

# Business Segment Strategies

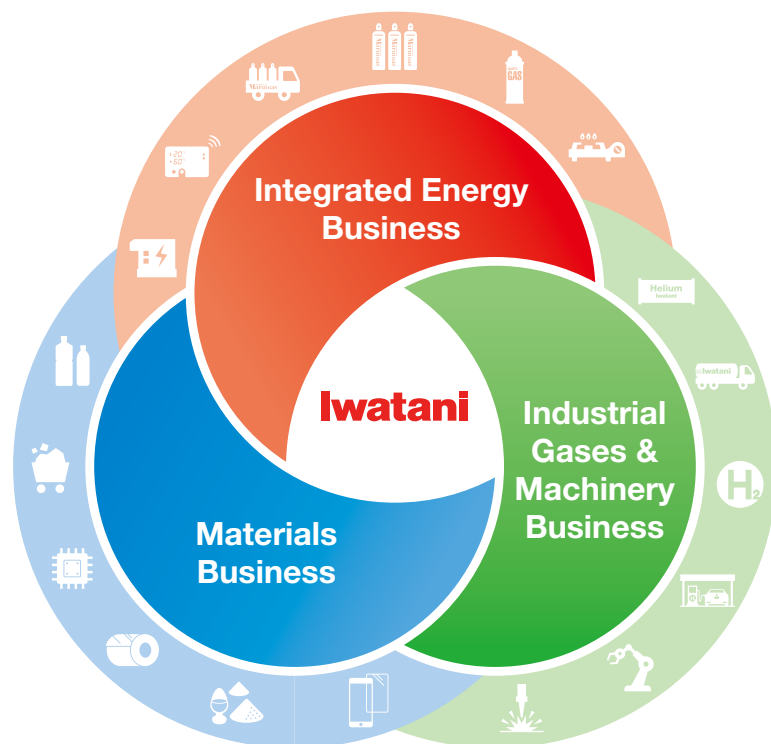
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# Three Business Fields

Centered on gas and energy,  
Iwatani Corporation is active in three  
business segments:

**Integrated Energy,**  
**Industrial Gases & Machinery,** and  
**Materials.**



## Integrated Energy Business



### Energy

MaruiGas consumer and commercial LPG / industrial consumer LPG / city gas (maintenance) / electricity / LNG / kerosene / LPG supply facilities / LNG satellite facilities / boilers / cogeneration / industrial furnaces

### Daily commodities

LPG emergency generators / gas heat pumps / ENE-FARM / commercial water heaters / high performance gas regulating equipment / solar power / storage cells / gas alarms / Iwatani GateWay / cooking sets / auto gas stands

### Cartridge gas

Portable gas cooking stoves / cassette gas canisters / FORE WINDS outdoor brand / Millser / ALALA household detergent / sales and delivery of Natural Mineral Water from Mt. Fuji / health foods

## Industrial Gases & Machinery Business



### Industrial gases

Oxygen, nitrogen, argon / carbon dioxide / helium / acetylene / ammonia / refrigerant gas / regenerative medicine / deuterium / Hydrocut

### Hydrogen

Liquid hydrogen, compressed hydrogen / liquid hydrogen tanks / hydrogen supply facilities / hydrogen-refueling stations

### Machinery

Welding and cutting equipment / robotics systems / electronic component manufacturing systems / semiconductor and automation equipment / environmental equipment / medical equipment / forming and sheet metal equipment / machine tools / powder molding equipment / compressors / high pressure gas supply facilities / tanker trucks

## Materials Business



### Functional plastics

PET resins / aluminum catalyst PET resins / biomass PET resins / biomass PP, PE, and PS resins / general-purpose resins / engineering resins / molded plastic products

### Resources

Mineral sands (zircon sands, titanium ore) / biomass materials (palm-kernel shells, wood pellets) / fire-resistant materials / metal powders, carbon materials

### Advanced materials

Rare metal raw materials / rare earths / nano materials / ceramic formed products / other electronic materials

### Metals

Stainless steel / aluminum / copper, copper alloys / functional aluminum foils / high alloyed materials, nickel alloys / high performance stainless steel foils / processed metal products / recycled metals

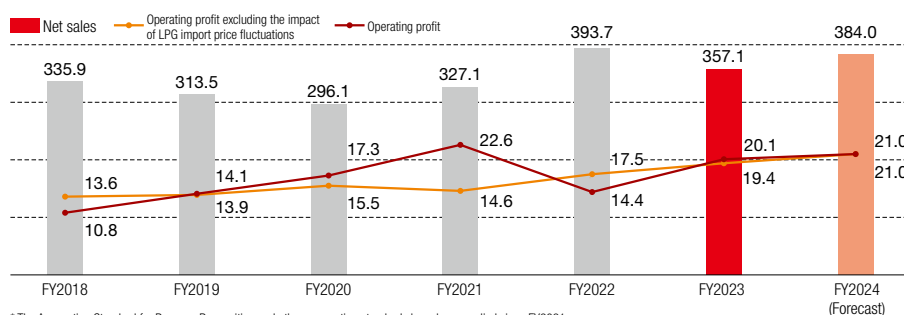
### Electronic materials

Battery raw materials (e.g., cobalt, lithium, manganese) / battery parts and materials / functional films for displays

# Net Sales by Business Segment

■ Trends in net sales and operating profit (¥ billion)

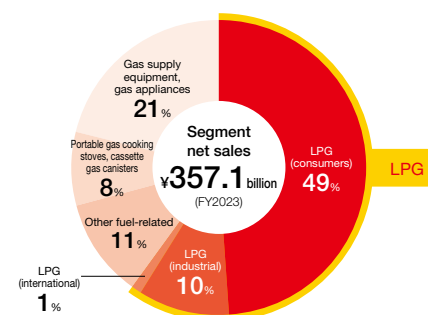
## Integrated Energy Business



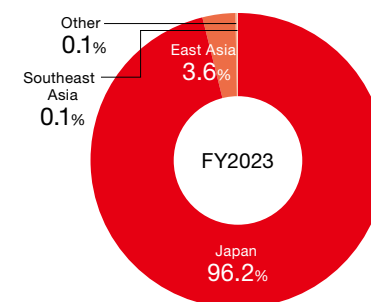
\* The Accounting Standard for Revenue Recognition and other accounting standards have been applied since FY2021.

\* Business segment categories were revised with the FY2023 corporate reorganization. Figures for FY2022 reflect these segment changes.

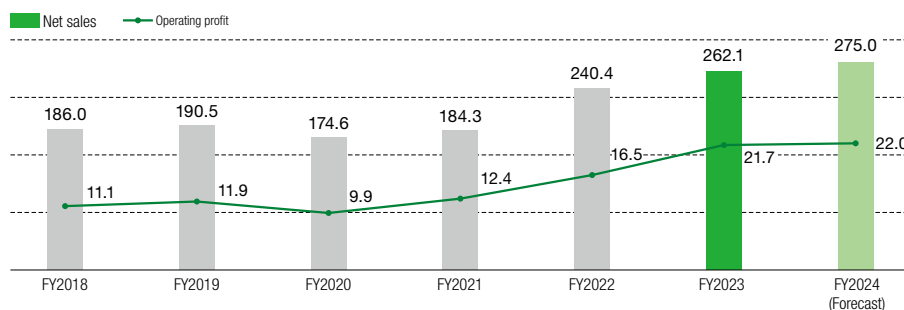
■ Sales composition



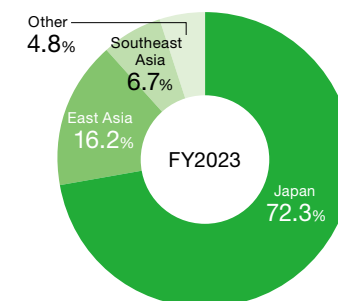
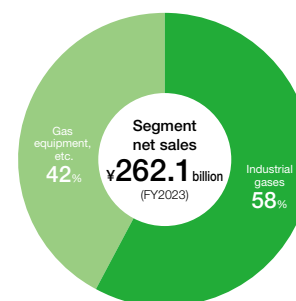
■ Sales composition by region



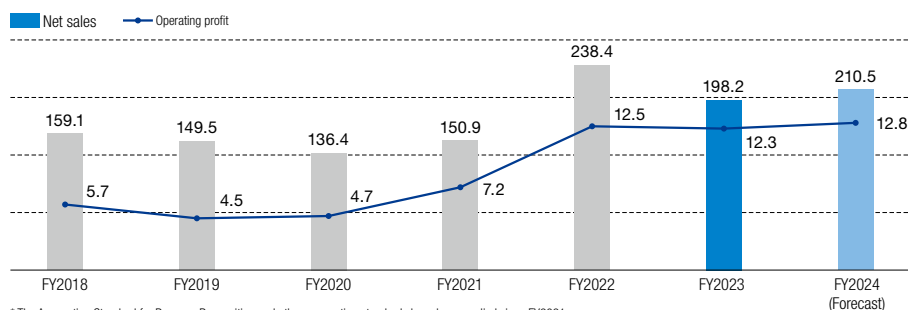
## Industrial Gases & Machinery Business



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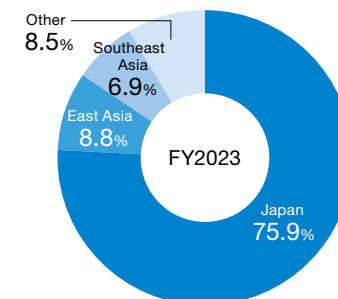
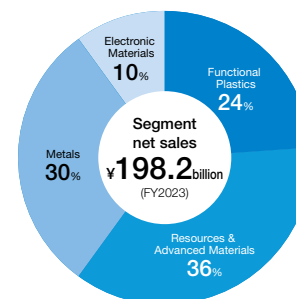


## Materials Business



\* The Accounting Standard for Revenue Recognition and other accounting standards have been applied since FY2021.

\* Business segment categories were revised with the FY2023 corporate reorganization. Figures for FY2022 reflect these segment changes.





# Integrated Energy Business

As a leading player in the LPG field in Japan, we ensure stable supplies by building and maintaining integrated structures from import through distribution. We also provide various comprehensive services, including LNG supply, the installation and maintenance of various facilities, and proposals for business continuity planning (BCP) and energy conservation solutions.



**Hisayuki Shimizu**  
Senior Managing Officer  
General Manager,  
Energy Division

## Establishing the leading position in the community as an energy & living total service provider

Mergers and acquisitions were carried out in FY2023 utilizing our nationwide locations. Based on this, the Energy Division is working to grow its share of direct sales LPG customers. In addition, by creating services that support local lifestyles, we have worked to deliver solutions to the challenges facing our customers and communities. To grow our businesses in the future, we will continue to grow our share of the LPG market while delivering solutions to community challenges based on continuing M&A efforts and striving to cut business costs and enhance business administration in various ways, including using AI to make deliveries more efficient and consolidating facilities with those of affiliate companies. We will also endeavor to secure stable earnings over the long term by building solid relations of trust with customers by using various types of data to manage and strengthen customer relations through a customer relations management (CRM) system. In the area of decarbonization, we will enhance efforts to promote the migration from industrial fuels like heavy oil to LPG and LNG, strengthen sales of carbon-offset LPGs through J-Credits, and accelerate research and development on the production of green LPG.



**Yasushi Sakai**  
Senior Managing Officer  
General Manager,  
Daily Commodity Division

## Finding solutions to society's challenges through decarbonization and digital transformation (DX) by promoting use of high efficiency devices

In addition to selling gas devices and security equipment, the Daily Commodity Division contributes to household decarbonization through promoting use of high efficiency devices. It is also tasked with building infrastructure to solve challenges in today's aging and depopulating communities by promoting the Iwatani GateWay platform, which integrates digital technologies into security services. We identify the courses of action that LPG businesses should take in order to realize an energy & living total service. While sales of gas equipment struggled in FY2023 due to customers' post-COVID inventory adjustments, sales and installation of security equipment to streamline LPG deliveries maintained stable trends. Also, about 70% of the surface area of Fukue Island in the city of Goto, Nagasaki Prefecture, where demonstration testing of Iwatani GateWay is underway, is now included in the telecommunications service area. Through means such as expanding the service menu through testing of security services for seniors, efforts to prevent frailty risks, and online health examinations, we will aim to be a business needed in the community by providing solutions to the various needs of LPG customers across Japan.



**Atsunori Kometani**  
General Manager,  
Cartridge Gas Division

## Focusing on prompt product development and international expansion

The most crucial issues for the Cartridge Gas Division are product development and the need to expand sales of portable gas cooking stoves and cassette gas canisters overseas. While we are already striving to grow sales of portable gas cooking stoves and cassette gas canisters in Japan, where we hold a large market share, we're also focusing on new product development to grow demand itself. Stoves fueled by cassette gas canisters have gained popularity in recent years. In FY2024, we will continue to propose new methods for using cassette gas canisters. Overseas, we're expanding businesses in Southeast Asia. Our portable gas cooking stoves plant in Thailand came online in 2023. We will sell stoves made in Thailand in surrounding countries as well as in Thailand itself. While the plant currently produces just one model, we plan to increase production to three models during FY2024 while accelerating market development by selling cooking plates tailored to the aspects of culture of each market. Our division's other product lines include natural mineral water from Mt. Fuji, the ALALA detergent series, and health food. We will work to grow their sales while focusing chiefly on customers who use Iwatani's LPG, gas cooking stoves, and cassette gas canisters.

# Integrated Energy Business

## Strengths

### 1 LPG last-mile services, stable supply structure

- As a leading player in the LPG field, we operate a stable supply structure for deliveries to customers across Japan, including five import terminals, 108 filling stations, and 130 distribution centers.
- We support living and business continuity planning (BCP)—for example, promoting the adoption of LPG-powered emergency generators—to ensure disaster preparedness.
- In the event of a disaster, the MaruiGas Disaster Relief Corps, made up of Marui-Kai members from across Japan, rushes to the scene to inspect and restore LPG service.

### 2 Capacity to propose optimal energy mixes for decarbonization purposes

- We propose comprehensive solutions only Iwatani can provide, including fuel conversion to LPG and LNG, green LPG, hydrogen, ammonia, and renewable energy.

### 3 Business infrastructure for solutions to community issues

- Our broad-ranging support structure for solving the issues faced by communities and customer households draws on a sales force of approximately 3,200 persons at about 280 sales offices across Japan, together with the digital solutions made possible by the Iwatani GateWay platform.

## Opportunities

### 1 Growing demand for fuel conversion in response to the rising need to reduce CO<sub>2</sub> emissions

### 2 Structural changes amid the decarbonization movement within the LPG industry

### 3 Growing need for solutions to community issues

## Risks

### 1 Declining demand for energy due to changing community demographic trends

### 2 Delays in raising the adoption of renewable energy

## Business Capital

### Nationwide real contact network and LPG dealership organization (Marui-Kai)

- A nationwide network, from import terminals to filling stations
- Disaster-resistant core LPG centers in communities across Japan
- A network of sales and distribution facilities across Japan
- Strong customer base built on leveraging our brand power and strengths in safety

#### Sales offices

- Approx. 280 sites
- Approx. 3,200 employees

#### Distribution centers

- Approx. 130 sites
- Approx. 1,600 employees
- Approx. 1,300 vehicles

### Japan's largest and most unique nationwide private sector disaster prevention organization (MaruiGas Disaster Relief Corps)

- A nationwide disaster prevention organization established jointly with distributors to ensure rapid LPG recovery in response to disasters
- Made up of some 3,600 qualified gas technicians from various companies
- Conducting annual concurrent nationwide drills to maintain and strengthen disaster response capabilities

### Cassette gas canister production plants designed for safe, reliable quality control and stable supply

- Quality control and brand power based on integrated production and sales structures
- The capacity to develop new products reflecting customer needs
- Structure for stable supply using domestic and international manufacturing facilities



Japan



China

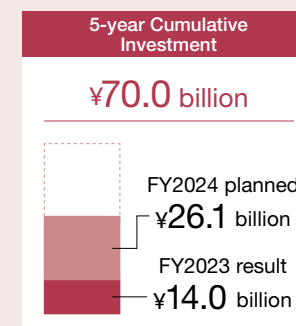
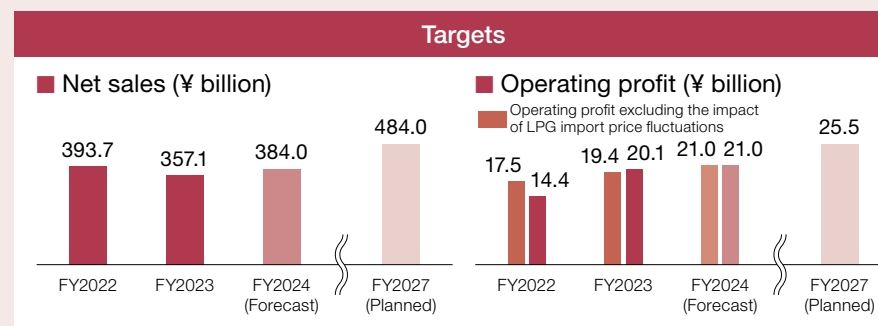


Thailand

### The Iwatani GateWay digital platform, used for solutions to community issues across Japan

- An IoT platform for connecting with customers
- A new infrastructure for providing services and value to support consumer lifestyles
- Domestic Energy & Services Strategies [➡ P. 26]

## PLAN27 medium-term management plan targets and progress





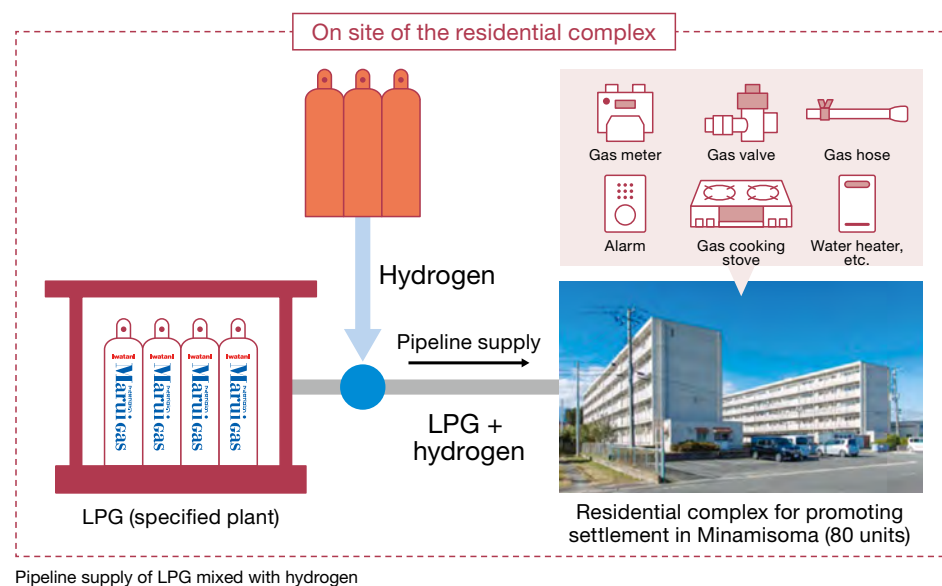
# Integrated Energy Business

\* Measures to grow the LPG business are covered under the Domestic Energy & Service Strategies [➡ P. 25].

## Initiatives

### Toward Japan's first pipeline supplies of mixed hydrogen and LPG to households

Iwatani's demonstration testing project for the pipeline supply of hydrogen and LPG mixed at usable ratios to households at a residential complex for promoting settlement in Minamisoma, Fukushima Prefecture (80 units) has been selected for funding by the New Energy and Industrial Technology Development Organization (NEDO). This is the first project in Japan to supply mixed hydrogen and LPG to households and to use existing supply infrastructure and gas appliances for mixed hydrogen and LPG. In FY2023, we verified the safety of mixtures with hydrogen and whether existing facilities could continue to be used. Plans call for beginning supplies of LPG mixed with 10% hydrogen at the end of FY2024. We will also consider increasing mixture ratios in the future while monitoring these usage conditions. Pipeline supply of LPG mixed with hydrogen is expected to be one means of reducing CO<sub>2</sub> emissions in households, and this test in Minamisoma will serve as a basis for promoting further efforts toward realization of this goal.



### Proposing life products and services to meet customer needs

To our nationwide LPG customer base, we sell products for business continuity planning (BCP) needs, including LPG emergency power generators and gas heat pumps (GHPs), as well as products that contribute to decarbonization via three types of power cells (storage cells, solar cells, and fuel cells) and high efficiency water heaters. We offer the essentials of daily life, including our own brands—ALALA (natural household detergents) and Natural Mineral Water from Mt. Fuji (water delivery). We offer various products and services that improve quality of life, including home remodeling and community safety services based on the Iwatani GateWay platform [➡ P. 26]. We continue to improve the lives of our customers by providing the products and services needed by our customers and communities.



Gas heat pumps (GHPs)



Solar power



ALALA




Natural Mineral Water from Mt. Fuji

# Integrated Energy Business

## Initiatives

### Publishing results of carbon footprint calculations to help reduce CO<sub>2</sub> emissions

Results of carbon footprint calculations (only in Japanese) 

In August 2022, as part of efforts to contribute to a decarbonized society, we began calculating the carbon footprint\* of Iwatani Cassette Gas orange-label products produced at the Shiga Plant of Iwatani Cartridge Gas Corporation. We are calculating CO<sub>2</sub> emissions, from production through disposal, in cooperation with Zeroboard Inc., based on ISO 14067 and procedures and standards issued by the Ministry of Economy, Trade and Industry and the Ministry of the Environment. Calculation procedures and results are reviewed by SOCOTEC Certification Japan, an independent agency, before being labeled on the products and posted on the website. In addition to announcing the results of these calculations annually as one indicator of decarbonization, we will strive to reduce CO<sub>2</sub> by decarbonizing production processes and working with companies within the supply chain.

\* A quantitative indicator of GHGs emitted over the entire product life cycle, from raw materials procurement through disposal, converted to CO<sub>2</sub> emissions



Cassette gas canister bearing carbon footprint label

本製品の原材料調達から廃棄までの温室効果ガスの排出量(カーボンフットプリント)をCO<sub>2</sub>排出量に換算して表示しています。詳しくはこちら

**IWATANI CASSETT GAS**  
IWATANI CASSETT FUELSERIES 専用

### Sales of Cassette-Feu KIWAMI begin

In January 2024, we began selling Cassette-Feu KIWAMI, the flagship model in the Iwatani Cassette-Feu series of products first introduced in 1969 to meet various consumer lifestyle needs. KIWAMI is designed under the supervision of global car designer Takumi Yamamoto, who also designed the *Mahoroba*, a hydrogen fuel cell ship we plan to demonstrate at Expo 2025 Osaka, Kansai, Japan. This line departs from the traditional boxy design, incorporating instead a circular top plate in a rose gold color integrated with the feet. Iwatani Cassette-Feu KIWAMI, which combines a luxury feel with functionality and safety, adds to the appeal of dining tables both for everyday use and for serving special guests. We will continue to supply products that enrich consumer lives.



Iwatani Cassette-Feu KIWAMI

# Industrial Gases & Machinery Business

The Industrial Gases & Machinery Business delivers solutions for customers based on its stable supply capacity for various industrial gases and an extensive product lineup, including gas supply facilities and machinery, all based on the research and development facilities and technological capabilities accumulated over many years.



**Kazutaka Yokoya**  
Managing Officer  
General Manager,  
Industrial Gases Division

## Supporting global industry through industrial gases

The Industrial Gases Division supplies industrial gases including air separation gases (oxygen, nitrogen, and argon), helium, carbon dioxide, semiconductor gases, and medical gases. These gases are used in plants and at research facilities across the automotive, semiconductor, electronic components, medical, and food products industries. We support global industry by drawing on the technological capabilities accumulated over many years and on our broad lineup of gas and machinery products in fields ranging from manufacturing and supply facilities for various gases and gas applications and efficient distribution and safety monitoring services. We strive to achieve the Sustainable Development Goals (SDGs) and reduce CO<sub>2</sub> emissions through business related to gases to realize a sustainable, carbon-neutral society. We plan to remain an essential presence by adapting nimbly to societal change and technological innovations and by supplying products and services that deliver solutions to the challenges facing customers around the world.

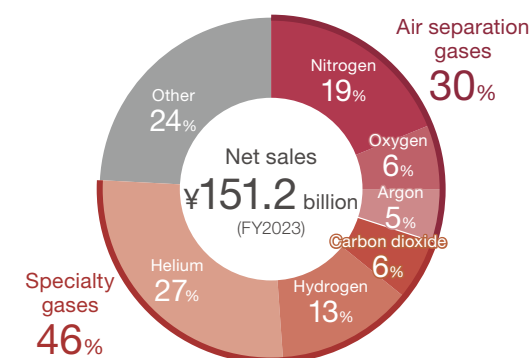


**Hiroyuki Yano**  
Senior Managing Officer  
General Manager,  
Machinery Division

## Achieving solutions and growth alongside our customers based on a wide range of machinery

The Machinery Division sells various types of machinery, from gas supply equipment, welding and industrial robotics machinery to electronic components production equipment, equipment for semiconductors, medical and pharmaceutical products, environment conservation, and machine tools. Drawing on our extensive domestic and international networks, our wide-ranging product lineup, and years of expertise in machinery adoption and solutions, as well as the comprehensive capabilities of the Iwatani Group, we seek to grow alongside our customers while helping them overcome various challenges through specific, practical, targeted proposals. In recent years, we've begun selling hydrogen cutting machinery and mixed hydrogen burners, products that help reduce and control CO<sub>2</sub> emissions in manufacturing processes like cutting thick sheet metal and calcination furnaces. We will continue to demonstrate our presence as a member of the Iwatani Group by adapting flexibly to future environmental changes and targeting growth based on the keywords of decarbonization, automation, and customer focus.

## Breakdown by gas type



## Machinery, etc.

● High pressure gas supply equipment

● Welding robots



● Tanker trucks ● Welding machinery ● Dedicated sheet metal and welding machines ● Semiconductor manufacturing equipment ● Welding materials ● Pharmaceuticals manufacturing equipment



# Industrial Gases & Machinery Business

## Strengths

### ① Business development based on stable procurement and stable supply as a producer

- Helium: Competitive strength in global markets based on our multiple procurement sources, use of own containers, etc.
- Hydrogen: Handling in house all activities from manufacturing through distribution, storage, use, and maintenance
- Air separation gases: Building a stable nationwide supply structure based on our advanced ISO 9001-certified quality management structure

### ② Years of experience, expertise, and handling technologies in hydrogen

- Hydrogen Strategies [➡ P. 18]

### ③ Capacity to propose solutions to specific customer challenges

- A wide range of gas application technologies, including low-carbon and zero-carbon solutions
- Capacity to propose comprehensive solutions with integration of diverse industrial gases and machinery and equipment

### ④ Technological development capabilities of the Iwatani R&D Center and the Iwatani Advanced Hydrogen Technology Center

- Technology Strategy [➡ P. 39]

## Opportunities

### ① Advancing decarbonization, automation, and labor saving in manufacturing

### ② Market expansion in China, Southeast Asia, and the United States

## Risks

### ① Evolving domestic and international industrial structures

### ② Country-specific risks, policy trends, and other aspects

## Business Capital

### Safe, precise, and speedy gas supply and service network

- Building stable domestic and international supply chains from production through supply
- Establishing regional maintenance structures
- Customizing gas supply systems depending on customer needs

#### Hydrogen

- Building structures for stable supply of compressed hydrogen and liquid hydrogen

#### Helium

- Ensuring stable supply through procurement from two sources: Qatar and the US
- Establishing a distribution network centered on Japan and Asia using our own helium containers

### Applications technologies capable of handling diverse gases in accordance with their properties

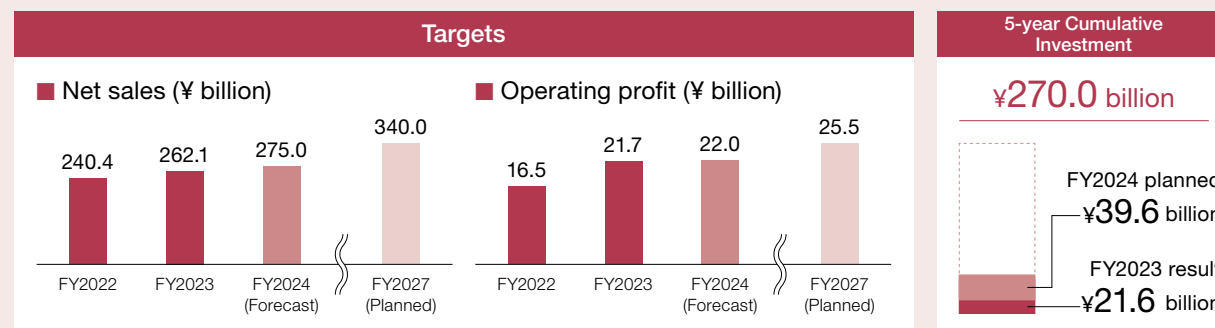
- Capacity to propose solutions backed by the gas handling technologies, extensive track record in their adoption, and integrated capabilities from design through maintenance accumulated over many years
- Continuing development of new gas technologies while responding swiftly to customer needs and issues

Example: Hydrocut® hydrogen-based premixed fusing gas that significantly reduces CO<sub>2</sub> emissions; high-density oxygen solution equipment, which is seeing increasing use in inland aquaculture; liquefied nitrogen and storage containers used to freeze and store regenerative medical products such as cells

### Comprehensive abilities combining gases with machinery

- The Iwatani Group can provide services from gas supply through machinery and equipment for using gas
- Our extensive product lineup and broad-ranging domestic and international networks, in addition to years of expertise, support customer production activities

## PLAN27 medium-term management plan targets and progress



# Industrial Gases & Machinery Business

## Initiatives

### Contributing to regenerative medicine through low-temperature technologies

We're addressing the growing demand for liquefied nitrogen in freezing, storage, and transport of cells at temperatures below  $-150^{\circ}\text{C}$  as a new growth field that will help industrialize regenerative medicine. Iwatani proposes comprehensive solutions, including carbon dioxide for cell growth, liquefied nitrogen and containers for freezing and storing cells, transport containers, and temperature loggers. For medical institutions, we offer gases and products essential to building cold chains—from cell production plants to storage and transport facilities. We're also focusing on research and development through joint research with universities and on capital joint ventures with startups. In 2022, we opened a regenerative medicine/bioresearch facility at the Iwatani R&D Center, where we are currently building a structure to reproduce and evaluate the series of processes performed at cell production plants. We're also making progress on developing technologies for gently freezing cells and research and development on cell storage and transport containers. In 2024, we developed the basic technology for freezing 3D cells. In this field in particular, our research and development capabilities are emerging as clear strengths. As we enhance these initiatives in the future, we plan to bring to market cell storage and transport containers produced in-house.



Cell culture

### Onshore aquaculture initiatives based on our high density oxygen solution technologies

Iwatani offers products related to onshore aquaculture, centered on oxygen produced using our high density oxygen solution technologies. While offshore aquaculture uses fish pens and similar facilities, onshore aquaculture technology is used to raise fish in artificial environments on land. We have accumulated the high density oxygen solution technologies needed to help fish grow through more than 30 years' experience in supplying oxygen to eel farmers and selling oxygen solutions equipment. In 2023, we opened an onshore aquaculture research facility at the Iwatani R&D Center as we continue to pursue research in this field to identify real-world applications. In addition to oxygen, our lineup of onshore aquaculture products addresses industrial needs ranging from LPG boilers to maintain water temperature to emergency generators and fiberglass-reinforced plastic (FRP) cultivation tanks. In recent years, in addition to fisheries companies, companies from a number of other industries have begun entering the onshore aquaculture field. We will continue to target this industry, including efforts currently under consideration to expand into overseas markets, due to the status of this industry as a contributor of solutions to challenges such as food shortages.



Onshore aquaculture experimental facility

# Industrial Gases & Machinery Business

## Initiatives

### Mixed-hydrogen burners to help reduce CO<sub>2</sub> emissions from industrial furnaces

The Japanese government has targeted a 47% reduction (vs. FY2013) in CO<sub>2</sub> emissions by 2030. Under these conditions, reducing the CO<sub>2</sub> generated from burning fuel is a pressing need for Japanese manufacturers that operate industrial furnaces in drying, calcination, smelting, or other processes. The mixed-hydrogen burners developed jointly with our partners represent one solution to reduce CO<sub>2</sub> emissions generated by such manufacturers. Our burners make it possible to mix hydrogen with existing fuel at ratios of 0-100% and can be retrofitted in significantly less time than it would take to upgrade entire industrial furnaces. We delivered our first mixed-hydrogen burner in March 2024; in May of that year, we installed a test unit at the Iwatani R&D Center, where we will pursue practical testing and collect data on mixed hydrogen combustion to meet customer needs, with the goal of accelerating sales of mixed-hydrogen burners. We plan to continue to leverage our position as Japan's sole liquid hydrogen supply network operator to provide solutions that help reduce CO<sub>2</sub> emissions.



Mixed-hydrogen burner

### Opening a gas supply base in Singapore to power business growth in Southeast Asia

In 1974, Iwatani established a company in Singapore to serve as the center of our businesses in Southeast Asia. The company produces and sells industrial gases for high tech industries, including the semiconductor industry. In recent years, customers in Southeast Asia have used industrial gases for a wide range of applications, and demand is expected to continue growing. In June 2024, we opened a gas center with expanded gas filling and storage capacities, bringing together our supply bases for helium, semiconductor gases, and air separation gases, previously scattered across regions including Malaysia and Singapore. To effectively meet the growing demand, we also expand our systems to enable timely delivery. We will build on the construction of this new plant to grow the Industrial Gases Business in Singapore and Southeast Asia.



The new gas center on the island of Jurong, Singapore

### Introducing new products in the Hydrocut® series to control CO<sub>2</sub> emissions

Acetylene (C<sub>2</sub>H<sub>2</sub>), used in brazing and gas pressure welding and in the cutting of various metals, emits CO<sub>2</sub> during combustion. We offer the Hydrocut® series of gases mixing hydrogen and ethylene as an alternative. The distinguishing features of Hydrocut® can contribute to solutions for issues in this field—for example, reducing CO<sub>2</sub> emissions by 84% compared to acetylene, reducing radiant heat for comfortable working, and ensuring safety through backfire resistance. Thanks to this wide range of advantages and our technological support, it is now being used in various fields, including shipbuilding, construction, and auto parts. In 2023, we introduced New Hydrocut, which reduces CO<sub>2</sub> emissions still further by increasing the hydrogen mix ratio. We will continue to develop technologies and products that address customer needs to reduce CO<sub>2</sub> emissions and achieve environmental improvements at construction sites.



Hydrocut



# Materials Business

The Materials Business develops mineral sands and other mineral resources; procures and supplies functional plastics, advanced metals, and other raw materials essential to the environmental, electronics, and automotive fields; and contributes to decarbonization through biomass fuels and other sustainable products for a cyclical society.



**Kenji Motoori**

Senior Managing Officer,  
General Manager,  
Materials Division

## Building the decarbonized society of the future by ensuring a stable supply of green materials

As the global economy changes at unprecedented speed in response to rising geopolitical risks, the Materials Division builds robust supply chains to secure stable supplies of the raw materials essential to the fields of renewable energy, electronics, and mobility. Amid rising demand to reduce carbon emissions production processes, our investee Nordic Mining mines raw materials for green titanium powered entirely by electricity generated from renewable energy. We plan to launch sales of this material in FY2025. We're also making progress on efforts to supply the materials customers need to build a cyclical society. These efforts include participating in a plastics recycling consortium and studies on developing the metals recycling business. We will continue working with partners in Japan and around the world to realize the promise encapsulated by our corporate slogan: Creation of a more comfortable space on the Earth is what Iwatani wishes and strives for.

## Functional Plastics

- Resin raw materials (PET resin, polypropylene, etc.)
- Resin molding products, films, sheets

**Related industries:** Beverage and food, daily household goods, home electrical appliances, etc.



Air conditioner panel



PET resins

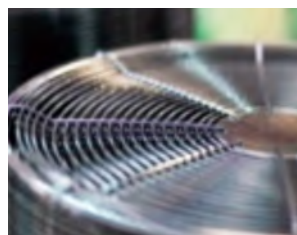


Films (protective tape)

## Metals

- Stainless steel ● Precision stainless steel ● Aluminum
- Non-ferrous materials ● High alloys ● Processed metal products

**Related industries:** Electronic components, air conditioning equipment, etc.



Wire processing



Stainless steel

## Resources & Advanced Materials

- Mineral sands (zircon, titanium raw materials)
- Ceramic raw materials (Rare Earth metals, zirconium compounds)
- Refractory raw materials ● Biomass fuels ● Electronic materials

**Related industries:** Chemicals, ceramics, automotive, semiconductors, etc.



Australian mineral sands concession

## Electronic Materials

- Battery-related materials
- Display materials

**Related industries:** Electronics, automotive batteries, etc.



Smartphone materials



Automotive battery materials

# Materials Business

## Strengths

### 1 Strong customer network

- A strong customer base including leading players with high motivation to achieving carbon-free society and control over markets
- A lineup of eco-friendly materials based on our network, including eco-friendly resins and biomass materials

### 2 Stable supply structure

- Stable procurement capabilities based on strong ties to overseas suppliers and our in-house sources
- Diversification and greening of procurement sources to meet customer needs

### 3 Proposing state-of-the-art products

- Capacity to propose products that draw on high-value-added advanced technologies to address the needs of society and our customers
- Nano-size materials development and joint development of new and advanced materials with universities and startups

## Opportunities

- Demand shift toward eco-friendly products during the stage of transition to a carbon-free society
- Rising demand for rare resources
- Growth of China, Southeast Asia, and other emerging markets

## Risks

- Market contraction for existing products due to rising environmental awareness
- Rising costs of development, production, procurement, logistics, etc.
- Supply risks associated with rising geopolitical risks and natural disasters

## Business Capital

### Business infrastructure in mineral sands

- Ownership of mining concession in Australia
- Building a stable supply structure by diversifying supply sources
- Leading share of sales in Japan in combination with procurement from major resource firms

### Overseas metal processing plants

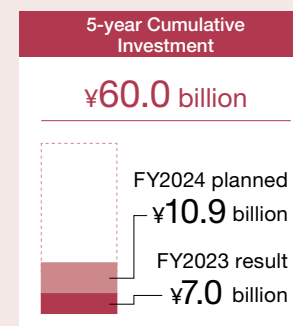
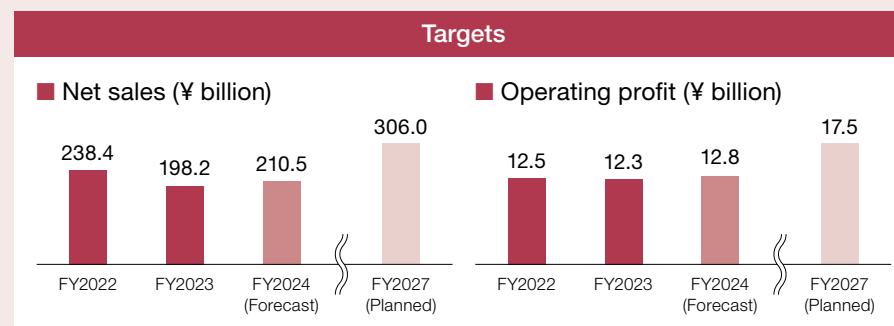
- Developing an integrated production structure from raw materials through processing, to target emerging markets (Thailand, China)
- Product development/processing functions to meet customer needs (air conditioning equipment, automotive parts and materials)

### Strong ties to suppliers

- Building an extensive network to realize stable procurement from suppliers around the world



## PLAN27 medium-term management plan targets and progress





# Materials Business

## Initiatives

### Strengthening supply capabilities for the vital mineral resource of mineral sands

Mineral sands (minerals in sand form, such as zircon sand and titanium ore) contain rare metals vital to the environmental, electronics, and automotive industries. In addition to imports and sales of products (produced in South Africa and Canada) from major global suppliers, we operate our own mining concession in Australia, in which we hold 100% mineral rights. In 2022, we invested in Nordic Mining, a Norwegian resources firm, to secure rights to the Japanese market for high purity titanium ore mined from a new concession slated to begin operating in 2025. In addition to expanding production facilities to strengthen the structures needed to ensure a stable supply, we plan to grow sales to highly decarbonization-conscious customers by emphasizing the green aspects of titanium sourced from Norway due to the nation's high rate of renewable energy use. As a leading player in the industry, we will continue working to build ever more robust supply chains.



Nordic Mining concession (Norway)

### Growing sales of eco-friendly resins

We sell eco-friendly resins as a solution we can offer to manufacturers of products such as bottles, beverages, and films that need to lessen their environmental impacts. We're focusing on growing sales of our eco-friendly resins lineup consisting of three product lines: bio-PET resin made of biomass MEG refined from sugarcane dregs (waste molasses), aluminum catalyst PET resin of outstanding recycling performance (color and physical properties resistant to change during recycling) thanks to its high heat stability, and low antimony-catalyst resin with reduced risk of leakage of heavy metals from products. In addition, in 2021 we began offering bio PP, PE, and PS resins using the recyclable resource bio naphtha, supplying bio plastics that deliver the same quality as petroleum-derived plastics while reducing CO<sub>2</sub> emissions.



Bottles made from eco-friendly resins

# Materials Business

## Initiatives

### Business growth by strengthening stainless steel processing function and developing new technologies

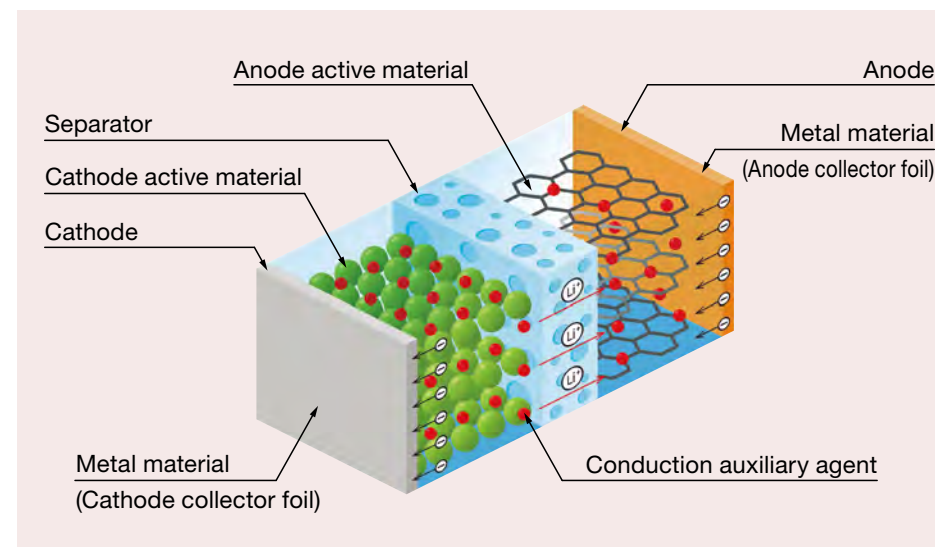
In March 2024, to grow sales of the stainless steel business, a core component of the metals segment, we acquired all shares of stock issued by Taihei Kozai Co., Ltd. and TAIHEIKINZOKU Co. Ltd. Based in Hyogo Prefecture, these companies have established structures that enable the rapid supply of a wide range of materials based on extensive inventories and quick processing. Their customer-centric approach has secured leading shares in their regional markets. We're committed to continuing to enhance the Group's competitive strengths and strengthen the stainless steel business. We've also established a technology for welding stainless steel and copper, something conventionally considered difficult to weld. This technology will make it possible to replace some of the copper piping in air conditioning and other equipment with stainless steel, helping to reduce use of copper, supplies of which are expected to tighten. We will continue to grow our businesses through active alliances and acquisitions and to develop new markets through research and development.



Welding copper and stainless steel using a copper-iron alloy

### Strengthening our ability to supply the rechargeable-battery materials essential to lithium-ion battery production

Thanks to their compact size, light weight, and long life, rechargeable lithium-ion batteries are used in smartphones, laptops, EVs, hybrid vehicles, and in many other devices/applications. We provide materials like lithium, cobalt, and manganese essential to the manufacture of the cathode materials that determine lithium-ion battery capacity and energy density. Currently, these metals are refined mainly in China; we're striving to add to the stability of the supply for these materials by establishing a new supply chain outside of China. We're also pursuing research and development on solid state batteries, which are expected to enter commercial use in several years, and on parts and materials that reduce the risk of fire posed by lithium-ion batteries. In these and other ways, we will participate in the growing rechargeable battery materials market and strengthen our market supply structure.



Internal structure of a lithium-ion rechargeable battery