AIR WATER's Growth Strategy

Integrated group management

Optimize the entire group for capital efficiency

Boost profitability of existing businesses in Japan

- Business inspections for enhancement
- Price management
- BS management led by the headquarters
- Optimal personnel allocation, etc.

Grow new businesses

1 Overseas industrial gases

Will build a business foundation in industrial gases and, in the future, diversify into related fields such as medical, environmental, and food products, making high growth.

Target markets: India, North America
Strengths: Gas plant technology, VSU model, tie-ups with major trading companies

2 Decarbonization

Will establish a clean energy supply model of local production for local consumption, solving climate change issues.

Focus areas: Biogas, methane, hydrogen, CO_2 capture/re-use
Strengths: High-efficient gas purification/separation technology, transport and supply infrastructure, community-based social capital

3 Agriculture

Will grow agribusiness to help increase food self-sufficiency and reduce food loss.

Focus area: Fruit & vegetable distribution and processing
Strengths: Business base in Hokkaido (procurement capacities, the brand, etc.), capital and business tie-ups with two industry leaders, freshness keeper with logistics and gas technology

Realizing “terrAWell30”

The Air Water Group has set forth the vision toward FY2030 and released it as “terrAWell30.” Under this vision, we are working to “create new corporate value through solving social issues” while generating synergies by creatively combining diverse businesses, human resources, and technologies based on the two growth axes of Global Environment and Wellness.

Our vision toward 2030 = terrAWell30

Increased profitability

Operating profit: **160** billion yen Operating margin: 10%

Expanded business

Revenue: **1.6** trillion yen, of which 20% from overseas revenue

Enhanced capital efficiency

Through integrated group management, the Group’s management resources will be totally optimized, increasing capital efficiency.

ROE: **12**% or more (9.7% in FY2022)

ROIC: **8**% or more (5.6% in FY2022)

Non-financial KPIs

GHG emissions

cut **30**%

(vs. FY2020)

Waste recycling rate

80%

(65% in FY2021)

Water consumption intensity

cut **10**%

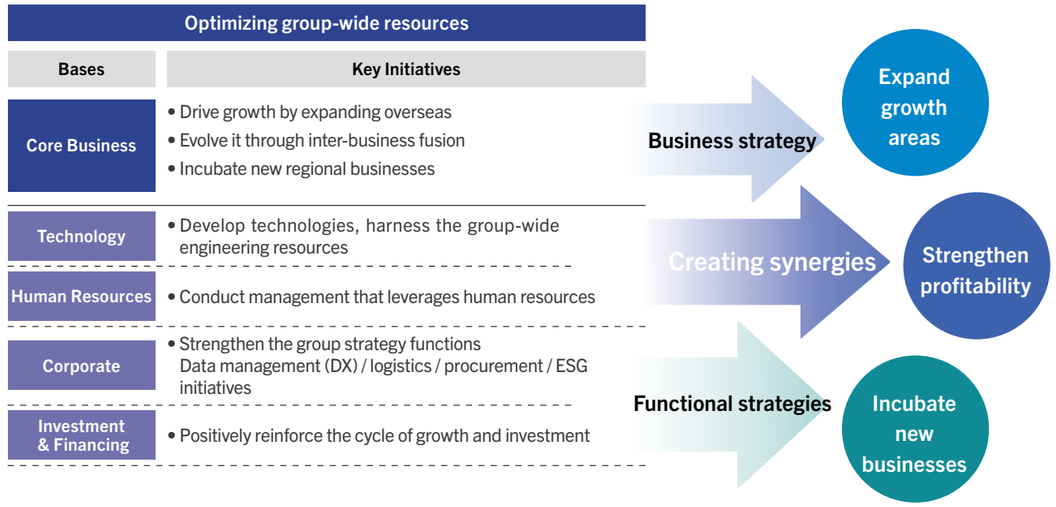
(vs. FY2021)

Society we aim for

- Decarbonized
- Resource recycling-oriented
- Where people and nature coexist
- Smart Society
- With long healthy lifespan

Basic policy of “terrAWell30”

We create synergies by optimizing Group management resources to expand growth areas, strengthen profitability, and incubate new businesses.



Progress in growth strategies

To realize our vision of “terrAWell30,” we are strengthening profitability, expanding growth areas, and incubating new businesses, based on the idea of maximizing the value we can create by the Group’s management resources.

Strengthen profitability

Evolving Integrated Group Management (p.42)

We shifted to unit-based and group-integrated management to promote total optimization. In the domestic business, we are enhancing logistics (total optimization of data-based logistics), DX (reduced operations using IT), and procurement (cost cut by group-wide procurement), as well as strengthening profitability through optimal personnel allocation, price management, and appropriate inventory levels.

Expand growth areas

FOCUS 1 (p.44)
Global & Engineering

Here introduces the Global Business, which aims to become a gas company with a strong presence in the global market and shows rapid growth through aggressive investment in industrial gas and engineering. Topics include its base strategy, strengths, and market strategies for its most important regions, North America and India, respectively.

FOCUS 2 (p.48)
Electronics

This section describes the Electronics Business, which continues to grow by capturing investment demand from the semiconductor industry, which is expanding its investment in digitalization and domestic production of products to meet increasingly complex, cutting-edge needs.

Incubate new business

FOCUS 3 (p.50)
Incorporating Carbon Neutrality into Growth

This section showcases how we approach carbon-neutral society and a resource-recycling business model by leveraging our technologies and businesses that contribute to low-carbon/decarbonization, our customer base, logistics network, and other management resources.

FOCUS 4 (p.54)
Incorporating Wellness into Growth

Here presents how we create new businesses and set up the structure that can solve social issues such as food shortages due to the growing world population and the extension of healthy life expectancy in a super-aged society.

Evolving Integrated Group Management

In April 2022, the Air Water Group transitioned to unit-based management by integrating organizations of AIR WATER INC. and the group companies. Moving on, we intend to elevate this unit management into a group management structure that integrates the Air Water and those group companies playing core roles in each business area, thereby we will optimize group management resources and promote autonomous growth of each group company.

Each autonomous growth drives the entire growth

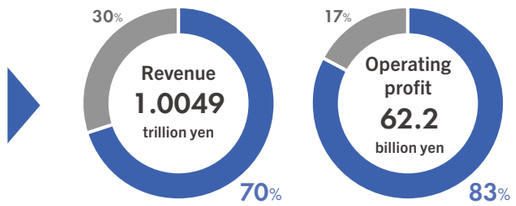
Since 2000, we have brought in more than 245 companies from diverse backgrounds through M&As, and have managed the Group respecting the uniqueness of each company's business.

Now seeing a diverse range of business and revenue of 1 trillion yen, it is no exaggeration to say that the autonomous growth of each group company drives the growth of the entire Group.

Major consolidations and reorganizations

Timeline	Business areas	Core companies created
Oct. 2020	Regional business companies	Air Water Hokkaido Inc. Air Water East Japan Inc. Air Water West Japan Inc.
Oct. 2021	Functional chemicals	Air Water Performance Chemical Inc.
	Processed food	Air Water Agri & Foods Co., Ltd.
Apr. 2023	Industrial gases, specialty chemicals Semiconductors equipment	Air Water Electronics Inc. Air Water Mechatronics Inc.
	LP gas (Hokkaido)	Air Water Life Solution Inc.
July 2023	Medical equip., care products	AIR WATER MEDICAL INC.
Oct. 2023	Aerosol, needles	AIR WATER REALIZE INC.

Out of FY2022 results, % of 23 core companies (operating profit of ¥1B or more)



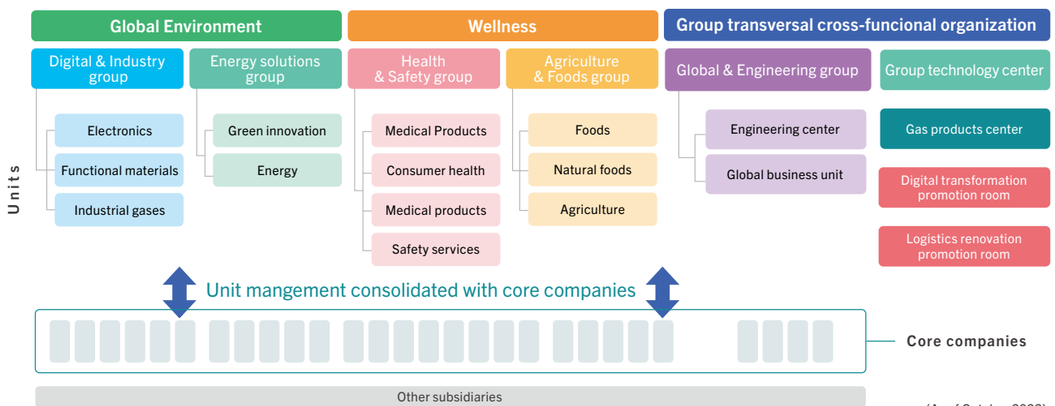
Formed the "core companies" through reorganization

To encourage autonomous growth of group companies, it is important to have each company increase its presence in the industry and to reach a certain size to facilitate strategic capital investment, M&As, and alliances with other companies.

Therefore, we have defined companies with annual operating profit exceeding 1 billion yen as "core companies", and have integrated and reorganized group companies to form core companies in each business area.

Introduction of the Unit System

While focusing on the autonomous growth of group companies, we are working to build a management structure that allows us to leverage the collective strengths of the group by creating synergies among various businesses, human resources, and technologies, which are our management resources. As a key strategy for it, we have integrated and reorganized our diverse business domains into four business groups under the two growth axes of "Global Environment" and "Wellness" in April 2022, and also introduced the new "Unit System." For details on the purpose of the Unit System, please refer to CEO Message (p.14).



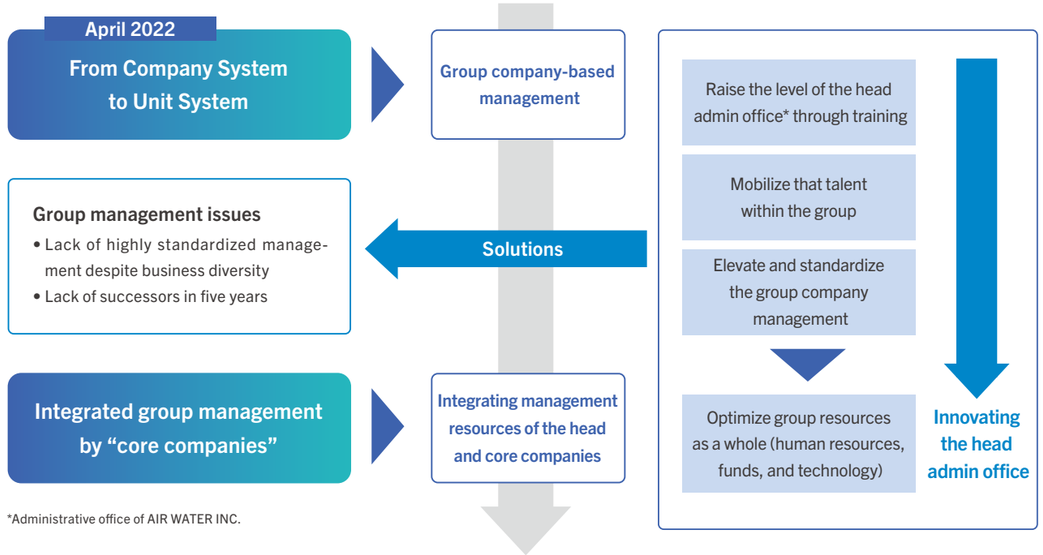
(As of October 2023)

*1 Out of the 13 unites, leaders of 7 unites are from M&A companies, and these unit leaders are also appointed as presidents of Group companies that are affiliate core companies (part of them have experience as presidents).

*2 Prior to intorduction of the Unit System, organizations that group transvertially promote technology development, engineering, function and digital transfromation promotion of gas products, and logistics renovation are established.

Innovating the head office administration and mobilizing group-wide human resources

Another future challenge for our group management is to highly standardize the management of group companies by the headquarters administration and to increase the mobility of human resources. The common application of advanced management is essential to optimize the allocation of management resources and to promote business growth in each company. In addition, mobilizing human resources within the Group and fostering the next-generation management are also an urgent issue, given the concern about the lack of successors to management personnel at group companies.



*Administrative office of AIR WATER INC.

Integrated group management by the core companies

Of the 142 consolidated subsidiaries as of March 31, 2023, there are currently 23 core companies with operating income of 1 billion yen or more. We plan to increase the number to about 30 companies through further integration and reorganization.

While based on the Unit System and keeping the originality of their operations, we will manage both the headquarters and core companies in an integrated manner as to the key management resources (human resources, funds, and technology) and the common infrastructure that supports the growth of core companies (BS management, digital transformation, and logistics). Thereby we will be realizing our growth strategies, including the total optimization of group management resources.

Human resource mobility

Funds aggregation

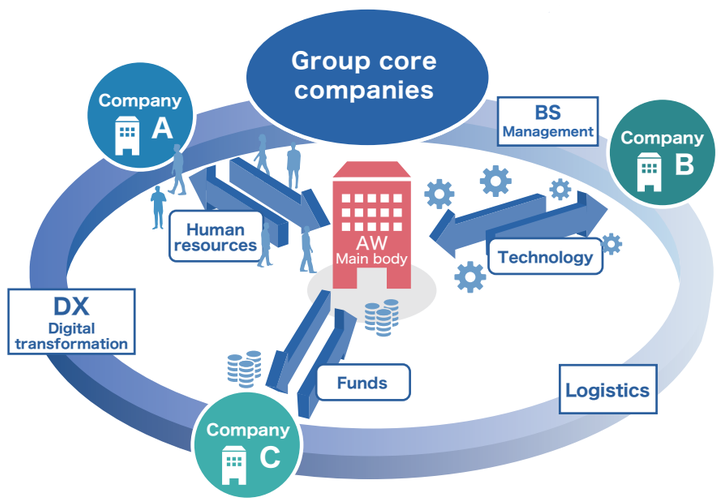
Tech management

BS management

Logistics

Digital transformation

Optimize group-wide resources for profitability and capital efficiency



FOCUS 1

Global & Engineering

Making a presence in the global market as an industrial gas manufacturer

One of the growth drivers to our long-term vision "terrAWell30" is the global business. Our Group has designated India and North America as the most important areas, and is expanding our industrial gas business globally by leveraging the engineering capabilities cultivated in Japan.

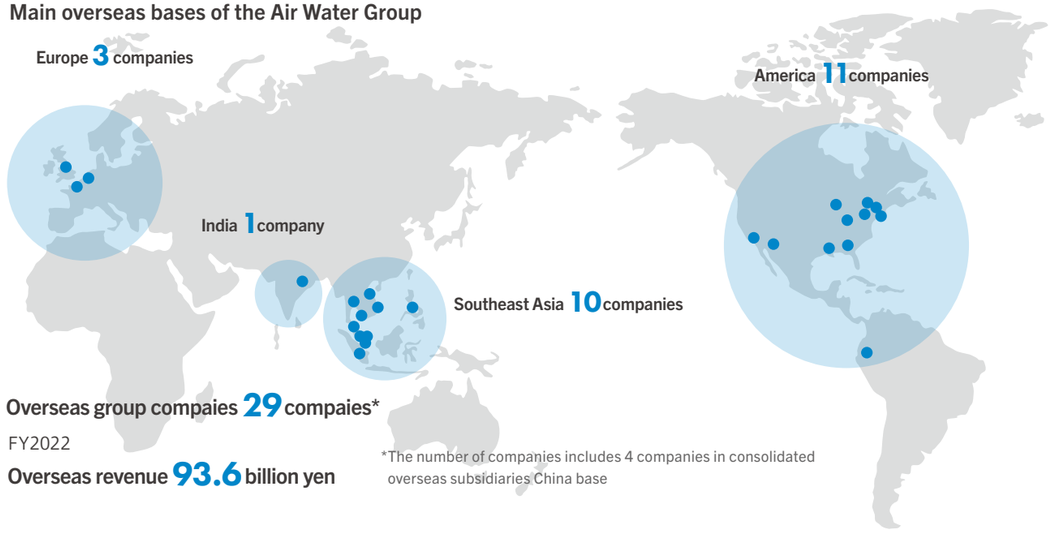
Expanding in India and North America

We have positioned India and North America as drivers of company-wide growth, as we believe their market environments are well suited to leverage our accumulated strengths.

India is currently in a high-growth period with strong demand from the steel industry, the largest user of industrial gases, and a GDP growing at 7% per year. Government-led infrastructure investment is underway to promote the automobile industry and other manufacturing industries, with the goal of expanding annual crude steel production capacity to 300 million tons by FY2030, more than double the current capacity. Since industrial gas is essential for the growth of the manufacturing industry, there is high growth potential in India, just as it did during Japan's former period of rapid economic growth. We consider India as our key strategic area where we can demonstrate our advantages in engineering technology and plant operations that we have provided to Japanese steelmakers to date.

North America is the world's largest industrial gas market, approximately five times the size of Japan. Multiple industries are increasing their gas use, including semiconductor-related manufacturing and cryogenic transport technologies in pharmaceuticals and biotechnology. Also, new usages for decarbonization such as hydrogen and CO_2 capture are expanding, and we believe that our experience in the North American market, the world's most advanced consumer of industrial gases, will make us more competitive in the global market.

Main overseas bases of the Air Water Group



Overseas group compaies 29 compaies*

FY2022

Overseas revenue 93.6 billion yen

*The number of companies includes 4 companies in consolidated overseas subsidiaries China base

Bringing engineering capabilities overseas

We acquired the technology for a large-scale cryogenic air separation plant through our joint venture with Kobe Steel, and secured its position as a plant manufacturer as we enhanced the engineering. We also placed manufacturing bases for plants and cryogenic equipment not only in Japan, but in North America, Asia, and Europe to establish a global engineering system that covers demand in all regions. Moreover, we have the operation and maintenance technologies that contribute to stable and safe operations for our customers, which we have cultivated over many years by supplying on-site gas to steelmakers. In India, we acquired business in 2019 from the local subsidiary of a major industrial gas company. It solidified the foundation of our on-site gas supply to steel mills, the first and second largest in India, and our lorry and cylinder business around the eastern and southern parts of India. With such plant engineering technology and expertise, we will develop the ability to compete with industrial gas majors on an equal footing, and focus on our overseas business in India and North America.

Starting in 2022, Air Water and Mitsui & Co., Ltd. have formed a strategic alliance to expand the business in the global market focusing on industrial gases. It harnesses our technology and know-how in gas production/supply and Mitsui's information network in the fields of chemical/steel/energy, etc. to accelerate our industrial gas business in India and North America. In the future, we will leverage our industrial gas business bases to boldly take on the challenge of expanding into other businesses, such as medical and food products, in the global market as well as in Japan.

Launched G&E Group to speed up business growth and development

We have established the Global & Engineering (G&E) Group to centralize our expertise in the industrial gas and boost global expansion. The primary mission is to grow the global business even faster, using core technologies in deep-cooled separation, adsorption separation, hydrogen production, and cryogenic gas applications. Another is to speed up the process from R&D to commercialization by deepening cooperation between the development division and operating companies. We also have the Global Management division to manage overseas operating companies in a timely and centralized manner, by which we will be enhancing management functions such as finance, consolidated control, and operational auditing.

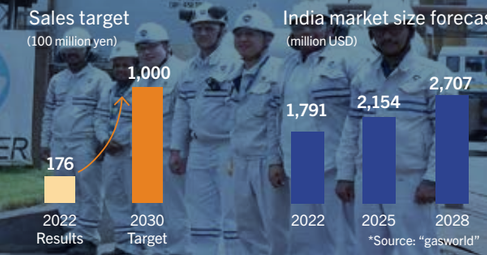
Our overseas expansion has brought us a variety of human, technological, and other resources so far. Going forward, we will develop a global database of engineering talent and utilize it in our human resource strategy. We will also provide solutions to increasingly complex social issues by quickly increasing the strength of our global human resources through recruitment and training, and by combining resources through the cross-fertilization of diverse human resources and technologies.

AIR WATER INC.
Corporate Director,
Managing Executive Officer,
in charge of Global & Engineering Group,
and General Manager
of Engineering Center

Shigeki Otsuka

India Business

India has the fastest growing industrial gas market in the world. With rapid economic growth, the amount of oxygen used in the steel industry is expected to further increase due to the growing demand for steel materials for automobiles and construction materials.



India market strategy

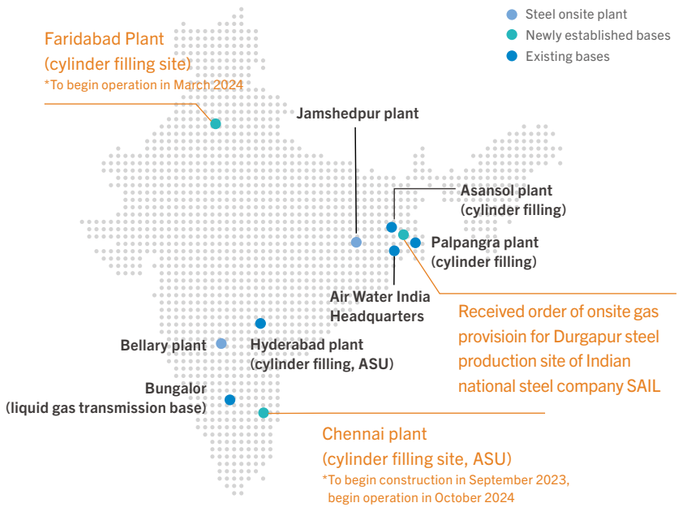
- Win new on-site gas supply for steel
- Build an infrastructure network with more gas production bases

Ranked the industry's 3rd position through M&As

After entering India in 2013, Air Water has increased its credibility as a local industrial gas producer and gained the third largest market share in India, starting with a major M&A of steel on-site bases in the eastern and southern parts of the country in 2019.

Won an on-site gas supply contract for a state-owned steel company

The Japanese government is strengthening ties with India in many areas, including politics, society, and security. Against this backdrop, in September 2023, we received an order from Steel Authority of India Limited (SAIL), a state-owned steel company in India, for on-site gas supply to its Durgapur steel plant in the eastern part of the country. It makes a significance for the Japan-India Economic Partnership, as Air Water, a Japanese company, will be working on a large-scale project with an Indian state-owned company. We plan to invest approximately 13.5 billion yen to make a cutting-edge, large-scale deep-cooled air separation plant, combining the engineering capabilities of Japan, India, and the U.S. under our global structure, and to start supplying gas in October 2025. This is our first order in India for a large-scale deep-cooled air separation plant and the third on-site gas supply base for the steel industry in India, following Tata Steel (Jamshedpur Plant) and JSW Steel (Bellary Plant). We have taken a steady step toward dramatic growth.



Networking for business development throughout India

In March 2024, a filling plant will begin operation in northern India, where we have yet to enter, and in October 2024, a liquefied gas production plant will start operation in Chennai, a major city in the south. We intend to continue capital investment in line with demand, expand our business throughout India, and build a network of manufacturing, transportation, and sales infrastructure based on our on-site gas supply business for steel makers. At the same time, we aim to become the second largest gas supplier in India by expanding our gas portfolio to include hydrogen, helium, rare gases, and other gases. In the future, we aim to expand our India business to 100 billion yen by 2030 by developing diverse businesses, including gas and related equipment for the semiconductor industry, which is expected to expand into the country, as well as biogas, medical, and food fields.

Matsubayashi COO discusses with President Modi as part of Japan and India parnership

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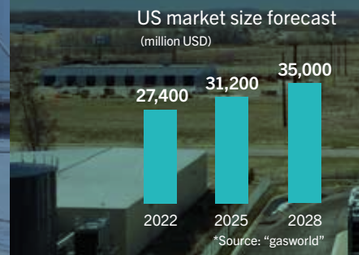
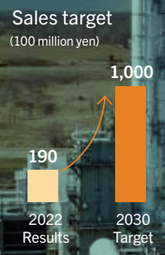


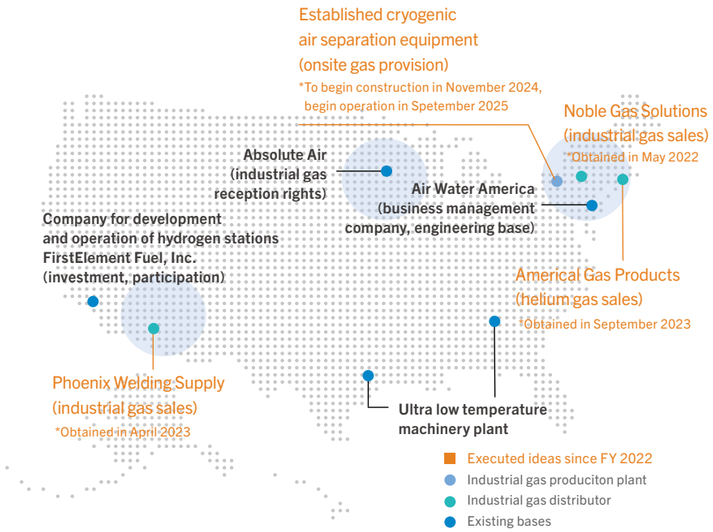


North America Business

North America has the world's largest market for industrial gases with an average annual growth rate of 4.5% expected. Besides major industries such as semiconductors, there are also advanced initiatives to build a hydrogen supply chain, etc.

North America market strategy

- Develop a U.S. version of "VSU" strategy
- Establish value-added helium and green liquefied hydrogen businesses



Entered the world's largest market with new demands

North America is the world's largest industrial gas market, about five times that of Japan (about 3 trillion yen), and is not only a center for cutting-edge technologies, but also a market where related new applications, including those related to decarbonization, are being created ahead of the rest of the world. Our strength in developing the North American market is our highly efficient gas purification and separation technology and our engineering capability to design and manufacture deep-cooled air separation equipment. Since entering the North American market in 2016 looking to industrial gas expansion, we have increased our presence in the market while building our business base through acquisitions of cryogenic equipment manufacturers and plant engineering companies, as well as working with local partners.

Launched the industrial gas business

Through such a process, we started our industrial gas in North America in 2022. Our market development strategy is the "U.S. version of the VSU model," in which we acquire sales functions through M&As and alliances with local distributors, while establishing our own gas production facilities around these facilities. In August 2023, we acquired our first gas production site in New York State, supplying on-site gas to a large customer. Prior to this, in May 2022, we had acquired an industrial gas distributor based in the same area, which launched an integrated gas supply business from production to sales. In April 2023, we bought out a distributor based in Arizona, where the high-tech industry is located, thereby expanding our business area. Furthermore, in September 2023, we acquired a helium sales company that covers throughout North America. By expanding our handling of high value-added gas types and enhancing our ability to make comprehensive proposals, we will capture demand from semiconductors and other growth industries.

Capturing decarbonization demand

In the U.S., where decarbonization-related demand is growing rapidly, we currently produce and sell liquefied hydrogen tanks that require a high level of technology and CO_2 recovery equipment. Also, we invested in FirstElement Fuel Inc., the largest hydrogen distributor for mobility in the U.S., and are building a hydrogen supply chain through supplying liquefied hydrogen tanks and rechargers*. Our vision is to further expand the advanced technology and know-how acquired in the U.S. to other regions, including Japan, as well as to work on CO_2 capture and the production and supply of green liquefied hydrogen.

*Mobile hydrogen station capable of transporting liquefied hydrogen and refueling gaseous hydrogen in a single vehicle.

American Gas Products plant

FOCUS 2

Electronics

Seizing the growing semiconductor market with our group-wide strengths

In Japan, major semiconductor manufacturers are building new/additional plants to promote digitalization and domestic production of semiconductors.

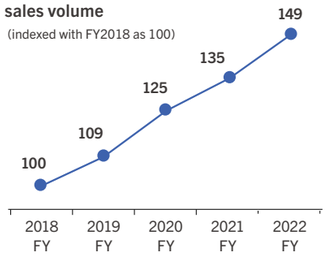
The Air Water Group has a track record of supplying on-site gas for semiconductors with the “V1” nitrogen gas generator, pioneering in the industry since 1980’s. Especially in recent years, we have continued to invest heavily in on-site gas supply, particularly to major semiconductor manufacturers.

In addition to gases, our products for the semiconductors have expanded through M&As, by which we have more products to enhance their production and technology; including specialty gases and chemicals, supply equipment, gas purification and exhaust gas treatment equipment, and thermal control equipment for the manufacturing equipment. Among them, electronics-related sales doubled from about 45 billion yen in 2010 to about 95 billion yen in 2022.

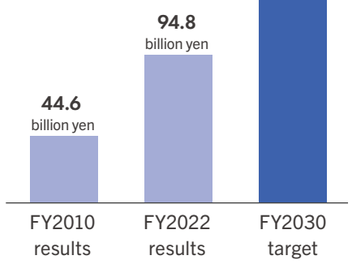
Then in April 2023, the electronics business across the Group was reorganized into two operating companies with clearly defined roles in “gas” and “equipment,” and shifted to a structure aimed at more effectively utilizing group resources and expanding business.

Looking forward, we target 150 billion yen scale by 2030 with our comprehensive strength in on-site gas supply to semiconductor manufacturers and related fields.

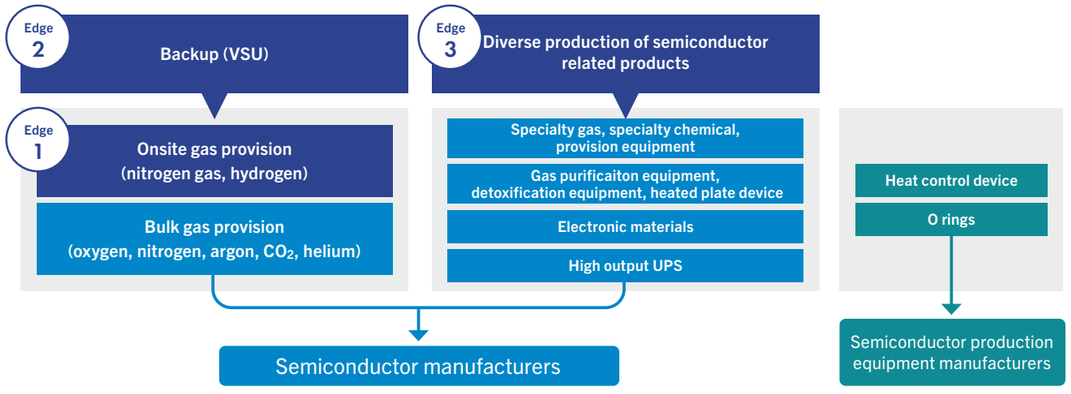
Transition of nitrogen gas sales volume
(indexed with FY2018 as 100)



Electronics unit revenue (results/target)



Air Water Group’s comprehensive strengths for the Electronics



With our competitive edge in the semiconductor industry developed over years, we will seize the greater demand for electronics-related products and keep growing.

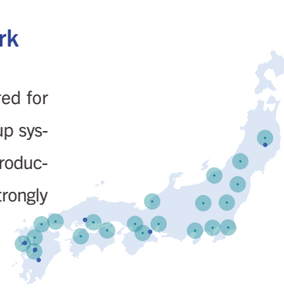
Edge 1 Nitrogen gas generator “V1”

In the 1980s, we developed an innovative nitrogen gas generator, the V1, which did not use an expansion turbine, and also pioneered the industry’s first “total gas system.” It is to build our own plants in customers’ factories and provide the total support including gas production, supply, monitoring, and maintenance, which became the de facto standard model for the supply of nitrogen to semiconductor factories. We have installed more than 200 of them, mainly for semiconductor manufacturers and other electronics-related users. Moreover, for large-scale semiconductor plants such as DRAM and CMOS sensors, we have the expertise and track record of stable supply through our five Gas Centers in Japan, which outperforms the competitors. We are accelerating investment in gas supply plants to accommodate more semiconductor manufacturing plants, as well as strengthening our engineering system to build the plants. (ref. p.71)

Gas Centers around Japan
L: Hiroshima, R: Nagasaki, B: Iwate (WIP)

Edge 2 Backup system with VSU network

We ensure a stable supply of industrial gases required for semiconductor manufacturing at any time. As a backup system for this purpose, we have deployed liquefied gas production plants called “VSU” at 22 locations nationwide to strongly support the supply of gas for electronics.



Iwate Ekisan Co.

Edge 3 Total support for semiconductors

Not only gas supply, we also provide comprehensive support for semiconductor manufacturing, including sales of materials and equipment for medicine and chemical raw materials, as well as piping work and logistics. We have warehouses close to semiconductor plants that can handle high-pressure gases and hazardous materials to provide one-stop management of manufacturing materials from procurement to supply. We have also developed a materials management service, in which qualified personnel are stationed in the plants to undertake all container exchange and material supply equipment inspections.

Specialty chemicals, supply equipment

Purifier, detoxifier

Hazardous material storage

Opening our new electronics-related base in Kumamoto

We are launching a new business complex base in Kikuchi-gun, Kumamoto Prefecture, which specializes in electronics-related business by the summer of 2024. This new site will have warehouses to store specialty chemicals, specialty gases, and basic chemicals to meet the growing demand for semiconductor materials. In the future, we are looking to build a gas plant to supply gas on-site to nearby semiconductor plants.

FOCUS 3

Incorporating Carbon Neutrality into Growth

The issue of climate change is not only a Materiality for us, a company that consumes a lot of electricity, but also a major business opportunity.

Based on industrial gas, our core business, we have developed over many years technologies and businesses that contribute to low-carbon and decarbonization, such as CO_2 capture, hydrogen production, and methane, as well as management resources such as ties with local communities, a customer base, and a logistics network. By capitalizing on these resources with regional characteristics, our Group will work to build a "resource-recycling energy supply model of local production for local consumption" that creates clean energy from locally generated waste, and stays committed to solving social issues.

Case 1. Produce & utilize biomethane

Modeling sustainable and locally-recyclable energy supply

Our Group has been working to build a regional recycling supply chain in which unused biogas generated from livestock manure is processed into liquefied biomethane (LBM), an alternative fuel to liquefied natural gas (LNG), and consumed within the region. It is a business model that solves social issues by providing clean, sustainable, domestically produced energy in dairy farming areas, and also reducing odors and water pollution caused by livestock manure.

Marine fuel

Conducted demonstration tests of LBM as marine fuel for domestic transportation with six companies including Mitsui O.S.K. Lines. It would be an effective way to decarbonize ship operations.

Plant power, product materials

Signed an agreement to use LBM at the Obihiro Plant of Panasonic Industry Co. In FY2025, it will be used for electricity and EV relays materials to help decarbonize the plant.

Idea as an industrial gas manufacturer

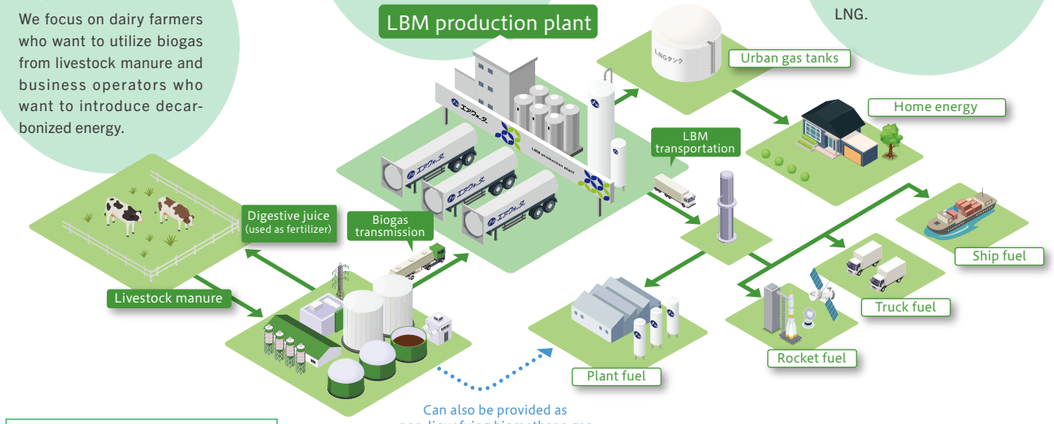
We focus on dairy farmers who want to utilize biogas from livestock manure and business operators who want to introduce decarbonized energy.

Our gas-related technologies

We apply our know-how in gas collection/transportation, separation/purification, and other technologies related to the stable gas supply.

Our LNG sales infrastructure

We supply the produced LBM as CO_2-free fuel to users promoting decarbonization as an alternative to LNG.



LBM Supply Chain in Tokachi area

*If the entire production is used to replace LNG, the greenhouse gas would be reduced by more than 60%.

This is an initiative unique to our Group that combines our core industrial gas technology and energy business know-how with Hokkaido's regional business infrastructure and logistics network, and is scheduled to be commercialized in FY2024. We will handle LBM as a new energy product and invest some 60 billion yen over the next 10 years to implement it in society.

City gas (Energy for living)

We conducted a demonstration project to use LBM as an alternative fuel to LNG in the pipeline service area of Obihiro Gas Co., making the first attempt in Japan to supply LBM to city gas users.

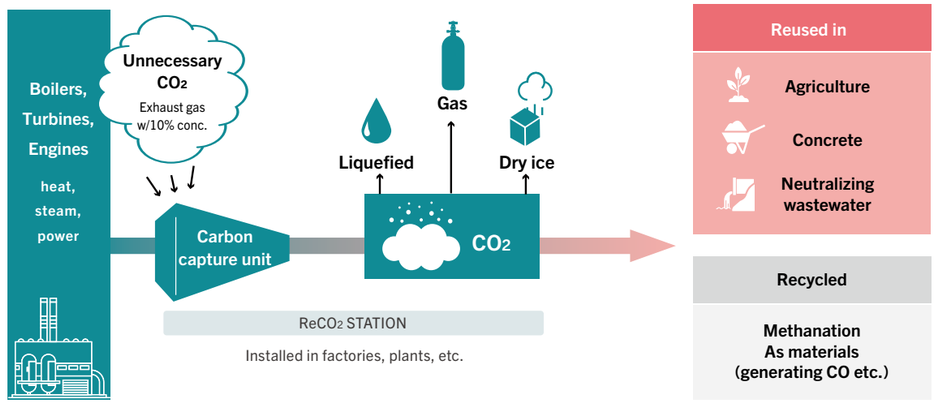
Rocket fuel

Interstellar Technologies Inc. decided to use LBM as fuel for the satellite launch vehicle "ZERO" and started demonstration experiments at the engine combustion test facility in December 2023.

Case 2. Use CO_2 capturing technology to create recycling society

The world has yet to establish a technology for low-cost, low-energy CO_2 capture from low-concentration flue gas emitted from small- to mid-scale factories such as boilers and industrial furnaces. We made this possible with "ReCO_2 STATION," a compact CO_2 recovery and utilization system. It was developed by using our proprietary adsorption separation technology, based on our long experience in gas production/engineering technology and as a manufacturer of carbon dioxide gas and dry ice. The collected CO_2 can be turned into dry ice on site, and we are building a new carbon dioxide gas supply chain of the "local production for local consumption" model.

Recycling and utilization of emitted CO_2



Recycling waste into biogas, biomethane, and other decarbonized and low-carbon energy.

"ReCO_2 STATION" is designed for use with combustion exhaust gas with a CO_2 concentration of about 10% from industrial furnaces and boilers. It is also a container-sized device that can compress CO_2 to produce liquefied carbon dioxide gas, which can then be solidified to produce even dry ice.

Our Group is a leading manufacturer of dry ice, which is used to cool and preserve food and other products, but in recent years, suppliers of CO_2, the raw material for dry ice, are decreasing due to the closure of domestic refineries and steel mills. In the future, we plan to build a locally produced and consumed dry ice supply network which captures CO_2 and produces dry ice within the region. We also promote "carbon recycling," in which the collected CO_2 is regarded as a "resource" and reused as a raw material or fuel.

Dry ice made by this equipment

We are also developing technology to capture low-concentration CO_2 at lower cost, which was adopted by the New Energy and Industrial Technology Development Organization (NEDO) for its "Green Innovation Fund Project." We jointly research with TODA KOGYO CORP. and Saitama University on using a material called sodium ferrite (Na-Fe oxide) as a CO_2 adsorbent. We aim to reduce the collection cost to 2,000 yen/t-CO_2, about half the current.

Case 3. Advance the hydrogen supply business

Using hydrogen, which does not emit CO_2 during combustion, is one of the keys to decarbonization. We are taking the lead in building a hydrogen value chain in the U.S., where decarbonization-related measures are rapidly advancing, by utilizing the wealth of knowledge and technology accumulated as an industrial gas manufacturer in the production, storage, transportation, and use of hydrogen gas. At the same time, we are working with local governments and industry to contribute to carbon neutrality by utilizing our nationwide bases in Japan.

Invested in U.S. hydrogen station developer/operator

Our Group has invested in FirstElement Fuel, Inc. (FEF), the largest developer and operator of hydrogen stations in California, USA. In addition to supporting FEF's goal of establishing a network of 80 hydrogen stations in the state by 2024, we will provide the solutions necessary to operate hydrogen stations, including liquefied hydrogen tanks and liquefied hydrogen trailers, and promote new initiatives related to the hydrogen supply chain in terms of production, sales, and distribution of liquefied hydrogen.

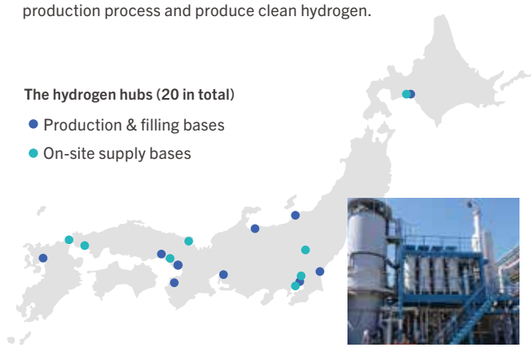
FEF's hydrogen station

Building the onsite-based hydrogen supply chain in Japan

Our Group boasts nine on-site hydrogen gas supply sites and 11 compressed hydrogen production sites in Japan as one of the top hydrogen gas suppliers.

The "VHR" hydrogen gas production system, an on-site production method using natural gas steam reforming, is being deployed throughout Japan to clean up the supply chain for existing industrial applications and to meet the increasing demand for a future hydrogen energy society. In the future, we plan to recover CO_2 emitted during production process and produce clean hydrogen.

The hydrogen hubs (20 in total)
- Production & filling bases
- On-site supply bases



Hydrogen gas generator "VHR"

Producing CO_2-free hydrogen

1) Clean hydrogen energy from "cattle manure"

In April 2022, we launched Japan's only hydrogen production and supply business using carbon-neutral biogas derived from livestock manure in the town of Shikaoi, Hokkaido. To encourage the use of hydrogen as well, the town and local companies introduced fuel cell vehicles running on hydrogen derived from dairy cow manure.

Shikaoi Hydrogen Farm Co.

2) CO_2-free hydrogen from unused natural gas by DMR method

As adopted by the New Energy and Industrial Technology Development Organization (NEDO), we have started a hydrogen production demonstration in Toyotomi Town, Hokkaido, using the direct methane reforming (DMR)* method to generate hydrogen from methane-based natural gas associated with hot springs, without emitting CO_2 directly.

Natural gas extraction plant in Toyotomi

*DMR is a clean reaction that uses methane to generate hydrogen and solid carbon, such as carbon nanotubes, with an iron-based catalyst. A new production method that can produce so-called turquoise hydrogen is currently under development with TODA KOGYO CORP.

FOCUS 4

Incorporate Wellness into Growth

Solving social issues related to people's wellness (healthy living) is the mission of the Air Water Group and an important area for growth.

As the super-aging society faces social issues such as the shortage of hospitals, working environment of healthcare professionals, and gap between average life and healthy life expectancy, our Group will contribute to extend healthy life expectancy not only through acute care but also through the healthcare business for prevention, pre-symptomatic diseases, and rehabilitation outside hospitals.

When it comes to "food," the basis for our healthy and fulfilling life, we see the long-term shortages given the growing population and climate change worldwide. In this context, we are committed to improving food self-sufficiency through our business such as "fruit and vegetable distribution and processing platform" and "land-based aquaculture platform."

Case 1. Enhance the "fruit and vegetable distribution and processing platform"

Our agribusiness (agriculture & processing) is based in Hokkaido, the largest producer of agricultural products in Japan. Based on our strong ties with growers through contract cultivation and procurement of raw vegetable materials, we have developed a system to process agricultural products into the required form and supply them in a timely manner, thereby opening up new sales channels. We are particularly reinforcing our "fruit and vegetable distribution and processing platform" by leveraging our logistics capabilities to link production areas with consumption areas and our technologies to preserve freshness with industrial gases.

Meanwhile, as food security and self-sufficiency become social issues, stable supply is getting more important in the domestic fruit and vegetable market due to decreasing farmers and more frequent abnormal weather.

With this context, in February 2023, we have started partnering with VEGETECH Co., a fruit & veg trading company engaged in processing and intermediate wholesaling, and DELICA FOODS HOLDINGS CO., which sells whole/cut vegetables for commercial use. We are working to stably supply Hokkaido vegetables from our Group to the both companies, build raw material storage bases in preparation for the "2024 problem" in logistics, and expand new production areas to diversify production area risks.

In October 2023, we acquired 51% of the shares of Marushin Seika Co. which is the largest middle wholesaler in the Fukuoka City Central Wholesale Market and has a wide sales channel to mass merchandisers, food manufacturers, and restaurants, and thus became our group company. We are expanding our fruit & vegetable network in Kyushu, which can complement the off-season of Hokkaido, and making a stable supply by decentralizing production areas. We will also collaborate with the Kumamoto Low Temperature Logistics Center, starting in February 2024.

Such collaboration with industry giants strengthens our procurement network and enhances the fruit and vegetable platform that has a value chain and logistics network from processing to sales. We are committed to contributing to the development of sustainable domestic agriculture, connecting production areas with dining tables, creating a rich food culture in response to the times, and contributing to people's wellness.

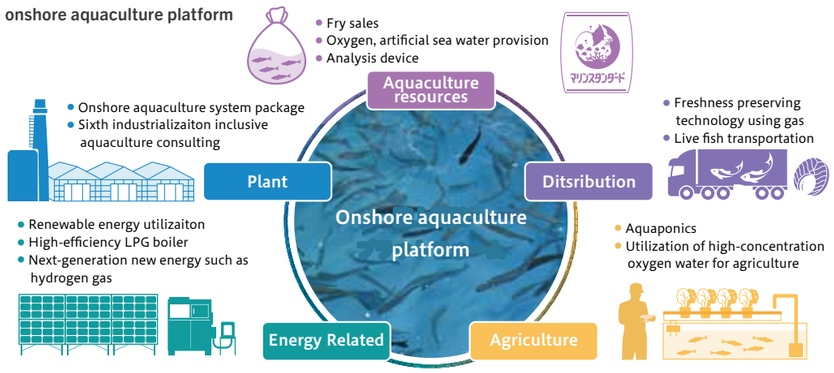
Case 2. Industrialize onshore aquaculture

With declining natural fish catches and an aging and decreasing number of fishermen, sea-based aquaculture, the mainstay of aquaculture, is facing limitations in increasing production, as well as environmental problems such as the accumulation of uneaten feed on the seafloor, which leads to water pollution.

To address these social issues, our Group started onshore salmon farming from May 2023 in Higashikagura Town, Hokkaido, under a breeding environment suitable for cold climates. We offer the "onshore aquaculture platform," an all-in-one package from plant design to operation and maintenance, taking advantage of the Group's unique strengths in technologies such as remote monitoring and freshness maintenance, in addition to oxygen, energy, and artificial seawater, which are essential for aquaculture.

At the "Nature's Blessing Farm Matsumoto" (Matsumoto, Nagano Pref.; scheduled to open in FY2024), we will begin test cultivation of salmon and whiteleg shrimp in a semi-enclosed smart onshore aquaculture plant that uses well water, and will develop ancillary equipment and consumables to increase efficiency. This small-scaled, semi-closed cycle plant of smart onshore aquaculture can save initial investment and be used across Japan as a model for local production for local consumption. By industrializing the onshore aquaculture, we are looking to provide people with easy access to delicious fish and contribute to food self-sufficiency.

Building an onshore aquaculture platform



Case 3. Extend healthy life span through pulp regeneration

Oral health has received particular attention in recent years because of its close connection to physical health. One of the keys to a long and healthy life is to keep "own teeth" as long as possible. Aeras Bio Inc. in our Group commercialized pulp regeneration therapy first in the world in 2020, which is a new treatment for teeth that have lost their pulp due to severe decay and injury. Partnering with RD Dental Clinic (by Medical Corporation Kenko Mirai), the treatment is now available across Japan. Furthermore, Aeras Bio has developed a banking system to collect, culture, preserve, and transport dental pulp stem cells from unused teeth in collaboration with dental clinics nationwide. Cultured stem cells are expected to be used not only for pulp regeneration therapy, but also for future regenerative therapy to restore organs and tissues that have lost function due to disease or injury. (As of November 2023, there are 17 clinics in Japan that offer pulp regeneration therapy and 182 partner clinics that perform extractions for pulp stem cell banking.)

In June 2023, a treatment that regenerates even the dentin, which surrounds and protects the pulp, was put to use. Covering the regenerated pulp with stronger dentin is expected to strengthen the entire tooth, seal gaps, and prevent reinfection.

In addition, clinical research is underway with the aim of commercializing around 2027 the "other family pulp regenerative therapy" using cells from family members within the second degree of kinship. Since it is possible to transplant cells taken from one unwanted tooth into many people, further research is ongoing to cultivate quality cells in large quantities. In this way, our Group is establishing a new dental practice for oral health and aiming to contribute to the wellness (healthy living) of more people.

TOPICS

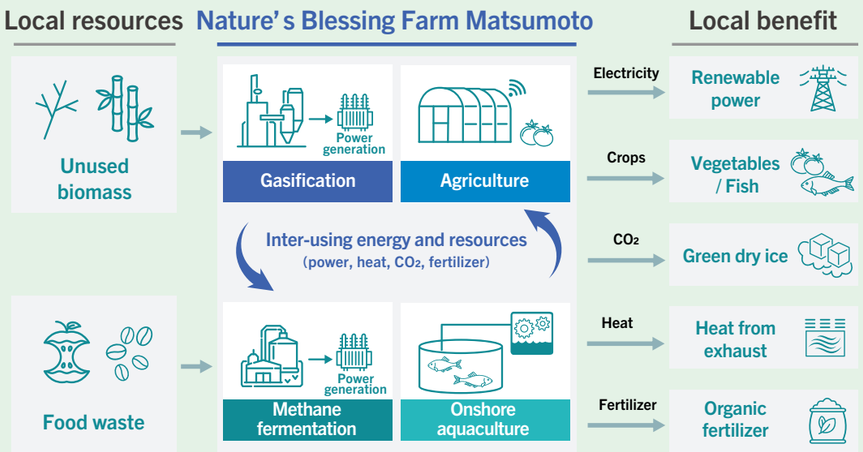
A facility that models the society we aim for, in both Global Environment and Wellness.

"Nature's Blessing Farm Matsumoto"

In October 2022, we started construction of a facility to develop a resource-recycling model that enables local production for local consumption of energy, named "Nature's Blessing Farm Matsumoto" in Nagano Prefecture, which is planned to complete in 2024. The facility consists of a "biomass gasification & power generation plant," a "methane fermentation plant," a "smart onshore aquaculture plant," and a "smart agricultural house." They utilize the unused biomass resources generated in the region to produce gas and electricity, and use the heat and carbon dioxide gas produced in the process for onshore aquaculture and agriculture. This model facility symbolizes the society we aim for in terms of both Global Environment and Wellness.

In the biomass gasification & power generation, we use bamboo and pruned branches, which tends to become waste in the region, as fuel for power generation. It adopts the first biomass gasifier in Japan that does not generate tar. The plant is going to accept all types of unused wood, including forest residues and thinned wood, as well as general wood waste generated in Matsumoto City. In the methane fermentation, we will collect local food waste, turn it into biogas, and use it for energy and power generation. The residue is then used as fertilizer without waste. Aquaculture and agricultural wastes are also reused as raw materials for biomass gasification power generation and methane fermentation.

In the onshore aquaculture that uses artificial seawater, we will cultivate salmon and whiteleg shrimp. In the agricultural house, we will work on optimizing the growing environment for tomatoes, strawberries, etc., by promoting photosynthesis with carbon dioxide gas and utilizing a system of programming the cultivation methods of skilled farmers. In the future, we look to expand the verified resource-recycling model to other regions in a form that matches local issues, along with our products such as oxygen, carbon dioxide, and artificial seawater, which are essential for onshore aquaculture and agriculture. We are further working to realize and balance a decarbonized society, people's healthy lifestyles, and our business expansion.



Biomass gasification & power generation facility

Onshore aquaculture plant

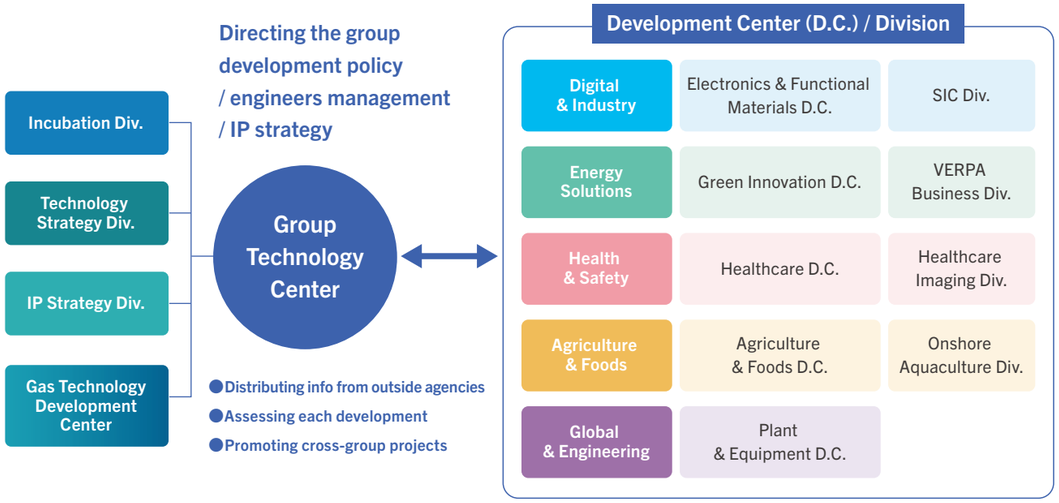
Technology Strategy

For Air Water, technological development capabilities are the source of solutions to add value to products and services and to meet customer needs, and are an essential strategic axis for creating new businesses that contribute to solving social issues.

Technology development structure

Our Group has more than 38 R&D locations, and a wide variety of R&D activities are carried out there. In terms of the R&D structure, the Group Technology Center (GTC) functions as the Group's strategic platform, integrating company-wide technology strategies, and is responsible for cross-sectional management of R&D in each business including assessment, IoT, AI, intellectual property management, and training of engineers. In July 2023, we established a "Development Center" in each business group to speed up and improve the efficiency of R&D by linking business needs and development more directly. We also set the "Healthcare Imaging Div." and the "Onshore Aquaculture Div.," which have entered the commercialization phase, to accelerate the launch of our business.

At the same time, the "Gas Technology Development Center" was opened in the GTC. The center promotes the development of gas technology, which is the foundation of all businesses and a source of synergy, especially in various gas applications including those in the electronics, food preservation and transportation, and medical and bio-related fields.



Basic policy of our strategy

1. Make technology a growth driver

Will promote rapid commercialization of development themes through assessment by GTC and use of Stage Gates. Elevate the Group's engineering through synergies from dispatching technical information, industry-government-academia collaboration, and enhanced corporate branding.

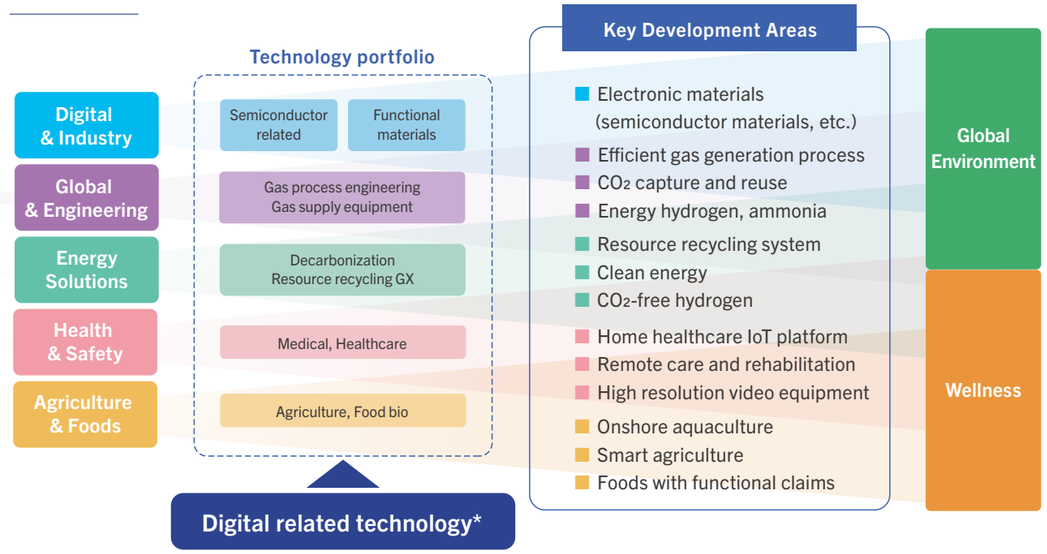
2. Develop gas application for new business

Will develop application technologies, led by the Gas Technology D.C., to create new gas demand in the electronics, food preservation/transportation, medical, and bio-related fields, as a catalyst for new business.

3. Plan and promote technical talent strategy

Will centrally manage the skills of the Group's engineers and promote hiring, skill identification, training, and placement of the right person in the right job.

R&D themes



*We acquired digital-related elemental technologies such as sensing (light and sound), image processing, and remote communication control, by integrating the R&D department (approx. 70 people) of a major electronics manufacturer in the past few years. By incorporating them with our existing technologies and businesses in industrial gas, medical, agriculture and food, we are working on tech innovation to create new businesses.

Development & information hubs of the Air Water Group

We are developing bases for the creation, development, and dissemination of new businesses that will contribute to solving social issues. These facilities will serve as a stage for improving brand power through information dissemination and enhancing human capital through the process of creating new businesses with technology, as well as technology development through the promotion of open innovation.

Opened in Sept. 2019

Birthplace of the pulp regeneration treatment

International Advanced Medical Center @Kobe

R&D center to create new products and services for healthy "living" for people

Opened in Sept. 2023

For experiencing and co-creating a healthy lifestyle

Air Water Kento

A place to create a wide business related to "wellness" in the 100-year-life era, contributing to a longer healthy life

Opening in Oct. 2024

Gathering of wisdom in Hokkaido

Air Water Forest

A hub to create new businesses that contribute to solving regional issues in Hokkaido by bringing new ideas and collaboration with research institutions, universities, local governments, and local companies

Opening in 2024

Circulating resources, energy, agriculture, and aquaculture

Nature's Blessing Farm Matsumoto

A facility that models a carbon-neutral, recycling-oriented society where energy is locally produced and consumed in four plants: biomass gasification & power generation, methane fermentation, smart onshore aquaculture, and smart agriculture