



NIPPON SANSO HOLDINGS

# BofA Securities | 2022 Hydrogen Conference Corporate Presentation

December 14, 2022 [US]  
Tokyo (Japan) with the United States

The Gas Professionals

# Important Notice

For the purpose of this notice, “presentation” means this document, any oral presentation, any question and answer session and any written or oral material discussed or distributed by NIPPON SANSO Holdings Corporation (“NSHD”) regarding this presentation. This presentation (including any oral briefing and any question-and-answer in connection with it) is not intended to, and does not constitute, represent or form part of any offer, invitation or solicitation of any offer to purchase, otherwise acquire, subscribe for, exchange, sell or otherwise dispose of, any securities or the solicitation of any vote or approval in any jurisdiction. No shares or other securities are being offered to the public by means of this presentation. This presentation is being given (together with any further information which may be provided to the recipient) on the condition that it is for use by the recipient) on the condition that it is for use be the recipient for information purposes only (and not for the evaluation of any investment, acquisition, disposal or any other transaction). Any failure to comply with these restriction may constitute a violation of applicable securities laws. The companies in which NSHD directly and indirectly owns investments are separate entities. In this presentation, “NSHD” is sometimes used for convenience where references are made to NSHD and its subsidiaries in general. Likewise, the words “the Company”, “we”, “us” and “our” are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies.

## ● Forward-Looking Statements

This presentation and any materials distributed in connection with this presentation may contain forward-looking statements, beliefs or opinions regarding NSHD’s future business, future position and results of operations, including estimates, forecasts, targets and plans for NSHD. Without limitation, forward-looking statements often include words such as “targets”, “plans”, “believes”, “hopes”, “continues”, “expects”, “aims”, “intends”, “ensures”, “will”, “may”, “should”, “would”, “could”, “anticipates”, “estimates”, “projects” or similar expressions or the negative thereof. These forward-looking statements are based on assumptions about many important factors, including the following, which could cause actual results to differ materially from those expressed or implied by the forward-looking statements: the economic circumstances surrounding NSHD’s global business, including general economic conditions here and abroad; competitive pressures and developments; changes to applicable laws and regulations; the success of or failure of product development programs; decisions of regulatory authorities and the timing thereof; fluctuations in interest and currency exchanges rates; claims or concerns regarding the safety or efficacy of marketed products or product candidates; the impact of health crises, like the novel COVID-19 pandemic, on NSHD and its customers and suppliers, including foreign governments in countries in which NSHD operates, or on other facets of its business; the timing and impact of PMI (post-merger integration) efforts with acquired companies; the ability to divest assets that are not core to NSHD’s operations and the timing of any such divestment(s); and other factors identified in NSHD’s most recent annual Consolidated Financial Statements on Japanese Securities relevant acts and exchange commission, available on NSHD’s website. NSHD does not undertake to update any of the forward-looking statements contained in this presentation or any other forward-looking statements it may make, except as required by law or stock exchange rule. Past performance is not an indicator of future results and the results or statements of NSHD in this presentation may not be indicative of, and are not an estimate, forecast, guarantee or projection of NSHD’s future results.

## ● Certain Non-IFRS Financial Measures

This presentation and materials distributed in connection with this presentation include certain financial measures not presented in accordance with International Financial Reporting Standards (“IFRS”), such as Core Operating Income, EPS (Earnings per share), Debt, Net Debt, Adjusted net D/E ratio and Free Cash Flow. NSHD’s management and executive officers evaluates results and makes operating and investment decisions using both IFRS and non-IFRS measures included in this presentation. These non-IFRS measures exclude certain income, cost and cash flow items which are included in, or are calculated differently from, the most closely comparable measures presented in accordance with IFRS. By including these non-IFRS measures, management and executive officers intends to provide investors with additional information to further analyze NSHD’s performance, core results and underlying trends. NSHD’s non-IFRS measures are not prepared in accordance with IFRS and such non-IFRS measures should be considered a supplement to, and not a substitute for, measures prepared in accordance with IFRS. Investors are encouraged to review the reconciliation of non-IFRS financial measures to their most directly comparable IFRS measure, which are on the part of our slide deck.

## ● Financial information

NSHD’s financial statements are prepared in accordance with international Financial Reporting Standards (“IFRS”).

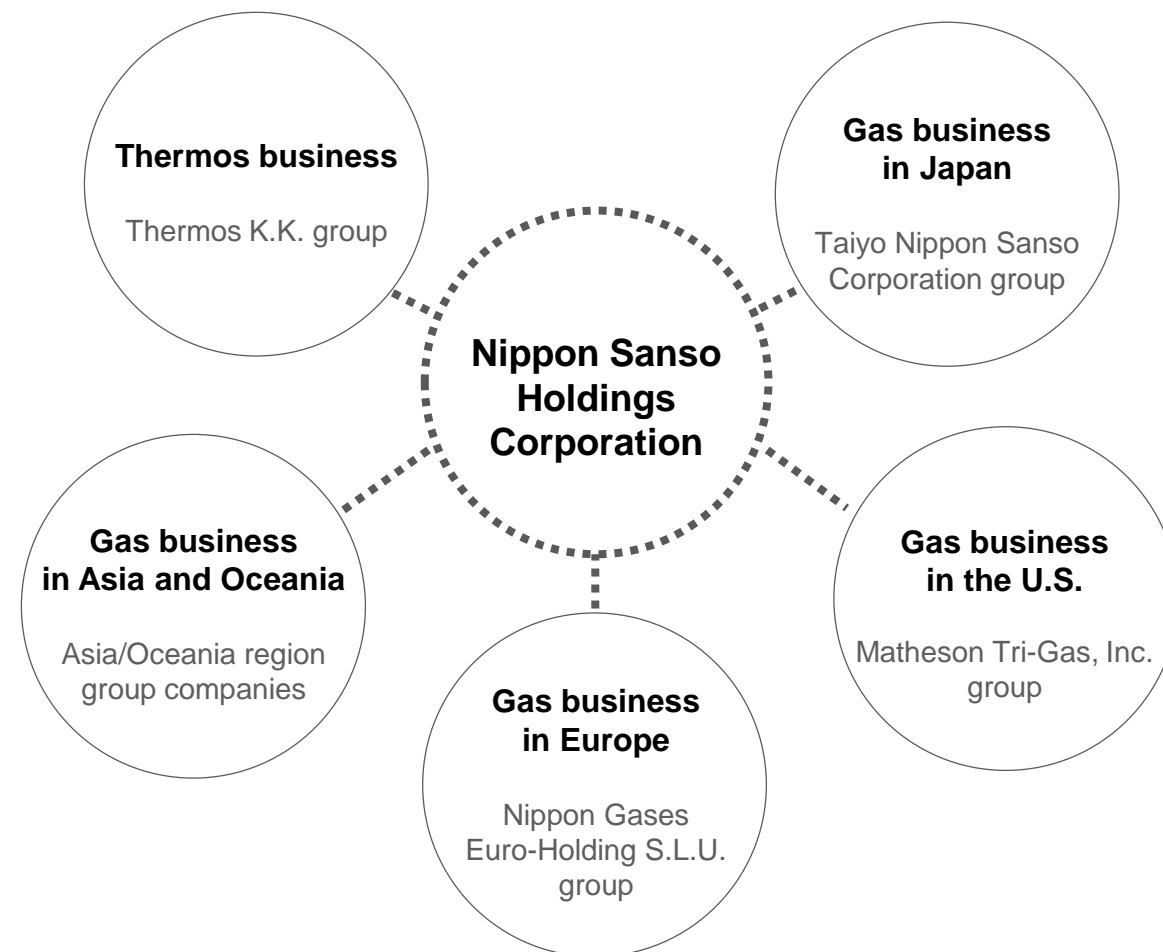


**NIPPON SANSO HOLDINGS**

# Group Overview

Company name	<b>Nippon Sanso Holdings Corporation (NSHD)</b>
Ticker <small>(Tokyo Stock Exchange)</small>	<b>4091.T</b>
Established	<b>October 30, 1910</b>
Head office	1-3-26 Koyama, Shinagawa-ku Tokyo, Japan
President CEO	<b>Toshihiko Hamada</b>
Employees <small>[As of March 31, 2022]</small>	<b>19,398</b>
Revenue (¥ bn.) <small>[FYE2022]</small>	<b>957.1</b>
Operating income (¥ bn.) <small>[FYE2022]</small>	<b>101.1</b>
OI margin <small>[FYE2022]</small>	<b>10.6%</b>
Countries Served	<b>32 Countries and Areas</b>

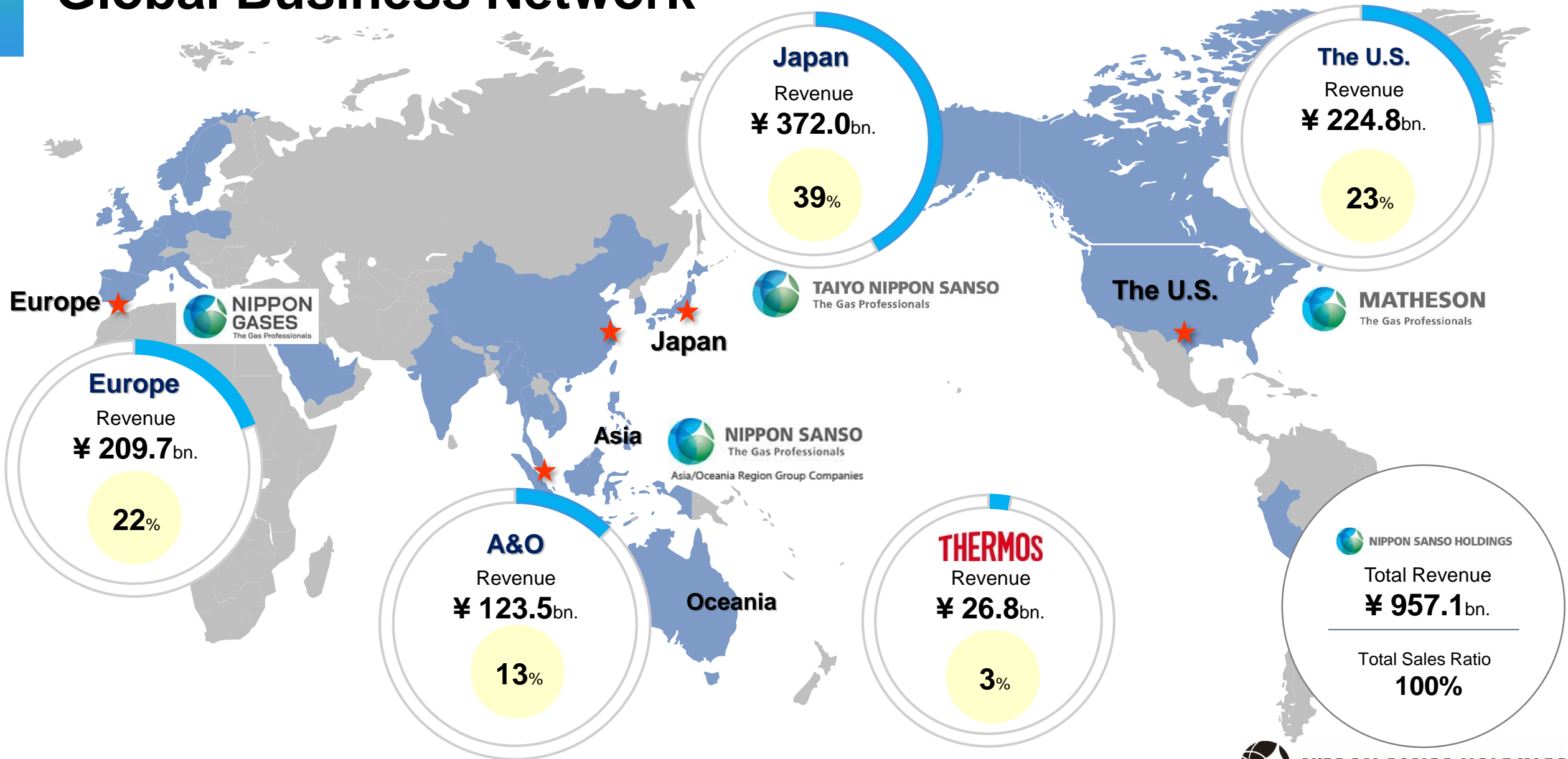
## NSHD's Group operating structure





# Global Business Network

\*Figures for each segment are for FYE2022.



# Our key businesses

## Industrial Gas



### Main Products

- Oxygen
- Nitrogen
- Argon
- Hydrogen, CO and syngas
- Carbon dioxide
- Helium
- Related equipment & construction

## Electronics



### Main Products

- Arsine ( $\text{AsH}_3$ )
- Diborane ( $\text{B}_2\text{H}_6$ )
- Fluoromethane ( $\text{CH}_3\text{F}$ )
- Hydrogen chloride (HCL)
- Phosphine ( $\text{PH}_3$ )
- Silane ( $\text{SiH}_4$ )
- Related equipment & construction

## Thermos

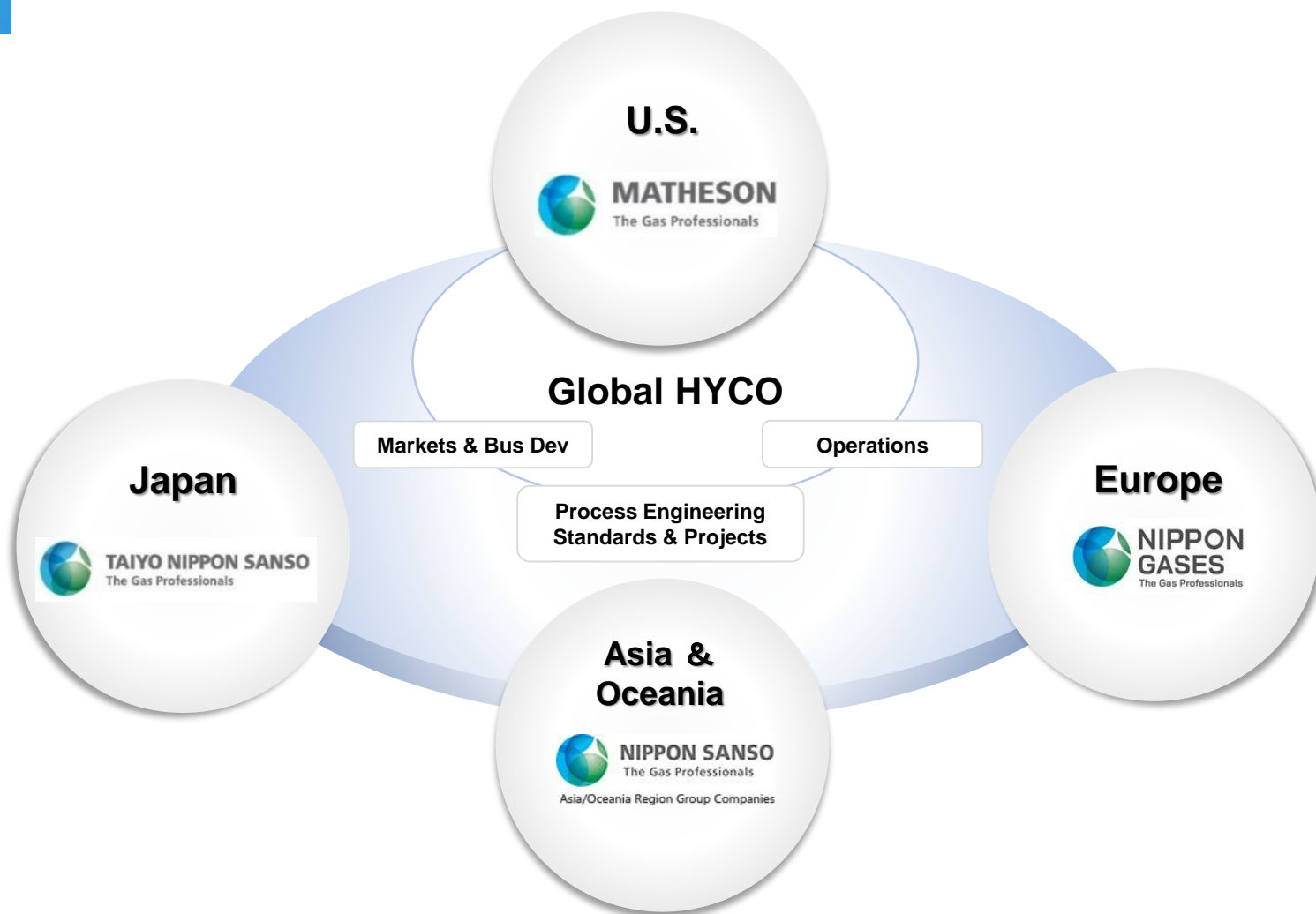


### Main Products

- Bottle
- Mug
- Tumbler
- Frying-pan
- Pan
- Dish



# Global HYCO



## Development and Value Creation

- Select partnerships
  - Technology per project solution and EPC per focus geography
- Matheson/NSHD Plant/Ops Standards
- HyCO Solutions Expertise to deliver value
- Best-in-class lifecycle operations
  - Fleet reliability > 99.5%
  - Leading, uncompromising safety performance
  - Performance through Collaboration
    - Field Staff and Experts
    - Remote Operations Center (ROC) & Tools
    - HYCO Process & Project Experts
  - Continuous feedback into plant design, instrumentation & controls

(Note) Use of different terms in this presentation as below,

- HyCO: the area of H<sub>2</sub>, CO, Syngas plus CO<sub>2</sub>
- HYCO: our own business line

# Strategic Themes for NSHD and HYCO

- Lower Carbon-Intensity of industrial gas production of existing business
  - ▶ Improvements in operational efficiency and power management to reduce “carbon footprint” and improve operational costs
- Enlarge footprint of NSHD/Matheson’s Hydrogen business, leveraging Global HYCO’s commercial and technical expertise
  - ▶ Expand our basis of HYCO business into new geographies, establishing plants with state-of-the-art configurations
  - ▶ Establish HYCO solutions that are optimally integrated with Customer Processes to minimize overall GHG footprint
    - Customer process – HYCO integration design with the ability to develop commercially viable solutions
    - Work with customers toward the production of environmentally-friendly products, such as renewable fuels and bioplastics
  - ▶ Based on discriminative assessments, select specific HyCO production technologies for further development to achieve gases supply with mitigated carbon footprint
- Development of select industrial gas applications technologies and supporting capabilities to help customers meet their Carbon Neutral goals



# HyCO/Hydrogen Development Pillars

## ● **Three Pillars** for Near-Term and Future Development in HyCO



● Our approach to growth only includes implementation of technologies that we deem economically acceptable.



# I. Expand Strategically – Recent Developments

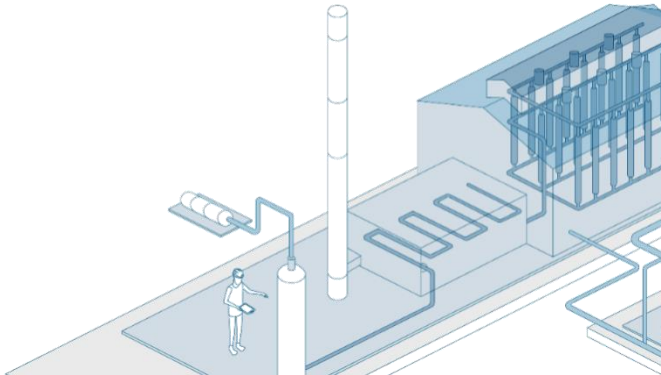
## HYCO for the Production of Improved Fuels and Chemicals

### ● Matheson/NSHD Secures Very Large Award in India

- 20-Year Supply Award from NRL, Numaligarh, for 132 kNm<sup>3</sup>/hr (285 Tons/day) Hydrogen & steam; Solution development focused on most efficient/Low CI Hydrogen solution for diverse feedstock slate (RLNG, LPG, Naphtha)
- Hydrogen integral to the Govt. of India's mega northeast development initiative led by NRL involving the India-Bangladesh Friendship Pipeline, interstate Pardip-Numaligarh Crude pipeline project, import crude terminal, interstate product pipeline and 2G ethanol projects

### ● Matheson/NSHD Establishing Peru Business

- 20-Year Supply Agreement executed for supply of “Over the Fence” Hydrogen and Nitrogen to Petroperu.
  - Gases will be utilized for the new state-of-the art Refinery designed from a Sustainability perspective by Petroperu at Talara for ULSD/RG
  - One of the largest, most sophisticated hydrogen plants in South America; Designed with great attention to feedstock flexibility and water conservation
- Petroperu and EPC Contractors completing gas plant complex and Matheson HYCO have been supporting Petroperu on Plant Commissioning /Startup.



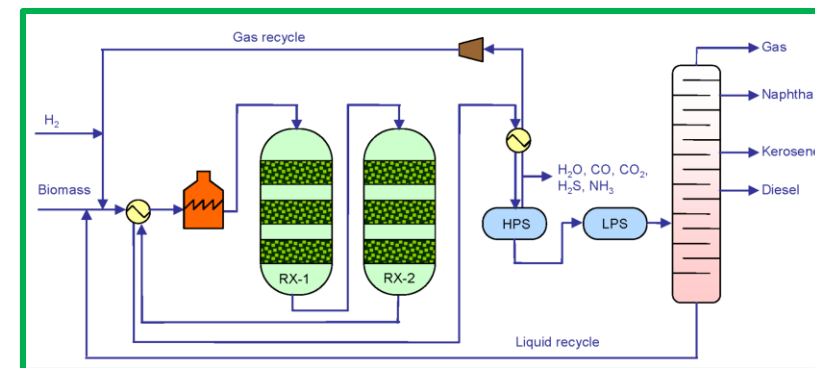
## II. HYCO Integration with Customer Processes

### Utilization of HYCO Configuration Capability to Establish Best-in-Class HYCO integrated with Customer Processes

- Focus Segments include Petrochemicals, Renewable Fuels, Steel Production and specialized cases in other industries
  - Recovery and reutilization of waste streams and energy integration to achieve best in class efficiency

### Segment Example: Renewable Transport Fuels Segment

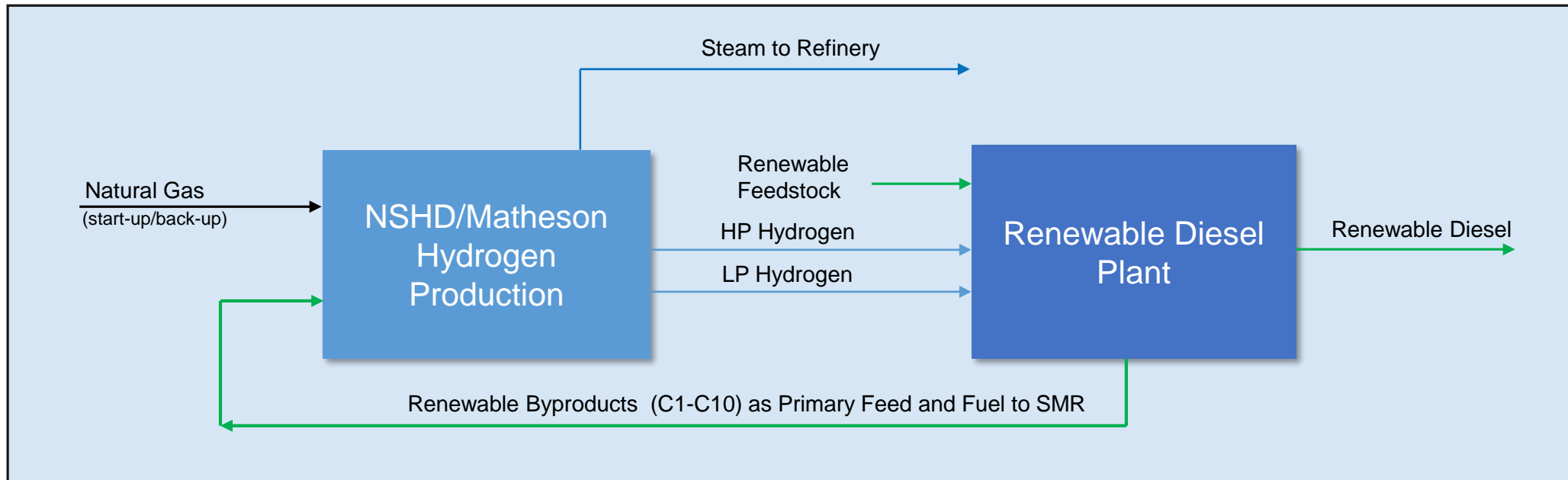
- Renewable Diesel is emerging as the most cost-effective and easily implemented Carbon-Mitigation approach in the medium/heavy duty transport sectors
- Sustainable Aviation Fuel (SAF) emerging as the promising alternative to reduce emission in the aviation sector. SAF can be produce from multiple renewable sources; including renewable ethanol. Market and H<sub>2</sub> consumption moderate
- Renewable fuel processes require hydrogen to hydrotreat feedstocks
- Recent incentives in the USA (Inflation Reduction Act “IRA”) further incentivize the production of renewable H<sub>2</sub> (up to 3\$/kg H<sub>2</sub>) for renewable fuel/jet production; as well as the carbon capture and sequestration (credit increased to 130 \$/Ton)
  - Framework implementation yet to be fully defined and can be complex (e.g., credits for H<sub>2</sub> production and CO<sub>2</sub> capture are mutually exclusive)
- Renewable H<sub>2</sub> faces challenges: high cost, limit volume, logistics, etc.



Renewable Fuel Production Unit

## II. HYCO Integrated with Renewable Diesel

- NSHD/Matheson worked with Fuels Company and developed an Integrated HYCO Scheme for Hydrogen Supply for new, Renewable Diesel Plant being established in the southeast USA
  - Long-term Supply Agreement and supporting Contracts executed during summer 2022



- HYCO plant will have significant feedstock/fuel flexibility and H<sub>2</sub> capacity exceeding 30 MMSCFD\*

\* MMSCFD: million standard cubic feet per day

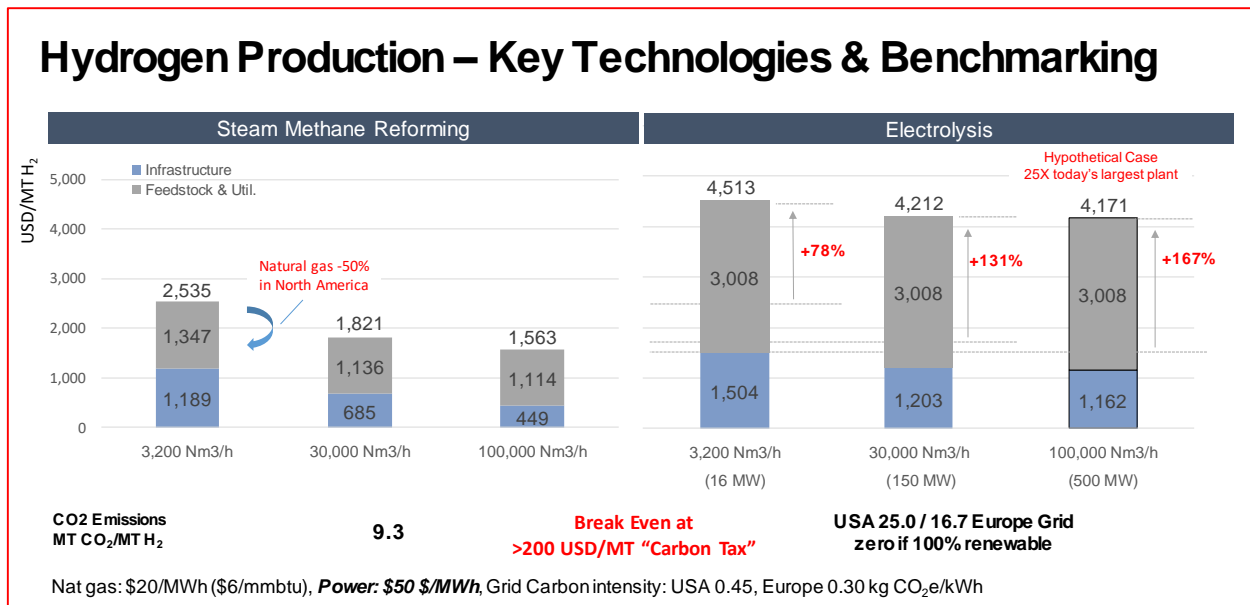
# III. Technology Evolution - I

## Hydrogen “Green” Technologies Assessment

- Green hydrogen is limited to production by electrolysis of water without use of fossil fuels
- Smaller green hydrogen supply continue to be more competitive than large schemes
- Inflation Reduction Act is a potential associated game changer for the US
- Source of green (renewable) power infrastructure is a key challenge

## CO<sub>2</sub> Recovery Technology Assessments

- Liquid amine scrubbing has been the most widely used technology due to proven commercial experience
- Alternate technology options based on CO<sub>2</sub> adsorption from flue gas using pressure, vacuum, and thermal swing adsorption.
- Total cost of CO<sub>2</sub> recovery is highly dependent on size of the unit and location specifics
  - Liquid amine scrubbing system total costs (Capex+Opex) in the range, \$50 to \$80+ per Ton of recovered CO<sub>2</sub> recovered (w/o CO<sub>2</sub> compression)
  - Developing adsorption-based options have potential to have economics in the range, \$35 to \$60 per Ton recovered CO<sub>2</sub> (w/o CO<sub>2</sub> compression)
  - NSHD subsidiaries and HYCO also continue to track membrane-based options for specific cases
- Matheson/NSHD HYCO will utilize options as suitable for our projects compatible with CCU/CCS





# III. Technology Evolution - II

## Alliance with Hysytech

- Nippon Gases Europe (NGE) , NSHD's European business, has formed an alliance with Italy-based company Hysytech to promote the development and use of green chemistry and alternative biofuels with the ultimate goal of establishing a circular economy.
- Hysytech specializes in the design, development and industrial implementation of new turn-key process technologies and equipment including bio-methane and bio-LNG and green and low CI Hydrogen.

## Partnership with Sysadvance

- Portugal-based company partnering with Nippon Gases Europe
- Specialize in PSA-based technology to purify biogas from anaerobic digestion sources
- Ability to produce bio-methane and recover CO<sub>2</sub>



# Summary

## Establishment

- NSHD's HYCO established very safe, highly reliable Plant Operations and Supply integrated across the corporation
- Plant Standards established for different types of HyCO technology to enable robust plant designs for the future
- HyCO Solutions capability and tools established including sustainability focus and winning target projects

## Growth

- NSHD HyCO's efforts have led to the execution of multiple, strong, long-term contracts with top-tier and dynamic customers using sustainable solutions with profitable growth

## Future

- Business Objectives include:
  - Continue business/footprint establishment in growth geographies
  - Business positions involving step-out carbon-mitigated solutions in specific market segments in the US/EU/Japan
  - Strategic alliances on specific production and applications technologies associated with Carbon-Neutral solutions, provided the overall economics are compelling



# The Gas Professionals

# Q&A Session

---



Head,  
Global HYCO and Operations,  
Matheson-Tri Gas, Inc.

**Raghu Menon**



General Manager,  
Investor relations,  
Group Finance &  
Accounting Office

**Keita Kajiyama**



# Appendix

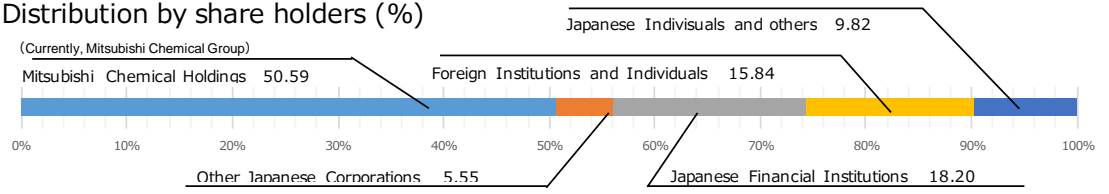
---

Corporate Information (As of March 31, 2022)

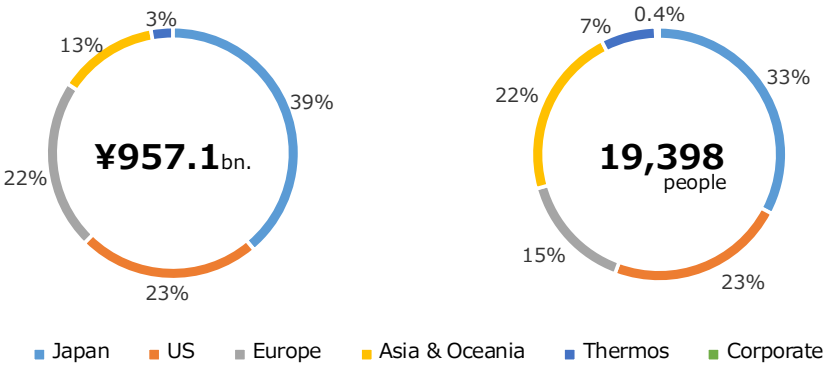
Company Name	Nippon Sanso Holdings Corporation
Founded	October 30, 1910
Headquarters	1-3-26 Koyama Shinagawa-ku, Tokyo 142-0062, Japan
TEL	81-3-5788-8500
	Representative Director, President CEO
Representative	Toshihiko Hamada
Common stock	37.3 billion yen

Stock information (As of March 31, 2022)

Number of shares	433,092,837
Number of shareholders	14,709
Listed stock exchanges	Tokyo Stock Exchange Prime Market
Ticker	4091.T



Revenue / Employee personnel by Segment (As of March 31, 2022)



Corporate Philosophy

# The Gas Professionals

Group Philosophy

Proactive. Innovative. Collaborative.  
Making life better through gas technology.

Group Vision

We aim to create social value through innovative gas solutions that increase industrial productivity, enhance human well-being and contribute to a more sustainable future.

Main Core business

Industrial Gas business

Electronics business

Thermos business

FYE2023 Financial Forecast (IFRS)

Revenue	¥1,160.0 bn.	Net income attributable to owners of the parent	¥68.0 bn.
Operating income	¥113.0 bn.	EPS	¥157.11

# Our Medium-term management plan Summary

<https://www.nipponsanso-hd.co.jp/en/ir/management/plan.html>

Published on November 1, 2022

## Overview

Plan Name	NS Vision 2026
Slogan	Enabling the Future
Period	4 years from April 2022 to March 2026
Released date	May 11, 2022

## Financial target

(Final fiscal year in the plan: FYE2026)

Revenue	¥975.0-1000.0 bn.
Core Operating Income	¥125.0-135.0 bn.
EBITDA margin	Group: ≥24 % Japan, the U.S., EU, A&O, Thermos: ≥17-33%
Adjusted net D/E ratio	≤0.7 times
ROCE after Tax	≥6 %

(Note) Forex rate (Assumption) : USD ¥115 EUR ¥125

## Non-Financial target

### <Environment>

Reduction rate of GHG emissions	FYE2026:	18 %
(Base year: FYE2019)	FYE2031:	32 %

GHG reduced emissions through environmental product offer  
FYE2026: Lower GHG emissions through environmental product offerings and applications  
> NSHD Group GHG emission

### <Safety Management>

Lost Time Injury Rate	FYE2026:	≤1.6
-----------------------	----------	------

### <Compliance>

Rate of receiving compliance training	FYE2026:	100 %
---------------------------------------	----------	-------

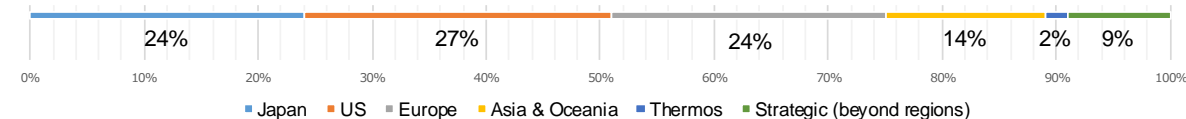
### <HR>

Rate of female employees	FYE2026:	≥22 %
	FYE2031:	25 %
Rate of female management posts	FYE2026:	≥18 %
	FYE2031:	22 %

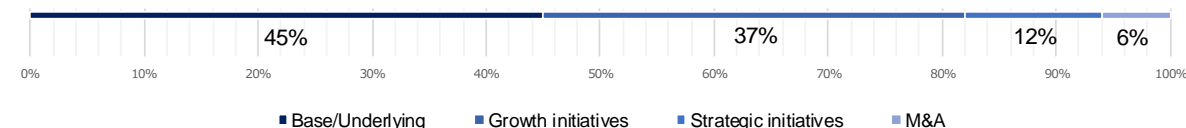
## Capital allocation

Cash-in	(the total for 4 years)
[Operating Cash flow]	¥730.0 bn.
Cash-out	¥433.0 bn.
[Investment as a whole]	

## Composition ratio by Business



## Composition ratio by Initiative

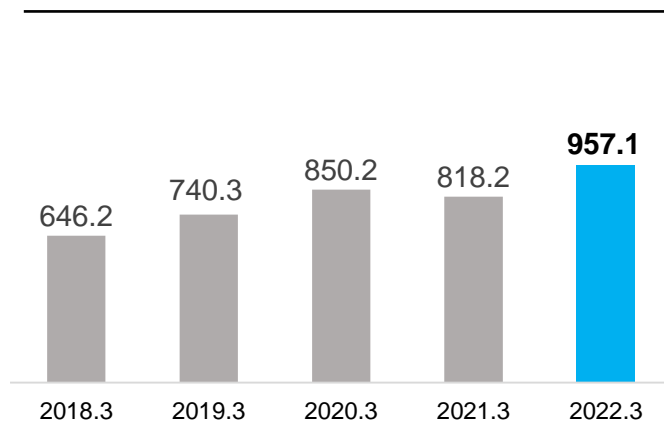


## Focused fields

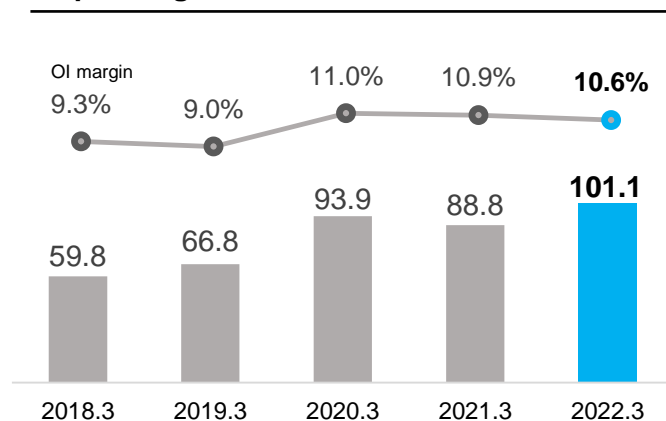


# Business performance over the past five years

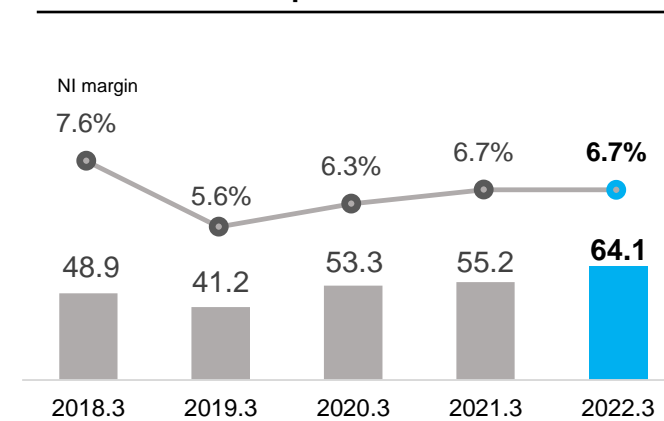
Revenue (¥ bn.)



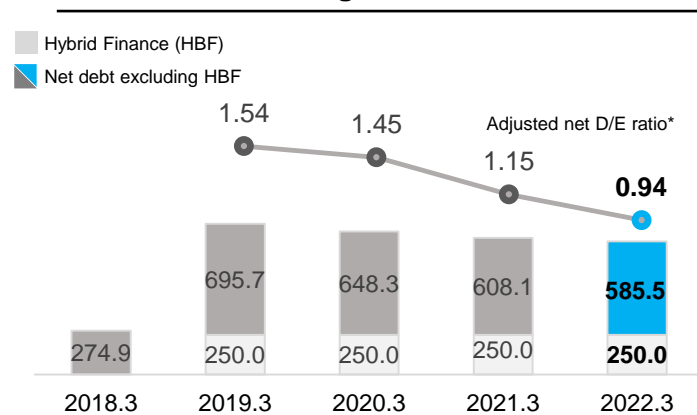
Operating income (IFRS) (¥ bn.)



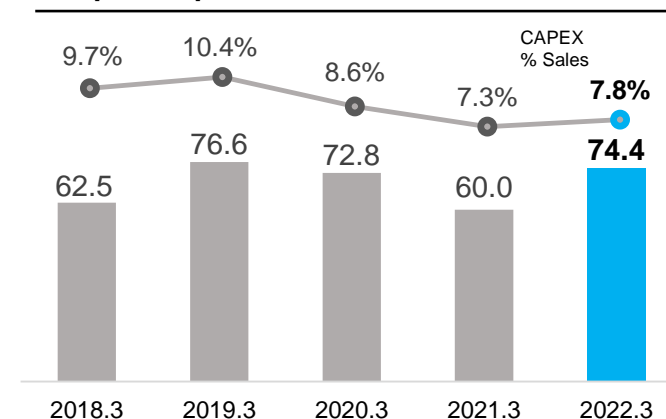
Profit attributable to owners of the parent (¥ bn.)



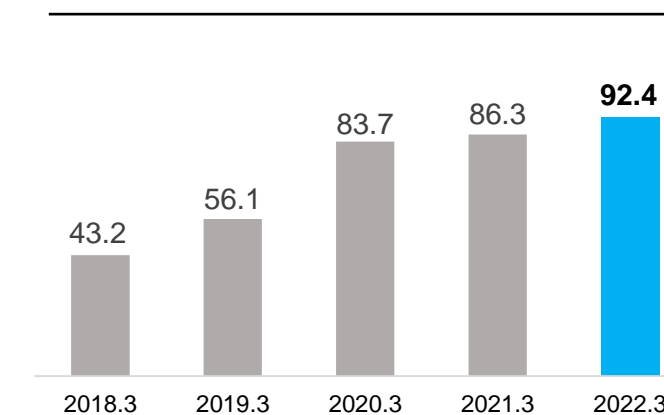
Net interest-bearing debts (¥ bn.)



Capital expenditures (¥ bn.)



Depreciation and amortization (¥ bn.)



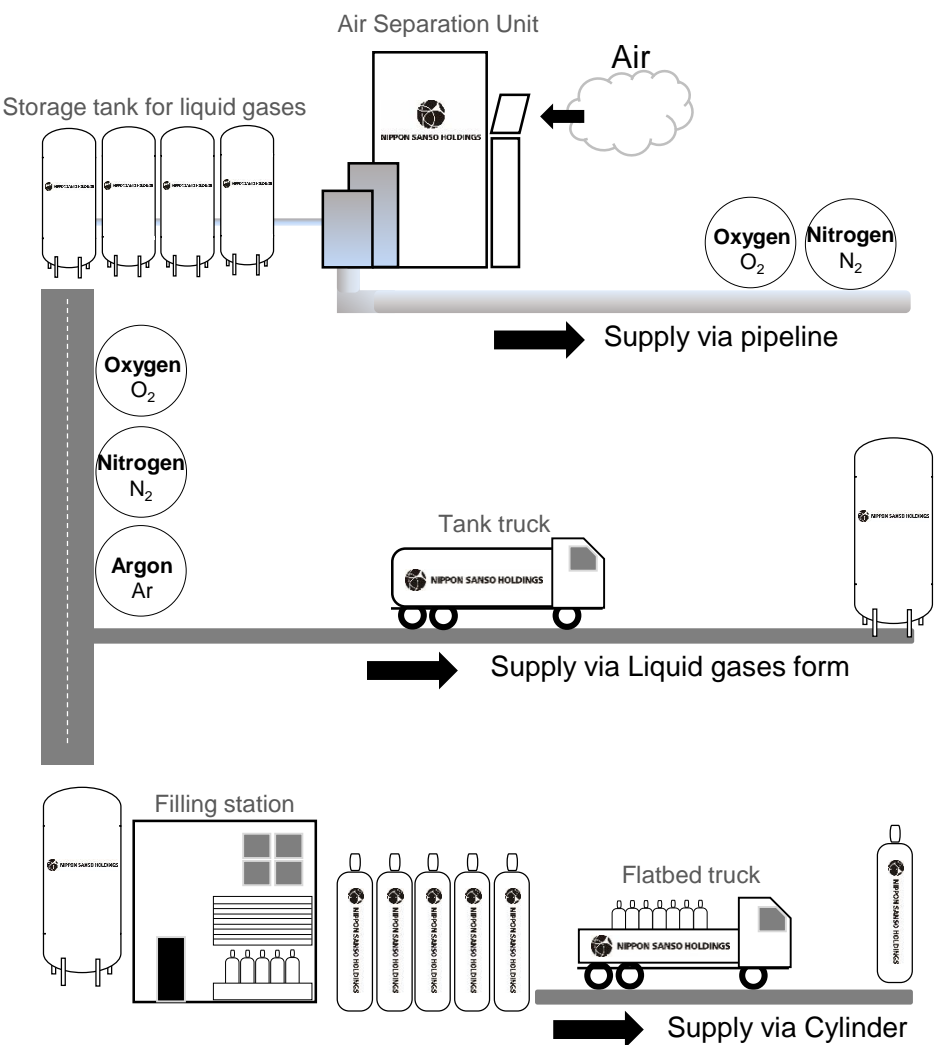
\*Adjusted Net D/E Ratio: an indicator of safety (financial soundness) calculated in consideration of this part due to 50% of the amount raised by HBF is permitted as "Equity" by rating agencies.

\*It's recorded on a construction basis until FYE2019 and on a cash basis from FYE2020 onwards.



# Industrial gas supply systems

## Air Separation Gases



## On-site

Major supply destination (Sector)

Steel	Petrochemical	Refinery
-------	---------------	----------

We've established production plants in the vicinity of the customer. A form of direct connection and constant supply of pipes. (Large-scale supply)

## Bulk

Major supply destination (Sector)

Automobile	Shipbuilding	Manufacturing
Construction machinery	Pharmaceutical Medical	Glass/Paper
LCP	Photovoltaics	Food/beverage
		Semiconductor

We've installed a storage tank for liquefied gas in the customer's premises. A form of supply according to the method of use of gas. (Medium-scale supply)

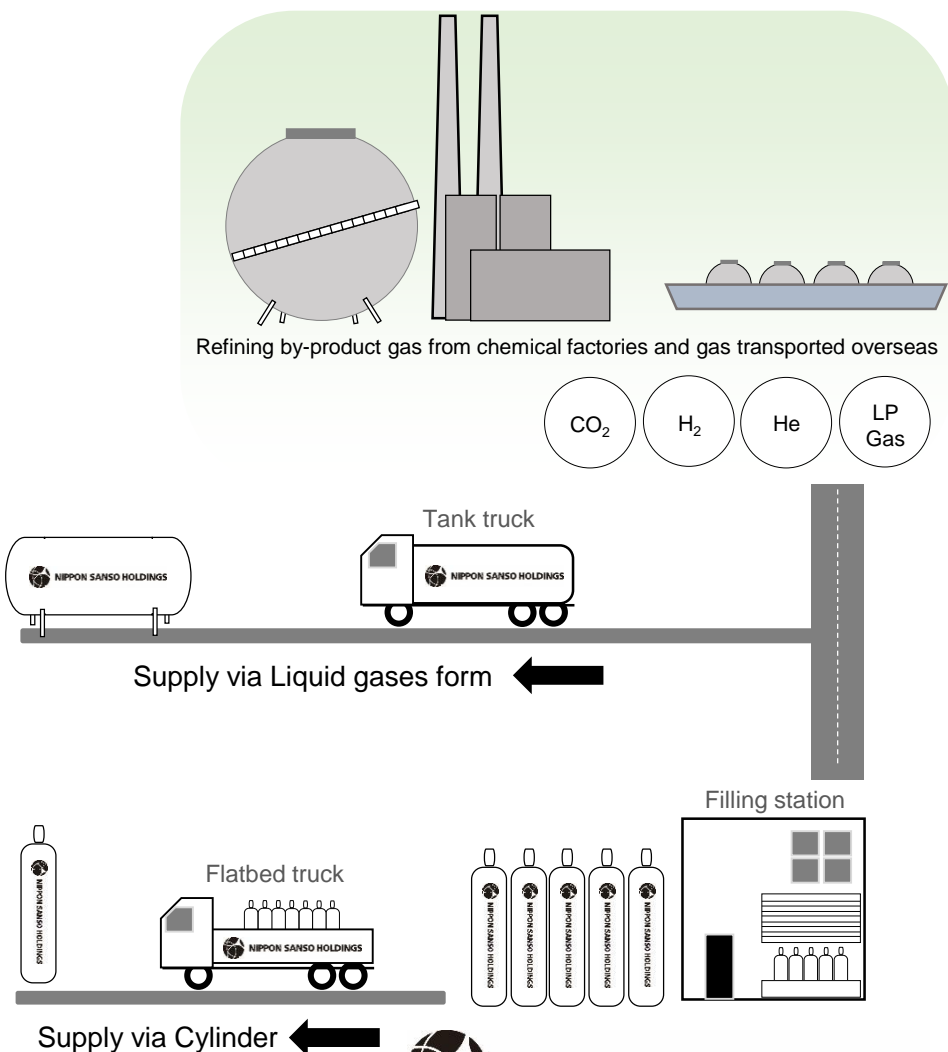
## Packaged

Major supply destination (Sector)

Homecare	Advanced medicine	Sanitation
Engineering development	R&D	Construction/Installation

We deliver filling containers (cylinders) to customers. A form of supply according to the method of use of gas. (Small-scale supply)

## Other Gases



## For further information, please contact:

---

### Investor Relations for investors

Investor Relations, Group Finance & Accounting Office

Tel: +81 (0)3-5788-8512

E-mail : [Nshd.ir@nipponsanso-hd.co.jp](mailto:Nshd.ir@nipponsanso-hd.co.jp)

### Upcoming IR events

Q3 FYE2023 Earnings Call

February 2, 2023

[www.nipponsanso-hd.co.jp/en/](http://www.nipponsanso-hd.co.jp/en/)

**NIPPON SANSO Holdings Corporation (Ticker:4091.T)**

Headquarters : 1-3-26 Koyama Shinagawa-ku, Tokyo 142-0062, Japan





**NIPPON SANSO HOLDINGS**

**The Gas Professionals**

© 2022 NIPPON SANSO Holdings Corporation All rights reserved