Environmental Efforts at RYOBI

November 12, 2025

RYOBI LIMITED

Sustainability Promotion Section,
General Corporate Affairs Department,
Corporate Administration Division

General Affairs Section,
Shizuoka Plant,
Die Casting Manufacturing Division

I. Corporate Data

II. Description of Project that was Awarded the 2024 Energy Conservation Grand Prize
- Cross Functional Team (CFT) Activities at Shizuoka Plant

III. Approach to Decarbonization
- Participation in NEDO Green Innovation Fund Project

I. Corporate Data

Company name:	**RYOBI LIMITED**
Established:	**December 16, 1943**
Representative:	**Akira Urakami, President and CEO**
No. of employees:	**RYOBI - 1,675**
	RYOBI Group Total - 7,939
Capital:	**18,472 million yen**
	*** No. of employees and Capital are as of Dec. 31, 2024.**
Major products:	**Die casting products**
	Builders' hardware (door closers, hinges, architectural hardware, etc.)
	Printing equipment (offset printing presses, peripherals, etc.)

I. Corporate Data

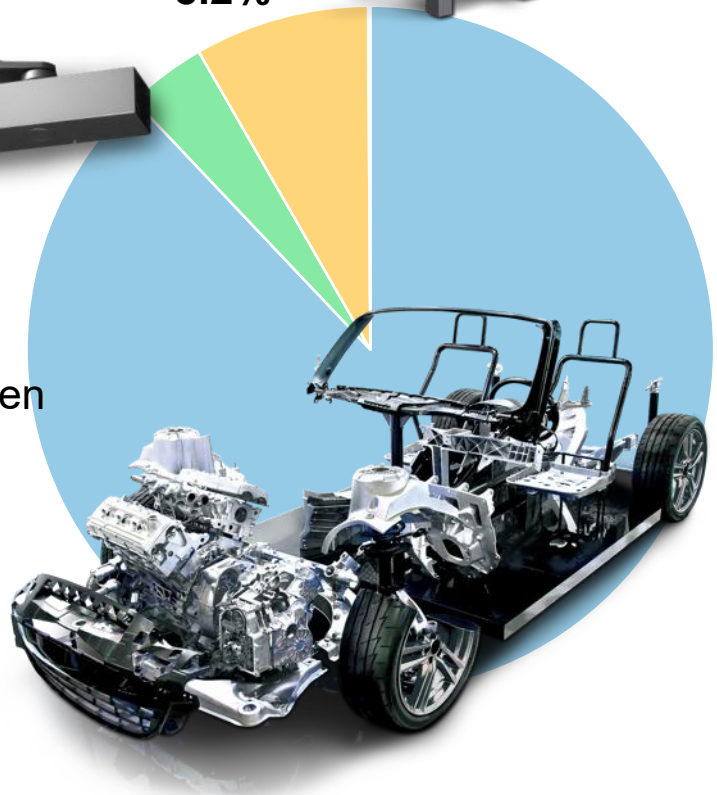
Consolidated sales (FY ended Dec. 2024)

293.3 billion yen

◆ Composition ratio of sales in different business fields

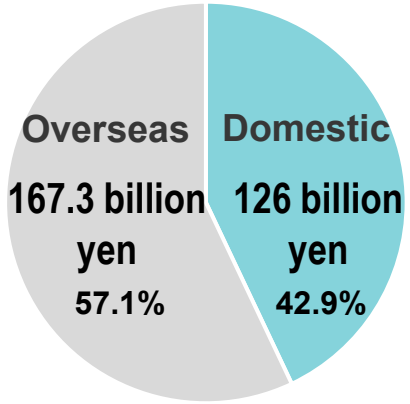
Builders' hardware
11 billion yen
3.8%

Printing equipment
24.1 billion yen
8.2%

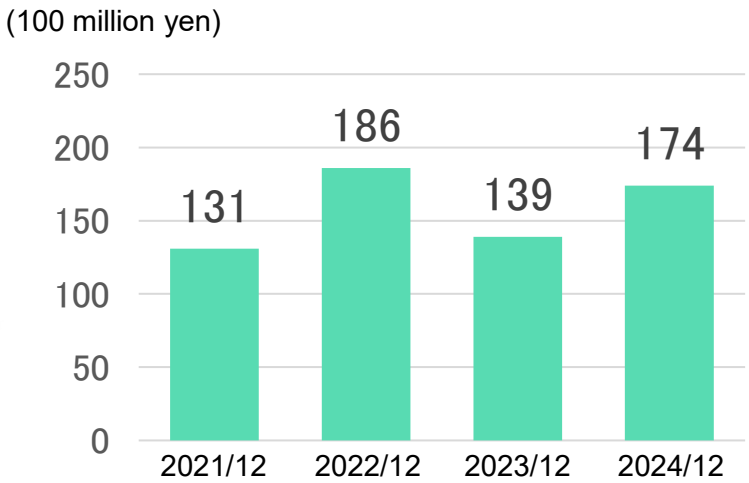


Die casting
257.9 billion yen
87.9%

◆ Composition ratio between overseas and domestic sales

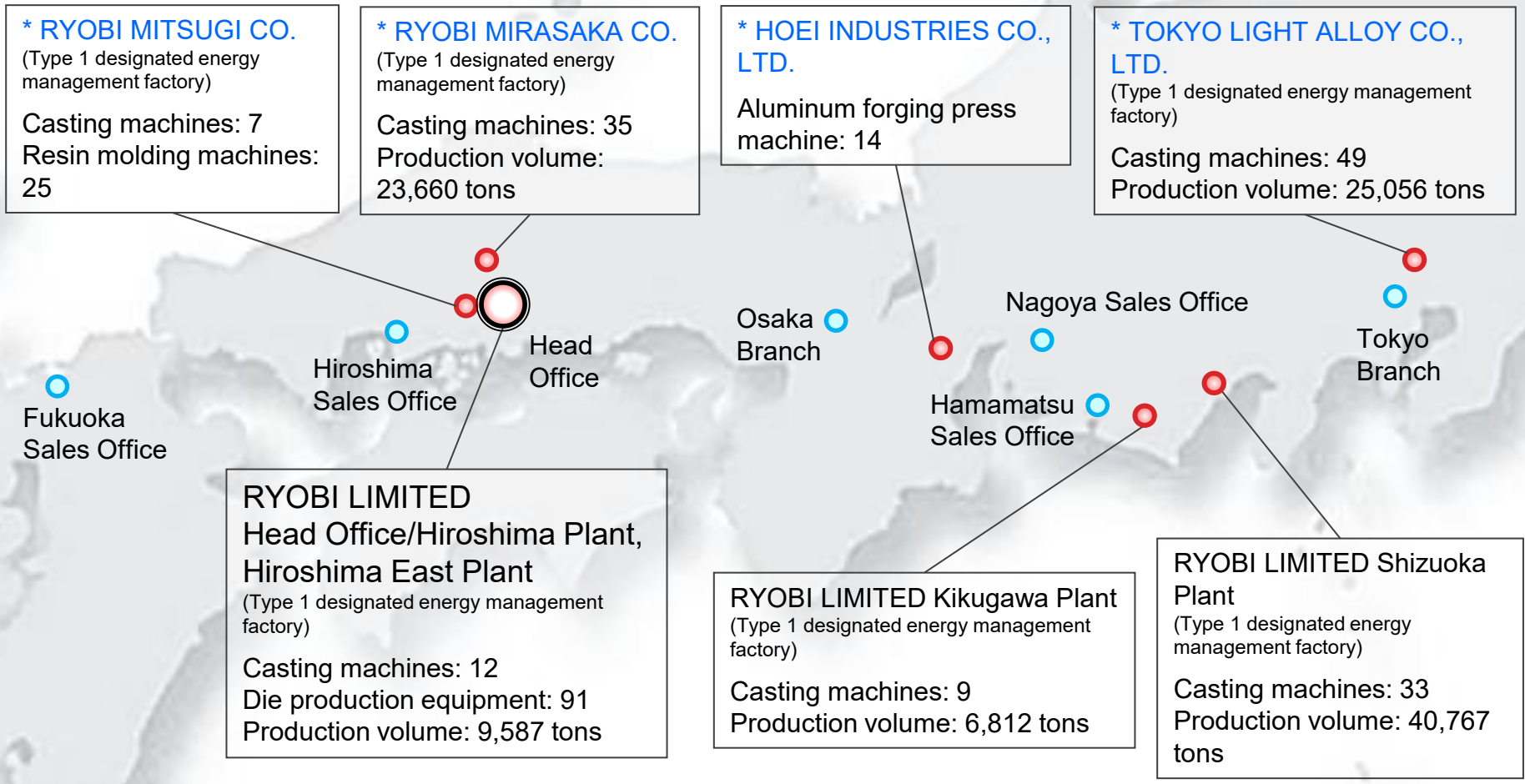


◆ Capital investment



I. Corporate Data

RYOBI Group production bases in Japan



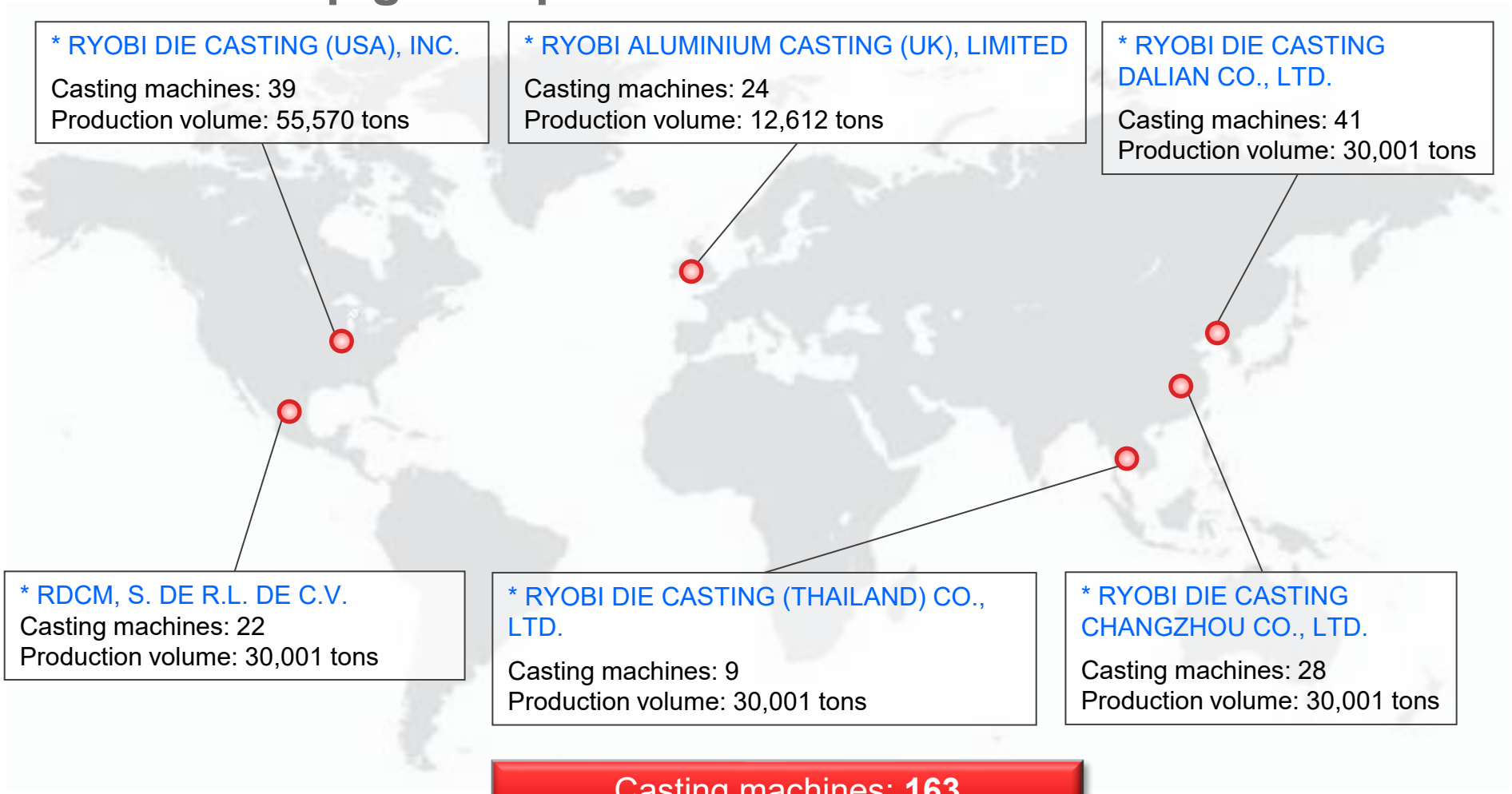
Casting machines: **145**
Large machines (1,200 tons or more) among the above: **62**

* Group company
Production base
Sales base

Production volumes: Actual figures for the year ended Dec. 2024
Owned facilities: As of Dec. 2024

I. Corporate Data

RYOBI Group global production bases



Casting machines: **163**
Large machines (1,200 tons or more) among the above: **124**

* Group company
Production base

Production volumes: Actual figures for the year ended Dec. 2024
Owned facilities: As of Dec. 2024

RYOBI LIMITED Shizuoka Plant

Cross Functional Team (CFT) activities

<Topic> Reduction of Energy Use toward Carbon Neutrality

(Project period) From Feb. 2022 to Jan. 2023

Team members

Yasunori Harada (General Affairs)

Keisuke Yoshida (Product Machining)

Masaaki Motohashi (General Affairs)

Toshiya Watanabe (Die Casting Manufacturing)

Akitomo Hohku (Production Engineering)

Takehiro Kihara (Machine Maintenance)

Osamu Sano (Aluminum melting)

Akira Yatsukura (Die Maintenance)

Naoki Kitamura (Quality Control)

Takuma Shoji (Die Casting Manufacturing)

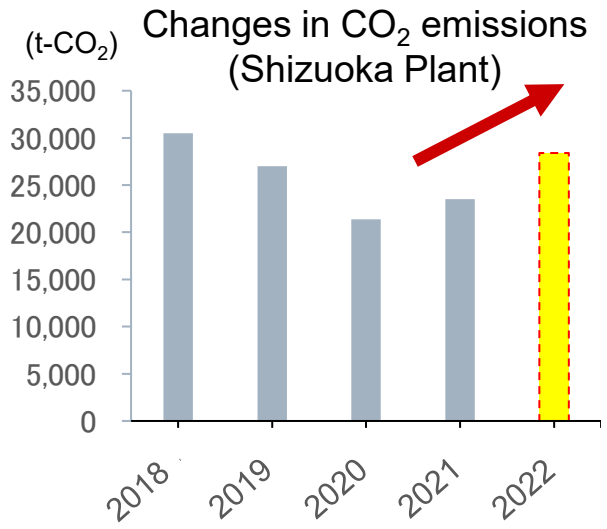
Haruki Yamamoto (Machine Maintenance)

A. Outline of the Activities

1. Background

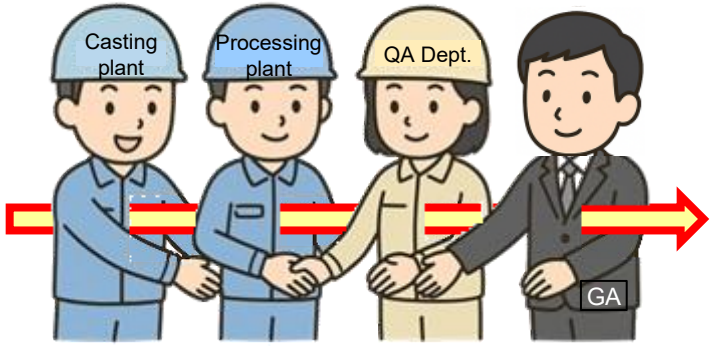
The RYOBI Group is working to reduce environmental impact, with the set CO2 emission targets "**Achieve carbon neutrality by 2050, and reduce the CO_2 emissions by 47% or more from the fiscal 2018 level**".

Shizuoka Plant has also continued energy-saving activities. It was concerned that the CO_2 emissions for the next year (2022) would increase due to the expected recovery in production that had been declined in the time of COVID19.



For planning and implementation of more efficient and effective energy-saving measures

The Cross Functional Team (CFT) composed of cross-functional members from manufacturing, maintenance, production technology, and other departments was established to work together on energy-saving activities.



A. Outline of the Activities

1. Background

[Production processes]

Aluminum melting → Casting → Processing

[Energy used]

City gas / Electric power

[Ratio in CO_2 emissions]

4 : 6

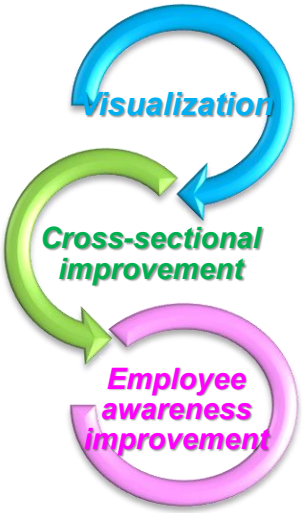
Fuel shift to hydrogen was examined

Decided to focus on energy-saving activities for electric power
Target: 4.0% reduction from Dec. 2021 level

Let's do our best!

2. Approach

<Three core activities>



<Analysis>
Establish a foundation for improvement activities through visualization of CO_2 emissions and electric power consumption, and work on the reduction of electric power consumption.

<Wide variety>
Cross-sectionally implement the activities for reducing electric power consumption, present activity case examples to the employees, and apply the experience and knowledge from the activities widely to other sections across the company.

<Full participation>
Improve employee awareness about "CO_2 reduction" through trainings and events.

B. Activity Details

Visualization

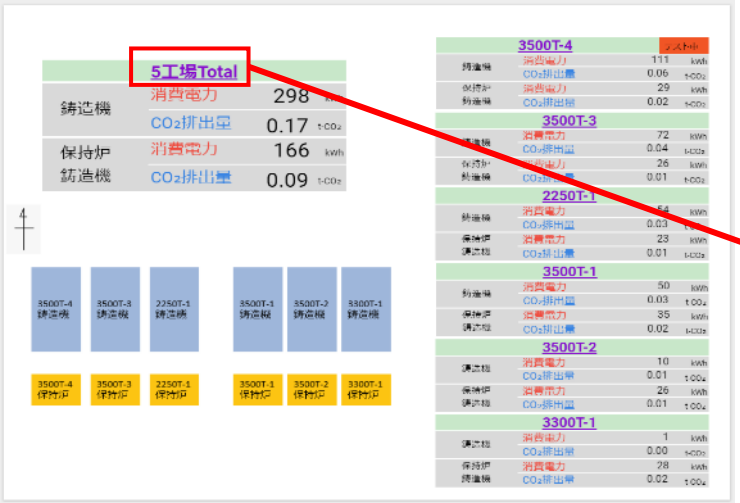
1. Visualization of "CO_2 emissions"

Based on the web application operated in Hiroshima Plant, the electric power consumption and CO_2 emissions for each plant, line, and casting machine can be viewed on the on-site monitors in real time.

Improvement effect:

Understanding the fluctuations in daily electric power consumption and CO_2 emissions, followed by timely and appropriate measures, made it possible to immediately check the improvement effect.

The foundation for continuous improvement activities could be established.



■ On-site monitor

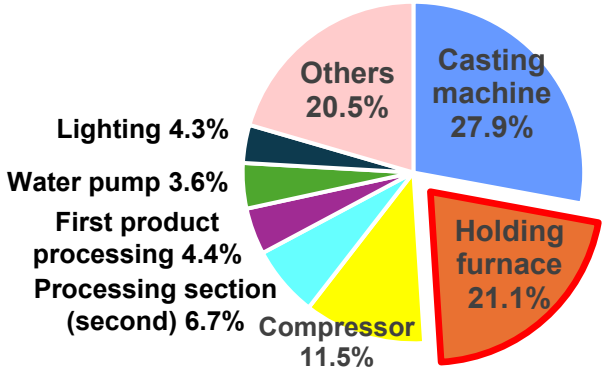
B. Activity Details

Cross-sectional improvement

RYOBI

2. Reduction of heat release by using “Pata-Pata-Kun” at the opening of holding furnace

Electric power consumption in Shizuoka Plant

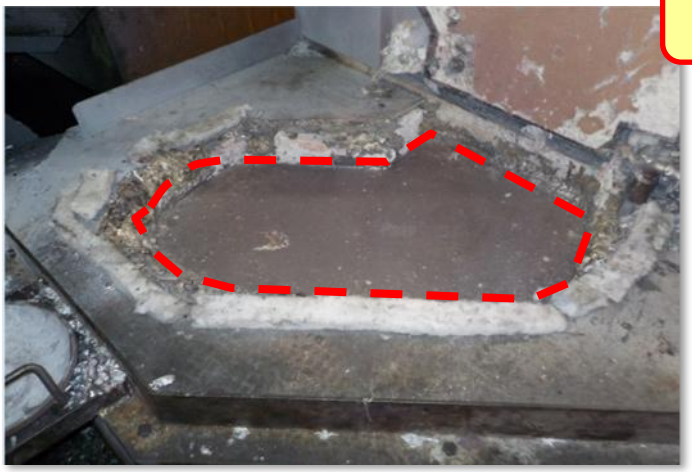


All members visited the site to observe the casting machine holding furnace accounting for approx. 20% of the entire electric power consumption.

The opening of the draw-up port is too wide, isn’t it?

<Improvement measures>
A movable cover for covering the opening was designed and installed.
The cover was designed to be easily opened and closed using a wire.

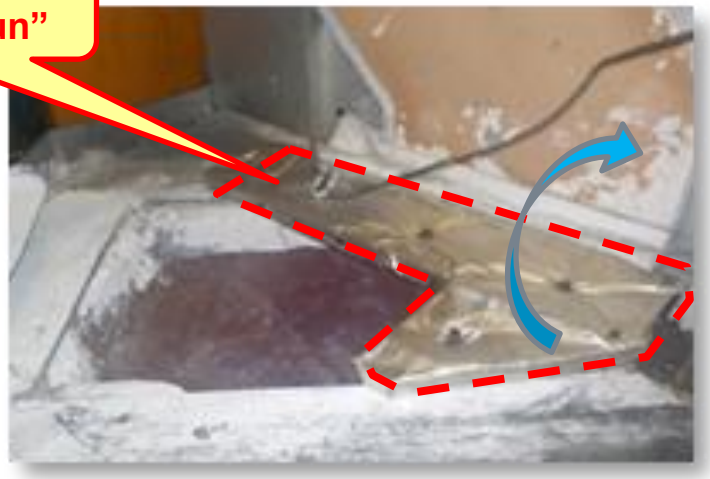
Before improvement



Approx. 60% reduction in the opening area

Cover named “Pata-Pata-Kun”

After improvement



Improvement effect: 1.70% reduction (from Dec. 2021 level)

B. Activity Details

Cross-sectional improvement

RYOBI

3. Reduction of electric power consumption through changing holding furnace specifications

1) Modifications in shapes at molten metal distribution port

* Measures taken at new installation

Modifying the corner to R100 prevents molten metal from being fed excessively.

Prevention of AL accumulation → Reduction and prevention of heat loss by improving adhesion of the cover

Eliminating the casing surrounding the port prevents deformation (raised surface) of the top plate due to aluminum infiltrated into the plate.

2) Use of super-insulating and patented fiber cloth inside the holding furnace casing

Improvement effect from the change of fire-resistant material

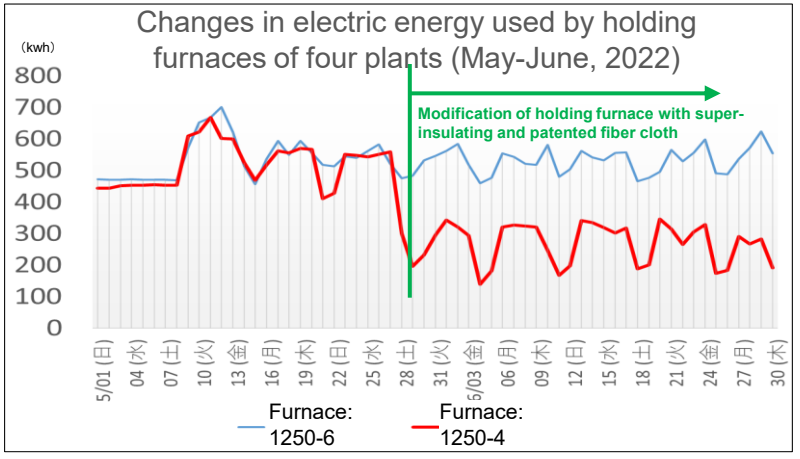
<Furnace without the specification changes>

Average value in six months from new installation of the holding furnace: 484 kWh/day

<Furnace with the specification changes>

Average value in one month from new installation of the holding furnace: 269 kWh/day

Difference in monthly electric energy 6,450 kWh/month **(Reduction of 129,000 yen per month)**



Improvement effect: 0.24% reduction (from Dec. 2021 level)

B. Activity Details

Cross-sectional improvement

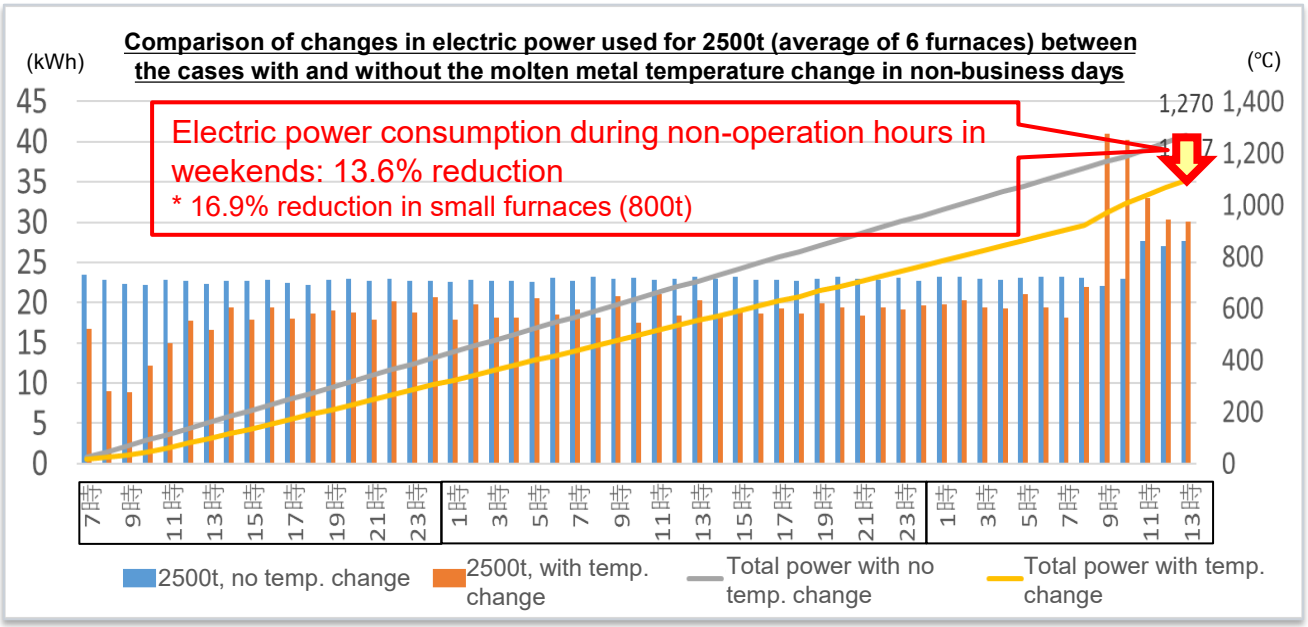
RYOBI

4. Changing temperature setting for holding furnaces in non-business days

The improvements with “Pata-Pata-Kun” and changes in holding furnace specifications were effective to a certain extent, but not sufficient.
Additional measures were considered.

Is it necessary to keep molten metal at this temperature in non-business days?

<Additional measure>
Taking account of the energy consumption at restarting and other aspects, the optimal holding temperature was reviewed and changed from **670 to 640ºC**.



Improvement effect: 0.31% reduction (from Dec. 2021 level)

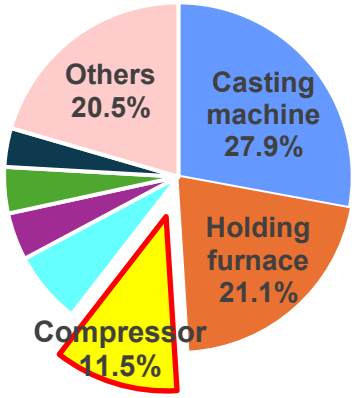
B. Activity Details

Cross-sectional improvement

RYOBI

The effect of reduction in electric power consumption through the improvement of holding furnaces was by 2.25% (from Dec. 2021 level), which is not sufficient.

For further reduction, focusing on compressors which accounted for the second largest share in electric power consumption next to the holding furnaces, we worked on the reduction of air consumption (improvements in air blow for casting machines).



5. Improvements in air blow for casting machines

There are three types of air blow for casting machines, which are (1) intermittent air blow, (2) cylinder air blow, and (3) air blow inside die. At first, we worked on the improvement in “(1) intermittent air blow” and optimized air blow timers, which achieved a reduction of air consumption by 17%.

However…

There is so much work for improvement.
Some concerns remain on product quality.

As a result, it could not be a continuous improvement measure.

Let’s try to improve the (2) cylinder air blow and (3) air blow inside die, which may pose fewer quality concerns!

B. Activity Details

Cross-sectional improvement

RYOBI

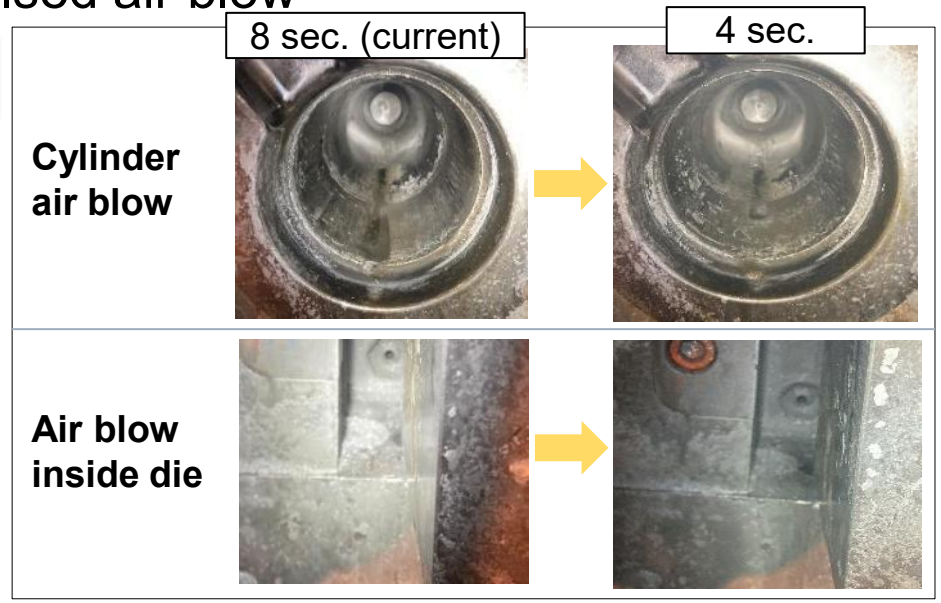
6. Improvements in air blow for casting machines

[Improvement measure] Modification of the cylinder air blow and air blow inside die to achieve shorter and pulsed air blow

a. Reduction of air blow time in stages

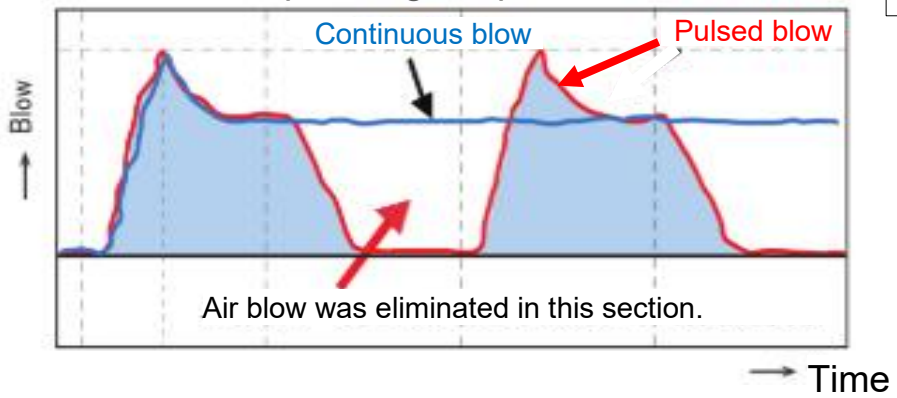
With consideration for quality

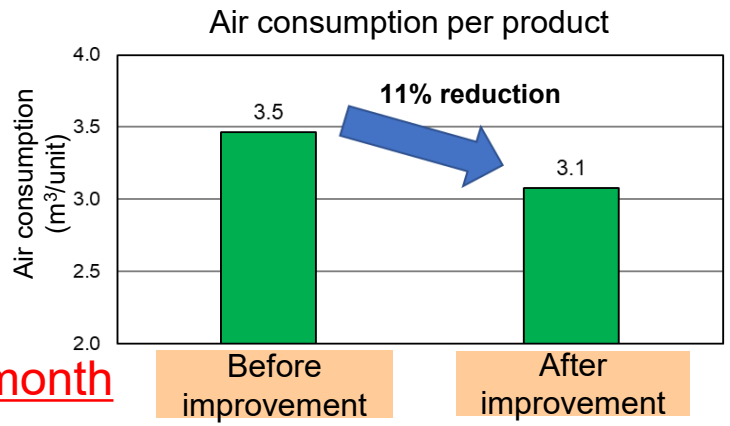
Reduction from 8 seconds (current) to 4 seconds!



b. Pulsed air blow

Sample image of pulsed blow





Improvement effect: 155 kWh reduction per month

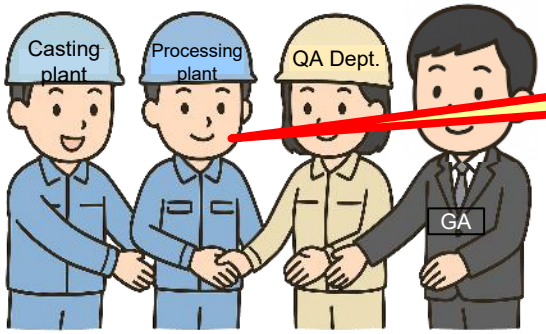
B. Activity Details

Cross-sectional improvement

RYOBI

7. Improvement in air blow in processing steps

Voice from the members involved in processing steps



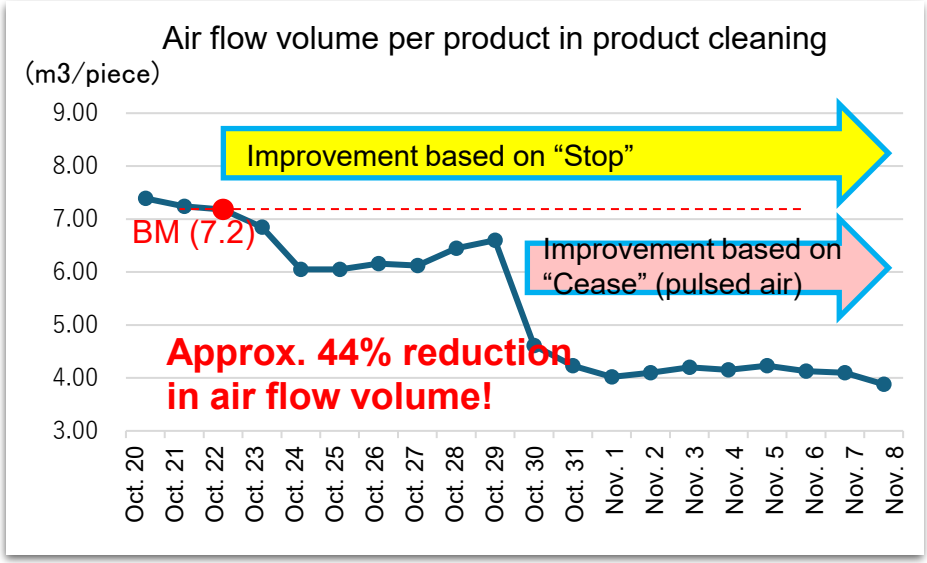
We should be able to apply the improvements in air consumption to processing steps!

Some research has found that air blow used for cleaning products accounted for 10.9% of total electric power used in processing plants.

<Improvement measures>
Implemented the activities based on the “Cease” and “Stop” from the “Six Energy-Saving Precepts” of Toyota Motor Corporation.

No product is blown by the air (Air blow is not doing its work) → “Stop”

Air blow continues for 65 seconds (Air blow is doing excessive work) → “Cease”



Improvement effect: 0.24% reduction

(from Dec. 2021 level)

“Stop” activity: 0.09% reduction
“Cease” activity: 0.15% reduction

B. Activity Details

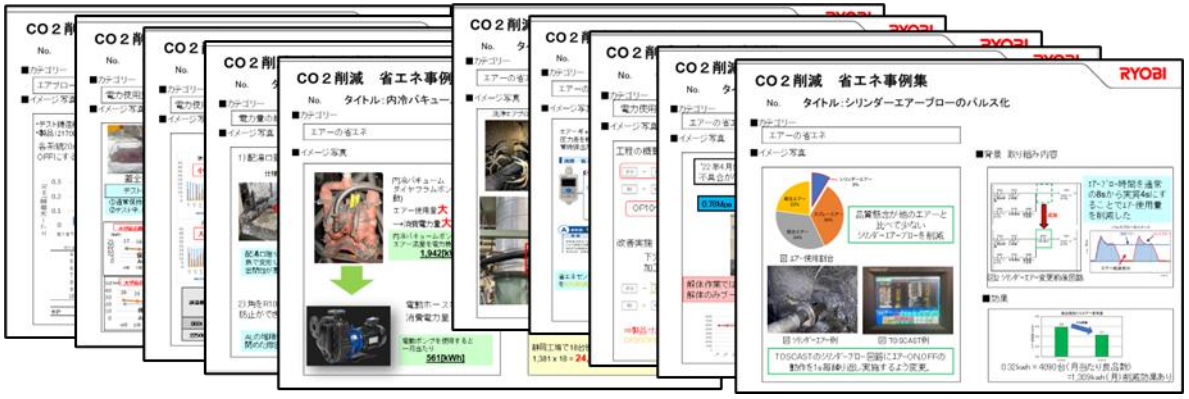
Cross-sectional improvement

RYOBI

8. Compiling improvement case examples and applying them to others

Presented case examples in the electric power reduction activities to the employees, and applied the experience and knowledge from them widely to other sections across the company.

10 improvement resumes were prepared.



Application to other bases and subcontractors: As of January 31, 2023

9. Awareness-raising activities for all employees

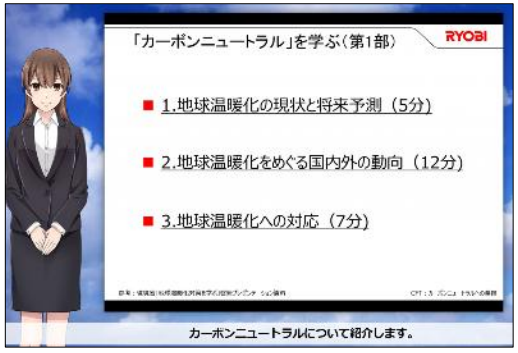
Employee awareness improvement

a. Training about “carbon neutrality”

Objective: To make the employees understand what “carbon neutrality” is and the “purpose and targets of CO_2 reduction”, and encourage them to participate in the “CO_2 reduction activities”.

Content: “Carbon neutrality” training in microlearning

→ To be reviewed in a comprehension test



B. Activity Details

Employee awareness improvement

10. Awareness-raising activities for all employees

b. Festival event called **"A bit of CO_2 reduction"** was held from June 6 to July 6, 2022.

Purpose: To help all employees in Shizuoka Plant understand the necessity of CO_2 reductions and participate in the improvement activities with interest.

Content: Presenting awards to high scorers based on the points given to the CO_2 reduction activities conducted by employees.

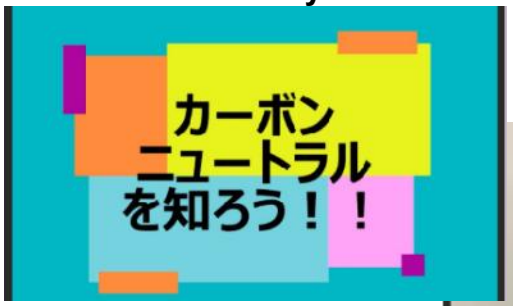
Actions taken to improve the event:

The participation rate at the beginning of the event was as low as 30%. However, with some measures, including placing energy conservation posters and playing a video containing a message from the plant manager, to create an atmosphere as an organization, the rate was improved finally to 66%.

Flag and poster

"Carbon neutrality video" showed on the screens at company cafeteria

Let's know more about carbon neutrality!



The video contained an enthusiastic message from the plant manager.

C. Results from the activities

Quantitative results

- Electric power consumption was reduced by 3.46% from the fiscal 2021 (Dec.) level.
  * Target of “4.0% reduction in electric power consumption from Dec. 2021 level”
  → Not achieved yet

Qualitative results

- With the visualization of electric power consumption and CO_2 emissions, a foundation for continuous improvement activities could be established.
- Through the activities of the CFT members, the sense of “work together with colleagues”, not based on top-down instructions, was fostered.
- The recognition that the energy efficiency and decarbonization were important topics to be worked on, not only by some employees in charge of the activities but also by all employees, was widespread in workplaces.

Beyond Ideals and Dreams

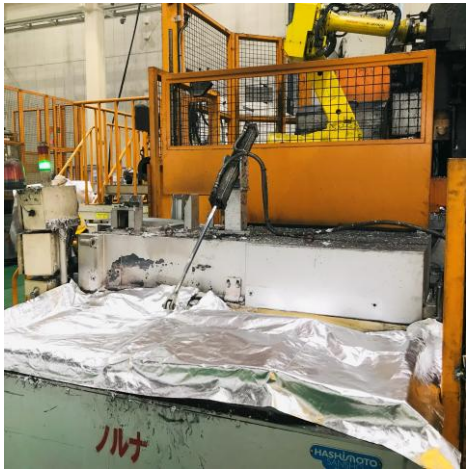
D. Case example of the activity followed
[Activity for reducing electric power used in holding furnaces]

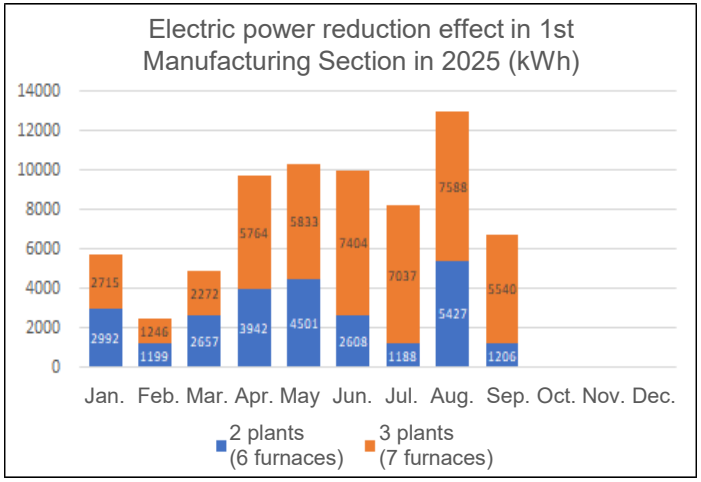
The measure taken to reduce electric power consumption in the holding furnaces during non-operating hours in weekends

<Improvement details>
Put insulation sheets over the molten metal supply port and molten metal distribution port to reduce electric power consumption due to heat release.

Molten metal supply port

Molten metal distribution port





Improvement effect: Approx. 8,000 kWh reduction per month is expected!

III. Approach to Decarbonization

A. Basic approach

As the protection of the global environment grows increasingly important, Ryobi prioritizes reducing the environmental impact and safeguarding the environment as one of our most crucial management issues. Under the Ryobi Group Environmental Policy, the Environmental Preservation Committee at each of our group companies and sites sets targets and strives to conserve energy and resources, reduce waste, and minimize greenhouse gas emissions.

Excerpt from RYOBI INTEGRATED REPORT 2024

Ryobi Group Environmental Policy

1. Identify and counter risks arising from changes in the operating environment.
2. Endeavor to reduce environmental footprints associated with each stage of a product's life cycle and prevent environmental pollution attributable to such life cycle. Specifically, the Group will:
   a. Work to reduce CO_2 emissions.
   b. Conserve energy and resources.
   c. Reduce or recycle industrial waste.
   d. Enforce rigorous measures to prevent environmental pollution.
   e. Reduce environmental footprints associated with procured goods.
   f. Furnish proposals on and otherwise promote environmentally friendly products and services.
3. Comply with environmental laws, regulations, ordinances, and agreements as well as relevant requests from interested parties.
4. Strive to ensure that the Group's entire workforce is highly conscious of the need for concerted efforts to improve the environment, to this end providing all Group members with robust education on the subject and otherwise helping them raise their environmental awareness.
5. Strive to preserve biodiversity and otherwise give back to regional communities through environmental protection efforts.
6. Constantly endeavor to improve the environmental management system to achieve the goals of initiatives listed above by formulating environmental targets, executing measures to achieve such targets, and implementing revisions based on the results of such measures.
7. Ensure that this environmental policy is understood by all Group members and publicly disclosed to external stakeholders.

III. Approach to Decarbonization

B. CO_2 emissions reduction targets

Environmental initiatives **Achieving carbon neutrality**

One of Ryobi's materiality issues is addressing climate change, and the company aims to achieve carbon neutrality by 2050.

[CO_2 emissions reduction target]

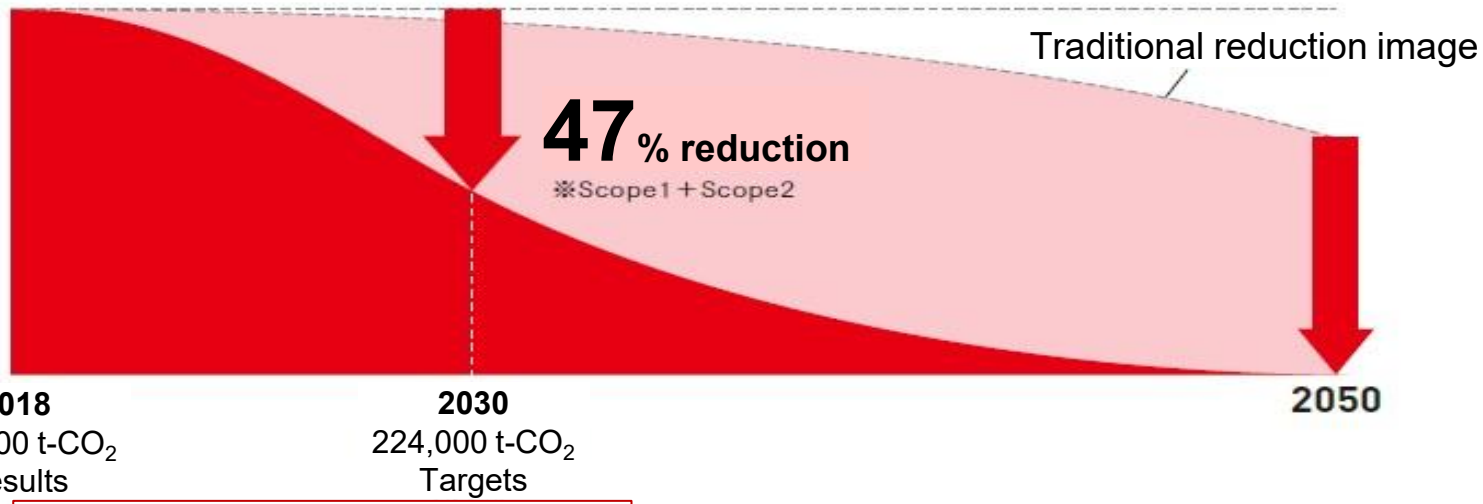
- Achieve carbon neutrality by 2050.
- Reduce CO_2 emissions to at least 47% by 2030 compared to the FY2018 level* (both in Japan and overseas).

* CO_2 reductions represent the absolute emissions for Scope 1 and Scope 2.

III. Approach to Decarbonization

B. CO_2 emissions reduction targets

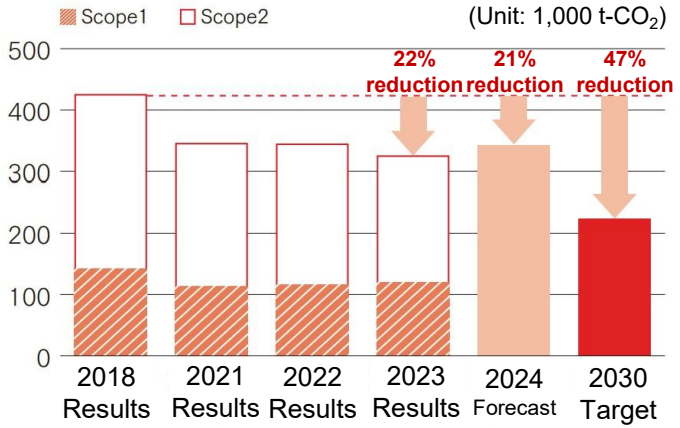
[CO_2 emissions reduction target for 2050]



Towards achieving carbon neutrality

Ryobi has made addressing climate change as one of our materialities and is committed to achieving carbon neutrality by 2050. In 2023, our CO_2 emissions totaled 330 thousand tonnes, marking a 22.3% reduction from 2018 levels. Since measures with significant reduction effects will not be achieved until 2025 or later, we will continue our efforts to reduce CO_2 emissions in 2024, although CO_2 emissions will increase due to an increase in production weight. Currently, we use Scopes 1 and 2 emissions as an indicator, but we will work on Scope 3 in the future.

[CO_2 emissions (Scope 1 and Scope 2) reduction targets]

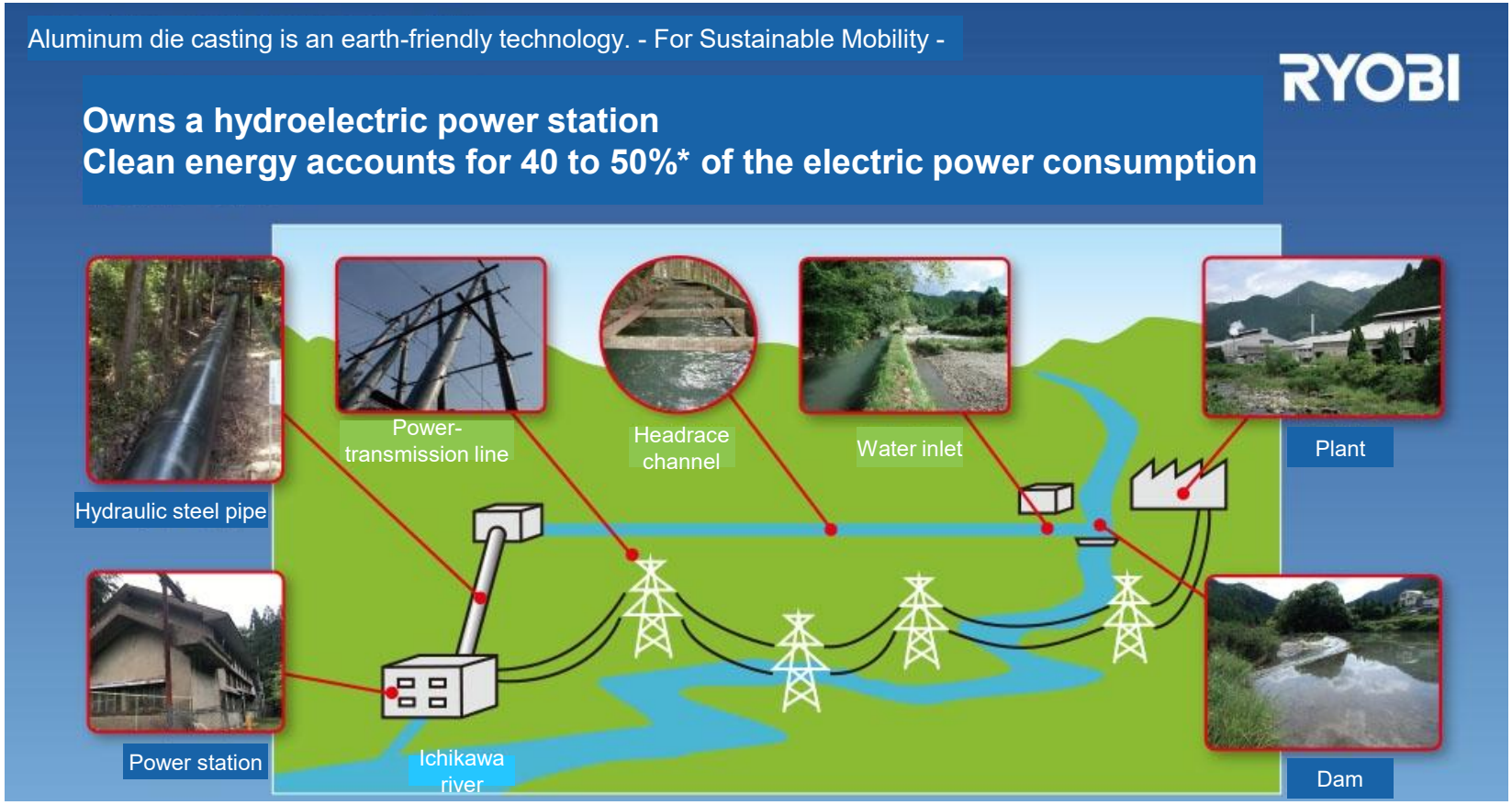


Excerpt from RYOBI INTEGRATED REPORTS 2023 and 2024

III. Approach to Decarbonization

C. Utilization of renewable energy

1. Reduction of electric power consumption through utilization of hydroelectric power generation
   (RYOBI Group company in Japan: Ikuno Co.)



Amount of power generated: Approx. 1.1 million kW
Amount of CO_2 reduced: Approx. 374 t-CO_2/year

Location: Asago City, Hyogo

III. Approach to Decarbonization

C. Utilization of renewable energy

1. Installation of solar power generation facilities (Ryobi Die Casting (Thailand))

A roof-mounted solar power system was installed at die casting plants in the RYOBI Group company (in Thailand).
Approx. 18% of annual total CO_2 emissions was reduced, and utilization of renewable energy are promoted.

Expected image of completed facilities

Installed solar panel capacity: 2.03 MW
Amount of CO_2 reduction: Approx. 1,565 t-CO_2/year
: 10.4% reduction (from the 2021 level)

Excerpt from RYOBI Website
Operation started in February 2023

Installation of solar power generation facilities to major production bases in Japan has been promoted since FY2025.

III. Approach to Decarbonization

D. Participation in NEDO Green Innovation Fund Project

RYOBI LIMITED hereby announces that, as a part of the initiatives to reduce environmental impact of our business activities and achieve carbon neutrality by 2050, it will participate in the Green Innovation Fund Project “Decarbonization of Thermal Processes in Manufacturing” offered by the New Energy and Industrial Technology Development Organization (hereinafter, NEDO).

Overview of the NEDO Green Innovation Fund Project “Decarbonization of Thermal Processes in Manufacturing”

- Project term: FY2023 to FY2031 (planned)
- Budget: 30.41 billion yen (financial support by NEDO)
- Project themes: in anticipation of the zero-emission fuel infrastructure to be established in the future, the following is the items to work on.

  [Research Development Item 1] Development of common base technology for carbon-neutral industrial furnaces
  [Research Development Item 2] Establishment of ammonia combustion industrial furnace technology for handling metal products
  [Research Development Item 3] Establishment of hydrogen combustion industrial furnace technology for handling metal products
  [Research Development Item 4] Establishment of technology to reduce the capacity of electric furnace receiving equipment and increase efficiency
- Details of adoption by NEDO:
  Green Innovation Fund Project sets out to work on “Decarbonization of Thermal Processes in Manufacturing” (NEDO website)

Our role in the project

Ryobi will work on the theme of [Research Development Item 3] Establishment of hydrogen combustion industrial furnace technology for handling metal products, in cooperation with two other companies and two national university corporations, including Sanken Sangyo Co., Ltd. as a leader.

We will work to contribute to achieving the carbon neutrality goal through the development of these technologies.

February 21, 2024 Excerpt from Ryobi website

III. Approach to Decarbonization

D. Participation in NEDO Green Innovation Fund Project

Development scenario (2023 to 2025)

Scenario	New facility to be installed	Objectives
1) Project outsourcing term <Small-scale demonstration term> (2023 to 2025)	Small tower-type melting furnace in 0.2 t/h class	• Properties of exhaust gas from tower chamber • Evaluation of heat-transfer efficiency • Study on the impact on objects to be heated and fire-resistant materials

Progress (melting test performed)

A melt comparison test on aluminum ingots was performed using hydrogen and LNG. The density of samples was evaluated in a sample analysis, which found no significant difference. Based on the result, is planned to do the test with more samples and examine the findings by around the end of November 2025.

III. Approach to Decarbonization

D. Participation in NEDO Green Innovation Fund Project

Development scenario (2023 to 2025)

Small tower-type melting furnace

Major specifications

Operating temperature:	1100°C
Melting capacity:	150 Kg/h
Heat sources:	Gas (13A), hydrogen, and electricity
Intended uses:	Study on the impact of hydrogen combustion on heated objects Study for social implementation of hydrogen-combustion melting furnaces

Continued efforts are made to examine, for example, the impact of hydrogen combustion on held molten metal.

III. Approach to Decarbonization

D. Participation in NEDO Green Innovation Fund Project

Development scenario (2026 to 2031)

1) Project outsourcing term <Medium-scale demonstration term> (2026 to 2028)	Tower melting furnace in 2t/h class	• Properties of exhaust gas from tower chamber • Evaluation of heat-transfer efficiency • Study on the impact on objects to be heated and fire-resistant materials • Confirmation of scale effect
1) Project outsourcing term <Large-scale demonstration term> (2029 to 2031)	Tower melting furnace in 4t/h class	• Validation of demonstration for operational safety and stability