

Semiconductor Specialty Gases

Nippon Gases' Solutions for the
Semiconductor and Photovoltaics Industry





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Nippon Sanso Holdings Corporation

Nippon Gases is part of Nippon Sanso Holdings Corporation (NSHD), the parent company to the Taiyo Nippon Sanso industrial gas business in Japan, the US Matheson Tri-Gas Group, Nippon Gases in Europe, the Asia/Oceania Regional Group and Thermos Business Group.

1910 Established 30th Oct	+19K Employees globally	32 Operational countries
Japan Head office in Tokyo	+130 Air Separation Units in operation	

Nippon Gases Europe

Nippon Gases Europe is your strategic partner for industrial, medical and semiconductor specialty gases. We offer our own technological solutions to a wide range of markets; our offerings span from the most efficient supply options to case-specific tailored technology applications for customers and/or partners. Together, we are "The Gas Professionals" and we all have the same goal: "Making life better through gas technology".

Our presence in Europe positions us as a leading company:

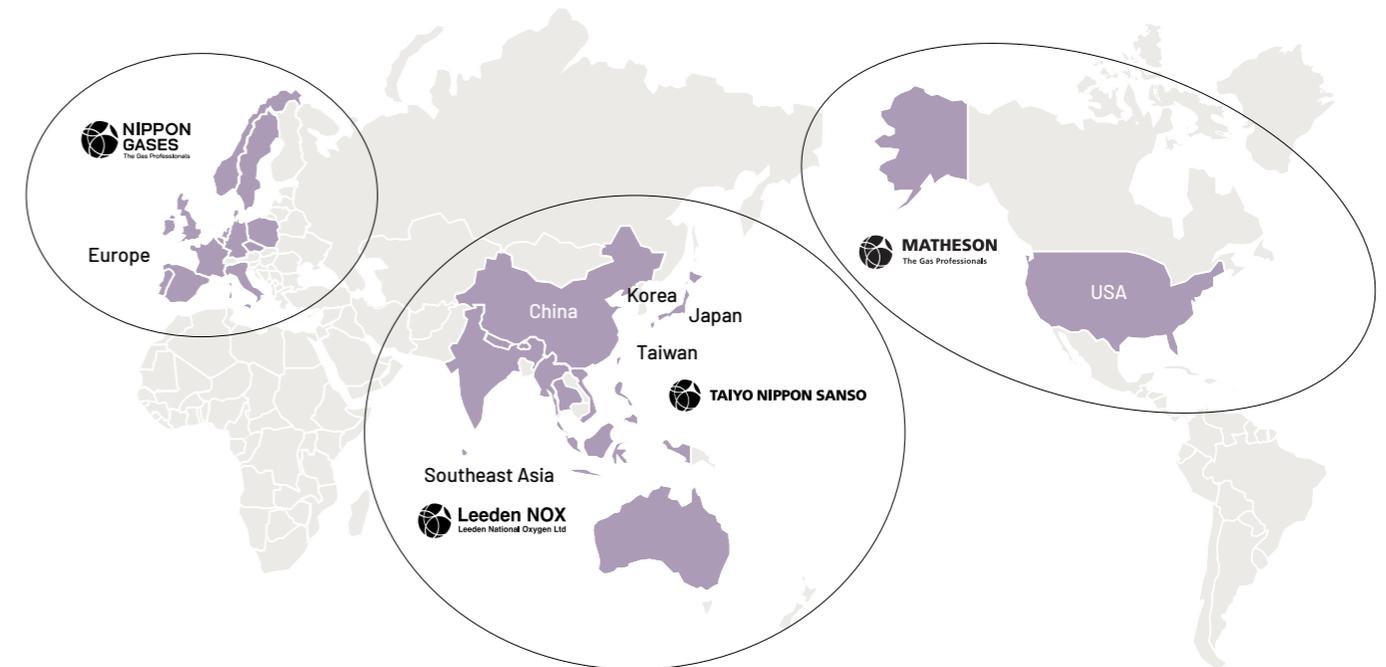
+3K Employees	27.9% of which are women	13 Operational countries
+150K customers	€1.9B revenue in FYE2023	

Total Electronics

Nippon Sanso Holdings Corporation's global semiconductor business

NSHD's activities in the Semiconductor Industry represent an important share in its global business as it represents approximately 18% of total group sales. Therefore, we operate globally a strong virtual Total Electronics Organisation that focuses on product safety and quality, sales, procurement and strategic supply chain planning. At the same time, we have local operations in 32 countries and dedicated SSG plants in Japan, China, Southeast Asia, Korea, the USA and Belgium. Local teams are available in each of these countries to serve you in local languages and timezones.

Global reach, local supply





Semiconductor Specialty Gases (SSG) production

Our state-of-the-art SSG facility in Belgium

Nippon Sanso Holdings Corporation (NSHD) supplies Semiconductor Specialty Gases to customers' facilities across the globe through its many subsidiaries and affiliates. Due to this approach, we are known as TNSC in Japan, YTNS and TN Shanghai in China, NSTW in Taiwan, MATHESON in the USA, MGPK in Korea, Leeden NOX in Southeast Asia and Nippon Gases in Europe.

All group companies stand for the same principles: excellent product quality, robust supply chains and state-of-the-art production facilities.

Nippon Gases Europe produces Semiconductor Specialty Gases in a dedicated, high quality production facility in Oevel, Belgium. A motivated and knowledgeable team of experienced employees ensure that your gases are shipped safely, timely and in the required quality to your manufacturing location.

Advantages:

- The facility offers a complete portfolio of gases produced on fully automated (PLC- controlled) equipment
- Advanced technology processes to drain, prepare, fill, mix and analyse cylinders to meet highest quality standards
- Local manufacturing capabilities and inventories improve supply chain robustness and delivery flexibility
- High precision hydride and hydrocarbon mixing and analysis capabilities
- Continuous investments in new products and manufacturing capabilities to keep up with changing market requirements

Responsible Business Alliance (RBA)

Nippon Gases is a proud member of the RBA - a voluntary Code of Conduct with social, environmental and ethical industry standards, aligned with our company's DNA.

For more details, scan the QR code:



Certifications:

- ISO 9001
- ISO 14001
- ISO 17025



Portfolio

Our portfolio of Semiconductor Specialty Gases in Europe

We provide a gas supply base that integrates all the gases required for our customers' manufacturing processes

Product	Grades	Mixed in-house	NSHD group product*	Multiple Sources	Low CO ₂ footprint**
Ammonia (NH ₃)	5.0, 5.5, 6.0			•	•
Argon (Ar)	5.0, 6.0		•	•	•
Arsine (AsH ₃)	6.0, 6.5	•	•		
Boron Trichloride (BCl ₃)	3.0, 4.0, 5.0	•	•		
Boron Trifluoride (BF ₃)	2.5				•
Chlorine (Cl ₂)	4.0, 4.8				•
Deuterium (D ₂)	4.0	•		•	•
Diborane (B ₂ H ₆)	4.0	•	•	•	
Dichlorosilane (DCS - SiH ₂ Cl ₂)	2.0, 2.7, 4.0			•	
Disilane (Si ₂ H ₆)	4.8	•			
Ethylene (C ₂ H ₄)	3.5, 5.0	•	•	•	•
Germane (GeH ₄)	5.0	•		•	
Halocarbon-116 (C ₂ F ₆)	5.0				
Halocarbon-14 (CF ₄)	5.0			•	
Halocarbon-218 (C ₃ F ₈)	5.0				
Halocarbon-32 (CH ₂ F ₂)	4.8		•		
Halocarbon-C318 (C ₄ F ₈)	4.8				
Halocarbon-41 (CH ₃ F)	2.0, 4.0		•		
Hexafluoro-1,3 Butadiene (C ₄ F ₆)	4.0				
Helium (He)	5.0, 6.0	•		•	

*NSHD Group Product = molecule synthesised in-house by NSHD group company.

**Low CO₂ footprint = molecule sourced within European Union

Product	Grades	Mixed in-house	NSHD group product*	Multiple Sources	Low CO ₂ footprint**
Hydrogen (H ₂)	5.0, 6.0	•	•	•	•
Hydrogen Bromide (HBr)	4.5			•	•
Hydrogen Chloride (HCl)	4.5, 5.0	•		•	•
Hydrogen Selenide (H ₂ Se)	4.8	•	•		
Hydrogen Sulfide (H ₂ S)	2.5, 4.8	•	•	•	•
Krypton (Kr)	5.0	•		•	
Laser Gas Mixtures (Kr/ Ne, Ar/ Xe/Ne)	Cymer, Gigaphoton qualified	•		•	
Lens Gas Mixtures	All Grades				•
Neon (Ne)	5.0	•		•	
Nitrogen (N ₂)	5.0, 6.0	•	•	•	•
Nitrogen Trifluoride (NF ₃)	4.0, 4.5			•	
Nitrous Oxide (N ₂ O)	4.8, 5.5	•	•	•	•
Phosphine (PH ₃)	5.8, 6.0	•	•	•	
Propane (C ₃ H ₈)	5.0	•	•		
Propylene (C ₃ H ₆)	5.0		•		
Silane (SiH ₄)	5.0, 6.0	•		•	
Silicon Tetrachloride (SiCl ₄)	4.0, 6.0			•	•
Sulphur Hexafluoride (SF ₆)	4.5, 5.0			•	
Trichlorosilane (TCS - SiHCl ₃)	4.0				
Xenon (Xe)	5.0	•	•	•	•

All Nippon Gases hydride mixtures are produced with grade 6.0 H₂, N₂, Ar or He as balance gas.

For more information or other gases and grades availability please contact your local Nippon Gases sales representative.



Total solutions provider

Our solutions for the Semiconductor Industry

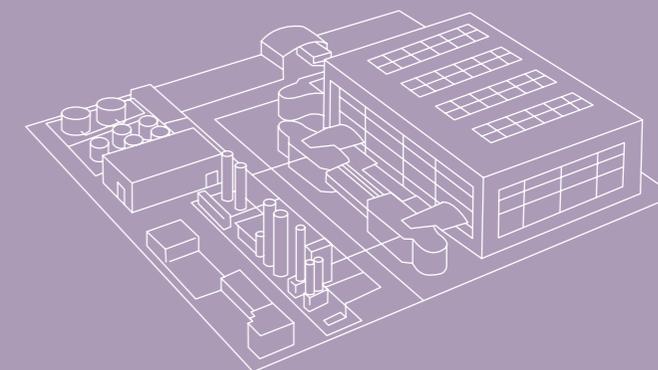
Nippon Sanso Holdings Corporation (NSHD) operates a “total gas center” with high purity nitrogen manufacturing equipment and Semiconductor Specialty Gases (SSG) supply systems adjacent to the customer’s semiconductor and liquid-crystal manufacturing plants, providing a round-the-clock stable supply of high purity nitrogen and material gases via pipelines. **We are your total solutions provider to the Semiconductor industry.**

Our portfolio of solutions includes:

- **Products:** We supply all the Semiconductor Specialty Gases (SSG) required for our customers’ processes.
- **Equipment:** We install various equipment to ensure a stable and high quality gas supply.
- **Services:** As Nippon Gases is a recognised leader in service, safety, and dependability, we are also a good choice for Site Gas Management. Site Services is a broad term that include but is not limited to Total Gas and Chemical Management (TGCM), safety trainings and remote monitoring systems.

Our services enable the future of innovation and technology in the electronics market.

We believe in this future. That is why we are applying our global knowledge and research capabilities to invest in the local expansion of our facilities, to ensure reliability of gas supply and to support our customers’ growth.





Group capability for equipment

Nippon Sanso Holdings Corporation, alongside its affiliates, provides a suite of innovative equipment solutions for the electronics industry, a.o. Nanochem Purifiers, MOCVD tools as well as Abatement Systems.

Adapted technology for each case:

- Productivity improvement**
High performance and productivity to reduce the cost per wafer
- Power devices production**
Enable ultrapurification of gases used in wafer and semiconductor fabrication
- Less waste emissions**
Allowing more sustainable processes



NANOCHEM®
Our purifiers offer comprehensive solutions for the source, point-of-use, bulk and proximate purification requirements of specialty gas users.

For more info, scan the QR



Metal Organic Chemical Vapor Deposition (MOCVD)
Serves for deposition of Compound Semiconductor Thin Films for Electronics and Optoelectronics.

For more info, scan the QR



Abatement Systems
Our group company has extensive experience in the development, design, and manufacture of exhaust gas treatment (abatement) equipment to safely and completely detoxify various gases used in your manufacturing location.

For more info, scan the QR



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