

Innovations by a Small Factory in Kawasaki towards a Decarbonized Society

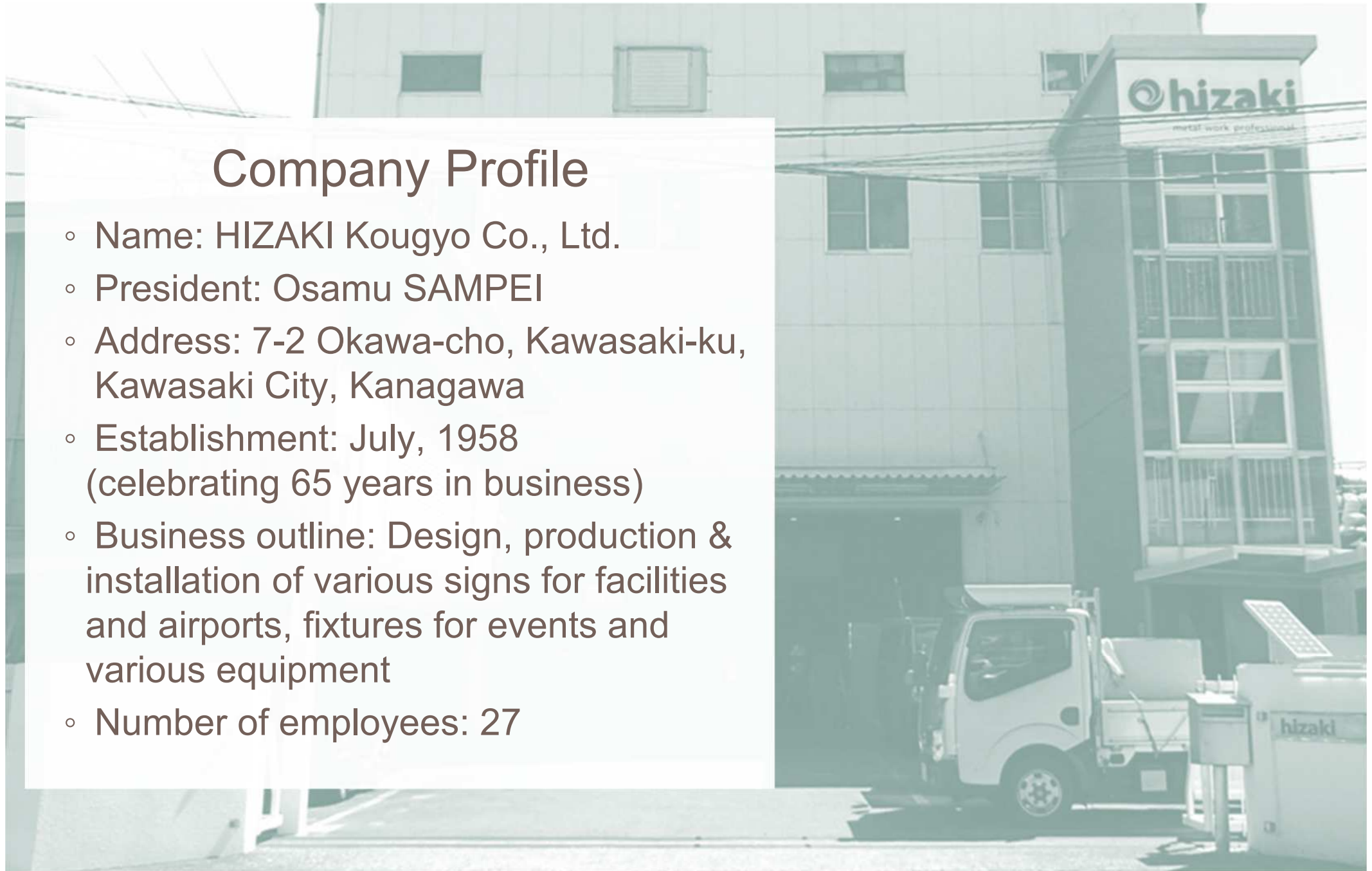
**Creating a new era of manufacturing companies
with a goal of achieving carbon neutral by 2030**

**The 16th Kawasaki
International Eco-Tech Fair
November 15, 2023**

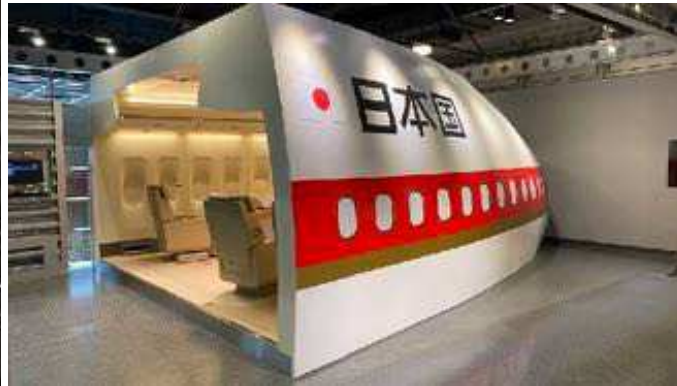
**HIZAKI Kougyo Co., Ltd.
CEO Osamu SAMPEI**

Company Profile

- Name: HIZAKI Kougyo Co., Ltd.
- President: Osamu SAMPEI
- Address: 7-2 Okawa-cho, Kawasaki-ku, Kawasaki City, Kanagawa
- Establishment: July, 1958
(celebrating 65 years in business)
- Business outline: Design, production & installation of various signs for facilities and airports, fixtures for events and various equipment
- Number of employees: 27



Our Works



What inspired us to reduce CO2 emissions?

March 11, 2011

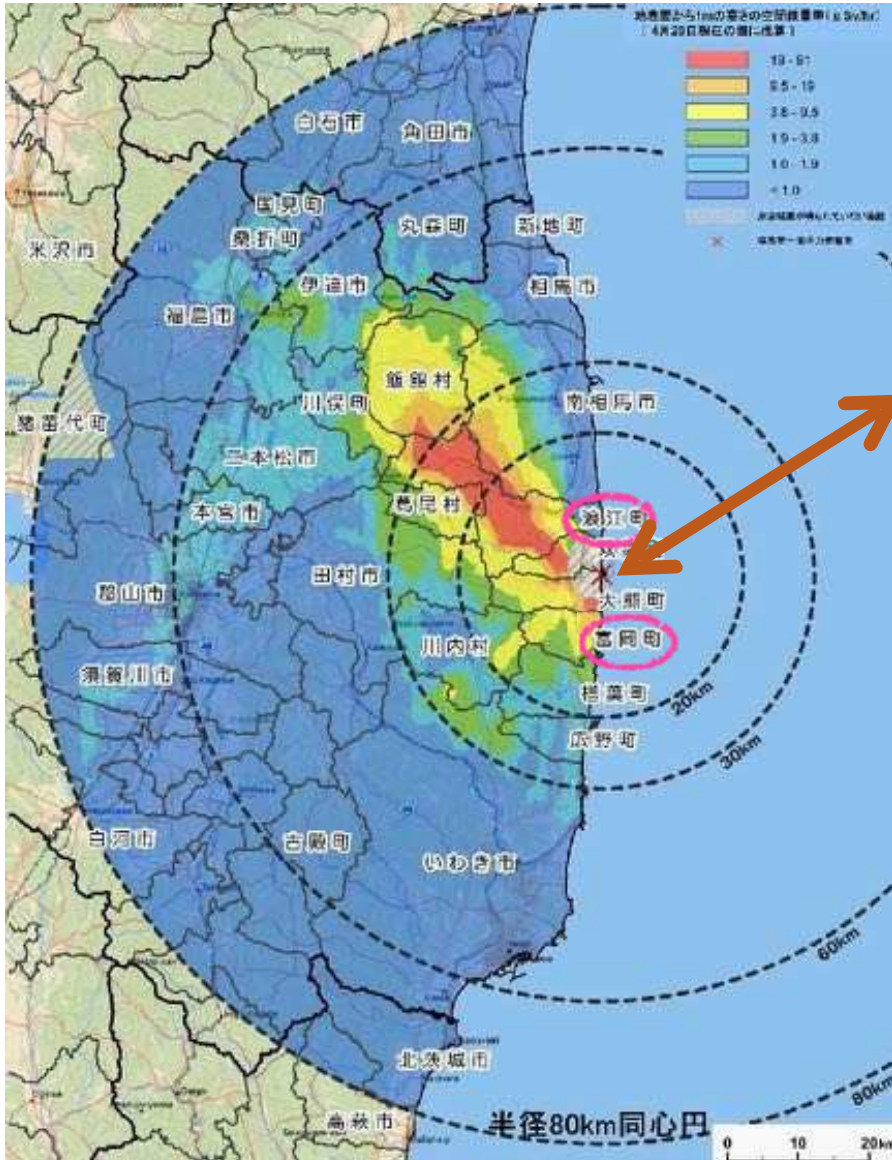
Impact of the Great East Japan Earthquake

- Doubts about electric power source...→→
Electricity outlets are a necessity in our affluent lifestyles, but what lies beyond that is an impact of CO2 and radioactive waste...

Impact on the Hometown

Nuclear power plant accident caused by the Great East Japan Earthquake on March 11, 2011

Hydrogen explosion at Fukushima Daiichi Nuclear Power Plant
Futaba-machi, Okuma-machi, and the birthplace of my parents, **“Tomioka-machi and Namie-machi”** were also affected



Results of Aircraft Monitoring by MEXT and US DOE



Efforts for Decarbonization



Energy Conservation (Reduction)

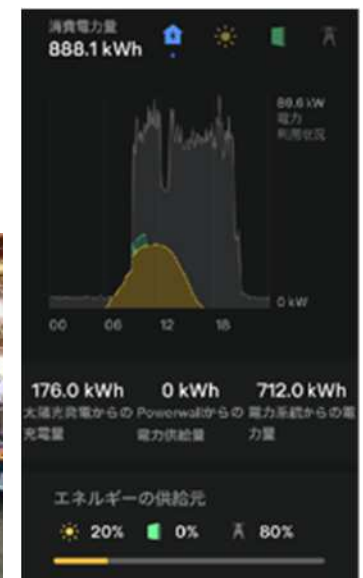
Consider the benefits of investment in equipment upgrades, manufacturing methods, work methods, and usage so as to minimize the company's energy consumption to the greatest extent

Utilization of Renewable Energy (Creation, Storage)

Minimize the amount of energy used through energy conservation, create our own energy whenever possible, and make effective use of the electricity produced

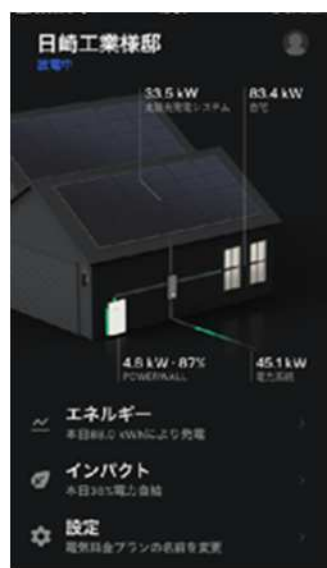
Energy Conservation / Introduction of Equipment (Reduction)

- Replaced all of 54 mercury lamps in the factory with LED lightings (2014)
- Applied thermal barrier paints for roof (2018)
- Replaced all internal lightings with LED lightings (2019)
- Upgraded to energy-efficient laser processing machinery (2019, 2020)
- Shared internal information of demand values and CO2 emissions (2019, 2021)

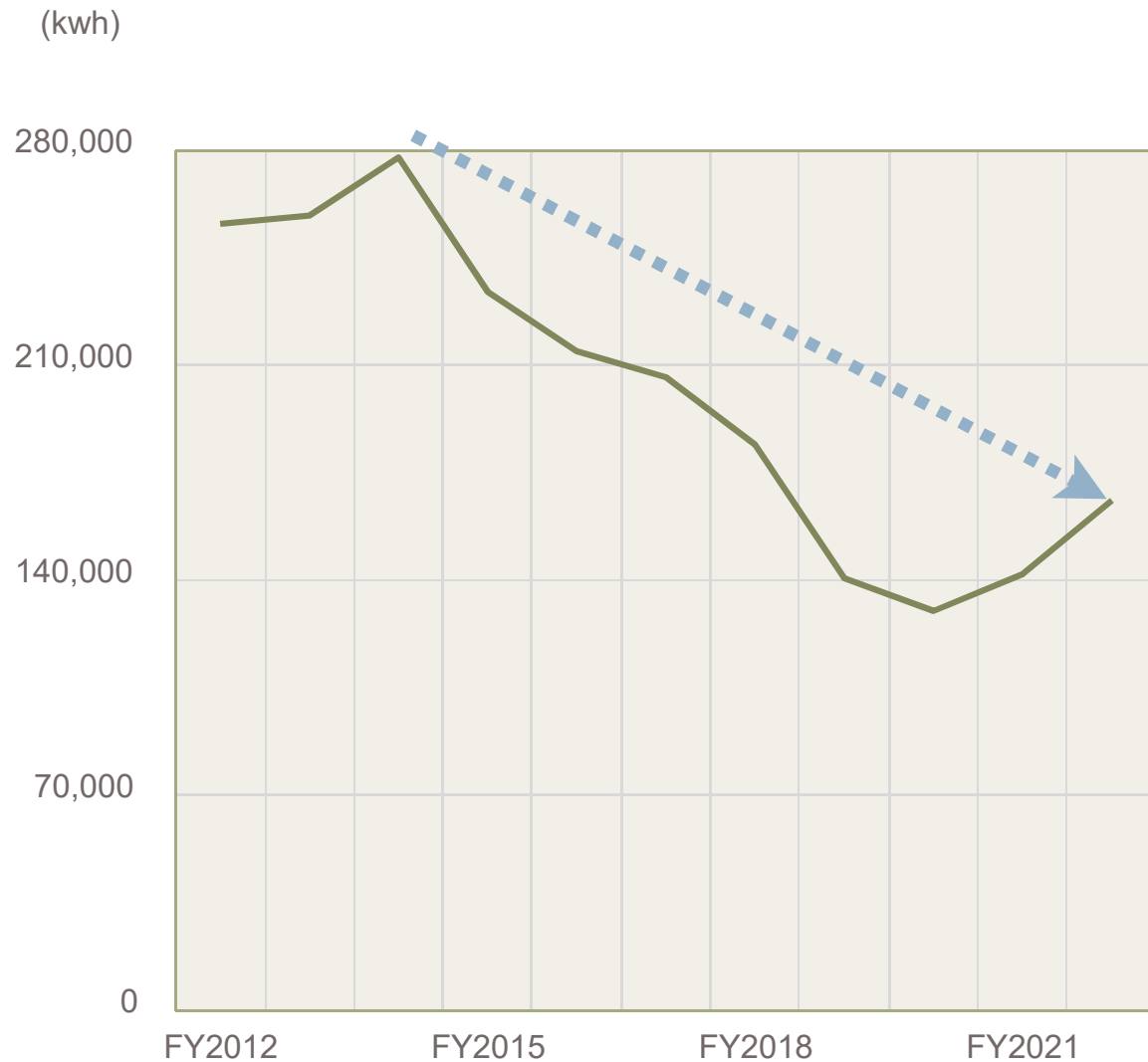


Utilization of Renewable Energy / Examples of Introduction (Creation, Storage)

- Installed solar panels for private consumption on the roof of the company building (2020)
- Introduced one each of PHEV and EV forklifts (2023)
- Connected a 13.5kwh storage battery (2021)



Changes in Annual Electricity Purchases



278,000 kwh at the peak (2013)

(Purchase price: 6.8 million yen)



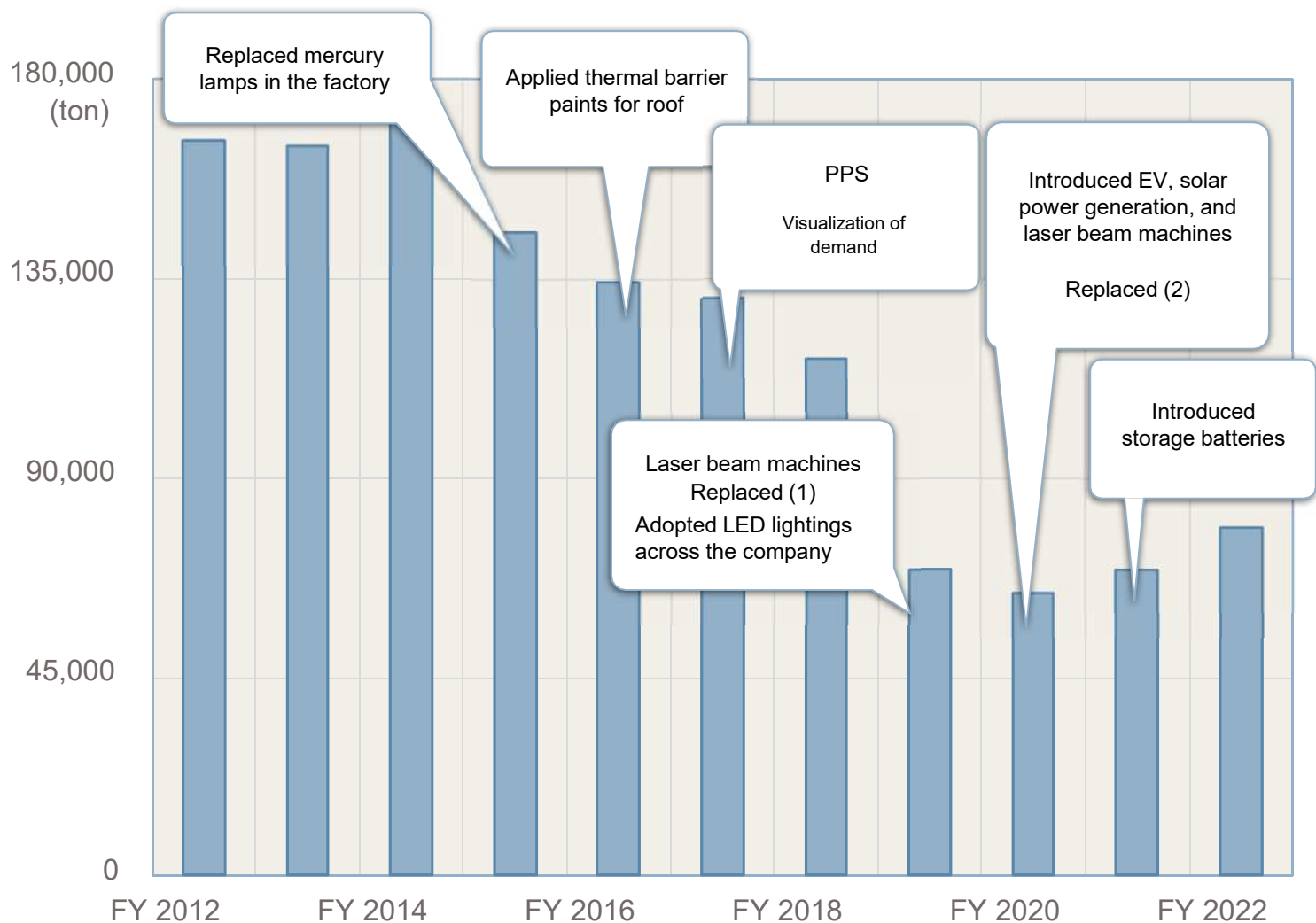
166,000 kwh at present (2022)

(Purchase price: 2.1 million yen in 2020
→ 5.4 million in FY2022)

*Amounts are increasing due to surging fuel prices!

Purchase amount is reduced by 49%!

Changes in Annual CO2 Emissions (Electricity + Fossil Fuels + Gas)



At the peak (2014)

172 ton



Present (FY 2022)

82 ton

Reduced
by 52%!

Summary of Cost Benefit over 10-Year Investment

Capital expenditures

- Mercury lightings in factory 5 mil. yen
- Thermal insulation paintings 2.57 mil. yen
- Fluorescent lamps, incandescent bulbs 0.5 mil. yen
- Laser beam machines x 2 180 mil. yen
- Company car x 1 5 mil. yen
- Solar power equipment 10 mil. yen

Total 203.07 mil. yen

Utilization of subsidies

- EV company car 0.55 mil. yen
- Laser beam machines 50 mil. yen
- Solar power equipment 3.3 mil. yen

Total 53.85 mil. yen

203.07 - 53.85 (mil. yen) =

Out-of-pocket expenses
151.22 million yen

Reductions during the period

- Factory's mercury lightings 12 mil. yen
- Thermal insulation paintings 2.8 mil. yen
- Fluorescent lamps and incandescent bulbs 1.1 mil. yen
- Laser beam machines x 2 17 mil. yen
- Company vehicle 3.5 mil. yen
- Solar power equipment 6.3 mil. yen

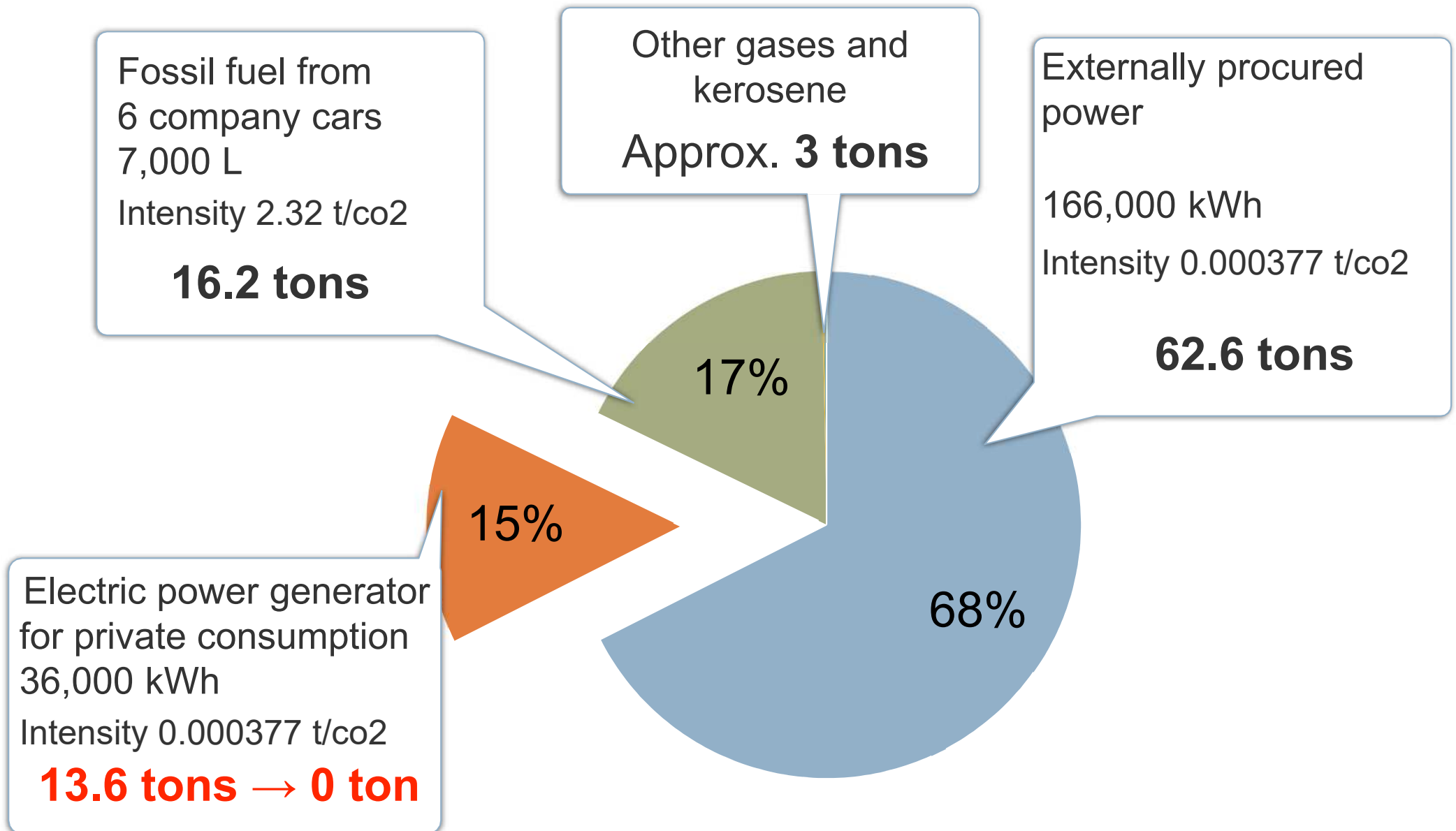
Total 42.7 mil. yen

Annual energy expense was reduced by

Approx. 5.2 mil. yen

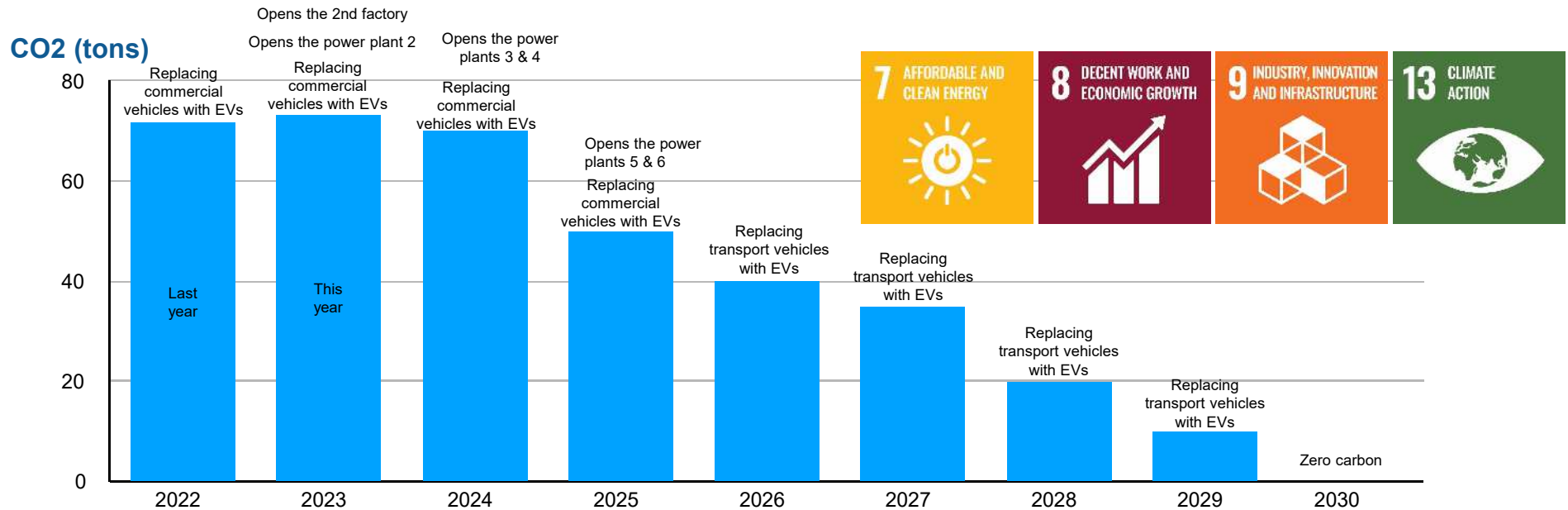
(for 2023 market conversion)

Breakdown of 81 tons of Annual CO2 Emissions in FY2022



Roadmap to the “hizaki Carbon Neutral”

As a result of our decarbonization efforts over the past few years, we halved the annual CO2 emissions from 140 tons to 70 tons. We will build our CN factory in Chiba this year, and continue to push forward as a top runner in decarbonization management in the SME manufacturing industry.



Annual energy consumption and CO2 emissions at present & Reduction by solar power generation for private consumption

Present amount of electricity purchased

= 166,000 kwh x Basic unit 0.377 = 62.6 tons (CO2)

Fuel consumption (such as gasoline)

= 7,000 L x Basic unit 2.322 = 16.2 tons (CO2)

Reduction by solar power generation

= 36,000kwh x Basic unit 0.377 = 16.6 tons (CO2)

Reference (reduction of expenses by power generation: 1kwh

= 40 yen x 36,000 = 1,440,000 yen)

Distance-based CO2 Emissions from the Company Vehicles

| Model | Fuel | Fuel efficiency | Usage per 1 km | Coefficient | CO2 emissions per 1 km | Annual mileage | Annual emissions kg |
|-----------------|-----------|-----------------|----------------|-------------|------------------------|----------------|---------------------|
| Atlas A | Gasoline | 5 | 0.200 | 2.322 | 0.464 | 7,000 | 3,251 |
| Atlas M | Gasoline | 6 | 0.167 | 2.322 | 0.387 | 5,500 | 2,129 |
| N van | Gasoline | 10 | 0.100 | 2.322 | 0.232 | 12,500 | 2,903 |
| HIJET | Gasoline | 16 | 0.063 | 2.322 | 0.145 | 5,000 | 726 |
| HILUX | Light oil | 12 | 0.083 | 2.585 | 0.215 | 10,000 | 2,154 |
| HIACE | Light oil | 12.5 | 0.080 | 2.585 | 0.207 | 12,000 | 2,482 |
| MITSUBISHI PHEV | Gasoline | 14 | 0.071 | 2.322 | 0.166 | 5,000 | 829 |
| MITSUBISHI PHEV | EV (kwh) | 5 | 0.200 | 0.377 | 0.075 | 15,000 | 1,131 |

Organizations that CN participates in & Certificates and Awards that CN has received

Organizations

- RE Action

RE100 is the global corporate renewable energy initiative bringing together hundreds of large and ambitious businesses committed to 100% renewable electricity. We are the first company in Kawasaki City participating in the organization of the small to medium enterprises version initiative.

- GX League

We are one of the 440 companies participating in the league to discuss which is a partnership of industry, government, academia, and financial institutes to achieve both industrial structural reform and economic growth by using as little fossil fuels as possible, which are a source of greenhouse gases, and instead, renewable energy sources such as solar and wind power, and implement voluntary emissions trading.

- Decarbonization Action Mizonokuchi

In February 2020, Kawasaki City announced its goal of virtually zero CO2 emissions by 2050, and in November of the same year, it formulated the Kawasaki Carbon Zero Challenge 2050, a decarbonization strategy, and established “Decarbonization Action Mizonokuchi” as one of its initiatives toward 2030.

Certificates & Awards

- Kanagawa’s businesses promoting local energy production and consumption
Certified on March 4, 2020
- Kanagawa Global Environment Awards
Awarded on March 9, 2021
- Kawasaki Smart Lifestyle Gran Prix
Encouragement Award
Encouragement Award in November 12, 2021
- Kawasaki SDGs Gold Partner
Certified on November 15, 2021
- The 129th Kawasaki Entrepreneurs Audition
Received the most 6 awards in January 4, 2022
- Low CO2 Kawasaki Brands '22
Certified as the outdoor brand, November 1, 2022
- Decarbonization Challenge Cup
The Minister of the Environment award, the Gold prize in the Company/ Local Government section
in March 7, 2023

Participation in “Renewable Energy 100 Declaration RE Action”

“HIZAKI Kougyo” and “Kawasaki Shinkin Bank” are the first companies that has participated in the initiative in Kawasaki City.

Our efforts have attracted attention from various media outlets, leading to lectures, magazine and newspaper coverages etc...

Decarbonization × Small Factory = HIZAKI Kougyo



New Business Projects

Businesses associated with Food Trucks

Existing Businesses

Outdoor

Gibier Trucks

SDGs-Tech

Tech-OD



Off-the-Grid Mobility Spaces (Mobile Houses)

Renewable Energy Projects

CN-SDGs

OD-CN

New Sites:
Sagami CN Lab
CN Factory Kimitsu

Vehicles

Outline of New Businesses

For Decarbonized Society: Part 1



Production related to renewable energy



We are able to achieve this level of carbon neutrality even though we are a small factory. Recently, we have begun to receive an increasing number of consultations on renewable energy-related development projects. There is a demand for new manufacturing for the decarbonized society of the future. We are now in a position to meet such needs.

Products for 'to C'

Outdoor Items (EC business)



This is a new, BtoC outdoor goods business that our company, which had been mainly a BtoB business, has started. Last year, we were certified as a CN brand by Kawasaki City. We will grow this business into one of our mainstay businesses with the brand power of our renewable energy promotion and our longtime processing know-how and technical capabilities.

For Decarbonized Society: Part 2



Off-Grid Mobility Space (Mobility Vehicles)



An environmentally friendly trailer that operates on an independent power source. It combines three features: a strong structure, a highly flexible design, and a unique EMS (Energy Management System). It won 6 awards, the most in the audition, at the 129th Kawasaki Entrepreneur Audition!

Customized Vehicles for SDGs Society



Production and Sales of Food Trucks & Gibier Trucks



We started this business thinking that we could support restaurants that have suffered a lot of damage from the Covid-19 pandemic and been making various efforts to survive and maintain their businesses. We manufacture and sell one-of-a-kind food trucks tailored to our customers' needs. We also develop a vehicle for a mobile butchery facility for the purpose of getting rid of nuisance wildlife and processing them for consumption as part of a consortium project by the Ministry of Agriculture, Forestry and Fisheries.

Plans for New Factory

A carbon-neutral factory with independent power is under construction for the SDGs-related business and assembly of customized vehicles and large products

Our second factory, “hizakiCN Factory Kimitsu”

Scheduled completion: End of January, 2024, operation to be started in March

Location: 130-1 Tenjinsita, Nishiawagura, Kimitsu City, Chiba

Site area: 330 tsubo (factory’s floor area 405m², office 48m²) with solar power panels on the roof for private consumption

Business description

- Assembly work of customized vehicles, including food trucks and mobile homes
- Welding, assembly and painting of large can products
- Development and mass-production of renewable energy related products
- Sales, display and maintenance of complete vehicles
- Assembly of EV-converted vehicles

In addition, “CAD center” in Ishigakijima and “CN Town” in Iwatemachi are in progress



CN Visiting Lectures and Workshops

Providing lectures to visualize renewable energy power using mobile houses with independent power source and manufacturing experience workshops in Kawasaki and Yokohama

Kawasaki Frontale
Monodukuri Fair 2022 Workshop
(Renewable energy x plastic recycling)



Kansei Junior High School
Visiting Lecture for the 3rd grade
students on decarbonization
December, 2022



Kansei Junior High School
Visiting lecture for the 2nd & 3rd
grade students on decarbonization
April, 2022



Kawasaki Brave Thunders
SDGs Workshop Event 2023
Renewable energy machine operation,
manufacturing experience



Striving to Achieve Two Goals



(1) Achieving 100% carbon neutral by 2030
(Scopes 1 & 2)

(2) Shifting to new **“solving social issues”**
businesses