



Environmental and
Social Report
2014

Management Philosophy



We dedicate ourselves and our resources backed by the entrepreneurial spirit and pride in creation and development of businesses linking air, water, the earth, and humans.

Our name embodies our mission: to create and conduct enterprises that effectively use our planet's air, water, and other irreplaceable assets, for the purpose of making a meaningful contribution to our fellow human beings across the globe.

As a Group, we continuously strive to increase our capabilities and our service to society, and we are continually working to identify opportunities to develop new and significant businesses that can make a real difference to communities large and small. In general, we focus on businesses that concern the human: medicine, nursing care, agriculture, and food products.

We are proud of our unique capabilities and ideas, and we apply these in full force when taking up the challenge of each new business, regardless of scale. In all of our endeavors, we design environmentally responsible solutions that deliver a reliable flow of safe products and services to our customers.

This year's Environmental and Social Report introduces a number of our business initiatives, and explains how we are leveraging our unique vision as a Group to create and deliver significant value to society at large. As always, we hope that this year's Environmental and Social Report succeeds in deepening our communication with our many stakeholders.



About This Publication

Enterprises have been making various efforts to fulfill their Corporate Social Responsibility (CSR) over time. Air Water began publication of this annual *Environmental and Social Report* in 2002, as a way of informing our stakeholders about our commitment to CSR, and about the organization and content of our CSR activities throughout the many businesses we operate. With the goal of appealing to a wide range of readers, we have arranged this 2014 Report as follows.

- The Report covers the corporate activities of Air Water Inc. and its Group companies during fiscal 2013. It is divided into the following sections: Business Overview; Commitments from the Top; Management Report; Feature Story; and Social and Environmental Reports.
- This report is based on data from April 1, 2013 to March 31, 2014. We also include some information about more recent initiatives.
- In editing this report, we have referred to the ISO 26000 guidelines, to the *Environmental Reporting Guidelines* from Japan's Ministry of the Environment, and to other relevant guidelines,
- Our feature story tells about the operations of Air Water Carbonic Inc., as an example of how Air Water and its Group companies fulfill their social responsibility. The story includes outside voices, and explains how our operations create positive value for society as a whole.
- The environmental report section describes the environmental policies, targets, and achievements of Air Water and Group company businesses in the industrial gas sector, chemicals sector, agriculture and food sector, and additional sectors (seawater and logistics).
- The remaining sections of this report describe our basic approach to these obligations, and provide a candid assessment of our current status.



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The Air Water Group balances two major types of business: industry-oriented enterprises in areas such as industrial gas and chemicals, and health and lifestyle enterprises in medicine, nursing care, agriculture, food, and more. The entire Group practices an "All Weather Management System" that maintains a clear focus regardless of management changes and business climate.

Driven by our Order Rodentia Style of Business, our mid-size Group companies are continually opening up new areas of business, providing mutual support, and building the strength of the entire Group.

A new mid-term business plan, NEXT-2020 Version 2, implemented in 2013, will help us reach our goal of 1 trillion yen in annual sales by fiscal 2020. The new plan establishes three basic concepts.

Basic Concepts

Motto: Growth and Reform

Three Basic Concepts

1. Exertion of comprehensive strength through the pursuit of synergies. Use synergy to drive growth and reform.
2. Expansion of businesses involving people. Push growth into a new direction.
3. Acceleration of structural reform. Rebuild core businesses.

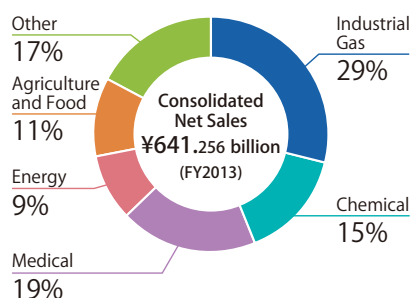
The mid-term plan enjoyed a great first year, as we scored new records in sales and ordinary income and successfully achieved our objectives. Moving forward, we shall monitor the business environment carefully even as we continue to implement these basic concepts and pursue our plans accordingly. For our industrial businesses, our focus shall be on restructuring and strengthening profitability. In our lifestyle sectors, we shall work to drive high growth. Across all sectors, of course, we shall pursue our mission of making a positive contribution to the regions we operate in, to our society, and to the lifestyles of the people we serve.

In all of our endeavors, we remain dedicated to making a meaningful contribution to the regions we do business in, and to the people we serve. We are committed to earning your trust, and to providing services that all stakeholders recognize as useful and necessary.

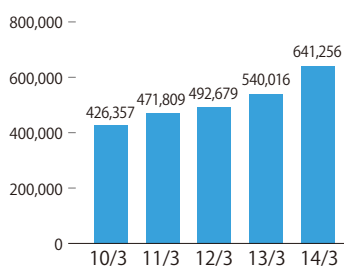
Paid-in Capital: ¥32,263 million

Number of Employees: 9,557 (consolidated)

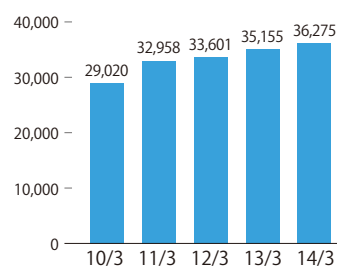
Percentage of Sales by Segment (%)



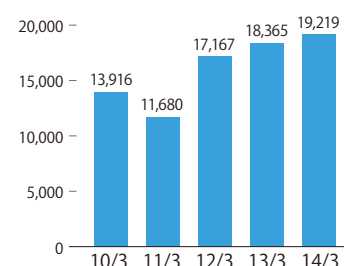
Net Sales (millions of yen)



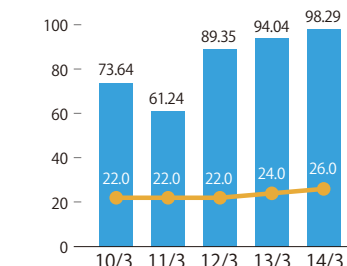
Ordinary Income (millions of yen)



Net Income (millions of yen)



Net Income per Share (yen) Dividends per Share (yen)



Industrial Gas

We provide a full range of services: gas manufacturing technologies such as cryogenic, PSA, and membrane air separation; storage technologies such as cold evaporators (CEs), mobile LG containers, and gas cylinders; transport via tank trucks; and design, development, construction, and maintenance of gas plants. We offer safe and reliable delivery of a wide variety of industrial gases, including oxygen, nitrogen, argon, and CO₂. Delivery methods are adjusted to meet each user's specific conditions and requirements.



Compact, high-efficiency liquid nitrogen/
oxygen co-production plant "VSU"



CO₂ plant

Chemicals

We manufacture and sell a variety of coal-derived chemical products: coke-oven gas (a byproduct generated when producing coke to fuel blast furnaces); purified gases obtained by separating out and purifying the active constituents of coal tar; and crude benzene, BTX, products from carbon materials, and products from tar distillation. We also use synthetic organic chemistry techniques, developed over many years, to produce and sell fine chemicals—such as pharmaceutical and agricultural intermediates and electronic materials—for customers both in Japan and abroad.



Gas purification plant



GMP plant for highly active processes

Medical

Air Water offers a wide variety of comprehensive solutions. We supply medical gases to institutions throughout the country through our nationwide network. We also offer all kinds of one-stop services associated with hospital operations including the supply of medical equipment and devices, and offering sterilization services and other SPD (supply, processing, and distribution) services. Outside the hospital, we provide for local healthcare such as home medical care and nursing care.



Operation room, ICU showroom



Sterilization center

Energy

Under the Hello Gas brand, we deliver LP gas, kerosene, and other fuels to households and industrial facilities throughout Japan. We also offer a variety of other energy solutions based on our own original technologies, including: LNG transport equipment and containers; LP-gas power generator trucks; and energy supply systems that use wood biomass.



Hello Gas spherical tank



15.7-ton LNG tank truck

Agriculture and Food

Our high-value-added agricultural and food businesses deliver safe, reliable, high-quality goods to a wide range of customers throughout the country. These businesses include production, distribution, processing, and marketing of upscale (mainly domestic) ham, delicatessen, high-quality and extremely fresh frozen foods, and agricultural products.



Gold Pak products



Sunsetsu Saveur products

Other Businesses

While most of our enterprises are in the five sectors described above, we are also engaged in seawater businesses, logistic business, and other specialized businesses whose technologies, products, and services contribute to the growth of the entire Group.



Household salt products



Chassis transport

We serve local communities, and we serve our global society. By deploying a wide range of businesses in many locales from our own viewpoint, Air Water makes an important contribution to the regions we serve, and to our common future.

In today's world, we are all concerned with the issue of climate change, living as we do amidst a continuing trend of record-breaking blizzards, rains, heat waves, and other worrisome anomalies. The very act of "taking the climate for granted" has resulted in a climate that we can no longer take for granted.

Because our many businesses are focuses on making effective use of natural resources to serve humanity's real needs, we fully recognize that we must treat these resources with great respect, and develop and exercise capabilities that will put us in the forefront in the effort to use resources wisely.

To fulfill our mission and meet the needs of society, we must maintain a strong and productive business presence. Fortunately, our unique "Order Rodentia Style of Business" and "All Weather Management System" have helped us maintain steady growth even as Japanese industry in general has suffered through long-term economic stagnation, the Great East Japan Earthquake and nuclear accident, and other challenges as well. We have built, and continue building, a comprehensive group of companies that complement one another, delivering powerful synergies that enable us to move smoothly into new business fields, and to create new business opportunities. In this way, we have responded rapidly and flexibly to environmental change. Our Group includes both industry-serving businesses—primarily manufacture and distribution of industrial gases and chemicals—and "lifestyle" businesses in the medical, energy, agriculture, and food sectors.

To fulfill our mission to help serve lifestyles and planetary wellbeing, we must continue developing business over a wide range of areas. We are currently focusing our vision on strengthening our regional strategies, under the motto "Build partnerships and create new businesses."

To this end, we are looking to discover, develop, and build relationships with those who share our ideals and social mission, to pursue greater synergies among our Group companies, and to establish businesses that put down local roots and grow together with the community. We strive to work closely with our partners to cultivate values that will lead to new and original enterprises.

In particular, we are moving forward with the deployment of local power-generation businesses that are closely tied to local life and that fit the characteristics of each locality—using LNG, wood-biomass, coal, and other locally suitable energy sources. In pursuing this strategy, we seek to leverage all of our Group's various capabilities to produce a wide range of local "mini Air Water (*Shinshu Model*)" solutions that contribute to social stability and safety.

Since 2004, our locally-based VSUs (compact high-efficiency liquid nitrogen/oxygen co-production plants) have helped to shorten industrial-gas shipping distances and to reduce energy consumption. In 2013, we installed our eleventh VSU facility, in the city of Hofu, in Yamaguchi Prefecture. We will continue to promote energy conservation and CO₂ reduction by establishing the network of locally-based VSUs.

Commitments from the

We recognize, of course, that provision of safe, stable, healthy workplaces—places where all employees can feel at ease—is essential to achieving our business goals. Employee health and safety is our highest priority, and we are continually striving toward zero work-related accidents. We are devoted to providing a business culture that puts safety and trust first, regardless of circumstances.

As our management philosophy indicates, we remain committed to fulfilling our corporate social responsibility. Moving forward, we shall continue to marshal the knowledge and wisdom that will enable us to push ahead with our mission to confidently and proudly create and deploy a wide range of businesses that tie together our air, our water, our planet, and its people.

We present this report to all stakeholders, in the hopes that it will help you to better understand our Group's management position and business activities. As always, we humbly request your continued support.

Hiroshi Aoki
Representative Director, Chairman of the Board,
Chief Executive Officer
Air Water Inc.

H. Aoki



Approach to Organizational Governance

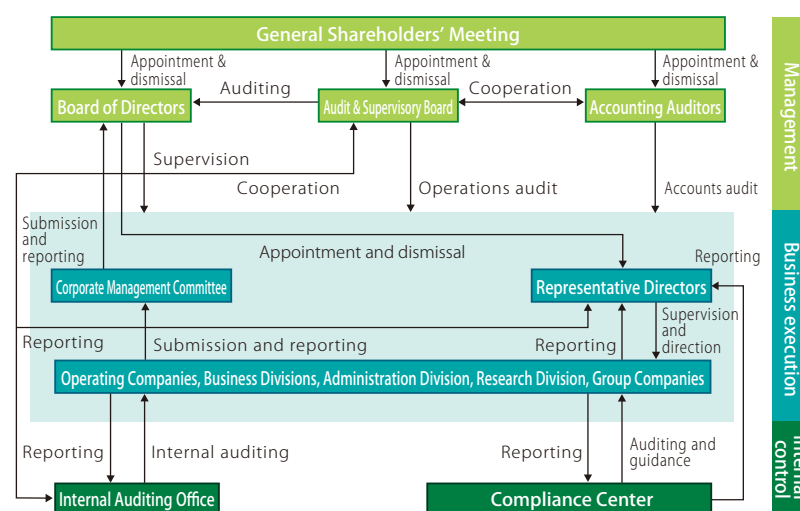
Air Water believes that gaining trust from all stakeholders is essential for continuous growth. For this reason, the entire Group is committed to pursuing a highly transparent governance structure.

Corporate Governance Structure

Basic Approach to Corporate Governance

The Air Water Group believes that conducting fair business activities observing social common sense and gaining trust from shareholders, customers, local communities, employees and all other stakeholders is essential for continuous business growth and the maximizing of enterprise value. We view comprehensive corporate governance including an internal control system as the most important management issue for gaining stakeholder trust and fulfilling corporate social responsibility. Air Water is working to strengthen its corporate governance by constructing a fully functioning management structure for appropriate management decision-making and the proper and swift execution of business based thereon, with supervision and monitoring, while securing management transparency through wide-ranging information disclosure.

Corporate Governance Structure



Compliance

Compliance Framework

As the foundation of its compliance structure, Air Water has established the "Air Water Group Code of Ethical Conduct" as an action guideline so that directors and employees of the Company and its Group companies comply with the law and practice behavior respecting social ethics. Air Water conducts education in the spirit of observing social ethics and the law, and establishes rules regarding legal compliance.

Internal Audits

Internal audits are conducted periodically by the Internal Auditing Office, which is the Company's internal auditing unit, to audit the Air Water Group's compliance with laws and internal regulations, as well as the propriety and appropriateness of its business processes. The Internal Auditing Office also supervises and monitors the construction and administration of internal control systems to secure the reliability and propriety of financial reports, and evaluates their validity as the division in charge under the responsibility and direction of the representative directors.

In addition to the Internal Auditing Office, Air Water has also established a Compliance Center as an exclusive unit for the management and control of compliance, safety and disaster prevention, environmental preservation and quality assurance across the Air Water Group.

Under our management structure, the Internal Auditing Office and Compliance Center report to the audit & supervisory board member and to the representative directors as appropriate when their internal audits confirm facts that might have a material effect on Air Water's management.

Compliance Committee

Air Water has established the Compliance Committee as a consultative body in which relevant divisions get together and discuss compliance issues. The Committee considers specific measures concerning the policies and instructions on compliance given by representative directors, and other issues, and also discusses ways to deal with compliance violations when they occur.

Internal Reporting System

Air Water has established an internal reporting system in order to manage its business while meeting compliance requirements. Anyone who becomes aware of violations of laws and various internal rules, or any acts which may violate them, can make a report.

Points of contact for reporting have been established both inside and outside of the Company, and there is a provision ensuring that the person who reports will not suffer any disadvantage.

Risk Management

Risk Management Structure

The Compliance Center, which is under the direct control of the representative directors, manages, as the supervisory division for the entire Air Water Group, the risks recognized as particularly important for business activities of Air Water and its Group companies, namely the risks concerning compliance, safety, disaster prevention, environmental preservation, and quality assurance.

Individual risks concerning information security, quality control, intellectual properties and business contracts are managed through prior inspection and authorization procedures. In addition, by enacting internal regulations and creating manuals, education and training at the level of each responsible division are carried out.

With the Compliance Center serving as the secretariat, the Risk Management Committee has been held regularly, through which the status of risk management framework in each division and Group company is assessed, and the risk management framework in the Air Water Group overall is bolstered.

If a risk having significant impact on business activities is realized, a Crisis Management Committee will be established immediately in accordance with the Risk Management Regulations,

and a framework for dealing with the realized risk promptly and appropriately will be put in place.

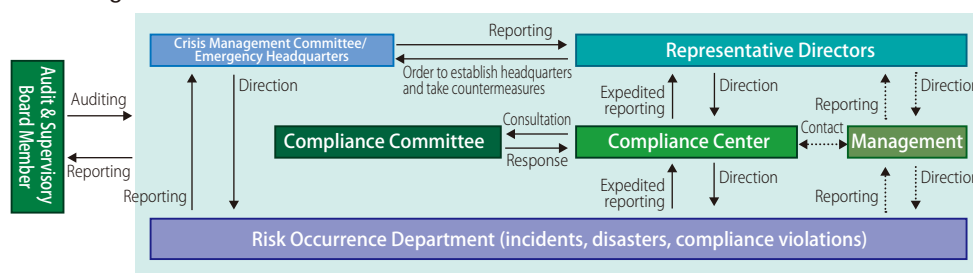
Safety Confirmation System

In the event of a major disaster, we must place the highest priority to confirm and ensure the safety of our employees and their families. Our Safety Confirmation System, introduced in response to the Great East Japan Earthquake, will help us rapidly confirm the safety of our employees and their families if and when a major disaster occurs. Under the system, which is linked to Japan's Earthquake Early Warning system (EEW), email is rapidly sent out to all registered users in the event of a major earthquake. Responses to these emails will help us assess the status of all employees and their families.



Safety Confirmation System

Risk Management Framework



Keeping Our Shareholders and Investors Informed

Communication with Shareholders and Investors

Air Water is devoted to building a stable, trusting, long-term relationship with our shareholders and investors. Accordingly, one of our roles is to help promote understanding of our unique business strategy and model, which is based on a multi-business structure characterized by continuous growth and change. To this end, we maintain continuous communication, disseminating information through our website and publications, and through IR activities both in Japan and abroad. In FY 2013, we updated our website to present relevant information both more clearly and more rapidly.

For institutional investors and analysts, we offer field trips to Group facilities in Hokkaido, Shinshu, and other locations, and we hold a conference call on each quarterly settlement date. We also arrange for various special meetings as appropriate. On May 21, 2013, for example, we held a special meeting to explain our new mid-term business plan.



Mid-term business plan: explanatory meeting



Report to shareholders



Air Water's Mission: To Support a Sound Infrastructure to Serve Society's Needs

Carbon Dioxide Gas: Crucial to Both Industry and Daily Life

As a product, carbon dioxide gas has many uses—both for industry and in daily life. The Air Water Group's customers use our CO₂ gas for many purposes—for welding, for the bubbles in beverages, and much more. We also supply the frozen version—dry ice—for use mainly as a coolant.

Carbon dioxide gas typically enters the production cycle as a byproduct generated in oil refineries and chemical works. Recent years, however, have seen a contraction in these industries, as many plants downsize and as others disappear entirely. As Japan's top gas supplier, Air Water has had to look to new strategies to maintain a stable supply of high-quality product to meet society's needs.

In this feature, we visited Air Water Carbonic Inc. —the Group's manufacturer and supplier of carbon dioxide gas and dry ice—to learn about some of the steps it has taken to maintain stable supplies, and to hear how its customers have responded.

Customer: Ito-Yokado Co., Ltd. (Seven and i Holdings Co., Ltd.)

Working Together to Resolve Issues in the Growing Market for Frozen Foods

Seven & i Holdings Co., Ltd. is pursuing new retail and distribution models that combine physical stores with on-line shopping. Air Water Carbonic is currently supplying Ito-Yokado Co., Ltd.—a large general store chain within the group—with dry ice. We spoke with Isao Hattori, General Manager of Ito-Yokado's Omni-Channel Promotion Dept., about how Air Water Carbonic has helped to support the company's customers.

"We first turned to Air Water ten years ago, when I was in charge of frozen food products. At the time, frozen food sales were very strong, and we couldn't fit enough products into our freezer compartments. So I became involved in discussions about developing vacuum-insulated boxes, which we could place out on the floor. Of course, these boxes need to be cooled with large quantities of dry ice—and so we got into the issue of how to reduce the dry ice costs, too. At the time, it turned out that Air Water Carbonic was the only company in the industry that would work with us on this."

When Mr. Hattori subsequently started revising his methods for procuring dry ice, Air Water Carbonic participated as a partner. And in March 2009, Ito-Yokado switched to Air Water Carbonic for supply of dry ice to all of their stores throughout the country.

By building up these types of partnerships, Air Water Carbonic has earned the trust of its customers. And as a result, the company now holds a 48% share of the dry ice market in Japan.



Isao Hattori
General Manager
Omni-Channel Promotion Dept.
Ito-Yokado Co., Ltd.

At Seven and I Holdings Entrance, after talking with us.

Dry Ice as Lifestyle Infrastructure: Keeping Food Fresh on the Way Home

Air Water Carbonic currently delivers dry ice to Ito-Yokado's seven frozen-food centers. Deliveries are made 365 days a year, in minimum units of 10 kg. Shoppers rely on dry ice to keep frozen food and ice cream cold as they carry these home, and to keep online food purchases fresh during delivery. Any delay in dry ice supply can lead directly to a drop in



Readiness for Emergencies

At the time of the Great East Japan Earthquake, it became clear that dry ice is part of the infrastructure of daily life. People

don't think much about dry ice unless it's suddenly runs out—and then they realize how important it can be. Many people were concerned that supplies would run short during the electricity cutbacks that followed the earthquake. But Air Water Carbonic delivered the full order, with no problem. It was a great response.

Comment from Air Water Carbonic

Masaki Musa

Director, General Manager of Sales Dept., and Branch Manager of Tokyo Branch of Air Water Carbonic Inc.



The importance of dry ice, to society in general, is not widely recognized. But in fact it's absolutely essential to low-temperature distribution systems. Customers demand stable supply at all times—even when there's a natural disaster, or a fierce heat wave, or cutbacks in the power supply. So we put our full efforts into ensuring stability, no matter what. Since we're the country's top supplier, I see that as our mission.

both food quality and customer services; and then, in turn, to a drop in sales.

"Temperature control equals food control," Mr. Hattori explains. "The biggest reason we turn to Air Water Carbonic, ultimately, is their market share. We use very large quantities of dry ice, and we need to be sure that our supplier will keep deliveries going at all times. In addition, Air Water Carbonic

delivers a better quality and better type of dry ice than their competitors. We've visited various factories, and the difference was quite evident."

Having earned the trust of Ito-Yokado, Air Water Carbonic is now also supplying dry ice to other important Seven and I Holdings companies—including York Mart Co., Ltd., York-Benimaru Co., Ltd., and Sogo & Seibu Co., Ltd.

CO₂ Gas Serves Both Industry and Consumers

Stable and Non-Combustible

Carbon dioxide is unusual among industrial gases, as it is also in high demand in daily life. Colorless, flavorless, odorless, making up about 0.04 percent of air. Exhaled in our breath; essential for the photosynthesis that supports plant life. It has other uses too—perhaps unexpected—both in and out of industry.

Carbon dioxide, like water, exists in three usable states: gas, liquid (liquefied gas), and solid (dry ice). Its gaseous form is non-combustible and extremely stable. It readily dissolves in water, and in dissolved form can readily react with other substances. These various features make it suitable for a wide range of uses.

Welding, Beverages, and More

Industrial CO₂ is generally supplied as liquefied gas, and its main largest application is in welding; large amount of liquefied carbon dioxide is used in arc welding. It also puts the bubbles

in beer and carbonated soft drinks, is the active ingredient in carbon dioxide hot baths, and is utilized as the active agent in fire extinguishers found on ships, at parking lots, and at other large facilities. In the agricultural sector, it is used to promote photosynthesis at vegetable factories. In the medical arena, it is used in laparoscopic surgery (to inflate the abdominal cavity), and in sterilization processes.

In its solid form—as dry ice—it is widely used to keep frozen foods and perishable foodstuffs cold during distribution. Dry ice can also be used for blast cleaning*, and to create fog and smoke effects at theaters and ceremonies. And these are only some of its many uses in both industrial and non-industrial settings.

* Blast cleaning with dry ice offers a number of advantages. In particular, dry-ice blasting does not scratch surfaces; and clean-up does not require any post-processing, as the dry ice quickly disappears (sublimes) into the atmosphere.



Welding



Carbonated drinks



Cooling with dry ice



Feature Story

Business Infrastructure Boosts Stability

Air Water Carbonic's Trump Card: A Nationwide Production and Sales Network

Air Water Inc., pursuing its role as a comprehensive industrial gas manufacturer, entered the carbon dioxide gas business in September 2001, with the establishment of Mitsui Chemicals Air Water, Ltd. Over the next few years, Air Water gradually added new production facilities. In 2005, all stock was transferred out of Mitsui Chemicals, and Air Water Carbonic was born.

At present, Air Water Carbonic is able to maintain a stable supply throughout the country by working with Air Water Group's regional companies—which constitute a nationwide sales network—and by operating its own production facilities across the country, from Hokkaido to Kyushu.

A Changing Market, as Raw Supply Contracts

In most cases, carbon dioxide gas producers use, as their input, the relatively high-purity (98–99%) carbon dioxide gas released as a byproduct by oil refineries and ammonia production plants. Recent years, however, have seen the downsizing or closure of many of Japan's refineries and chemical plants—resulting in a drop in the supply of byproduct. Mitsuru Iwamoto, President of Air Water Carbonic, spoke about how the company is addressing this challenge.

"Today, society appears to be moving away from its dependence on fossil fuels, and we expect the industry contraction



Air Water Carbonic Inc.
Ichihara Plant

to continue. But demand for carbon dioxide gas—both by businesses and among consumers—remains very broad. And as Japan's top supplier, we must always be able to ship without delays. This can be particularly daunting during summers, when nationwide demand is at its highest. For this reason, we have invested in plant and facilities—and this has enabled us to meet demand even in the face of contracting supply. We believe that it is our responsibility—to customers, and to society in general—to keep supplies stable.

Multiple Production Sites Help Ensure Supply

Air Water Carbonic is actively investing in plant and equipment to ensure sufficient availability of raw materials. Director Yoshiaki Kikuchi explains.

"Our first step was to build a supply system for western Japan; and we achieved this with the March 2013 opening of our new Sanyo-Onoda plant, in Yamaguchi Prefecture. And now we are looking forward to the start of production, slated for November 2014, at our Muroran Plant in Hokkaido. Our

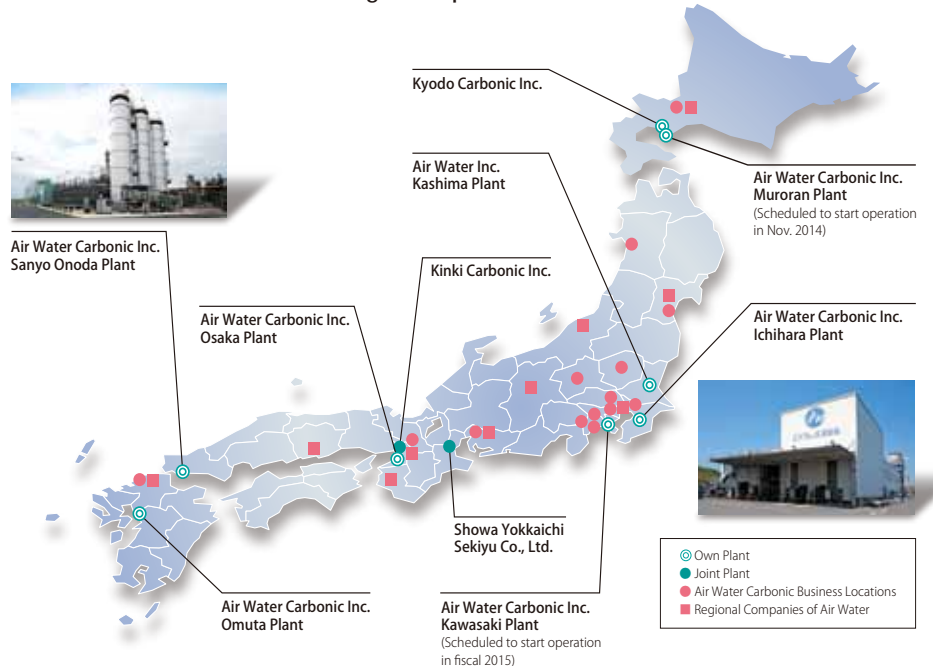


Mitsuru Iwamoto
President
Air Water Carbonic Inc.



Yoshiaki Kikuchi
Air Water Carbonic Inc.
Director, General Manager of Quality Assurance Office, General Manager of Technology Dept., and Production and Technology Group Leader

CO₂ Gas Production Facilities throughout Japan





Dry ice blocks (25 kg each)

largest market—the Kanto region—is currently served by our Ichihara plant (in Chiba Prefecture), but we are already moving forward with a project to start a second plant for the area in Kawasaki (in Kanagawa Prefecture)."

"When these new plants are online," explains President Iwamoto, "we will have ten production plants running throughout the country—eight of them we operate on our own, and two of them as joint enterprises. Stable supply is our highest priority, and the key to building a growing and satisfied customer base."

To Attract and Retain Customers:

Rigid Quality Control, of Both Product and Supply

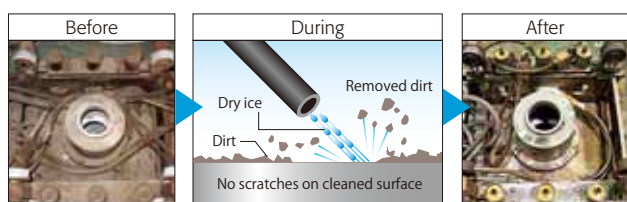
Carbon dioxide gas, of course, provides the carbonation in beer and soft drinks. And thanks in part to the growing popularity of carbonated water, overall demand for carbonated beverages has been trending upward for the past five or six years.

Carbon dioxide gas provided for use in beverages must meet the same high levels of quality and safety as required for foodstuffs in general. Air Water Carbonic supplies gas to many leading beverage manufacturers, and has therefore applied for and received certification of compliance with standards such as ISO9001, ISO22000, and FSSC22000.* Production processes and products are checked and analyzed daily to ensure that they comply with standards and maintain the highest quality. Consistent quality control is a key to winning the trust of customers.



CO₂ gas helps tomatoes grow

Blast cleaning with dry ice



Blast cleaning with dry ice

Finding New Solutions for Customers

Based on a partnership with customers, Air Water Carbonic works closely with them to devise effective solutions. Here are some examples.

- In recent years, vegetable factories have started using CO₂ gas to promote photosynthesis and plant growth. Air Water Carbonic is helping organic tomato growers boost their productivity.
- Dry ice is a key constituent in temperature-controlled supply chains ("cold chains"). These supply chains keep food and other products cold as they move from production site to customer. Air Water Carbonic is working to support this type of social infrastructure, and to help ensure stable supply of dry ice even during heat waves, natural disasters, or other major disruptions.
- Industrial cleaning usually involves solvents, water, and sand or other abrasives. Air Water Carbonic has devised an alternative: blast cleaning with dry ice. This approach is already helping customers achieve better operating efficiencies. Because dry ice quickly disappears back into the atmosphere, no post-processing is required. And dry ice does not leave scratches on metal dies or other similar industrial equipment.

By offering targeted solutions such as these, Air Water Carbonic is attracting and maintaining customers, and building customer loyalty.

* ISO 9001 is a standard covering quality management systems; ISO 22000 covers food safety management systems; ISO stands for International Organization for Standardization. FSSC 22000 is a food safety system certification, promulgated by the Foundation for Food Safety, that combines ISO 22000 with the ISO/TS 22002-1:2009 food-safety prerequisite programs.

Efforts on Customer-Related Issues

Air Water is working every day to offer products and services that ensure safety and security of our customers, and that meet their high expectations and earn their trust. We give serious considerations to our customers' voices, and the entire Group is pursuing efforts towards product safety and quality assurance.

Company-Wide Policy on Quality

Air Water has established the Company-Wide Policy on Quality, which is a common policy applied to each division and Group company, as follows.

Company-Wide Policy on Quality

Offering products, goods, and services
with quality appreciated by our customers
with a word of thanks.

To Deliver Safety and Security to Our Customers and to Earn Their Trust

For the Safety and Security of LP Gas Users

Air Water Hello Support Inc. serves as the call center for LP gas users in Hokkaido, and accepts phone calls 24 hours a day from about 165,000 customers from across Hokkaido. This call center opened in 2004, and is open 24 hours a day, 365 days a year. The center receives 25,000 to 30,000 phone calls a month, and while the main reasons for calling are to inform of moving, or for ordering kerosene or AW-Water (home-delivered drinking water), some are emergency cases related to safety, such as failure in ignition, LP gas odor, and malfunctioning of equipment.

When the matters raised by our customers require urgent attention, the person in charge in offices of Hokkaido Air Water Inc. will arrive within 30 minutes to attend the cases. At the same time, details are entered into a database called "Hello Gas System" by the operator, and are shared with related divisions. Records of approximately 500,000 cases have been accumulated in the database over four years. The persons in charge can sort and view data by date, division, content, and other categories, and the database is used every day to improve services.



For Patients Who Need Home Care Products

Air Water Medical Inc. is a company specialized in home care, and it mainly deals with products such as home oxygen concentrator and infusion pump exclusive to home total parenteral nutrition (Cafty Pump).

Users of home oxygen concentrator are mainly patients of chronic obstructive pulmonary disease (COPD). Home total parenteral nutrition (HPN) is for patients who are unable to take food orally. In both cases, users are mainly the aged.

While these types of equipment are used under the direction of a doctor, direct visits are made to patients' homes to deal with matters such as setting up or checking the equipment. As many of the patients are old, we always try to be clear and precise in our actions and responses. In addition, we believe that it is important for us, as professionals in medical equipment, to identify and address patients' needs promptly.

The home oxygen concentrator traded by Air Water Medical has features of a built-in battery and a fire prevention function. As a measure in preparation for natural disasters, widespread use of equipment that neither stops nor burns leads to providing "safety and security" to patients. Air Water Medical believes it has an important social function in this regard, and will continue to advance in this business.



Home oxygen concentrator

Measures for Quality Assurance

Efforts on Quality Management Systems

In the Air Water Group, each Group company has acquired the ISO9001 quality management system certification.

In fiscal 2013, courses to train internal auditors were organized by Air Water in three locations, and employees of the Air Water Group participated in the training.

Continuing from the previous fiscal year, support was provided to Air Water Philippines, Inc., which acquired the ISO9001 certification in July 2013.

Sharing Information on Quality Assurance

Air Water distributes "Quality Assurance Information" company-wide to share information on quality assurance. Six issues were published in fiscal 2013, featuring information on the revision of the rules on quality assurance, reference materials from workshops on quality assurance, and other topics.



Quality Assurance Information

Workshop on Quality Assurance

The first quality assurance workshop was held in Tokyo and Osaka on November 6 and 11, 2013, with an aim to raise awareness on quality assurance, and to share information and technologies within the Air Water Group. In total, 100 persons participated in the workshop, and the participants were mainly the persons responsible for quality assurance in the Group companies.

A lecturer was invited from outside for the workshop, who gave a lecture on "An approach to ensure ISO and quality assurance." Participants learned a wide range of issues with a main focus on the basic points related to quality assurance.

We will continue to hold quality assurance workshops in a systematic manner, to raise awareness on quality assurance and to promote the sharing of information and technologies within the Group.



Workshop on quality assurance

Measures for Food Safety

Efforts on Food Safety Management

Air Water promotes the acquisition of food safety management system certifications by the companies of the Air Water Group that manufacture food products. Within the Group, Saver SS Inc. has acquired ISO22000, and Gold Pak Co., Ltd., Air Water Carbonic Inc., and Kyodo Carbonic Inc. have acquired FSSC22000. Furthermore, companies such as Gold Pak Co., Ltd. have acquired the Comprehensive Sanitation Management and Production Process, and Tomiichi Co., Ltd. and others have acquired HACCP of local governments.

In fiscal 2013, Tomiichi Co., Ltd. was granted HACCP certification in December for grated *daikon* (Japanese radish, for commercial use). We will continue to expand the acquisition of food safety management system certifications.



ISO22000 Certificate of Registration of Saver SS Inc.

Staff Workshop on Food Safety

Air Water Group companies involved in food products organized the first staff workshop on food safety in December 2013. The purpose of the workshop was to share information and technologies among the staff involved in food safety, and to improve technologies on food safety management. Participants in the workshop consisted of 27 staff members from 12 Group companies and 13 business establishments.

At the workshop, a lecture on food safety management system was given by an outside lecturer, and presentations were made on the efforts made by the companies concerning food safety.

We will continue to organize workshops on food safety, and will make efforts to bring the companies to a higher level.



Staff workshop on food safety

Relationship with Employees

(Toward Creating a Workplace Environment in Which Employees Can Work with a Sense of Security)

Air Water believes that ensuring safety is a basic premise of its corporate activities, and that the Company will not survive, nor will it grow, without the safety and security of its employees. Under the Safety and Health Basic Policy, information related to safety is shared and efforts are being made toward the goal of zero work-related accidents. The health of employees is our first priority, and we strive to create a comfortable workplace environment.

Safety and Health Basic Policy

Air Water has established the "Safety and Health Basic Policy" as the basics for measures concerning safety activities, and is working on the activities.

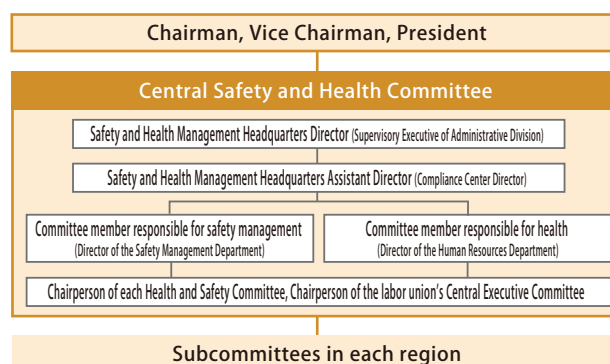
Air Water Group Safety and Health Basic Policy

1. We aim to achieve zero work-related accidents, and advance comprehensive and systematic safety measures.
2. We promote the formation of a comfortable workplace environment, while securing employee safety and health.
3. We comply with all related laws, and create workplaces with clear lines of responsibility concerning occupational safety, traffic safety, and occupational health, as well as safety and disaster prevention.

Under the above Basic Policy, we strive to increase each employee's awareness of the "Safety and Health First" rule and create an appropriate work culture through safety and health education.

Safety and Health Structure

Air Water has established a Central Safety and Health Committee structure to secure workplace safety and health. The Central Safety and Health Committee meets on a regular basis under the Safety and Health Management Headquarters Director, with the participation of the committee member responsible for safety, the committee member responsible for health, 25 chairpersons of the Health and Safety Committees, and officials from the Air Water labor union. The minutes of Central Safety and Health Committee meetings are disclosed internally using corporate networks for information sharing.

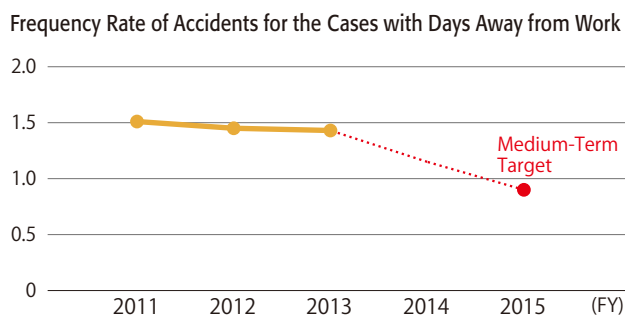


Safety and Health Structure Chart

To Achieve Zero Work-Related Accidents

Industrial Accident Statistics

In fiscal 2013, 37 cases with days away from work were reported within the Air Water Group. The number remained flat from 36 cases in fiscal 2012. Meanwhile, the frequency rate of accidents* for the cases with days away from work in fiscal 2013 was 1.43, and showed a slight improvement.



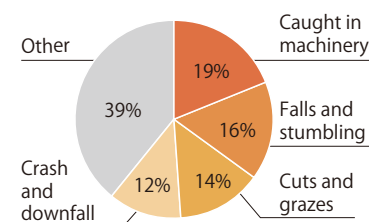
* Frequency rate of accidents for the cases with days away from work is an indicator for the frequency of industrial accidents. It is a rate expressed by the number of people encountering an accident per one million total working hours.

Taking into consideration the types of business as well as the number and composition of employees, the Air Water Group has set the medium-term target of the frequency rate of accidents for the cases with days away from work as 0.90 or below, for the period fiscal 2013 to fiscal 2015.

When looking at the causes of accidents in fiscal 2013, "cases of getting a finger, hand, arm, or foot caught in machinery," "cases of falls and stumbling," "cases of cuts and grazes," and "cases of crash and downfall" together accounted for 60%.

Breakdown of the Cases with Days Away from Work

(37 Cases in Fiscal 2013)



Range: Air Water Inc., consolidated subsidiaries, equity-method subsidiaries, equity method affiliates, non-consolidated subsidiaries

Training on Safety

Air Water conducts various types of training concerning safety. In fiscal 2013, a new training program titled "Staff Training on Safety" was implemented with the participation of staff members responsible for safety issues within the Group. In addition, we implement the following workshops: "Training to Experience Safety," targeting new employees and the employees working on-site; "Training on Risk Assessment" for staff members in charge of safety and health, leaders of workplaces, and employees working on-site in the Air Water Group; and "Training for Staff Members Responsible for the Safety of High Pressure Gas" targeting staff members who handle high pressure gas.



Staff Training on Safety

Among these training programs, the Staff Training on Safety is implemented with the aim to share information on work-related accidents and traffic accidents, and to spread the efforts concerning safety to the entire Group. The Training to Experience Safety, on the other hand, is implemented aiming at helping to prevent accidents by deepening knowledge of "risk" and "safety," as well as through understanding potential risks around oneself that exist in a workplace by sensing them.

Consciousness on safety is raised in the entire Group through the interaction among our staff members during these workshops.



Training to Experience Safety

Special Safety Diagnosis

Since the second half of fiscal 2013, Air Water has been undertaking "Special Safety Diagnosis" by a third-party organization as an awareness raising activity toward "creating secure and safe workplaces" within the Group.

Diagnosis is a process in which an external expert who has a wealth of knowledge and expertise on safety and health checks aspects including the status of safety management, production facilities, and machinery, as well as the ways of operation of the manufacturing plants within the Group.

The issues concerning safety, which had not been easy to detect in workplaces, are revealed through the "eyes of an outsider." The results of the diagnosis include the identification of risk points, as well as evaluation of good examples where satisfactory measures have been taken. Corrections are made and preventive measures are taken by the plants based on the guidance given.

Sharing Safety Information

Air Water distributes "Safety Information," which includes information such as on the accidents that occurred within the Group, through the corporate network.

Information on causes of accidents and measures to prevent recurrence is shared within the Group, so that the information spreads in worksites.



Safety Information

Safety Slogans

On the occasion of "National Safety Week," which is held every July, Air Water solicits "safety slogan" proposals from all employees, including employees at affiliates, in order to raise awareness of safety.

This contest provides a good opportunity for employees to think about safety at work and at home, and in fiscal 2013, 3,139 proposals were submitted.

An award is given for the best entry, and the slogan is displayed on posters in each workplace.



Safety slogan poster (FY2013)

The Record of 10,000 Consecutive Days of No Accidents Achieved—Hikari Plant, NSCC Air Water Inc.

The Hikari Plant of NSCC Air Water Inc. achieved 10,000 consecutive days of no accidents on August 17, 2013. As an on-site plant that supplies oxygen, nitrogen, argon, and hydrogen for the Hikari Works of the Nippon Steel & Sumikin Stainless Steel Corporation, the plant has been complying with related laws and regulations, rules, and procedural documents, and the employees have all been making efforts every day to raise their awareness on safety. This achievement is the result of these efforts.

Continuation of no accidents and no disasters will be pursued through implementation of safety activities with participation by all.



The Hikari Plant and staff members

Putting the Health of Employees First, and for Creating a Comfortable Workplace Environment

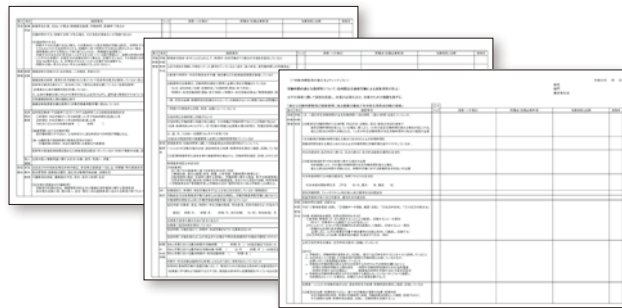
Appropriate Management of Working Hours

Air Water believes that appropriate management of employees' working hours is one of the fundamental aspects required to ensure that a corporate culture that gives first priority to safety and trust takes root.

In fiscal 2013, we focused our safety and health activities on efforts to prevent health impairments caused by long working hours and overwork. In August, a message was sent by Yasuo Imai, President and Chief Operating Officer, to Directors of Departments and to Group companies concerning appropriate management of working hours. At the same time, self-assessments were made based on a checklist concerning working hour management, wages, health management, and safety and health. Instructions were given to take measures on the points that required improvement.

Aside from the above, a notice was sent to the Departments and Group companies in April 2013 concerning issues, including appropriate management of working hours, and we are working to ensure appropriate working hours, measures concerning health management of workers, and promotion of safety and health committee activities.

In addition, in view of the results of the month of intensive inspection on overwork implemented nationwide by the Ministry of Health, Labour and Welfare, in January 2014 we made efforts to enforce appropriate management of working hours.



Checklist for appropriate management of working hours

Efforts Concerning Mental Health

Air Water works on mental health issues through the Human Resources Department, labor union, health insurance society, and the Central Safety and Health Committee, for the health management of employees and to improve their productivity.

As part of this effort, we educate our staff members by conducting different types of training according to the level of the target group, such as for newly assigned managers. Information on subjects related to "mental health management" and "support

for the return to work by those who were away from work due to mental health troubles" is included in the risk management manual available in the corporate network. Furthermore, health consultations by an industrial physician are conducted on a regular basis, through which opportunities are provided for employees to directly consult a doctor.

Through these measures, we are working to prevent mental health problems and to provide appropriate care.

Providing Health Related Information

The health insurance society of Air Water publishes an email newsletter titled "News from the public health nurse" twice a month to promote good health of our employees. A public health nurse assigned to the health insurance society writes the newsletter.

The "News from the public health nurse" is prepared by applying various ideas; for example by using simple language easy to understand for everyone, and writing concisely while avoiding long text. Also, submissions of *senryu* (humorous seventeen-syllables poem) on health related issues are invited and an event on health called "*Hakaru* (measurement) rally" is organized through the newsletter in October, which is the month for health.

Messages are received from those who have read the newsletter, including comments such as "Very interesting," "Easy to understand," and "Will certainly try this out." We will continue to promote good health of our employees by providing health related information.



Email newsletter "News from the public health nurse"

Working with the Labor Union

Air Water believes that relationship between labor and management is like the wheels of a vehicle. We strive to establish a firm collaborative relationship through exchanging frank opinions, working toward the same direction while maintaining a certain distance.

Accordingly, we hold the joint management council by labor and management once a month to discuss issues concerning labor and management. In fiscal 2013, we mainly discussed appropriate management of working hours and on efforts concerning mental health. We also hold the central round-table conference between labor and management every year at the time of the

regular meeting of the labor union, and hold the central joint labor-management conference twice a year. Aside from the above, we hold the wage committee four times a year on a regular basis. At this committee, discussion and examination are undertaken by representatives of labor and management in an objective manner and from the position of the company as a whole. The committee serves as an advisory body to determine employees' annual wage levels, which include their monthly salary and bonus.

Labor and management will continue to work together and strive to create a corporate culture that becomes the foundation of our future growth.

Relationship with Employees

(Making the Best Use of Diverse Human Resources, and the Efforts concerning Human Rights)

Various Group companies engaged in a wide range of businesses join together in the Air Water Group. It is composed of companies with diverse culture. We protect human rights and respect employees' individualities and personalities, so that employees of the Group can work lively.

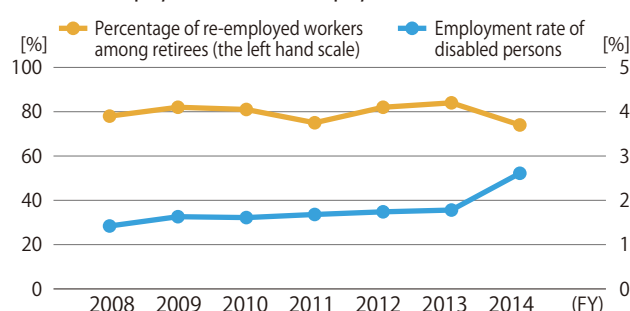
Toward Creating a Workplace Where Diverse People Can Work Lively

Air Water is working to create a workplace full of energy where diverse people can work lively.

We have established the rules for re-employing retired employees to accommodate senior employees who wish to be re-employed after retirement. In recent years, around 80% of retired workers have been re-employed, and we are making the most of the technical know-how that employees have accumulated over the years.

Concerning employment of disabled persons, the rate has exceeded the employment rate designated by law in fiscal 2014 (presently 2.0%). We will try to maintain the employment rate designated by law.

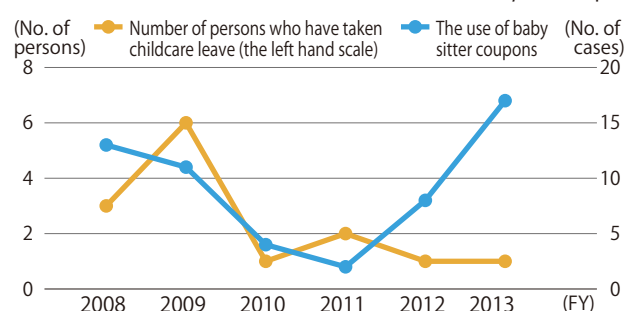
Ratio of Re-Employed Workers and Employment Rate of Disabled Persons



We are supporting child rearing employees through the childcare leave system which has been established to accommodate employees who wish to take leave to take care of their children. We have also set up a system to support childcare through the use of babysitters, to cater to employees who wish to continue working while raising their children. Discount coupons are provided when they use baby sitters. Furthermore, we distribute a childcare information magazine every month to employees who are raising their children (or to their spouses).

In addition to the above, we are working to create lively workplaces; for example, through continued discussion with the labor union for the best use of diverse human resources.

Number of Persons Who Have Taken Childcare Leave, the Use of Baby Sitter Coupons



Efforts on Human Right Issues

Air Water has established the "Air Water Group Code of Ethical Conduct" in which the code of conduct concerning workplace environment is stipulated as follows.

1. Unwelcomed words or actions of a sexual nature in the workplace are not tolerated. Sexual harassment should never be accepted.
2. Individual human rights are respected. Discrimination on the basis of gender, nationality, beliefs, race, age, social status, disability, or any other irrational reason unrelated to performance of duties is prohibited and should never be accepted.

In order to ensure conformance to the "Air Water Group Code of Ethical Conduct," the Code is studied in the training provided in advance for new employees, for those promoted to head of sections, and for managerial class. The training is followed by group discussion, during which awareness is raised through interaction.

Making the Best Use of Non-Japanese (Global) Personnel

Air Water Philippines, Inc. (hereinafter referred to as AWPI), an overseas affiliated company of the Air Water Group, is engaged in heat treatment of steel and aluminum materials, such as machine components, in the Philippines.

AWPI installed a new heat treatment facility and a washing facility to obtain new customers. To master how to operate these facilities, and to direct the disassembling work, Mr. Taytayon of the Marketing and Sales Department was sent to the Amagasaki Plant of Air Water NV Inc. Mr. Taytayon says, "I was deeply impressed with the Japanese culture. I hope my colleagues would also be given opportunities to visit Japan and to learn new technologies."



Eduardo Taytayon
Assistant Manager
Marketing and Sales Department
Air Water Philippines, Inc.

Promotion of Fair Business Practices

For the continued growth of its business, Air Water strives not only to comply with laws and observe agreements with our customers and suppliers as well as with other arrangements, but also to maintain trusting relationship with our stakeholders. Furthermore, the Company promotes fair business practices and aims to grow together with its stakeholders.

Purchasing Approach

Air Water has established its purchasing approach in the purchasing management regulations as follows.

- Air Water always conducts its purchasing activities in a proactive manner, thereby contributing to the development of the Company's business.
- Air Water builds long-term relationships of trust with its business partners on the basis of free competition, equality, and mutual trust so that as good partners, each party can exercise its capabilities to a higher degree in pursuit of mutual prosperity.
- Air Water selects its suppliers based on a comprehensive evaluation of the economic rationality of their goods and services. Selection is made without regard to nationality, location, or size of business, and new entrants are always given a fair and impartial opportunity to participate.
- In conducting its purchasing activities, Air Water considers conservation of resources and environmental protection in order to achieve harmony with the environment. In addition, the Company ensures that related laws as well as the "regulations" and "circulars" of the Company are fully understood. The Company is obligated to comply with the same.

Procuring Raw Materials for Artificial Recycled Wood Products

Air Water ECOROCA Inc. manufactures and sells artificial recycled wood (ECOROCA®). As it is made from recycled materials such as waste wood and plastic, the challenge is to ensure quality and stable supply of raw materials. To meet this challenge, we identify suppliers, and try to maintain good business relationships and to establish relationships of mutual prosperity.

Furthermore, we undertake comprehensive evaluation of the economic rationality by means of visits, and registration sheet and check sheets for suppliers.



Artificial recycled wood (ECOROCA®)

To Ensure Proper Dealings with Medical Institutions

The Air Water Group offers various medical services, with medical gas, hospital facilities, medical equipment, medical services, and home care as the main pillars. Medical gas and medical equipment are essential items on the front lines of health care for treating patients and for preventive care, and are all dealt with under the public health insurance system. As such, transparent and fair dealings are required for companies that deal with them.

To ensure proper dealings with medical institutions, Air Water complies with "The Fair Competition Code Concerning Restriction

on Premium Offers in the Medical Devices Industry," which is a voluntary rule of the industry jointly authorized by the Japan Fair Trade Commission and the Secretary-General of the Consumer Affairs Agency, under the Notification concerning the Medical Devices Industry and Other Similar Industries.

Accordingly, Air Water provides information related to the rule to concerned divisions and Group companies on a regular basis, and also gives explanations and provides guidance.

Compliance to the Antimonopoly Act

After receiving a cease and desist order from the Japan Fair Trade Commission in May 2011, Air Water has been continuing to hold seminars on compliance with the Antimonopoly Act.

The Antimonopoly Act compliance seminar is organized so as to target representatives and salespersons of companies that have newly joined the Air Water Group, employees who have been newly assigned or relocated to the Sales Division, and new employees.

Nowadays, site visits are conducted as part of the efforts to manage compliance risks of the new Group companies. During the visits, the companies' compliance systems are checked, and at the same time, it is ensured that the rules of the Air Water Group and other related matters, including those concerning the compliance of the Antimonopoly Act, are communicated and understood.

As a next step and as a new activity, we will organize the "Seminar on Ensuring Compliance," through which further efforts will be made to ensure that the points to be noted and matters to be complied with in daily business activities and routine works are widely known.



The Antimonopoly Act compliance seminar



Reference materials of the seminar

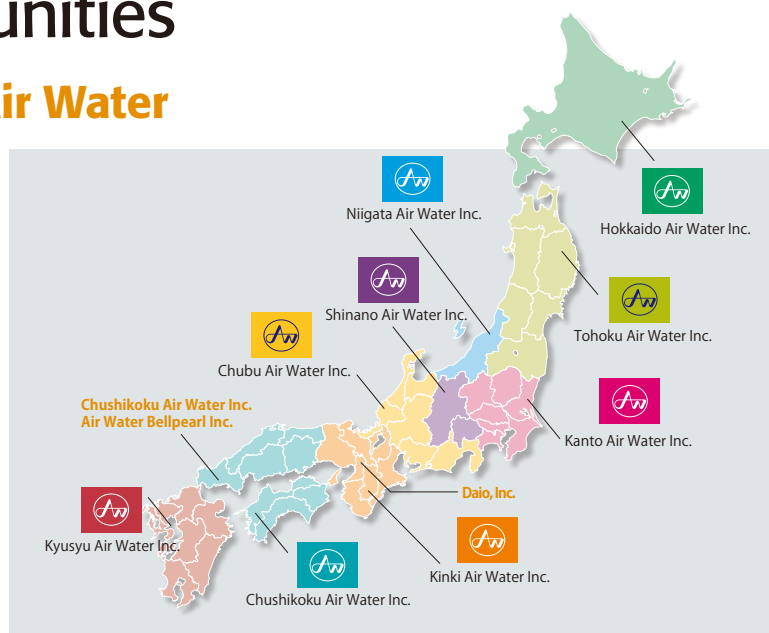
Making Progress and Growing Together with Local Communities

Local Communities and Air Water

The Air Water Group has nine Regional Business Companies nationwide, all of which are managed independently. These nine Regional Business Companies are working so that Air Water's business and technologies take root in the region, and also to create businesses unique to the region.

Since the Air Water Group is closely tied to local communities and pursuing businesses rooted in local communities, it is essential for each company to be trusted by local people for its survival. Therefore, each company is striving to become a trusted presence as a member of the local community.

This section presents the efforts of Chushikoku Air Water Inc. and Air Water Bellpearl Inc. on educational activities in local communities in the Chugoku District (the western part of Honshu), and cleanup activities of Daio, Inc. in the Kinki District.



The nine Regional Business Companies of Air Water and the Group companies whose cases are presented in this section.

* The nine flags nationwide all show different colors. Each expresses the region's natural features, economic strengths, and the spirits of the people.

Efforts in Chugoku and Shikoku Districts: Experiment Classes Held at the Science Museum "SOLAR"

The Science Museum "SOLAR," located in Hofu City, Yamaguchi, is a "hands-on" facility that aims to raise children's awareness on science and technology. The "Science Academy," a series of experiment classes for elementary school and junior high school students, is held at SOLAR during summer holidays, hosting voluntary lecturers from local businesses and other institutions.

The Air Water Group has been collaborating with SOLAR since 2011, and has been organizing an experiment class titled "Experience the extremely cold world of minus 196°C." The experiment class is jointly organized by three companies; namely, Chushikoku Air Water Inc., Air Water Bellpearl Inc., and another company in the neighborhood. Three classes, each with 20 elementary school students, were held in 2013, and approximately 150 people, including the families, enjoyed the experiments.

Five experiments were conducted during the experiment classes, including an experiment that showed a superconducting ceramic floating in a magnetic field at the temperature of liquid nitrogen (the Meissner effect).

In preparation for an experiment class, persons in charge from the three companies get together to plan various experiments. However, when they actually conduct the trials, most of them do

not work out immediately. Originality and ingenuity are required in some cases, and in other cases there are tricks that are not commonly known. Through these science experiment classes, the technological capabilities of those who serve as lecturers are improved as well.

Although the experiment classes require thorough preparation, comments received every year from elementary school and junior high school students and their parents who participated, such as "It was fun!" and "I enjoyed it!" have been an encouragement.

We will continue to contribute to stimulating children's interest in science through the Science Academy, and will always value interaction with local people.



What's going to happen?



Parents and children participating enthusiastically

Efforts in Kinki District: Participation in the Hirakata City Adopt Program*

Daio, Inc., an Air Water Group company that manufactures and sells high-pressure gas in the Kinki District, had been undertaking weeding and cleanup activities independently around the company premises for some time. Since July 2010, it has joined the "Hirakata City Adopt Program," the City's environmental beautification activity, and has been undertaking cleanup activities every month. A total of 126 people participated in fiscal 2013, and collected 502.3 kg of waste.

Being greeted by and talking with local people during cleanup activities have been good incentives for the activity.

Daio, Inc. strives to be a company trusted by local people, and will continue to be engaged in cleanup activities.



Cleanup activity



After the cleanup activity

* An environmental beautification program implemented through the collaboration of citizen's groups, local businesses, and other organizations, and the local government.

To Continue Protecting Our Precious Earth

The Air Water Group is engaged in a business that makes the most of precious resources of the earth to support industry and day-to-day life. We believe that conservation of the global environment is not only the basis of the continuity of our business, but also a theme that we, who live on the Earth, should work on as an obligation. Hence, the entire Group is making efforts to promote environmental conservation.

The Hybrid Hot Water Supply and Heating System, VIVIDO: The Idea That Changed the “Heating in Hokkaido”



In Sapporo, where the product was developed, with the Sapporo TV Tower in the background

In Hokkaido, for almost half the year you cannot live without heating. Hot water supply and heating using kerosene are common for life in winter, and fuel consumption for heating is high.

Air Water put ideas together to solve this regional issue and came up with something that did not exist in the world: VIVIDO, a hybrid hot water supply and heating system that combines electricity and LP gas. Energy conservation of approximately 24% and CO₂ emissions reduction of about 17% have been achieved compared to kerosene-based hot water supply and heating. The advantages have been valued by the people in the region, and the accumulated sales have exceeded 1,000 units by December 2013. The history of its development as well as its performance, evaluation, and other aspects are reported here.

Naohiro Kodama

(On the left in the photo)

Corporate Officer
General Manager
Electric Power Strategy Dept.
Air Water Inc.

Tatsuya Kuramoto

(On the right in the photo)

Leader of the Housing, Facilities,
and Energy Group
Central Hokkaido Energy Branch
Hokkaido Air Water Inc.

Air Water's Proposal for Energy Conservation That Brings a New Way of Central Heating Essential for Life in Cold Climate Areas

The average temperature in Hokkaido during winter is below zero in almost the entire region. Heating is essential for about half the year. In Hokkaido, hot water supply and heating based on “kerosene,” a fuel easy to handle, are common. However, the cost for heating in winter is a heavy burden. Air Water started looking into ways to reduce heating cost through energy conservation. We interviewed Mr. Kodama, General Manager of the Electric Power Strategy Department, who was involved in the initial stage of development, to learn about the history of development.

“The LP Gas Business of Air Water originated in Hokkaido. Partially due to this background, the approach to ‘make suggestions for a pleasant life’ to gas users had been ingrained in all employees. The idea of VIVIDO, the hybrid hot water supply and heating system, was proposed by an employee as well. VIVIDO combines heating by an electric heat pump that uses aerothermal energy, with Eco-JOES, which is a powerful and highly efficient hot water supply and heating device that uses LP gas. It has achieved energy conservation of approximately 24%* and CO₂ emissions reduction of about 17%* compared to kerosene-based hot water supply and heating systems. This product has been developed while giving serious thoughts

based on customers’ voices in which they expressed, for example, that they wished to reduce fuel and lighting expenses during winter, and that they wanted more convenient hot water supply functions.”

In addition to the development of the hardware, we were able to combine the rate schedule of power companies with that of VIVIDO, and have succeeded in reducing the running cost of hot water supply and heating.

* Values are estimated by Air Water.

Starting from the Point Where Nobody Knew: Focusing on Efforts to Propose the Product in a Systematic Way

How could a product that did not exist before be made widely known? Mr. Kuramoto, Leader of the Housing, Facilities and Energy Group of Hokkaido Air Water Inc., talks about the plan of activities at the initial stage of proposing the product.

“Our final goal was to propose the use of VIVIDO in newly built houses to home building firms and building contractors. This was because VIVIDO would perform the best in houses with high insulation performance. However, home owners would not select a hot water supply and heating system that they had never heard of for their houses, which is something they would buy only once in a lifetime. So we started by suggesting our LP gas users to replace their hot water supply and

heating systems, and accumulated a track record on evaluation of introduction as well as on cases of installment."

Customers' Voices That Supported the Accumulated Sales of Over One Thousand Units

"I think favorable winds blew for us as well," says Mr. Kuramoto. That is his response to the question asking why 1,000 units of this unknown product were installed across Hokkaido in the five years since its release. The Great East Japan Earthquake and the accidents of nuclear power plants drastically changed the decision criteria of people in selecting energy. Prior to the earthquake disaster, approximately 90% of newly built houses were all-electric homes, but this trend changed all at once after the earthquake disaster.

"Factors seriously considered by customers in Hokkaido include selection of the energy itself, such as electricity, municipal gas, LP gas, and kerosene, as well as the economic aspects on the ways to reduce heating cost. It appears that VIVIDO gradually became known to people within this historical context after the earthquake disaster."

VIVIDO reduces fuel and lighting expenses through energy conservation, and is also fully equipped with functions that bring comfort to life. The powerful hot water supply that boils water instantly, automatic bath filling, reheat function, and other functions that bring comfort are added to the system, and have been appreciated by our customers.

Following are examples of comments received from our customers: "Energy is conserved as the heating is done either by the heat pump or by Eco-JOES according to the temperature," "We are relieved because the running cost throughout the year has gone down," "The equipment is compact and does not use much space," "We don't have to worry about rise in price as we no longer use kerosene," and "We are satisfied with functions such as reheat and automatic bath filling." Installation of over 1,000 units is a result of the many voices of our customers reaching new customers.



The hybrid hot water supply and heating system combines a heat pump heating device that uses aerothermal energy (on the right in the photo) with a high-efficiency hot water supply and heating device that uses LP gas (Eco-JOES, on the left in the photo). It realizes high thermal efficiency and can accommodate use in Hokkaido where it is extremely cold in winter.

The hybrid hot water supply and heating system VIVIDO

Fulfilling Our Responsibility for Global Environmental Conservation by Proposing and Spreading the Use of Energy Efficient Products

Five years have passed since the release of VIVIDO, and the time has come for those customers who installed it in the initial stage to undertake maintenance of the equipment. As the accumulated number of installations is now increasing from the scale of 1,000 to 2,000, Air Water is working to strengthen the on-going follow-up system for customers, including a menu for check-up service and maintenance agreements. We listened to Mr. Kuramoto again.

"While VIVIDO does not require much maintenance, it does need check-up or follow-up services such as changing of anti-freeze solution. Since we visit our customers for other purposes such as supplying gas, we take those opportunities to consult about follow-up services and future plans, and to listen to their requests. We are always linked with our customers, and have established long-term relationships with them."

When the proposed new hot water supply and heating system, with less environmental impact and which aims to conserve energy, is selected and appreciated by our customers, it serves its purpose as a product. At the same time, the use of such product by customers allows Air Water to fulfill its responsibility to the global environment.

Expectations on VIVIDO, Which Makes Heating in Hokkaido Economical and Environmentally Friendly



Akihiro Ishida

Group Leader
East Sales Group No. 2
Sapporo East Branch
Misawa Homes Hokkaido Co., Ltd.

Among the home building firms, Misawa Homes Hokkaido Co., Ltd. was the first to adopt VIVIDO. We listened to Mr. Akihiro Ishida, Group Leader of East Sales Group No. 2, Sapporo East Branch.

"VIVIDO matches the theme of Misawa Homes, which aims for housing development which brings the Heart and Earth together (Heart & Earth = HEARTH). Since 50% or more of household energy use in Hokkaido is for heating purpose, we believe VIVIDO is suited for heating in Hokkaido, as it can warm the entire house with low energy cost."

After the Great East Japan Earthquake, diversity in energy is required in housing. Mr. Ishida says that, as VIVIDO has come into the picture, it has become a strong advantage for home building firms to be able to suggest to home owners in

Hokkaido the hybrid of electricity and LP gas, in addition to the energy options of electricity, kerosene, and municipal gas. He also says that VIVIDO is a good fit with well-insulated airtight housing, and it is easy to propose how fuel and lighting expenses can be reduced. Mr. Ishida has installed VIVIDO in his own house as well, and values it, saying, "I am satisfied with the comfortable space warmed by low-temperature hot water, the speed of automatic bath filling, and other functions, in addition to its energy conservation performance."

Lastly, he expressed his future expectations by saying that he would like Air Water to develop more new ideas suitable to life in Hokkaido by making best use of VIVIDO.

To Continue Protecting Our Precious Earth

Technologies, Products and Services of the Air Water Group That Contribute to the Environment

The Air Water Group provides a wide variety of technologies, products, and services that contribute to the environment, ranging from those that improve energy efficiency of infrastructure that support day-to-day life, to those that are related to daily life and are familiar to us such as recycling of oil. In this section, we present technological developments and business activities that contribute to both a comfortable life and a sustainable society.

Development of the Pulse Tube Refrigerator That Contributes to Resource Conservation

The technology of the pulse tube refrigerator, one of the low-temperature technologies of Air Water, has been adopted for research and development of the second-generation magnetic levitation train. The technology was selected because the advantages of the technology were highly valued, including its contribution to resource conservation, compact size, and easy maintenance.

The current, first generation magnetic levitation train of the Linear *Chuo Shinkansen* has magnets installed in the cars, and superconducting coils are embedded in the magnets. Cars are floated by magnetic force. Liquid helium (boiling point: -263°C) is required for the cooling of superconducting coils.

Presently, development efforts are being made toward adopting a high-temperature superconducting coil for the second generation magnetic levitation train. When this is put to practical application, it will be operated at about minus 223°C , thus will eliminate the need for the cryogenic temperature of liquid helium. The pulse tube refrigerator has an advantage of higher cooling efficiency compared to other cooling systems in the temperature range of the high-temperature superconductivity.

Also, since the cooling of the pulse tube refrigerator is based on compression and expansion of helium in gaseous form, liquid helium will not be required, and the use of costly helium will be

reduced significantly. Furthermore, the pulse tube refrigerator system allows several refrigerators to be operated by a single compressor, unlike conventional refrigerators that require one compressor for each refrigerator. This allows a compact design and reduces the weight of the car. There is an added advantage that its structure allows easy maintenance.

In addition to the example mentioned above, the pulse tube refrigerator is applied to gas liquefaction facilities and reliquefaction facilities making best use of its advantages. For example, the pulse tube refrigerator is the most efficient facility that cools nitrogen at ordinary temperature to produce liquid nitrogen (boiling point: -196°C), if it is of laboratory scale.

As explained above, Air Water anticipates using the cooling technology and the gas liquefaction technology of the pulse tube refrigerator in various areas to contribute to energy and resource conservation.



Pulse tube refrigerator

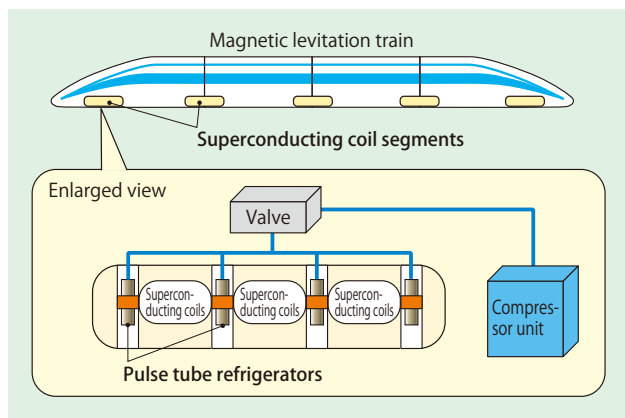
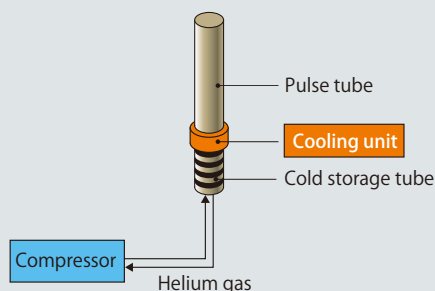


Diagram showing how the refrigerator will be installed in the magnetic levitation train

The Mechanism of the Pulse Tube Refrigerator

Helium gas is supplied from the compressor to the pulse tube. The joint of the pulse tube and the cold storage tube, which constitutes the cooling unit, is cooled through repeated compression and expansion. This cooling unit is applied directly to the place where cooling is required.



Application to liquid nitrogen generator

Production and Sales Business of Biodiesel Fuel That Contribute to Cyclical Use of Resources and Reduction of CO₂ Emissions

The Dream Corporation, an Air Water Group company which manufactures and sells biodiesel fuel mainly in Sapporo City, will start the manufacture and sales of fuel oil composed of biodiesel and light oil (B5) in collaboration with Air Water and Hokkaido Air Water Inc.

Biodiesel fuel is a type of renewable energy. Since it is produced from raw materials of plant origin, emission of CO₂ (a greenhouse gas) generated by burning fossil fuel is considered to be zero.

Presently, the Dream Corporation collects used *tempura* waste oil from businesses and households to manufacture biodiesel fuel, which is an alternative to light oil. The biodiesel fuel is sold to organizations including the Environmental Planning & Waste

Management Department of Sapporo City to be used for waste collection vehicles. Generation of CO₂ was reduced by 695 tons in fiscal 2013 through this activity.

From now on, we will pursue the establishment of a system for collecting waste oil from ordinary households and increasing the number of customers in other areas of Hokkaido. A new base station for production and shipment in Ishikari City, Hokkaido, which has a facility to blend biodiesel fuel and light oil, is also expected to be completed by the end of 2014.

The Air Water Group will use these biodiesel fuels proactively in the logistics and industrial sectors, and will operate businesses that contribute to cyclical use of resources and reduction of CO₂ emissions.



Vehicle for waste oil collection



Power generation using biodiesel
(white illumination at the Sapporo Odori Park site)

Development of a Power-Saving, High-Efficiency, Ejector-Type Sand Collection Device for Waste Water Settling Basin of Sewage Treatment Plants

Aquaintec Corporation is an Air Water Group company that has numerous achievements in development and construction of various types of equipment used in sewage treatment plants. In collaboration with Kawasaki City, the company has developed a power-saving, high-efficiency device that collects sand from waste water.

Rainwater as well as domestic effluents and sewage are purified in sewage treatment plants. To enable efficient treatment of waste water, it is essential to remove the earth and sand collected together with waste water. The newly developed ejector-type sand collection device is an energy efficient, advanced infrastructure facility that has a capacity to collect approximately six

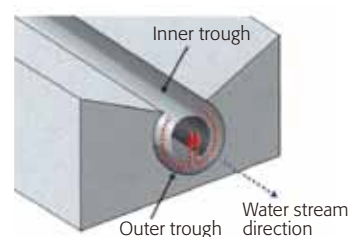
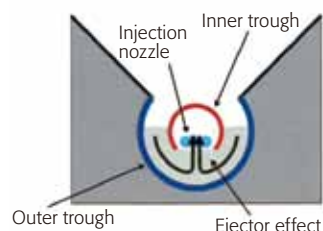
times more sand using 30% or less of the electricity required for conventional devices.

In conventional sand collection devices, sand collection efficacy drops because sand is blown up into the water when water jetted from the nozzle washes away the sand.

The ejector-type sand collection device, on the other hand, transfers the sand by pulling it in by the ejector effect (the negative pressure effect) of the water stream inside the inner trough. Through this measure, sand is prevented from being blown up, and sand collection efficacy improves. At the same time, electricity required to drive the pump has been reduced significantly.



Ejector-type sand collection device for waste water settling basin



To Continue Protecting Our Precious Earth

Environmental Management

The Air Water Group is engaged in a business that uses resources of the earth. As such, the Group believes that activities to preserve the global environment are essential for the sustainable growth of its business. The entire Group is pursuing environmental management under the Environmental Basic Policy.

Environmental Basic Policy

Air Water has established the Environmental Basic Policy as the basics for measures on environmental activities, and is promoting activities.

Basic Philosophy

Air and water—we are stewards of the great gifts of nature, and must consider ways of manufacturing products that are best for nature while also being best for industry and life. We will allow air and water to return to nature after being used by human beings—to regain their pure, original state. We deeply believe that this is our responsibility to the future. We seek to be a company grounded in the providence of nature and the cycle of life. We aim to recycle the earth's precious resources.

Basic Policy

1. We work to conserve resources, conserve energy, recycle, and reduce waste products in all our business activities from research and development to production, sales, distribution, and service.
2. We research and examine the impact on the environment from our business activities, establish technically and economically feasible goals for reducing environmental impact, and continuously work to achieve them.
3. We comply with environmental laws and regulations, establish voluntary standards as necessary, and work for environmental conservation.
4. We select resources (facilities, raw materials, subsidiary materials, components, etc.) required for business activities that not only satisfy technological and economic demands, but which also have a small environmental impact and little negative effect on local residents and employees.
5. Our research and development work gives consideration to the environment, safety, and quality, and provides products, goods, and technology development that contribute to the environment.
6. We promote acquisition of the ISO 14001 international standards for environmental management systems, and arrange structures for implementing our Environmental Basic Policy.
7. We use internal publicity and other activities to boost all employees' understanding and awareness of the Air Water Group Environmental Basic Policy. We disclose this Environmental Basic Policy to the general public.

Environmental Management Structure

The entire Air Water Group is working on environmental activities with our Chairman of the Board as the chief executive responsible. The central role is played by the Environmental Management Promotion Department of the Compliance Center, which provides guidance on compliance with environmental laws and regulations at workplaces and Group companies, and promotes activities to reduce environmental load.

Efforts on Environmental Management Systems

In accordance with the Environmental Basic Policy, the Air Water Group promotes acquisition of ISO 14001 environmental management system certification, especially at manufacturing plants inside the Group which have a high environmental impact. Certification has now been obtained for 30 business establishments, including Group company plants.

* See our website for the status of ISO 14001 certification acquisition:
<http://www.awi.co.jp/english/csr/>

Environmental Risk Management

Rules on Environmental Management and Other Regulations and Procedures

Air Water has established "Rules on Environmental Management" in order to comply with environmental laws and regulations and other requirements, and to promote activities for pollution prevention, resource conservation, energy conservation, and waste products and chemical substances reduction.

In addition, the "Rules to Comply with Environmental Laws and Regulations," the "Regulation on Activities to Reduce Environmental Impact," the "Industrial Waste Treatment Procedures" and the "Response Manual for Environmental Pollution Accident" have also been established and thoroughly informed to Group companies to promote environmental activities.

Environmental Audits

Air Water develops an audit plan based on the level of environmental impact, the status of ISO 14001 acquisition, results of environmental audits in the past, and other aspects concerning the plants and business establishments of the Group, and conducts environmental audits periodically in order to guide their environmental preservation activities as well as their compliance with environmental laws and regulations.

In fiscal 2013, environmental audits were conducted in 47 business establishments. In addition, two audits were conducted for companies that collect and transport industrial waste.

Appropriate corrections have been made on the points raised during these audits, and the level of environmental management has been improved.



Environmental audits

Education and Human Resources Development

Environment and Energy Management Staff Training Sessions

Air Water holds workshops for educating personnel at workplaces and Group companies about environmental activities and so on.

In fiscal 2013, "Reducing environmental risks" was selected as the theme, targeting persons in charge from the plants and business establishments of the Air Water Group with high environmental risks. The workshop included a lecture on "Training to improve sensitivity on environmental risks" by the Japan Environmental Management Association for Industry (JEMA), and participants improved their capacities in sensing the risk, and in making judgment and decisions.



Environment and energy management staff training session

Publication of Environmental Information

Air Water distributes environmental information such as information on amendments to environmental laws and regulations to workplaces and Group companies with the aim of reducing environmental risk.

TOPIC Efforts on Environmental Conservation

Shigeru Okamoto

Magnesia Manufacturing
Department
Manufacturing Headquarters
Tateho Chemical Industries
Co., Ltd.
(Ex-manager of water quality
pollution prevention)



Tateho Chemical Industries Co., Ltd. manufactures magnesia products and ceramic products using bittern from sea water and lime, and it uses a large amount of water resources in the cleaning process. Waste water discharged to the sea resulting from this process amounts to 350,000 tons per year. Therefore, management of waste water treatment facilities has been reinforced, including the inspection of waste water treatment system equipment, and emergency training is undertaken on regular basis, in order to prevent the occurrence of accidents related to waste water.

Recently, we were awarded the "Distinguished Service Award for Environment Preservation" from the Hyogo Prefecture Association for Corporate Environmental Conservation, commending the company's 21 years of operation without any water quality related accidents. We are thankful to many people for their support, which enabled us to receive such an honor. The company will continue its efforts on environmental conservation and pollution prevention, and from now on, will also work on training those who will carry on these efforts in the future.

Internal Environmental Auditors Training Sessions

Every year, Air Water holds training workshops for the internal environmental auditors at sites that have obtained ISO 14001 certification. Participants learn about ISO standard requirements and internal audit methods through text-based seminars, etc.

In fiscal 2013, training workshops were held in three regions nationwide (Hokkaido, eastern Japan, and western Japan) and 49 internal environmental auditors received training for the first time.

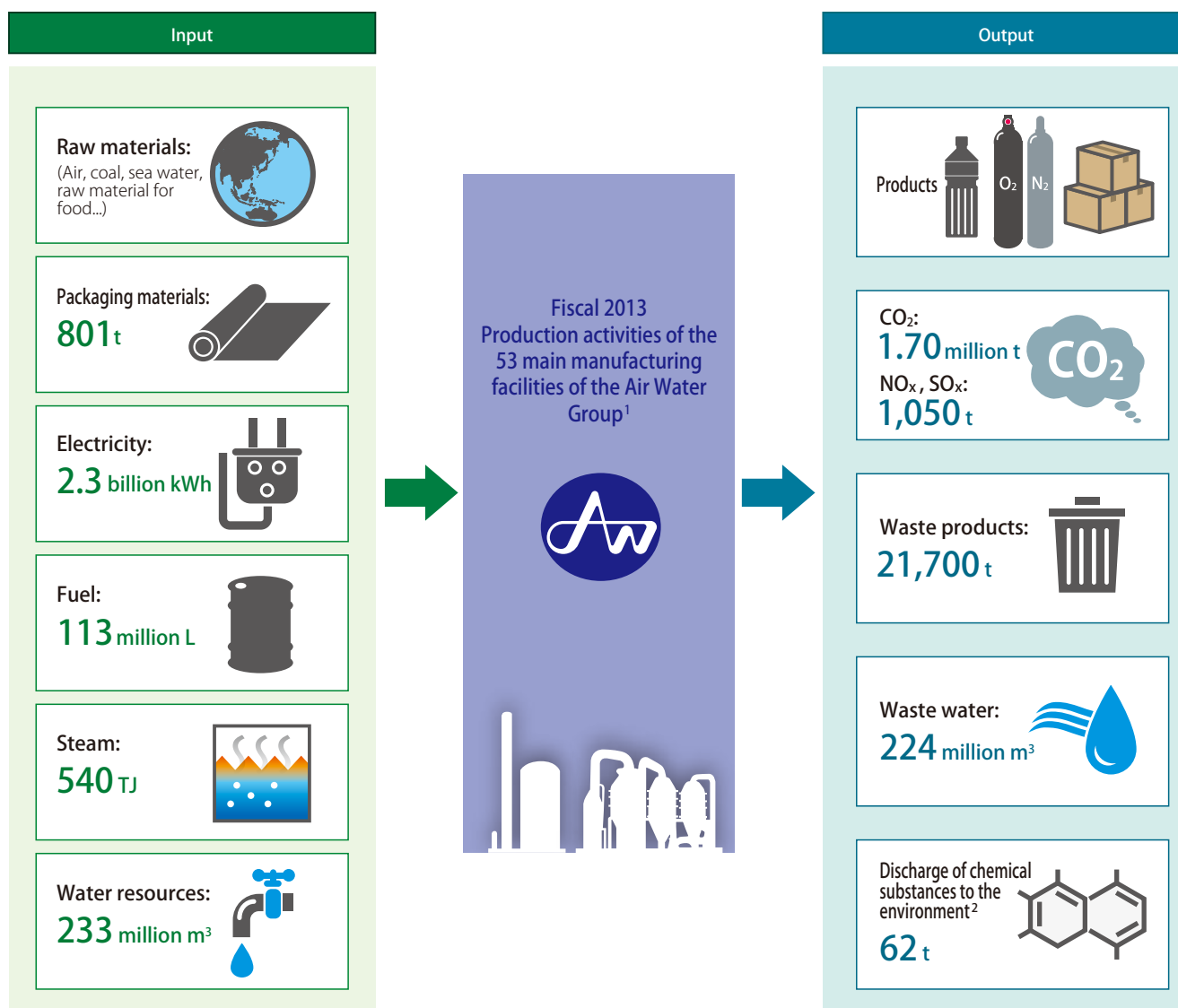


Internal environmental auditors training session

To Continue Protecting Our Precious Earth

Materials Balance (Overall Picture of Environmental Impact)

Providing customers with safe and secure products created from air, water, and the earth's resources, and returning them to nature after they have been used—Air Water's business activities can be said to be doing the earth's work. Air Water accurately tracks the resources, energy, and other inputs to its production activities, as well as the manufactured products, waste products, and other outputs, and works to reduce its overall environmental impact.



¹ Scope (manufacturing facilities with high environmental impact based on a standard set by Air Water)

- Industrial Gas Business: Air Water Inc. (Chitose, Wanishi, Kashima, Utsunomiya, Wakayama, Kobe, Hofu, Kokura, Uozu, Tonami, Arai), Daido Air Products Electronics, Inc. (Mie, Hiroshima, Nagasaki), NCSS Air Water Inc. (Hikari, Kumamoto), Chushikoku Air Water Inc. (Kudamatsu), Tomakomai Oxygen Co., Ltd., Fukushima Ekisan Co., Ltd., Niigata Ekisan Co., Ltd., Sagami-hara Ekisan Co., Ltd., Shinano Ekisan Co., Ltd., Shizuoka Ekisan Co., Ltd., Tokai Ekisan Co., Ltd., Matsuyama Oxygen, Inc., Daio, Inc. (VSUA Center), Shinko AirTech, Ltd. (Yokaichi), Air Water Carbonic Inc. (Ichihara, Omuta, Sanyo-Onoda), Kyodo Carbonic Inc., Air Water Bellpearl Inc. (Hofu)
- Chemical Business: Air Water Inc. (Kashima, Wakayama), SUN CHEMICAL Co., Ltd.
- Medical Business: Air Water Safety Service Inc.
- Seawater Business: Nihonkaisui Co., Ltd. (Onahama, Ako, Sanuki), Tateho Chemical Industries Co., Ltd. (Head Office, Une)
- Agriculture and Food Product Business: Saver SS Inc. (Hayakita, Shirakawa), Air Water Farm Agricultural Production Corporation (Chitose, Azumikino), Gold Pak Co., Ltd. (Azumino, Matsumoto, Eniwa, Aomori)
- Other Businesses: Air Water NV Inc. (Amagasaki), Air Water Sol Inc. (Ibaraki, Gunma, Gifu)

² Class I designated chemical substances under the PRTR Act

* See our website for other data on environmental performance:
<http://www.awi.co.jp/english/csr/>

Measures to Address Global Warming

Business activities of Air Water require a great deal of energy. As a Specified Business Operator under the Energy Conservation Act, the Company is working to track energy use accurately and conserve energy in all its operations, including not only plants, but also offices, business premises, and research facilities.

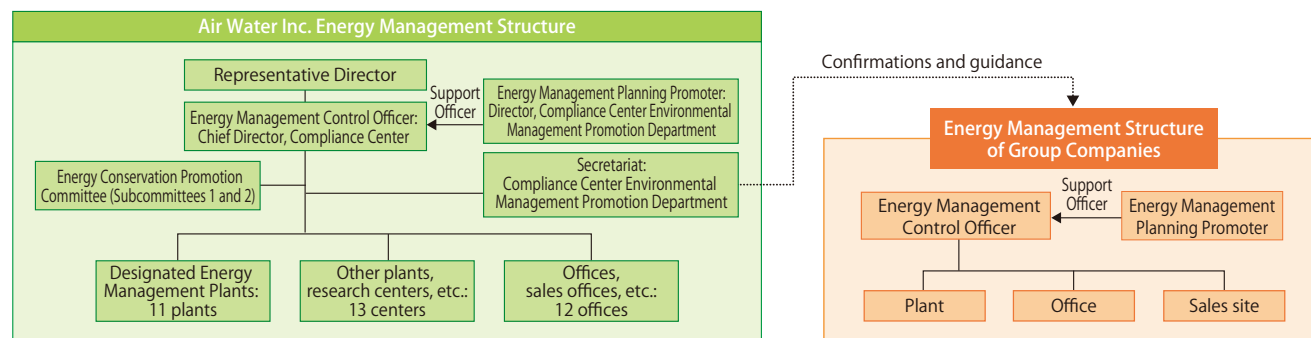
Energy Management Structure

As a Specified Business Operator under the Energy Conservation Act, Air Water has established an environmental management structure with the Compliance Center Manager acting as the Energy Management Control Officer. The "Energy Conservation Promotion Committee" is held twice a year with the participation of the Energy Management Control Officer, the Energy Management Planning Promoter, and the officers responsible for energy management at the designated energy management plants. The Committee studies various aspects concerning conformance to

the Energy Conservation Act, exchanges information on energy conservation, and considers specific business practices such as those related to data and reports in accordance with the Energy Conservation Act.

The Environmental Management Promotion Department of the Compliance Center also confirms the energy management structures of each Group company through environmental audits and other measures, and provides guidance.

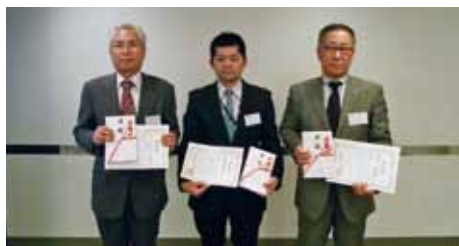
Energy Management Structure



Award for Business Establishments Excellent in Energy Conservation

The Air Water Group awards business establishments that have promoted energy conservation activities and have made an excellent performance as a business establishment excellent in energy conservation.

Information on best cases of energy conservation efforts is shared in the "Environment and Energy Management Staff Training Sessions" (see page 25), and further efforts are made to promote and expand energy conservation.



Award for business establishments excellent in energy conservation



Reports on cases of energy conservation

TOPIC Energy Conservation Efforts at Offices and Other Work Places

The head office's building of Air Water underwent an energy saving diagnosis conducted by the Energy Conservation Center, Japan, in order to drive energy conservation in office buildings. The head office in Chuo-ku, Osaka, is a building with eleven stories above ground level and has approximately 300 staff members.

Energy conservation efforts were made after receiving an energy saving diagnosis from an expert, and in fiscal 2013, electricity consumption was reduced by approximately 8% compared to the previous year. Further efforts to conserve energy will be made in fiscal 2014, with a target of 5% reduction compared to the previous year.

Main Energy Conservation Efforts at the Head Office's Building

- Light-shielding films applied on windows of the building facing south
- Suspension of operation of one out of the two outdoor air-conditioning units used for ventilation
- Optimization of temperature for the hot water supply systems installed in each floor
- All lighting fixtures in the office changed to LEDs



Energy saving diagnosis



Shading the windows of the head office's building facing south

To Continue Protecting Our Precious Earth

Efforts by Plants and Offices

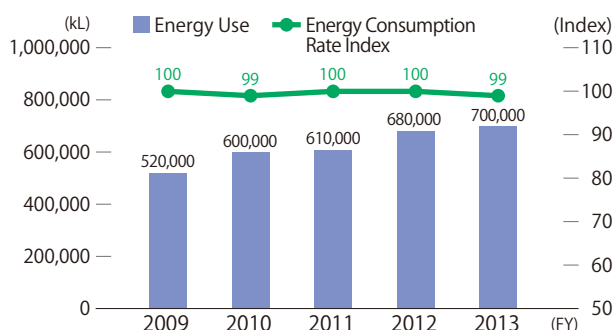
In the Air Water Group, presently 24 companies* are designated as Specified Business Operators and 39 plants are named as Designated Plants under the Energy Conservation Act.

In fiscal 2013, the total amount of energy used by these 24 companies was 700,000 kL (crude oil equivalent). Energy consumption rate showed an average annual reduction of 0.3% over the past five fiscal years, and had decreased by 1.2% compared to the previous fiscal year.

The total amount of CO₂ emission from the 24 companies was 1.74 million tons.

Air Water Group

Energy Use (crude oil equivalent, kL) and Energy Consumption Rate Index



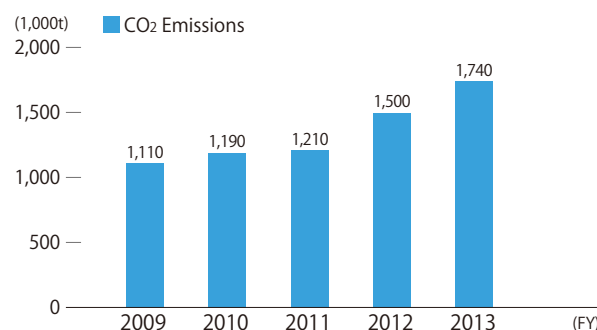
* 2009 energy consumption rate set at 100.

* Scope

Air Water Inc., Daido Air Products Electronics, Inc., NCSS Air Water Inc., Chushikoku Air Water Inc., Tomakomai Oxygen Co., Ltd., Fukushima Ekisan Co., Ltd., Niigata Ekisan Co., Ltd., Sagami-hara Ekisan Co., Ltd., Shinano Ekisan Co., Ltd., Shizuoka Ekisan Co., Ltd., Tokai Ekisan Co., Ltd., Matsuyama Oxygen, Inc., Daio, Inc., Shinko AirTech, Ltd., Air Water Carbonic Inc., Kyodo Carbonic Inc., Air Water Bellpearl Inc., Nihonkaisui Co., Ltd., Tateho Chemical Industries Co., Ltd., Saveur SS Inc., Air Water Farm Agricultural Production Corporation, Gold Pak Co., Ltd., Tomiichi Co., Ltd., Air Water NV Inc.

Air Water Group

CO₂ Emissions



Note: CO₂ emissions of the electricity purchased are calculated using the CO₂ emission factors of electricity utilities, and the figures since fiscal 2012 are affected by the increase of emission factors due to suspension of nuclear power plants and other factors.

Mid- to Long-term Goals of Addressing Global Warming (energy conservation)

Evaluation: ✓ Goal achieved, ○ Close to goal, × Far from goal

Goal	FY2009-2013 Specific Efforts	2009-2013 Results	Evaluation	Causes of the Differences
Reduce energy consumption rate by an average rate of at least 1% per year over the mid- to long-term (over the past five fiscal years)	Industrial Gas Business: Renewal to high-efficiency, large scale ASU plants, construction of high-efficiency VSU plants Chemical Business: Application of inverters in pumps, etc. Seawater Business: Replacement of facilities to introduce more efficient models (kiln, press, etc.)	Annual average reduction of 0.3% over the past 5 fiscal years	○	Almost flat, due to reduced demand associated with the Lehman Shock and the impact of the Great East Japan Earthquake

Fiscal Year Goals of Addressing Global Warming (energy conservation)

Goal	FY2013 Specific Efforts	2013 Results	Evaluation	Causes of the Differences
Reduce energy consumption rate compared with the previous fiscal year	Industrial gas business: Change of equipment such as compressors to those with higher efficiency, effective use of waste gas Chemical business: Reduced use of steam by improving operational efficiency Agriculture and food products business: Replacement of boilers to introduce high-efficiency models, and fuel conversion	Reduction of 1.2% compared with the previous year	✓	—

TOPIC Energy Conservation Efforts by Plants

Industrial Gas Business

Daido Air Products Electronics, Inc. (DAP)
Mie Gas Center

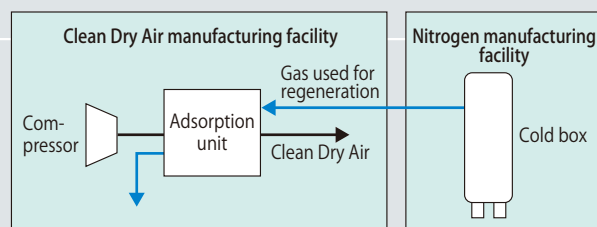


Yoshimitsu Yamamura
Center Director
(Qualified Energy Manager)



Mie Gas Center

Nitrogen (N₂) and Clean Dry Air (CDA) are manufactured at our Center, and are supplied to a liquid crystal display plant located next to the Center. The electricity used for manufacturing is not less than 100 million kWh per year.



Efficient Use of Waste Gas from Nitrogen Manufacturing Facility

To reduce the use of electricity, waste gas from the N₂ manufacturing facility is used effectively as gas for regeneration in the adsorption unit of the CDA manufacturing facility. Facilities have been rebuilt to bring the level of compressed air, which used to be used for regeneration, to zero, and some old CDA manufacturing facilities have been replaced to new, large-scale facilities. In fiscal 2013, we achieved energy conservation of 3.4% (= 3.5 million kWh/year) compared to the previous fiscal year through these measures.

We will continue our efforts in energy conservation activities by using these energy efficient facilities.

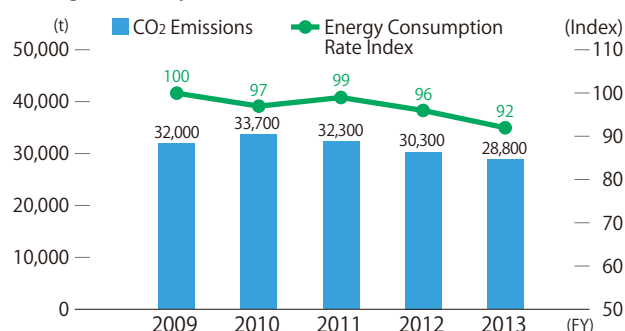
Transportation Sector Efforts

Efforts as a Freight Consigner

Air Water Inc. and Nihonkaisui Co., Ltd., as Specified Consigners under the Energy Conservation Act, promote energy conservation in transportation in accordance with the Act and in collaboration with transportation companies.

After the Great East Japan Earthquake, long distance haulage increased mainly in the Tohoku and Kanto regions, and as a result, the energy consumption rate had worsened. However, in fiscal 2013, the situation was resolved and the energy consumption rate showed a 4% reduction compared to the previous fiscal year.

CO₂ Emissions from and Energy Consumption Rate Index in Consigned Transportation



Scope: Air Water Inc., Nihonkaisui Co., Ltd.

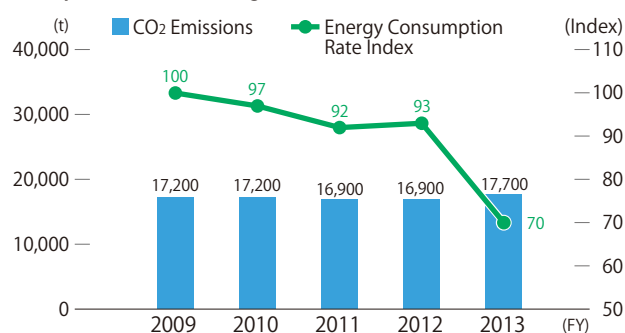
* 2009 energy consumption rate (energy use/amount of transportation) set at 100.

Initiatives Befitting an Innovative Transportation Business

Air Water Specialized Transportation Inc., which manages transportation in the Hokkaido area in the Air Water Group, is designated as a special freight carrier by Japan's national government under the Energy Conservation Act.

The company complies with the laws and regulations pertaining to transportation and works systematically on CO₂ emissions control and measures to prevent environmental pollution from vehicle exhaust.

CO₂ Emissions from and Energy Consumption Rate Index for Transportation as a Freight Carrier



Scope: Air Water Specialized Transportation Inc.

* 2009 energy consumption rate (energy use/amount of transportation) set at 100.

TOPIC Establishment of the Hofu Plant of Air Water Inc.

Industrial Gas Business

The eleventh VSU (compact high-efficiency liquid nitrogen/oxygen co-production plant) has been established in Hofu City, Yamaguchi, and has started commercial operation from September 2013.

Efforts to improve energy efficiency in transportation are being made by establishing a stable supply system through regional distribution of the industrial gas supply system. The supply structure in Chugoku District (the western part of Honshu), where the Company did not have its own infrastructure, has been strengthened, and the transportation distance has been shortened.



Mid- to Long-Term Goals of Addressing Global Warming (energy conservation)

Evaluation: ✓ Goal achieved, ○ Close to goal, × Far from goal

Goal	FY2009-2013 Efforts	Results	Evaluation
Reduce energy consumption rate by an average rate of at least 1% per year over the mid- to long-term (over the past five fiscal years)	Industrial gas business: Efficient delivery by constructing new VSUs (Kanagawa, Ehime, Shizuoka, Nagano, Osaka, Yamaguchi)	Annual average reduction of 3% over the past 5 fiscal years	✓

Fiscal Year Goals of Addressing Global Warming (energy conservation)

Goal	FY2013 Specific Efforts	Results	Evaluation
Reduce energy consumption rate compared with the previous fiscal year	Industrial gas business: Efficient delivery to Chugoku area using Hofu Plant Seawater business: Increased the ratio of transportation by ship	Reduction of 4% compared with FY2012	✓

TOPIC Efforts in Energy Conservation, Including Improvement in Fuel Efficiency

Air Water Specialized Transportation Inc. possesses approximately 500 transport vehicles, and is engaged in a wide range of business, including transportation of high-pressure gas, food products, waste, and materials related to medical business.



In order to conserve energy in transportation, fuel efficient vehicles have been introduced, and fuel efficiency improvement has been pursued by installing digital tachographs in all vehicles and by implementing practical training in eco-friendly driving.

As a next step, we will promote modal shift through measures including the use of larger vehicles such as trailers, and the use of marine transport between Honshu and Hokkaido, as an effort to improve the energy consumption rate.

Mid- to Long-Term Goals of Addressing Global Warming (energy conservation)

Evaluation: ✓ Goal achieved, ○ Close to goal, × Far from goal

Goal	FY2009-2013 Efforts	Results	Evaluation
Reduce the energy consumption rate by an average rate of at least 1% per year over the mid- to long-term (over a period of the previous five fiscal years)	• Introduction of fuel efficient vehicles • Eco-friendly driving	Annual average reduction of 8% over the past 5 fiscal years	✓

Fiscal Year Goals of Addressing Global Warming (energy conservation)

Goal	FY2013 Specific Efforts	Results	Evaluation
Reduce the energy consumption rate compared with the previous fiscal year	• Replaced/newly introduced 61 fuel efficient vehicles/large-sized vehicles • Assessed energy consumption rate for each vehicle • Provided guidance on eco-friendly driving in practice	Reduction of 24% compared with fiscal 2012	✓

To Continue Protecting Our Precious Earth

Proper Management of Chemical Substances

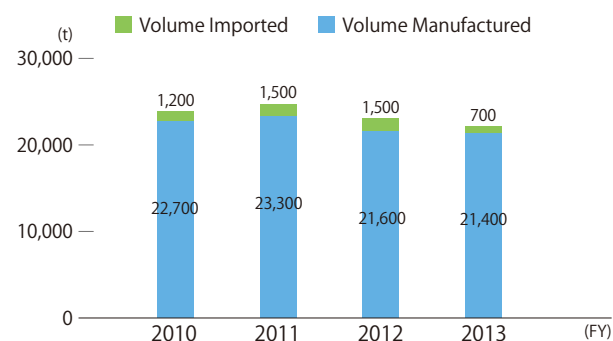
Air Water makes efforts on pollution prevention through proper management of the quantities of chemical substances manufactured, imported, and released. The level of management is also improved by having the employees who handle chemical substances understand the risks properly.

Manufacturing and Import of Chemical Substances

In accordance with the Chemical Substances Control Law, the Air Water Group makes appropriate notifications concerning manufacturing and import of chemical substances.*

* Chemical compounds created by causing chemical reactions to occur with elements or compounds.
(As defined under the Chemical Substances Control Law)

Amount of General Chemical Substances Imported and Manufactured

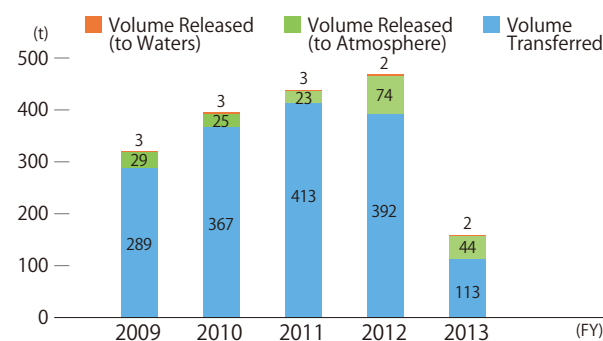


Scope: Same as the scope of "Materials Balance" on page 26.

The Amount of Chemical Substances Released to and Transferred in the Environment

The Air Water Group closely tracks the amounts of chemical substances released to and transferred in the environment. In accordance with the PRTR Act, the businesses subject to the law that handle Class I designated chemical substances notify the national government of the amounts released and transferred. SUN CHEMICAL Co., Ltd., which is involved in the chemical business, recycled solvents and reduced the amount of chemical substances transferred in fiscal 2013.

Amount of Class I Designated Chemical Substances Released and Transferred



Scope: Same as the scope of "Materials Balance" on page 26.

Workshop on SDS (Safety Data Sheet)

Air Water handles hazardous and harmful chemicals in its plants, and supplies them as products. Workshops on SDS are held in order to reduce accidents and disaster risks resulting from handling of chemicals.

In fiscal 2013, a workshop was held targeting the managers who are responsible for informing and explaining about hazards and harms of chemicals. The SDSs used in practice were used during the workshop to learn about SDSs, including the ways to read and use the Sheet. Forty-eight participants attended the workshop.



SDS workshop

* See our website for other data on environmental performance:
<http://www.awi.co.jp/english/csr/>

TOPIC Efforts to Reduce the Amount of Chemical Substances Released

Chemical Business

The Kashima Plant of the Chemical Company, Air Water Inc., recovers crude benzene contained in coke oven gas generated in the process of carbonizing coal, and produces approximately 50,000 tons of crude benzene per year. Crude benzene contains Class I designated chemical substances defined under the PRTR Act, such as benzene and toluene. Management of these substances to closely track the amount sold, transferred, and released is essential.

Crude benzene is in a liquid form under normal conditions, and is kept in outdoor storage tanks. However, a portion evaporates and its emission to the air cannot be avoided. Hence, measures are taken to reduce the amount emitted to the air, such as installation of a floating roof in the storage tank to control evaporation and emission, and by transferring the emitted air to a combustion facility for combustion treatment.



Shinji Maezawa
Technical Division
Kashima Plant
Chemical Company



Crude benzene tank

Third-Party Opinion



Masatoshi Ikari

Manager, Senior Consultant
Environmental Risk Section
Consulting Department 1
InterRisk Research Institute & Consulting, Inc.
Part-time Teacher, Seikei University

Continuing from last year, I have been asked to provide a third-party opinion, this year on the Environmental and Social Report 2014, which is the thirteenth published by Air Water.

Commendable Points

- “Commitments from the Top” at the beginning of the Report starts with a comment expressing concerns on the recent abnormal weather phenomena that have become the norm, and on the sustainability of our Earth. Then, the efforts, products, and cases of technical development “unique to Air Water” geared to solve various social issues (e.g., the mission for the top supplier of dry ice, the hybrid hot water supply and heating system VIVIDO, the development of the pulse tube refrigerator, and others) are presented in the feature stories and the environment report section. As such, the structure and contents of the Report are highly persuasive to the readers.
- Last year, I recommended more proactive disclosure of data related to employees. In this year’s report, data on the trends of “number of persons who have taken childcare leave” and “the use of baby sitter coupons” have been disclosed. The latter one in particular is a very unique system.
- In fiscal 2013, the amount of Class I designated chemical substances released and transferred have both been reduced significantly. Efforts made by those involved in this matter are highly commendable.

Points Where Further Improvements Are Expected

- It is clearly mentioned that ISO26000, which is an international standard of CSR, has been referred to in compiling the report from this year. However, it was not easy to find out from reading this report, for example, as to how the seven core subjects of ISO26000 (organizational governance, human rights, labor practices, the environment, fair operating practices, consumer issues, and community involvement and development) relate to the structure of this report. Further ideas and improvements are expected on the way the report is presented, for example by including a comparative table that shows the ISO26000 core subjects and the table of contents of this report.
- As it is said that “Employee health and safety is our highest priority” in the “Commitments from the Top,” please consider disclosing indicators related to employees’ health management (e.g., annual working hours, ratio of employees who have received medical examination, etc.).
- It is understood that the increase in CO₂ emissions (total amount) was unavoidable to a certain extent, due to the increase of emission factors caused by suspension of nuclear power plants and other factors. However, the energy consumption rate index has not reached the goal that should be strived for under the Energy Conservation Act, which is an average annual reduction of 1% or more, in the past five fiscal years. While there is some mention about the reasons for non-achievement (difference), further improvement is expected in this regard.

In Response to the Third-Party Opinion

Kazuhiko Hatano

Corporate Director
Corporate CSR Officer
General Manager, Compliance Center
Air Water Inc.

This is the third year for us to request the third-party opinion from Mr. Ikari. First of all, I would like to express our gratitude for the comments and suggestions that have been made.

Regarding the issue of ensuring safety, which had been pointed out last year, we have been undertaking new activities since the second half of 2013, such as the “Special Safety Diagnosis” and “Staff Training on Safety,” inviting external experts. While we

believe that the results will begin to show clearly from now on, we will continue our efforts to ensure that the culture of safety will take root in the Group as a whole. Regarding our efforts concerning employees, who are among the important stakeholders, we increased disclosure of various data as per your suggestion. We have also increased the volume of text on our efforts concerning employees’ health and work environment.

We will take serious note of the points raised on this report, and will try to reflect the “Points Where Further Improvements Are Expected” in the next issue of the Environmental and Social Report. Concerning the energy consumption rate index, we will continue improving it within our efforts under the Energy Conservation Act.

Corporate Profile (as of March 31, 2014)

Company Name: Air Water Inc.
Head Office Address: 12-8 Minami-Semba, 2-chome,
Chuo-ku, Osaka, 542-0081, Japan
Established: September 24, 1929

Representative: Hiroshi Aoki
Representative Director, Chairman of
the Board, Chief Executive Officer
Paid-in Capital: ¥32,263 Million
Number of Employees: 9,557 (Consolidated)



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This report is available on Air Water's website.
The PDF files can be viewed with Adobe Acrobat Reader.
URL: <http://www.awi.co.jp/english/csr/>

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This report uses FSC-certified paper made out of wood from properly managed forests.



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Since 2009, Air Water has been supporting the "Mori no Chonai Kai" (Forest Neighborhood Association) activities, which are sponsored by the "Office Chonai Kai," an environmental non-profit organization, through the paper used for the Environmental and Social Report. By donating 15 yen per 1 kg of paper, the Company is supporting forest thinning and contributing to nurturing healthy forests in Iwate. Last year's Environmental and Social Report 2013 helped facilitate the thinning of forest with an area of 0.12 ha.