG.

In the field of LNG Transport Equipment, Air Water has a commanding domestic market share in excess of 50%. This position is the result of products, including a 14.0-ton LNG tank truck with a shipping capacity among the largest in Japan and Japan's first sea- and land-use LNG container geared towards ocean transport. which have been developed from unique technologies and which are well regarded by customers throughout Japan.



10\_ft to be loaded onto

#### Contributing to local industrial development with "the other clean energy"

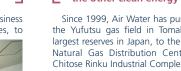


Since 1999, Air Water has pumped natural gas via its own gas pipeline from the Yufutsu gas field in Tomakomai, Hokkaido, which boasts some of the

largest reserves in Japan, to the Air Water Natural Gas Distribution Center in the Chitose Rinku Industrial Complex, and this gas continues to provide a stable supply to the tenant companies spread out across numerous industries, including the electronics, food product and automobile industries. This situation is unusual for an



Natural Gas Distribution Cente



# **OTHER BUSINESS**

#### **Seawater**

There is another field of chemistry where Air Water excels. That is "seawater chemicals," which seeks to effectively utilize seawater resources. Air Water's business in this field is undertaken by two of its group companies: Tateho Chemical Industries Co., Ltd., which boasts top-class, internationally recognized brand strength for magnesia, and Nihonkaisui Co., Ltd., which boasts the top share of the domestic salt manufacturing market.

#### Review of FY2010

The Magnesia Business experienced steady growth thanks to such factors as continued strong demand for magnesia for high quality electromagnetic steel sheets, one of Air Water's core products, to be used in overseas power infrastructure and a recovery in sales of magnesia for heaters in Europe. In the Salt Business, there was solid growth stemming from new purchases of table salt by major convenience stores for use in 'grab-and-go' meals as well as other factors such as increased sales of salt for clearing snow and ice from roads.

#### Establishing the Air Water brand as a global market share leader thanks to distinctive technologies born from Japan's abundant seawater resources

Tateho Chemical Industries sells high-function and high value-added magnesia products, which have seawater-derived "bittern" as their primary ingredient and are manufactured at two plants, Ako (Japan) and Dalian (China).

Tateho Chemical Industries uses crystal control technology, firing technology, and other distinctive, unmatched technologies to produce high value-added products under the internationally recognized "Tateho" brand. One standout product is Tateho Chemical Industries' magnesia for electromagnetic steel sheets, which boasts a more than 90% share of the global market. This additive is absolutely essential as an annealing separating agent to the function of high quality directional electromagnetic steel sheets incorporated into power plants, power transmission, power transformation and all other aspects of a power infrastructure. Tateho Chemical Industries also supplies many other magnesia products to a wide array of industry fields, including heater filler for home electric appliances and industrial equipment, electrode protective film for PDP, raw materials for ceramics, and pharmaceutical products and heavy chemicals.

In recent years, Tateho Chemical Industries has worked with Nihonkaisui not only to ensure a stable supply of "bittern" produced from the salt-making process but also to conduct joint research geared towards generating new business for the seawater industry.



#### Outlook for FY2011

In the Magnesia Business, strong demand for magnesia for high quality electromagnetic steel sheets is expected to continue. In addition, demand for electrofused magnesia used in heaters is expected to continue growing in China, and Air Water will work to expand its sales channels. In the Salt Business, the earthquake forced a temporary halt in production at the Onahama Plant, but emergency steps such as increasing production at the Ako and Sanuki Plants and importing salt from overseas are being implemented in order to ensure a stable salt supply.

#### Committed to providing industry and general consumer alike with a stable supply of Japan's top salt brand

Nihonkaisui is a comprehensive manufacturer of salt that commands the leading market share within Japan, and it is working to develop a range of business that makes effective use of seawater resources.

The Salt Manufacturing Business, which involves the manufacture and sale of salt for both commercial and general consumer use, is carried out at three plants in Japan –the Ako, Sanuki and Onahama plants; at these plants, a reliable supply of high quality, safe salt products, such as not only edible salt and salt for food processing but also salt for melting snow and salt for use in boilers, are produced to suit individual customer needs and are distributed throughout Japan. The Onahama Plant has temporarily halted its production as a result of the Great East Japan Earthquake; however, the production network maintained by the two plants in western Japan is being fully utilized and every effort is being made to ensure the stability of salt distribution. (As of August 31, 2011)

In addition to Salt Manufacturing Business, Nihonkaisui is developing environment-related products that effectively utilize seawater resources, such as magnesium hydroxide, to be used as a smoke gas treatment agent at factories, etc., and READ-F, to be used as a highly functional water contamination adsorbent and remover.

Furthermore, in January 2011 at a specialized facility within the Ako Plant, a new production business has been started manufacturing potassium chloride from seawater to be used as a raw ingredient in fertilizers. Through this business, Nihonkaisui provides a stable supply of high-purity potassium chloride to Japanese fertilizer manufacturers.



Potassium chloride production plant: Ako Plan

#### Accelerating the development of untapped resources found in seawater

Nihonkaisui is leading the way within the Air Water Group on the further development of untapped resources found in seawater. With seawater to work with, Nihonkaisui has commercialized a variety of resources contained in seawater, including not only salt but also magnesium hydroxide (expanding environment-related business as a stack gas desulfurizing and wastewater neutralizing alkaline agent), bittern (providing a stable supply as a raw magnesia material to Tateho Chemical Industries) and minerals (providing as mineral ingredients for AW-Water).

Also, starting in January 2011, new development of potassium chloride business has got underway, representing a move away from dependence on foreign imports. Furthermore, production of mineral water which effectively utilizes distilled water produced from the salt manufacturing process started in July. These and other new business initiatives represent the unlimited business potential found in the as-yet-unused ingredients waiting to be extracted from seawater.



#### Logistics

Air Water's Logistics Business maintains advanced logistics services nationwide and is essential to the group's transport infrastructure. Furthermore, it actively seeks out contract transporting business from customers outside the Air Water Group and has built an independent business structure that comprises 70% of direct sales.

#### **Review of FY2010**

3PL Business, which handles all logistical functions for customers, saw an increase in orders as a result of offering more advanced services, and General Cargo Logistics saw solid growth despite fuel cost increases thanks to a rebound in freight handling volume. Also, a specialized company in the Tohoku region was incorporated into the Air Water Group and made a strategic hub for the region with the aim of expanding Air Water's business area in the field of Food Product Distribution.

## The logistics business that gave birth to constant refrigerated transport technology

High-pressure Gas Logistics

Air Water's Logistics Business is the starting point for Air Water's industrial and medical gas business, as it ensures that gas is constantly delivered by Air Water to its customers. Transport vehicles, from liquefied gas tank trucks to trailer trucks, optimally suited to customer needs and based on the transport expertise and advanced transport technology using equable low

transport technology using equable low temperature which Air Water has cultivated over many years are used to quickly and safely deliver high pressure gas.



Food Products

Logistics

## Thoroughly temperature-controlled transporting to ensure freshness

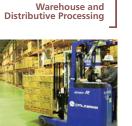
Air Water carries out food products distribution centered on a meticulous logistics network in Hokkaido and incorporating transport technology using equable low temperature, cultivated from high-pressure gas shipping, to ensure

the sensitive temperature control needed to preserve quality and freshness. This business made a full-scale entry into the Tohoku area in FY2010 and, for the future, is looking to expand further into Honshu.



Adding new value to complex logistics services

Air Water provides high value-added Logistics Business in a wide array of fields, including such services as proper inventory management and delivery services using Air Water warehouses as well as product tagging at distribution centers. Joint logistics proposals offered via these sorts of services represent some of the ways in which Air Water is actively advancing its Logistics Business.



#### Outlook for FY2011

Air Water is working to grow its business in each region of Japan in line with each region's business characteristics: in Hokkaido, it is working to cultivate new logistics fields; in eastern Japan, particularly in the Tohoku region, it is working to strengthen itself in the field of Food Product Distribution; and in western Japan, it is working to further cultivate niche services with major customer groups. Air Water is also utilizing M&A with a specialty vehicle manufacturer to provide the group with the ability to offer advanced needs-responsive solutions taken from auto body design know-hows to cultivate new customers.

#### A diversity of transport methods to Gener handle any type of lot

#### General Cargo Logistics

Air Water utilizes a transport network linking all parts of Japan to transport general cargo such as construction materials and agricultural products. A diversity of efficient transport arrangements – up to 3PL – suited to customer needs is offered, including ferries and other large product.

volume container transport methods and joint logistics for small- and medium-sized cargo lots, with the aim of increasing reliability and lowering transport costs to provide high quality logistics services that will attract customers.



#### Container transport method

Medical and

Environmental

#### Cutting-edge technology providing rigorous control over the "essence of life"

Air Water's wealth of experience with transport technology using equable low temperature has produced one more cutting-edge technology: blood plasma and NAT sample transportation. BT Business involves taking the blood (blood

plasma) collected at blood centers nationwide and transporting it in dedicated transport vehicles at a strictly controlled temperature of -20°C or lower to Japanese Red Cross Society plasma fractionation centers and blood management centers; this business represents a significant social responsibility contracted out completely to Air Water.



#### NAT sample transportation

## Capitalizing on advanced logistical know-how to realize group synergy

#### **Group Product Logistics**

Air Water's Logistics Business has cultivated a broad wealth of experience and know-how from outside logistics contracts undertaken in all fields, and it utilizes this experience and know-how to provide diverse product logistics services to the members of the Air Water Group. Amidst the business expansion that has taken place as a result of active M&A, Air Water's Logistics Business plays a key role in facilitating group synergy by enabling the Air Water Group to perform all of its own logistics in such fields as Industrial Gas, Medical Products, Food Products, Construction Materials, Household Products and, in recent years, salt for Nihonkaisui.

#### Further reinforcing proposal-based operational strength through the incorporation of an automobile body manufacturer into the Air Water Group

In April 2011, Air Water Specialized Transportation Inc. brought Hokkaido Body Co., Ltd., with its superior specialty automotive manufacturing technology and years of experience, into the Air Water Group. This merger now allows Air Water to perform its own specialty vehicle manufacturing, such as the heretofore outsourcing of cylinder trailers, and establishes a new business contract acceptance system, thanks to the newly acquired ability to offer detailed business solutions tailored to customer needs that can extend as far as the vehicle manufacturing stage. In this and many other ways, Air Water is further developing the comprehensive ability as a "total logistical supplier" to undertake any and all logistical services.



# **OTHER BUSINESS**

#### Agriculture, Food Products

Air Water's daily life and living business is significantly expanding in the area of food, including frozen foods, ham and delicatessen products, mineral water and glass greenhouse vegetable cultivation. Through this business, high quality, safe and reliable food is provided in a diverse range of life situations.

#### Review of FY2010

In the Food Products Business, solid growth was seen as a result of the introduction of new commercial products, including frozen broccoli and cooking sauces that continue to be adopted by more and more restaurant chains. In the Agriculture Business, a large-scale glass greenhouse that covers 10 ha of farmland was acquired from Azumino City in Nagano Prefecture for Air Water's tomato cultivation business; this is the second such cultivation site after the first in Chitose.

#### Breaking into new markets, from upmarket ham/delicatessen products and raw Food Products ingredient-type frozen foods to sauces and sweets

Business development is taking place centered on two companies: Saveur SS Inc., which is based in Hokkaido and well-regarded nationally for its high quality brands, and Sagami Ham, which has a strong local market presence in Kanagawa and the surrounding region of Southern Kanto.

Saveur SS Inc. uses its carefully-picked selection of ham and delicatessen products, which command 30% of the domestic uncured ham market, as well as its fresh, high-quality raw-type frozen foods, as the core vehicle for its development of general consumer and commercial business. Furthermore, Saveur SS Inc. is quickly working to bring forward its next lineup of core products that will include original cooking sauces, Hokkaido sweets and much more, opening up new business directions to explore in contemporary cuisine and finding a large base of customers, including supermarkets, hotels, restaurant chains and school cafeterias nationwide.

Meanwhile, Sagami Ham is using its core ham and sausage products, produced using an advanced "production technology," to develop business focused on securing the leading market share in Kanagawa. It has a product lineup, including the "Bologna Series" and "Honrei Series," which offers a wealth of variety to suit a broad array of customer needs. Business expansion through the use of group synergy, such as promoting the uncured ham and sauces of Saveur SS Inc. in the Kanto market, is also being actively pursued.



Sagami Ham products



In 2008, Saveur SS Inc. entered the sauce market looking to develop new core products for its Food Product Business. Basil sauce and a range of other highly distinctive sauce products have become highly regarded on the market; and from the expectation of further growth for this business, Air Water has decided to establish its own sauce production plant. This new facility is scheduled to go on line in December 2011, and the intention is to use it to expand production of existing products, develop new products, and strengthen collaborations involving uncured ham, a core product of Air Water's Food Product Business. In the future, this facility will be utilized as a next-generation strategic hub for expanded operations, such as the development of high added-value products that incorporate fresh vegetables grown at Air Water's farm facilities.

#### Outlook for FY2011

In the Food Products Business, cooking sauces will be positioned as core, strategic products for the next period, with the aim of starting operations at a new plant within FY2011. In the Mineral Water Business, the "One-Way Bottle Strategy" relying on environment-friendly, recycled containers will be deployed nationally at an accelerated pace by working in conjunction with the Sanuki Plant operated by Nihonkaisui. In the Agriculture Business, business expansion will be pursued via the use of a two-farm system that will facilitate the start of full-scale distribution.

#### Drinking water containing added "sea minerals" – safe, delicious and distinctive

Mineral Water

"AW-Water" is a unique product that contains a careful balance of reverse osmosis-treated high-purity water combined with minerals derived from seawater. AW-Water is manufactured at a dedicated plant that ensures rigorous quality control and is distributed by delivery service to homes and offices.

In recent years Air Water has stepped up the pace of its business development nationwide, thanks to such factors as the adoption of the "One-Way

Bottle Strategy" for recycling containers instead of collecting them and business expansion in Shikoku resulting from the development of Nihonkaisui's Sanuki Plant as a production facility. And by capitalizing on the fact that all plants, minerals, water coolers and other operational resources relating to Air Water's drinking water business are procured within the Air Water Group, Air Water has been growing its market position.



Water cooler and One-Way Bottle

Aariculture

#### Air Water's distinctive "agriculture of the future", born from optimal cultivation locations and high-tech greenhouses

In 2009 in Hokkaido, Air Water began the production and sale of fresh tomatoes and leafy vegetables grown in the large-scale greenhouse – one of the largest in Hokkaido – which it acquired in Chitose City. In April 2011, Air Water began full-scale operations at its second tomato production facility, which is located in Azumino City, Nagano Prefecture. At both of these facilities, compound environmental control systems automatically regulate CO2 gas

concentration, temperature, sunlight, irrigation and other environmental factors so that they suit the cultivation of vegetables, allowing for high quality, safe vegetables to be grown and supplied year-round. For the future, Air Water seeks to develop its own unique "Air Water-type agriculture" that utilizes the diverse operational resources of the Air Water Group to integrate everything from materials, seeds and seedling procurement to agricultural production, sales and processing.



# Les Sauces

Aerosol O-rings NV ECOROCA® The essence of Air Water's "Order Rodentia Style of Business" is to not only protect existing business fields but to always be expanding the scope of new product and technology development in order to foster growth in the group as a whole. Air Water has begun to tackle the challenges of further growth with a variety of business focused on the next generation of needs.

#### **Review of FY2010**

In Air Water's Aerosol Business, the emphasis was on cultivating new customers, such as cosmetics and pharmaceutical manufacturers, and on developing new products within the Air Water brand in the growing field of human body and household products. In O-ring Business, demand for O-rings geared towards semiconductor devices rebounded and grew steadily. In NV Business, Air Water strengthened its position and expanded its sales in the field of automotive parts – a field where it excels.

#### Japan's third largest manufacturer of aerosol products thanks to the mobilization of Air Water's distinctive technologies

Aerosol

Air Water Sol Inc. commands the No. 3 share of the domestic aerosol industry in terms of aerosol product (spray product) production volume. Air Water Sol was created through the merger and acquisition of four manufacturers possessing unique technologies, and the strength of Air Water Sol Inc. lies in its production system incorporating four highly specialized domestic plants as well as R&D capabilities in a wide array of fields. A diverse range of products is supplied to OEM, particularly coating materials and automotive parts (which, in both cases, Air Water commands a large market share) as well as cosmetics and quasi drugs (which are growth markets).

Air Water has also been actively developing products under its own brand in recent years which are tailored to a range of needs; such products include "Whitening UV Protection Spray," "Mild Hand Soap," "Tepure (disinfectant and washing solution)," and "Super Fresh ECO2 (CO2 gas blower)."

#### Unique rubber and resin molding manufacturing technology well-suited to fields demanding high precision and high quality

Air Water Mach Inc. is a specialized manufacturer of industrial-use rubber, manufacturing and selling a variety of rubber molded products and resin molded products geared towards general industrial machinery, home electric appliances, automobiles and medical products, with its most notable product being ultrahigh-performance rubber O-rings for semiconductor and LCD manufacturing systems.

All of these products from high value-added products to mass production products, are flexibly manufactured at production facilities in Japan (Nagano, Ishikawa) and in China (Fujian, Dalian), taking advantage of a strong production system incorporating molding and materials and centered on compounding technology, molding technology and composite technology cultivated over many years.



#### Outlook for FY2011

In Aerosol Business, Air Water seeks to cultivate its niche fields as well as to use M&A to venture into new fields, develop a concrete overseas strategy, and take other steps towards the establishment of operating bases. In O-ring Business, Air Water is strengthening manufacturing and distribution hubs and expanding sales hubs as part of efforts to expand O-ring sales in the Taiwanese and Chinese markets. In NV Business, Air Water is working to further strengthen sales in niche areas as well as to expand business at its hub in Thailand.

#### Using "gas nitriding technology" to produce harder, more attractive metal surface treatment

NV (metal surface treatment)

Air Water NV Inc. develops business that applies a uniquely developed "gas activation process," based in the advanced gas technology maintained by the Air Water Group, to metallic surface hardening treatment. Air Water NV uses the three technologies of "NV nitriding," which provides high quality surface treatment for various steel materials, "Pionite," which increases the hardness of stainless steel without compromising corrosion resistance, and "MYZOOL," which enhances solvent resistance through the creation of a chromium nitride layer, to provide unparalleled quality that satisfies the stringent demand characteristics of

automobile parts and home electric appliances, for which the need for efficient resource utilization and size and weight reduction is increasing. In addition to contract treatment business in their plants in Hyogo Prefecture and Gunma Prefecture and on-site treatment at user plants, Air Water NV is also performing heat treatment at its hubs in Thailand and the Philippines.



Example of metal surface treatment utilizing NV nitriding

1	A new kind of environment-friendly construction material that provides the natural feel of wood together with high durability	ECOROCA® (Environmental Construction Material)	

ECOROCA® is a 100% compound, recycled material made from used wood and waste plastic. This new, environment-friendly material, which provides superior durability together with the natural feel of wood, has found its primary applications in such fields as outdoor wooden deck construction. Because of the superior safety provided by ECOROCA®, it is particularly valued as a high quality construction material suited to public facilities and has been adopted in such construction projects as the building of a one-kilometer boardwalk at Odaiba Seaside Park.

In 2011, Air Water introduced a "heat-blocking deck" which helps keep surface temperature down, even in summer, and it is being increasingly

adopted into homes, schools, rooftop gardens and elsewhere. With the Nagano Plant, which produces high-grade product lines and possesses public certification (JIS A5741 certification), as the key driving force, Air Water will continue to release new and innovative products onto the market nationwide.



at the Odaiba boardwal

#### Entry into a new market with the group incorporation of a dental equipment manufacturer possessing unique technology

In April 2011, Air Water incorporated dental equipment manufacturer Denken Co., Ltd. into the Air Water Group and used this as the impetus for venturing into the heretofore unfamiliar Dentistry Business. Denken commands the leading domestic market share in heater-type casting machines for manufacturing the metallic components in false teeth and implants; they also manufacture electric ovens for firing false teeth, fully automated prosthesis casting machines and other equipment, and their unique precision casting technology is well regarded overseas as well. For the future, Air Water will develop original products that combine the superior technologies maintained by Denken with the diverse gas, medical, chemical, etc., technologies of the Air Water Group, and will make use of the sales routes and operational infrastructure of Air Water's Medical Business, to grow new business in the Dentistry Business.



O-rings

Aerosol products



# **RESEARCH AND DEVELOPMENT**

Consolidating cutting-edge technology from each business field to ensure that Air Water remains a technology-driven company producing unparalleled, highly distinctive products



#### Major R&D Results for FY2010

Making "Resource Conservation and the Environment" the Watchword for R&D - Creating New Gas Recovery, Separation and Applied Technology-driven Technologies -

<b>QuickSnow wide angle nozzle-type dry ice snow precision cleaning system</b> Cleaning speed is significantly improved through the adoption of a wide angle nozzle system. This environment-friendly technology produces no waste liquid (see p27 for details)	BN300GF highly heat-resistant substrate material Improved thermal resistance allows copper wire bonding todeliver performance on par with gold wire. This environment-friendly technology is halogen-free. (see p27 for details)
Liquid natural gas BOG (boil-off gas) nitrogen removal device A resource-saving technology that collects BOG exhaust. Japan's first removal device that applies high-efficiency cryogenic air separation technology.	<b>AW-Shield Gas for stainless steel and aluminum welding</b> An argon-based shield gas for high quality welding conforming to the revised JIS. This resource-saving technology increases the amount of weld penetration leading to the improvement of both welding speed and quality.
■Ozone waste liquid treatment technology (oxygen gas application) Uses ozone micro-bubbles to treat waste liquid produced during the production of electronic component, etc. This environment-friendly technology is able to reduce industrial waste to 1/100th of its current amount.	■Liquid natural gas-accommodating standing sealless pump A new leak-free, long-lasting, compact, light and quiet pump. This environment-friendly technology can accommodate transportation of LNG clean energy.



Research and Development Institute (Nagano Prefecture) Gas recovery and recycling technology, gas application technology, medical-related technology, fine chemicals and new materials technology, electronics materials technology



Gas Separation Process Development Division (Osaka Prefecture) Gas separation process technology (cryogenic air separation, adsorption/separation refining)



NV Development Division (Hyogo Prefecture) Gas nitriding and carburizing metal surface treatment technology

Hybrid Materials Research Division (Yamaguchi Prefecture) Functional resin materials technology, carbon materials technology Hokkaido Annex (Hokkaido Prefecture) Collagen application technology, environmental and food-related technology



Chemical Development Center (Ibaraki Prefecture) Fine chemicals technology (electronics materials, pharmaceutical and agricultural intermediates)



Hybrid Materials Research Division (Osaka Prefecture) Plasma surface treatment technology



Welding Laboratory (Wakayama Prefecture) Welding technology (welding and cutting)

#### BN300GF highly heat-resistant printing substrate material accommodates copper wire bonding to promote resource conservation and cost reduction

Environment-friendly, halogen and antimony-free BN300GF highly heat-resistant semiconductor substrate material was developed by the Chemical Development Center in conjunction with Printec Co. Ltd., for use with next-generation semiconductor packages.

Whereas the softening temperature for conventional polymide resins is 250°C, BN300GF resists softening up to 304°C and maintains an impressive 80% of its room temperature flexural strength up to 200°C. In comparison, at 200°C, conventional polymide resins lose 50% of their flexural strength.

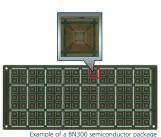
BN300GF achieves its superior performance thanks to highly engineered structure control deriving from the Air Water Group's resin production technology that combines polymide resin with a strongly adhesive epoxy resin without sacrificing heat resistance. The result is a highly thermostable substrate material capable of ensuring adhesiveness with copper foil.

Also, consideration has been given to developing a flame retardant formula that provides for both heat resistance and flame resistance without using any phosphorous-based flame retardants, which are likely to become subject to future regulations.

It is hoped that by utilizing superior high-temperature characteristics, BN300GF will become the global industry standard for use with copper wire bonding in place of gold wire. When performing copper wire bonding using conventional resins, it is necessary to bond the wire to the substrate at a low temperature for a long period of time in order to ensure joint strength; however, this new resin allows for bonding at high temperature, which means that the same production speed achieved with gold wire is possible with copper wire as well (see Table below).

In the field of semiconductor packages, the size of the global market for

substrate materials is steadily growing year by year; it was approximately 48 billion yen in 2010 and is expected to reach 78 billion yen in 2020. At the same time, semiconductor packages are steadily growing thinner, which means the demand for thermostability and warping resistance are growing more severe. For this reason as well, BN300GF is expected to grab an increasing amount of attention, and Air Water aims to use it to secure a 10% share of the global market.



#### Comparison with conventional materials

	BN300GF	Conventional materials
Glass-transition temperature (°C) (softening temperature)	304	250
200°C / room temperature flexural rigidity (%)	80	50
Temp. (°C) at which mounting is possible	200~250	150~170
Mounting treatment time (msec)	10	20

#### "QuickSnow" Dry Ice Snow Precision Cleaning System Significantly improves cleaning efficiency thanks to a wide angle nozzle

QuickSnow is a dry, precision cleaning system that performs cleaning by blasting the target item with "dry ice snow" (snow-like dry ice microparticles created from liquefied carbon dioxide) at high velocity.

Unlike conventional wet cleaning, QuickSnow employs a dry process that requires no post-cleaning drying or wastewater/effluent disposal, and the target item suffers little damage. Also, cleaning strength can be adjusted by controlling the velocity and particle size of the dry ice spray, and spray condensation can be controlled by controlling the temperature of the spray gas; thus, QuickSnow offers users an ideal cleaning solution that can be tailored to their needs

In addition, a wide angle nozzle was developed last year that offers at least a ten-fold increase in cleaning range over the existing spot-type nozzle; this makes it possible to significantly reduce cleaning time and carbon dioxide gas consumption. It is expected that this wide angle nozzle will lead to QuickSnow being adopted for semiconductor wafer cleaning and for the cleaning of large substrates, such as liquid crystal glass

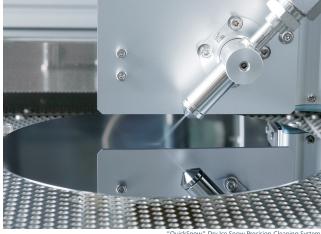
substrates.

Furthermore, while liquid carbon dioxide was traditionally supplied via gas cylinders, a device has been developed for supplying it from carbon dioxide LGC container, thereby achieving significant reductions in running costs

Air Water's proprietary QuickSnow technology is starting to be adopted as a cleaning solution in a wide range of areas, such as hard disk drive cleaning,



semiconductor-related component cleaning, electronic component cleaning and film production roller cleaning. Air Water is working to ensure its spread into an even broader array of areas.



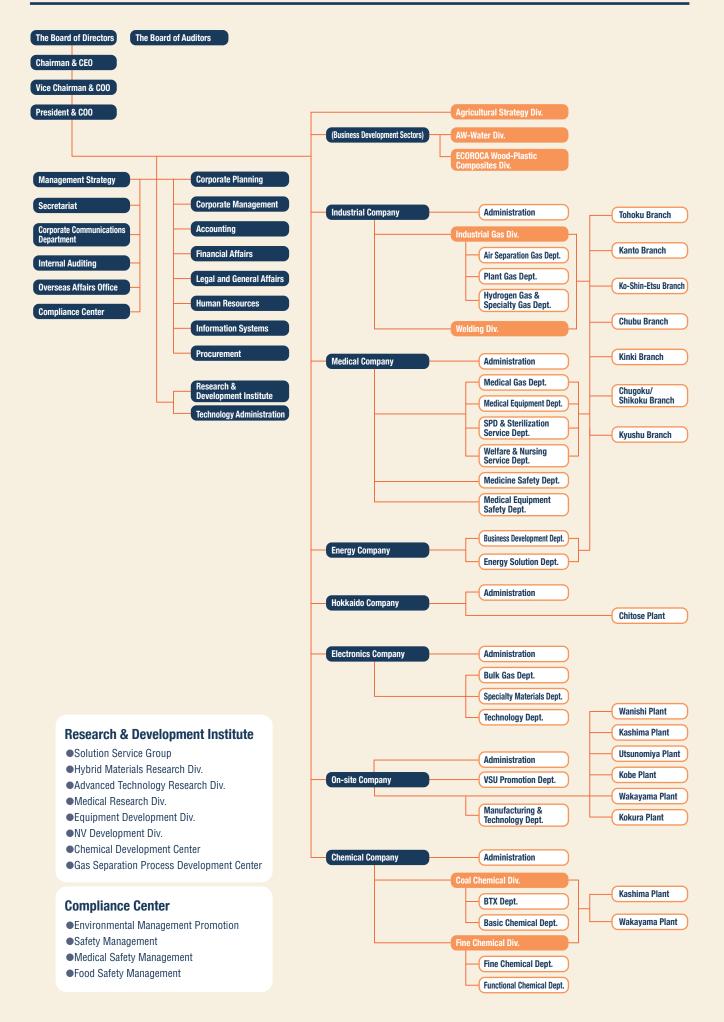
#### New technologies for FY2011 – Large-area, high quality, SiC semiconductor substrates

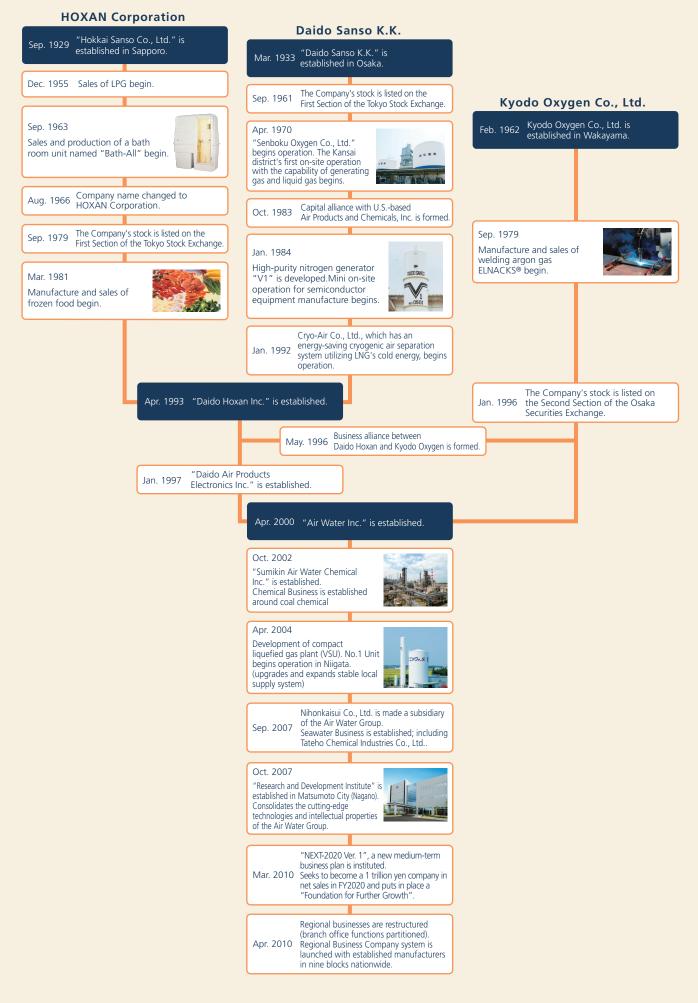
SiC (silicon carbide) semiconductor substrates are expected to find use in next-generation power devices (power converter units for everything from air conditioners and other home appliances to automobiles, trains and other heavy electric machinery), in super luminosity LED (for large-screen LCD televisions, automobile headlights, general illumination, etc.), and in many other areas. Conventional bulk SiC substrates with a large diameter are expensive and difficult to manufacture; thus, they have found few device applications.

The Research and Development Institute, however, has used unique high-vacuum deposition technology (VCE equipment) to develop a technique for cheaply depositing SiC over a large area (up to eight inches) on the surface of silicon substrate, enabling the successful production of a higher quality monocrystalline SiC thin film. The result is that it will now be possible to supply the market with competitively-priced, large-area SiC substrates.



Six-inch SiC-on-silicon s





### Corporate Information / Board of Directors / Shareholder Information

Corporate Outline		(As of March 31, 2011)
Company Name	: AIR WATER INC.	
Head Office	: 12-8, Minami-Semba 2-chome, Chuo-ku, Osaka, 542-0081, Japan	
	: Tel (81) 6-6252-5411 Fax (81) 6-6252-3965	
(Registered Address of Head Office)	2, Kita-Sanjo-Nishi 1-chome, Chuo-ku, Sapporo, 060-0003, Japan	
(Tokyo Office)	: 18-19, Toranomon 3-chome, Minato-ku, Tokyo, 105-0001, Japan	
Established	: September 24, 1929	
Paid-in Capital	: ¥31,013 Million	
Number of Employees	: 8,237(Consolidated)	
URL	: http://www.awi.co.jp/english/	

Board of Directors	(As of June 29, 2011)
Chairman of the Board and Chief Executive Officer	Hiroshi Aoki
Vice Chairman and Chief Operating Officer	Masahiro Toyoda
President and Chief Operating Officer	Yasuo Imai
Corporate Executive Vice Presidents	Akira Yoshino
Corporate Senior Managing Directors	Hirohisa Hiramatsu / Toshihiko Akatsu / Yoshio Fujiwara / Akira Fujita / Noboru Sumiya
Managing Directors	Yuu Karato / Takashi Izumida
Corporate Directors	Fusae Ota / Noriyasu Saeki / Yukio Matsubara / Hideo Tsutsumi / Masato Machida / Ryohei Minami / Hiroshi Terai
Auditors (Standing Auditors)	Tomohiro Katano / Koichi Nakagawa / Masaki Matsumoto
Corporate Auditor (part-time)	Taro Ishibashi / Morihiro Sekiyama

rincipal Shareholders		(As of March 31, 20
Company	Number of shares held (thousands)	Ratio of shares held (%)
Sumitomo Metal Industries, Ltd.	10,000	5.17
The Sumitomo Trust & Banking Co., Ltd.	7,936	4.11
The Master Trust Bank of Japan, Ltd. (trust account)	7,574	3.92
Japan Trustee Services Bank, Ltd. (trust account)	7,331	3.79
Sumitomo Mitsui Banking Corporation	6,196	3.21
Air Water Customers' Stockholding	4,982	2.58
National Mutual Insurance Federation of Agricultural Cooperatives	4,780	2.47
Japan Trustee Services Bank, Ltd. (trust account 9)	4,217	2.18
The Hokkaido Bank, Ltd.	3,916	2.03
North Pacific Bank, Ltd.	3,874	2.00

Information on Shares	(As of March 31, 2011)
Fiscal Year	From April 1 to March 31
Annual General Meeting of Shareholders	June
Record Dates	Annual meeting March 31
	Year-end dividends March 31
	Interim dividend September 30
Number of Shares per Unit	1,000 shares
Manager of the Register of Shareholders	The Sumitomo Trust & Banking Co., Ltd. 5-33, Kitahama 4-chome, Chuo-ku, Osaka
Telephone Number for Inquiries	TEL 0120-176-417 (toll-free in Japan)
URL	http://www.sumitomotrust.co.jp/STA/retail/service/daiko/index.html
Means of Advertising	Electronic advertising
	URL depicting advertising
	http://www.awi.co.jp/ir/koukoku.html
Stock listing	Sapporo, Tokyo, Osaka



