



August 30, 2023

(The contents of this briefing were posted on our website after some modifications were made.)

1. The Goals of our Engineering Business

■ Contribute to achieving a sustainable society

~ Contribute, especially by helping to achieve carbon neutrality in the industrial world ~

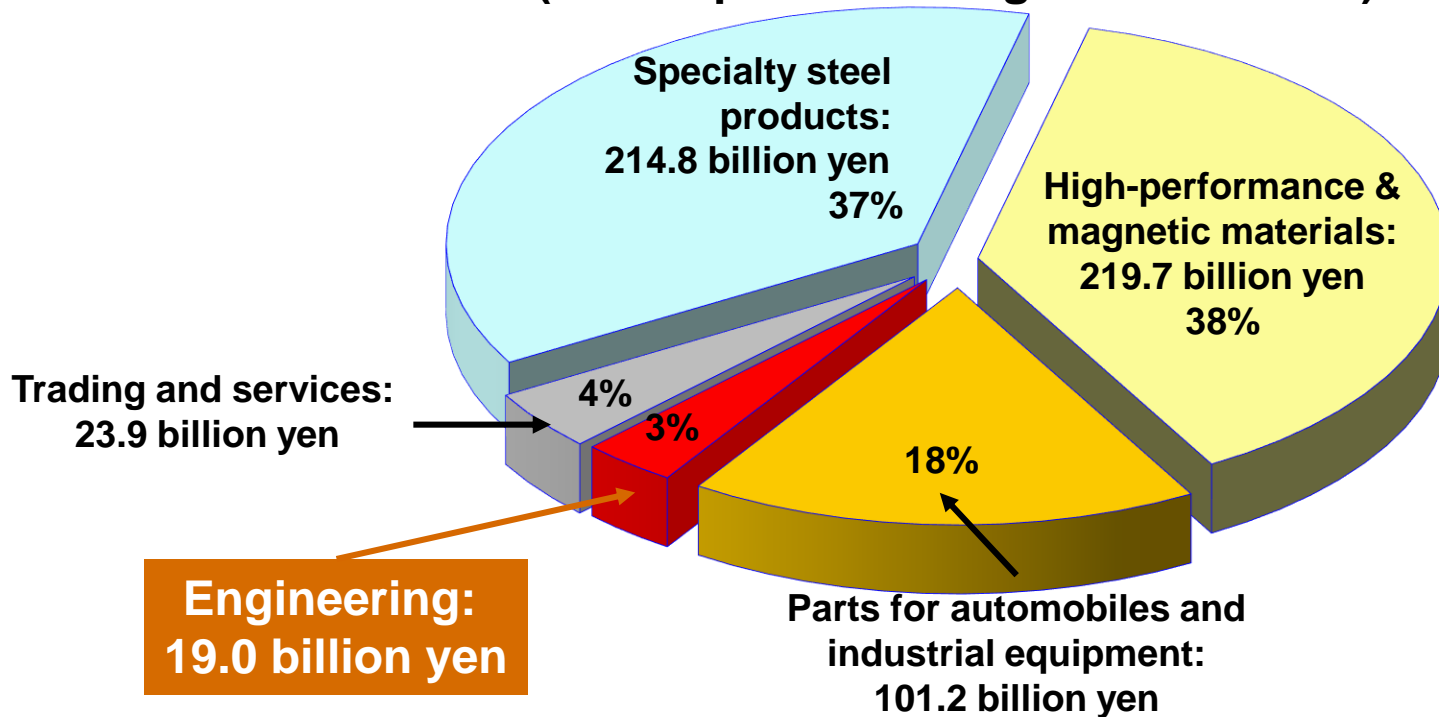
■ Leading the Daido Group's GX strategy

~ Contribute to achieving carbon neutrality by 2050~



2. Introducing our Engineering Business

Sales: 578.6 billion yen "on a consolidated basis"
(for the period ending in March 2023)



Division and subsidiaries involved in engineering business	Details of the Business
Machinery Division, Daido Steel Co., Ltd.	Design, manufacture, sell and maintain steel-making equipment, heat-treatment furnaces, vacuum furnaces, and environmental equipment
Daido Machinery, Ltd.	Design, manufacture, and sell machine tools, and maintain steel-making equipment
Daido Plant Industries Co., Ltd.	Design, manufacture, sell and maintain heat-treatment equipment
Daido Environment Engineering Co., Ltd.	Subcontract the operation and maintenance of environmental equipment

3-1. Introducing Our Machinery Division

☆The Machinery Division's Strengths☆

The Fusion of Operating and Equipment Technology

- In 1916, we started designing and manufacturing industrial furnaces, at the same time as we started producing specialty steel.
- Now, we continue to developing new products, designed from the user's perspective, under the motto: "The Fusion of Operating and Equipment Technology".

☆An overview of the existing markets☆

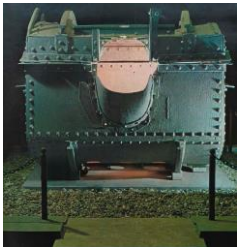
Electric arc furnaces and refining furnaces

Electric arc furnaces

- ❑ Delivery track record: a total of 241 units (since 1950)
- ❑ Top domestic market share (1/3 of the Japanese market share), according to our company's survey

Ladle furnaces (LF)

- ❑ Delivery track record: a total of 73 units
- ❑ Top domestic market share (2/3 of the Japanese market share), according to our company's survey



1.5-ton Héroult-type electric-arc furnace
(this is the type of furnace we manufactured for the first time in 1916)
The furnace received the Historical Landmark Award from the ASM (American Society of Metals) in 1988.

Heat treatment furnaces

Vacuum sintering furnaces

- ❑ Delivery track record: a total of 137 units
- ❑ Top domestic market share for rare earth magnets in Japan, according to our company's survey.

Protective atmosphere annealing furnace (STC furnace)

- ❑ Delivery track record: a total of 360 units
- ❑ Top domestic share for specialty steel heat treatment furnaces, according to our company's survey



Takiharuru Techno Center (a bird's-eye view)
Nagoya City, Aichi Prefecture, Japan

☆Introducing our products☆

Electric arc furnace Refining furnace

Our primary customers:

Steel manufacturers
such as
Electric arc furnace steel
manufacturers
Blast furnace steel
manufacturers

Major functions of our
products:

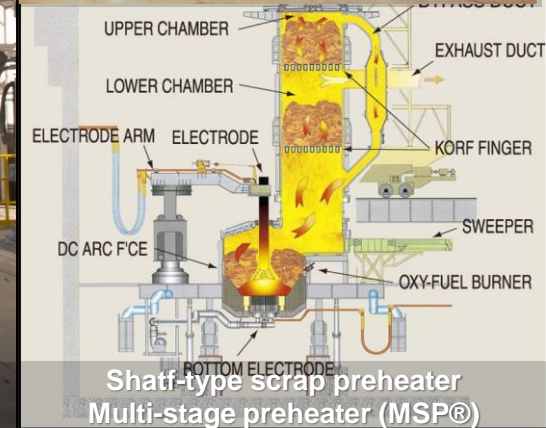
Used to melt raw materials,
adjust the composition of
molten steel, remove
impurities, and adjust
temperatures during the
steel-manufacturing
process.



Electric Arc Furnace with shell Rotation Drive
(STARQ®)



Ladle furnace (LF)



Shaf-type scrap preheater
Multi-stage preheater (MSP®)

☆Introducing our products☆

Heat treatment furnace

Our primary customers:

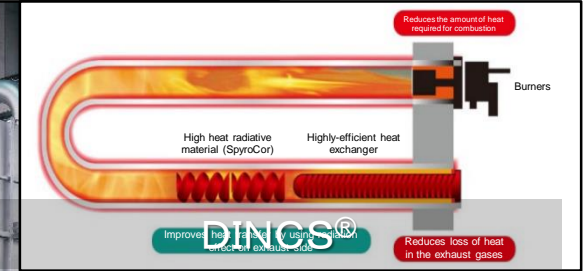
- Steel manufacturers
- Non-ferrous metal manufacturers
- Automobile manufacturers
- Machinery parts manufacturers

Major functions of our products:

Heat treatment during the manufacture of materials such as steel, copper and aluminum, by means of annealing, quenching, etc., according to the characteristics of the particular materials treated.



Protective atmosphere annealing furnace (STC®)



Vacuum carburizing furnace (ModulTherm®)

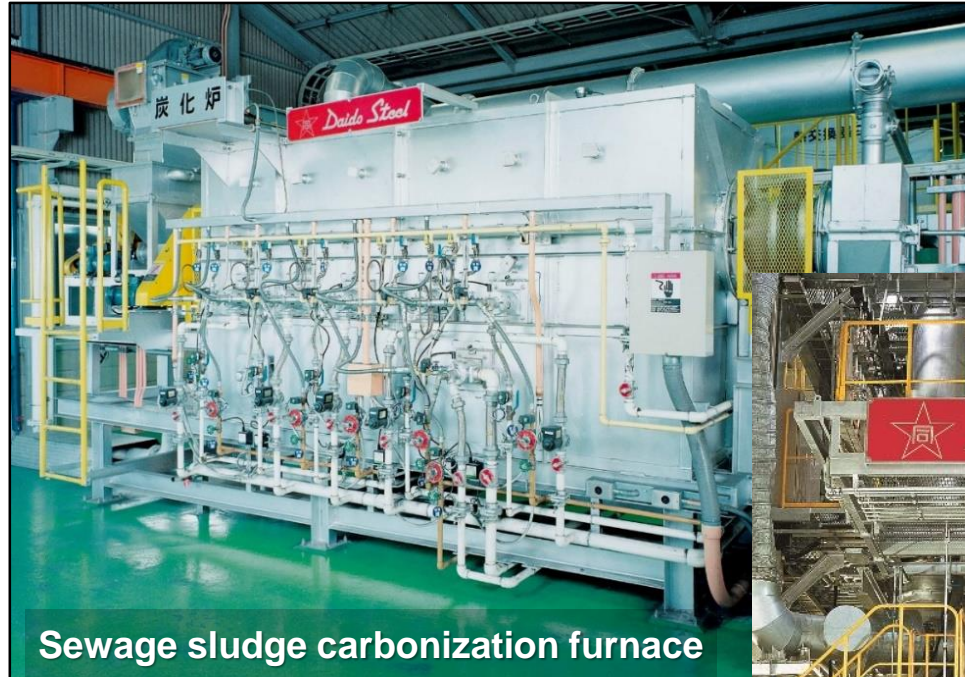
3-4. Introducing Our Machinery Division

☆Introducing our products☆

Environmental equipment

Our primary customers:
Government offices and
municipalities

Major functions of our
products:
Reduction of waste
material volume,
detoxification, and making
incineration ash waste and
sewage sludge recyclable.



Sewage sludge carbonization furnace

Sewage treatment plant



Furnace for melting incinerated refuse
ash and making it recyclable (DAP)

Waste incineration plant

4. 2030 Vision and Business Objectives

■ Our vision for the engineering business in 2030 ■

We will help bring about a low-carbon economy and recycling-oriented society and will lead the way to building a sustainable society that is a better place for all. We count on our track record over many years of experience and the unrivalled creativity and inspiration bequeathed to us by our predecessors to carry us forward on this path.

■ Business objectives ■

Machinery Division (non-consolidated)	Net Sales	ROS (%)
Target for 2030	30 billion yen ↑	10% ↑
Results for 2022	9.6 billion yen	7%

1. Expand the lineup of products **that contribute to achieving carbon neutrality**
2. Expand the number of products **that contribute to the circular economy**
3. Lead in reaching the goals set forth in **the Daido Carbon-Neutral Challenge**
(announced in April 2021)

5. The Engineering Business's GX Strategy Products and Services

Products that contribute to the realization of carbon neutrality (CN)

~ Achieving a low-carbon society ~

Large, energy-saving electric arc furnace (under development)

Complete CN heat treatment furnace (under development)

- Hydrogen burner
- Use of methanation technology

Energy-saving heat treatment furnace

- Premium STC furnace
- Vacuum carburizing furnace (ModulTherm)

Highly-efficient combustion system (DINCS)

Some other of our existing products

- Various refining furnaces (LF, RH, AOD, etc.)
- Various heat-treatment furnaces (continuous furnaces, vacuum sintering furnaces, etc.)
- Various types of environmental equipment (tunnel collection devices, etc.)

Ultra-high-temperature sewage sludge carbonization furnace (under development)

Energy-saving electric arc furnace

- Electric Arc Furnace with shell Rotation Drive (STARQ)
- High-temperature scrap preheaters (MSP, SSP)
- Scrap preheater (SPH-Mark II)

~ The concept of GX strategy ~
Achieving a sustainable society by increasing the sales of GX strategy products and services

Sewage sludge carbonization furnace

Electric arc furnace (EAF) dust recycling furnace (DSM)

Stainless steel dust recycling furnace (INMETCO System)

Incinerated refuse ash-melting and recycling furnace (DAP)

Maintenance Service

Circular Economy (CE) products

~ Achieving a recycling-oriented society ~

Premium STC, DINCS, STARQ, MSP, SSP, DAP, and DSM are registered trademarks of Daido Steel Co., Ltd.

6-1. Expanding our lineup of products that contribute to the achievement of carbon neutrality [Electric arc furnaces]

GX strategy for electric arc furnaces

Capture the demand for electric arc furnaces from blast furnace steel manufacturers, by developing large versions that contribute greatly to achieving carbon neutrality

Prerequisites: CO₂-free electricity, hydrogen

STEP2
Large energy-saving electric arc furnace

Reach carbon neutrality

Development and application of energy-saving technologies

Automated and autonomous operation

Make them large and easy to maintain at the same time

Realize large capacity power supply

Make them capable of melting various raw materials efficiently

Ensure they produce molten steel of reliable quality

STEP 1
Large electric arc furnace

Energy-saving electric arc furnace

Reduces CO₂ emissions by 5 - 13%

Conventional electric arc furnace

Reduces CO₂ emissions by 75%, as compared with current blast furnaces

Reduces CO₂ emissions by 50%

Conceptual timetable for reducing CO₂ release by the steel industry

2023

2026

2030

2050

Legend

Hardware technology

Software technology

6-1. Expanding our lineup of products that contribute to the achievement of carbon neutrality [Electric arc furnaces]

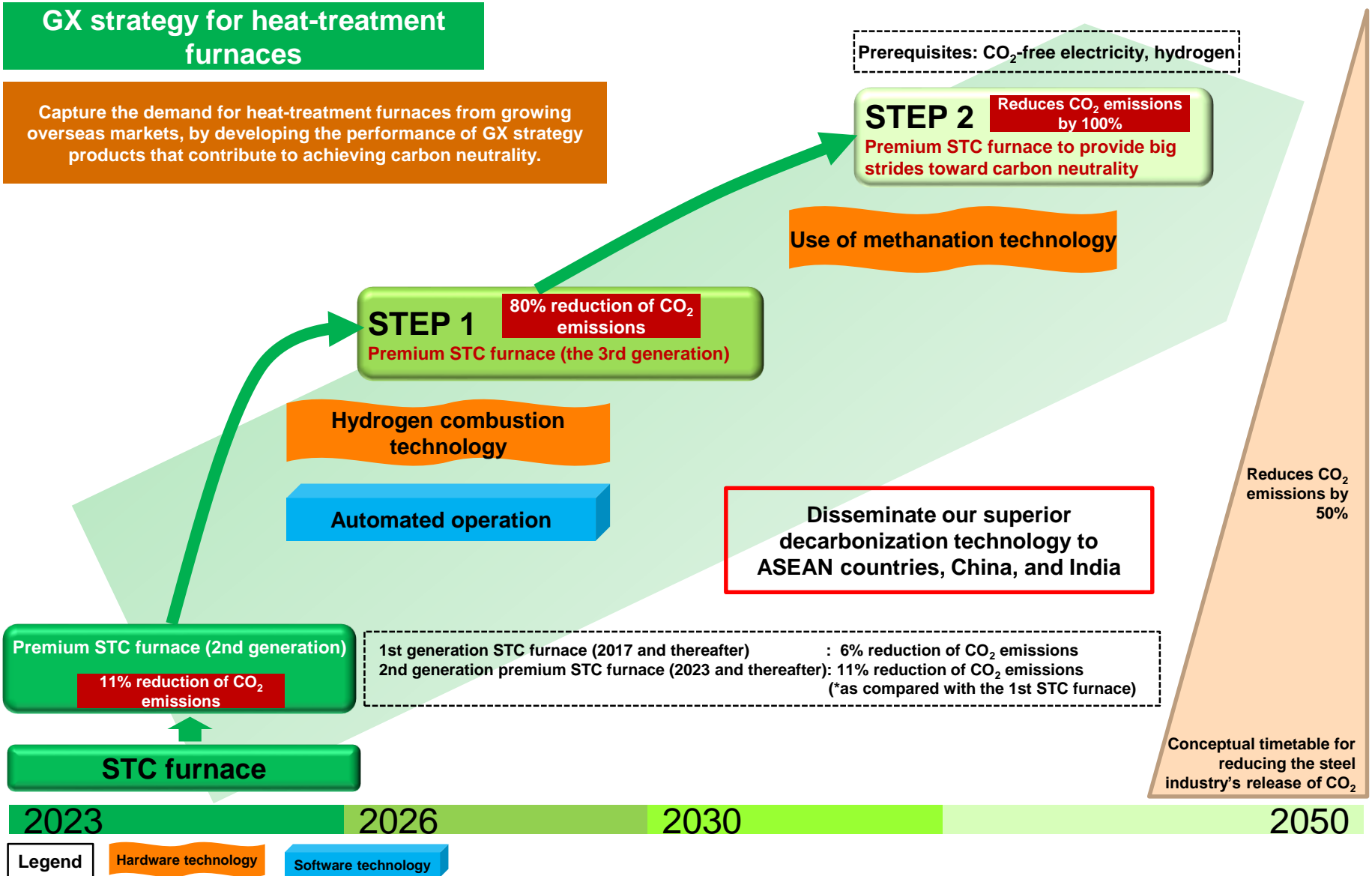
☆Forecast for the electric arc furnace markets☆

Market	Trends in the industry and among steel manufacturers	By 2030
Steel-manufacturing industry	<ul style="list-style-type: none"> • Expansion of electric arc furnaces + increased use of directly reduced iron • Hydrogen reduction blast furnace + development of CCUS 	The entire domestic steel industry plans to reduce CO ₂ emissions by 30-50%.
Blast furnace steel manufacturers in Japan	<ul style="list-style-type: none"> • Mass production of high-grade steel using large electric arc furnaces • Use of directly hydrogen-reduced iron • Maximize the use of existing electric arc furnace technology • Introduce environmentally-friendly electric arc furnaces • Manufacture high-grade steel using electric arc furnaces • Reduce CO₂ emissions by using direct iron reduction technology 	Each company will install 1 to 3 new large electric arc furnaces by 2030.
Electric arc furnace steel manufacturers in Japan	<ul style="list-style-type: none"> • Refurbish outdated equipment by utilizing the government's energy-saving subsidies 	We will meet increased demand from refurbishment requests mainly from users of our electric arc furnaces.



Order targets	Expand the general market for electric arc furnaces + Capture demand for electric arc furnaces from blast furnace steel manufacturers	15 billion yen/year in the domestic blast furnace market and electric arc furnace markets in Japan and abroad.
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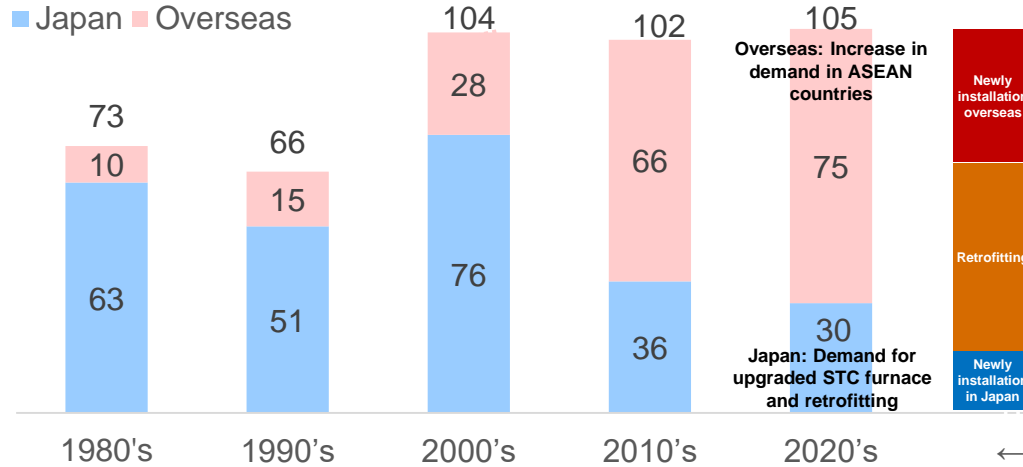
6-2. Expanding our lineup of products that contribute to the achievement of carbon neutrality [STC furnace]



6-2. Expanding our lineup of products that contribute to the achievement of carbon neutrality [STC furnaces]

☆Forecast for the STC furnace markets☆

[Track record and estimates of STC furnace sales (number of units)]



2000's: Explanation of the Japanese automobile market
 → The number of newly installed STC furnaces increased in Japan.

2010's: Localization of the supply chain of Japanese manufacturers operating overseas
 → The number of newly installed STC furnaces increased overseas.

2020's: Increase in localization needs + response to growing demand for achieving carbon neutrality
 → Aggressive implementation of the STC furnace sales promotion strategy

Sales promotion strategy

- Capture overseas growth markets → Expand sales of premium STC furnaces
- Existing customers → Propose retrofitting
 *Proposals on the greatly improved functionality that would be provided.
 (* Retrofitting means modifying existing equipment with new parts to incorporate the latest technology)

<Example of application>

- 1st-generation STC furnace → Change to the premium STC furnace (2nd generation)
 (Delivered in 1986 → Retrofitting is scheduled for 2023)

Worldwide sales performance



- STC furnaces have been sold in 14 countries and regions around the world.
- STC furnaces are manufactured under license in Europe, the U.S.A. and South Korea.

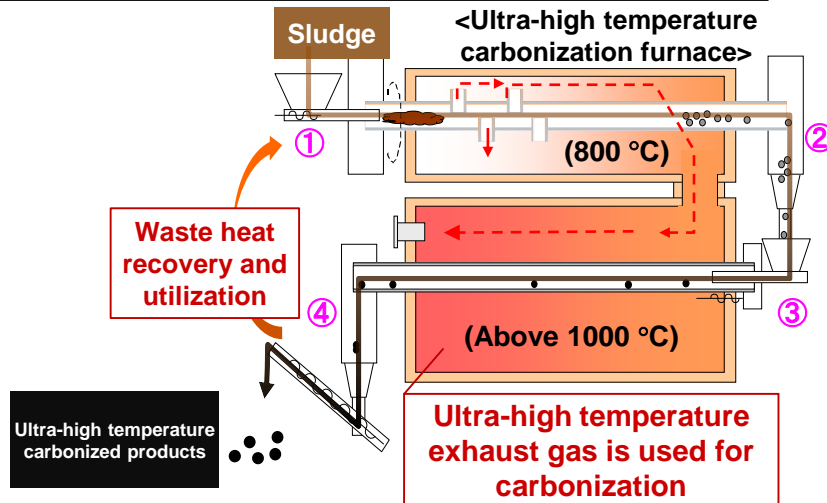
6-3. Expanding our lineup of circular-economy products [Carbonization furnaces]

- ◆ Selected for the Ministry of Land, Infrastructure, Transport, and Tourism's 2023 "Breakthrough by Dynamic Approach in Sewage High Technology Project" (the B-DASH Project).
- ◆ B-DASH is a **three-year** project, consisting of construction work in FY2023 and operation and evaluation/verification in FY2024 and FY2025.

<Main theme of the project>

"Demonstration of ultra-high temperature carbonization technology that will contribute to achieving a **low-carbon** society by **adding value** to sludge."

<Overview of low-carbon technology>



<Higher added value>



Ultra-high temperature carbonized products

Higher added value

Activated carbon substitute

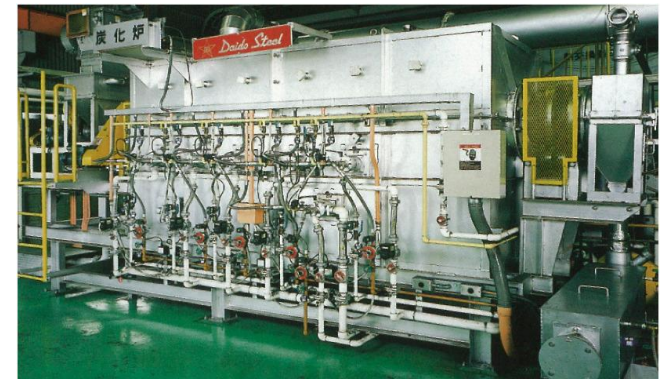
High grade and non-toxic

Fertilizer

Soil conditioner

Market size and further development of the market anticipated in the future

We plan to carry out a vigorous campaign of proposals, nationwide, to sludge treatment facilities (approx. 1,800 locations)



(Reference 1) List of subsidies for new equipment installations

SII (The Sustainable Open Innovation Initiative)

Policy addressed	Subsidy name	Relevant ministry / agency	Equipment eligible for this subsidy	Overview of subsidy
Support energy conservation	Advanced Energy-saving Investment Promotion Support Program	METI	Equipment that contributes greatly to reducing CO ₂ emissions, such as: <ul style="list-style-type: none"> • Electric Arc Furnace with shell Rotation Drive • High-temperature scrap preheaters • Vacuum carburizing furnaces 	162.5 billion yen: 50 billion yen from 2022 revised budget and 2023 budget and 112.5 billion yen from the subsequent-year portion in the act bearing notional treasury liabilities. The subsidy is expected to increase during the next year and thereafter.
	To receive a subsidy, equipment must be approved by SII			
Support the development of small- and medium-sized enterprises and business operators	Subsidy for business restructuring	Small and Medium Enterprise Agency	<ul style="list-style-type: none"> • Premium STC furnaces (including retrofitting) 	580 billion yen from 2022 revised budget and 2033 budget. The subsidy is expected to continue during the next year and thereafter.
Support overseas supply chains	Support Project for Diversifying Overseas Supply Chains	METI	<ul style="list-style-type: none"> • Premium STC furnace • Vacuum sintering furnace, etc. 	Strengthen the Japan-ASEAN supply chain system.
Green growth strategy	GI Fund	METI	[Track record] <ul style="list-style-type: none"> • LF • Heat-treatment furnaces 	Establish a 2 trillion yen fund at NEDO to support R&D activities for social implementation of the strategy over a 10-year period.
Support dissemination of low-carbon technology in overseas countries	Bilateral Credit (JCM) Promotion Project	Ministry of the Environment	Equipment that contributes greatly to reducing CO ₂ emissions, such as: <ul style="list-style-type: none"> • Electric Arc Furnace with shell Rotation Drive • High-temperature scrap preheaters • Vacuum carburizing furnaces 	Secure international CO ₂ emission reduction/absorption of a total of about 100 million t-CO ₂ by 2030 through public-private partnerships (13.7 billion yen for FY2023)

Advance GX investment incentives through carbon pricing	GX Economic Transition Bonds (under system design)	METI		Make a upfront investment of 20 trillion yen over the next 10 years, in line with the "GX Economic Transition Bonds"
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Subsidies that Daido Steel products have received in the past.

(Reference 2) Daido Steel's industrial furnaces that have been certified as energy-saving equipment

Advanced Energy Conservation Investment Promotion Support Program
10 of our products were certified as "advanced equipment and systems".

Product group	No.	Product name	Energy-saving rate*
Steel-making equipment	1	Electric Arc Furnace with Shell Rotation Drive(STARQ)	6.2%
	2	Electric arc furnace equipped with scrap preheater in movable furnace top	14.8%
	3	Environmentally friendly scrap preheater	6.0%
	4	Melt-down determination system (E-adjust)	1.9%
	5	Electric arc furnace direct dust collection controller	55.0%
	6	High-efficiency control system for steelmaking plant building dust collection system	20.0%
Heat-treatment equipment	7	ModulTherm	40.8%
	8	SyncroTherm	21.6%
	9	Premium STC furnace (2nd generation)	10.8%
	10	Highly-efficient combustion system (DINCS)	10.2%

*Energy-saving rate per equipment and system

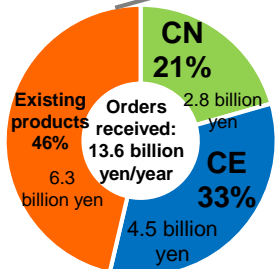
STARQ, E-adjust, ModulTherm, SyncroTherm, STC, and DINCS are registered trademarks of Daido Steel Co. Ltd.

7. Future development of our engineering business

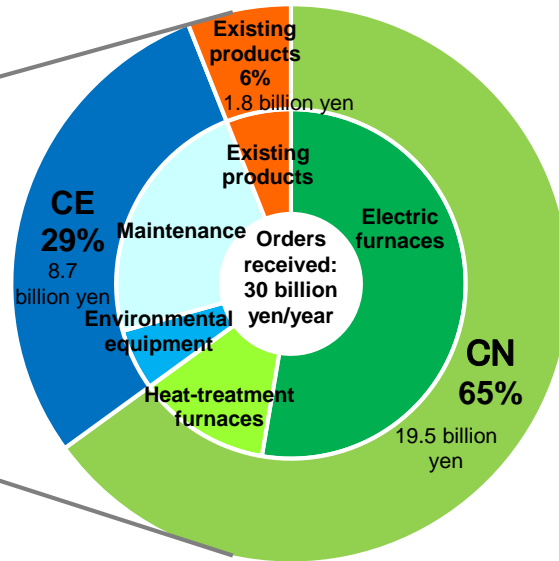
■ A preview of our future products portfolio

■ Orders received and planned for engineering business on a non-consolidated basis

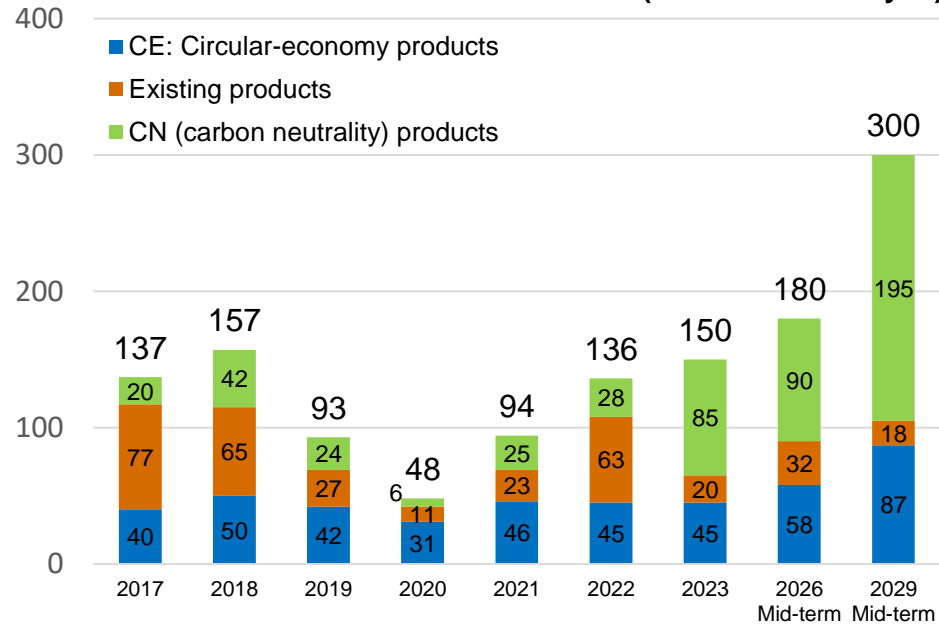
Product portfolio for 2022



Product portfolio for 2030



(Unit: 100 million yen)



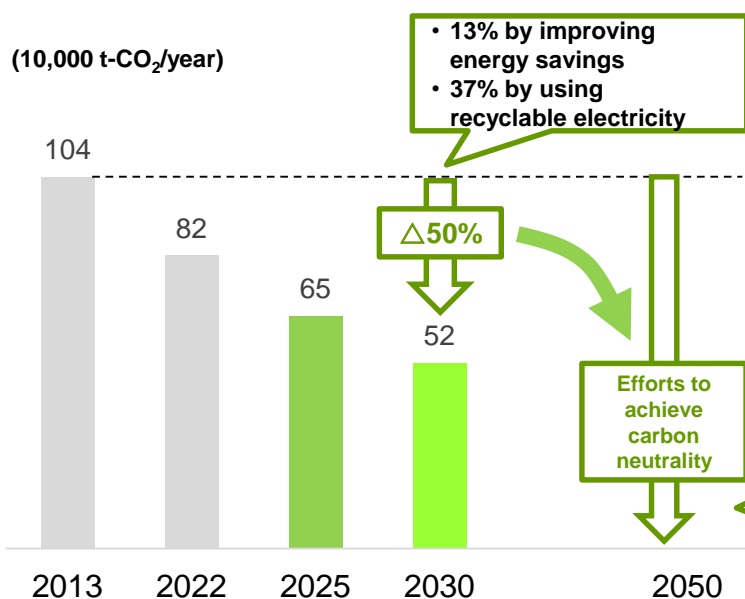
Results ← | → Estimates

8. Taking the initiative to reach the goals set forth in the Daido Carbon-Neutral Challenge

[Taking the lead in the introduction of the latest technologies that contribute to achieving carbon neutrality]

- ◆ **Melting process** : Fully communicate the energy-saving technology used for our electric arc furnaces to the entire Daido Group.
- ◆ **Heat-treatment process**: Fully communicate the use of the hydrogen burner for heating and heat-treatment furnaces within the entire Daido Group.

CO₂ emissions reduction targets for 2030



* These CO₂ emissions are the sum of Scope 1 + Scope 2 (energy-derived) solutions for Daido Steel Co., Ltd alone.

The coefficient of electric power CO₂ emissions (FY 2013 and 2022) was calculated using CO₂ emissions factors calculated by the relevant electricity company for each year.

FY2022's CO₂ emissions results are subject to third-party review.

- Further improvement of energy efficiency and conservation
- Further utilization of recyclable electricity



Contributions to the achievement of carbon neutrality through our engineering business

Scope 1 : Fuel
Using hydrogen burners for heating furnaces and heat-treatment furnaces

Scope 2: Electricity
Using energy-saving technology for electric arc furnaces



Experience our passion that enabled us to manage the technology.
Furthermore, challenge with us for even more.



Thermo★tainable

Advancing together into the future, with passion!