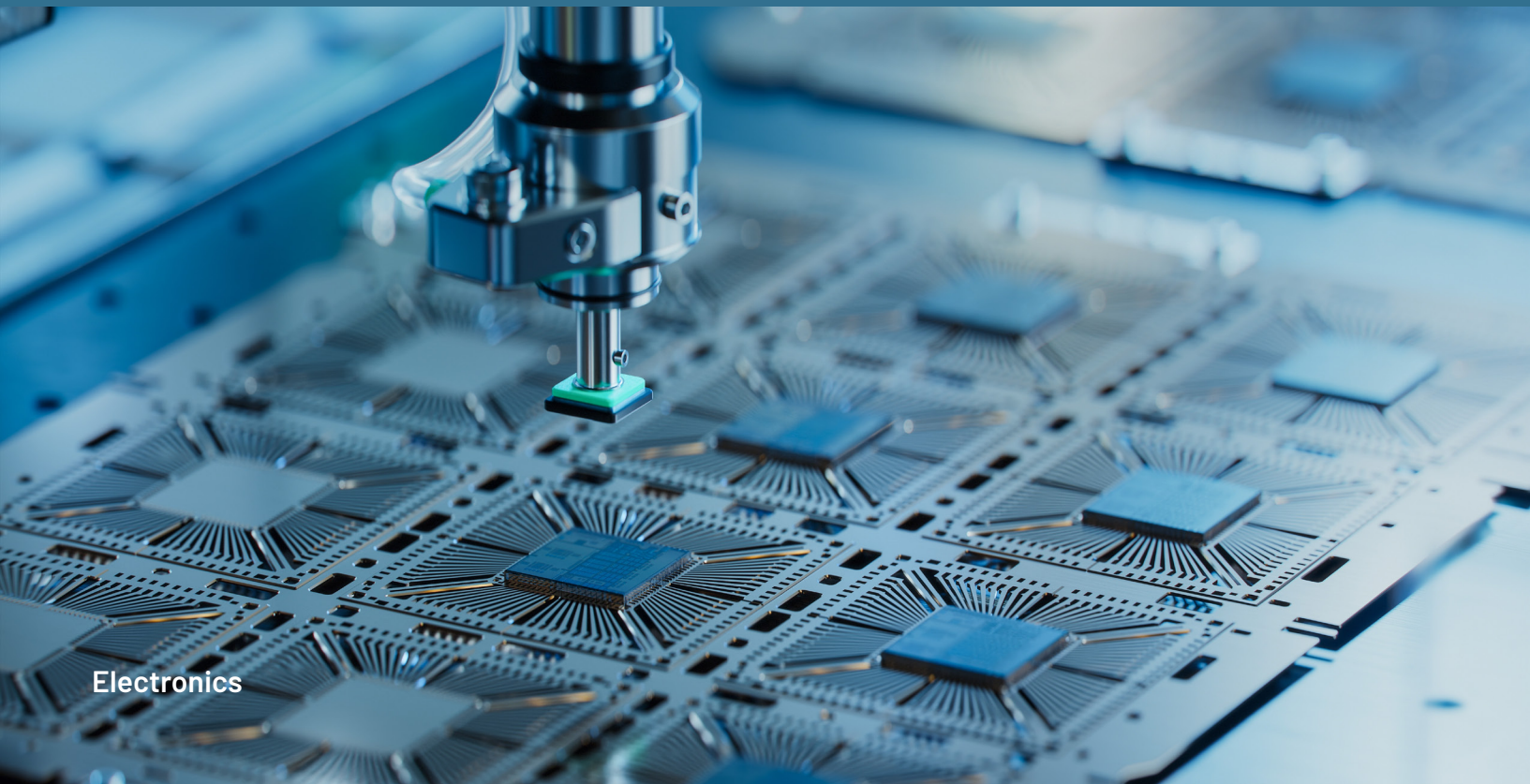




Semiconductor Specialty Gases

Solutions for the Semiconductor and Photovoltaics Industry



Electronics

Nippon Gases is more than just a supplier of industrial gases. As “The Gas Professionals” we are experts in gas manufacturing, gas supply and gas application.

Nippon Gases is one of the leading industrial gases companies in Europe and is part of Nippon Sanso Holdings Corporation - the parent company of the Japanese Taiyo Nippon Sanso, the American Matheson Tri-Gas Group and the European Nippon Gases.

Our Group was originally founded in 1910 in Tokyo and, since then, we have relentlessly developed our solutions and services for our customers. The key to target-oriented use of industrial gases is a customised analysis of your processes.

Application-orientated advice based on many years of international experience and excellent service, are for us the basis for a trusting customer-supplier relationship.

In everything we do, safety is always at the centre of our considerations. It is an inviolable part of our corporate culture, just as we are committed to protecting the environment and to acting sustainably and ethically.

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.

Japan

Head office in
Tokyo

+19K

Employees
globally

+130

Air Separation
Units in operation

32

Operational
countries

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

Established
30th Oct.

+150K

Head office in
Tokyo

27.9%

Employees
globally

€1.9B

Air Separation
Units in operation

13

Operational
countries

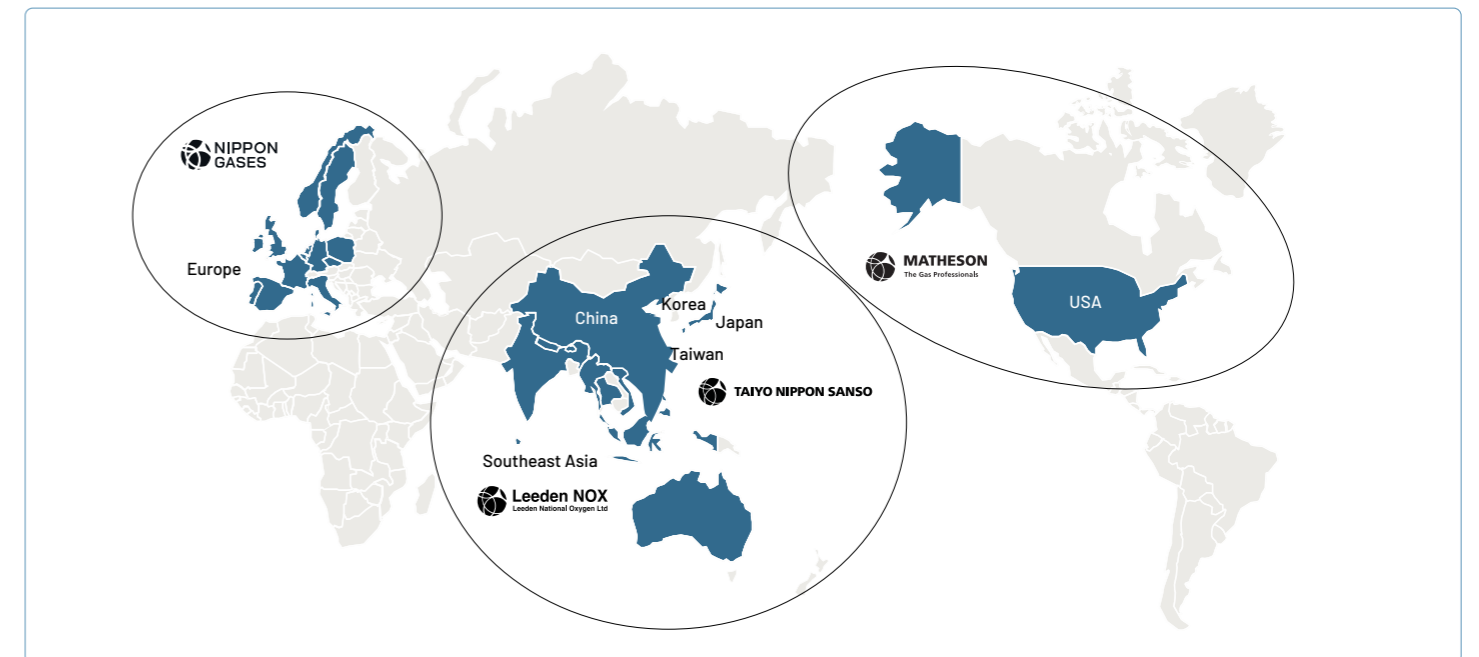
Total Electronics

Nippon Sanso Holdings Corporation's global semiconductor business

NSHD's global presence and network in Semiconductor Specialty Gases (SSG) represents an important share in its presence worldwide, as it represents approximately 18% of total group sales. Therefore, we operate a strong virtual Total Electronics Organization that focuses on Global Sales, Procurement and Strategic Supply Chain Planning.

At the same time, we have local operations in 32 countries and dedicated SSG plants 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 timezone.

Global reach, local supply.





Semiconductor Specialty Gases

State-of-the-art SSG facility in Belgium

The Nippon Sanso Holdings Group (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.

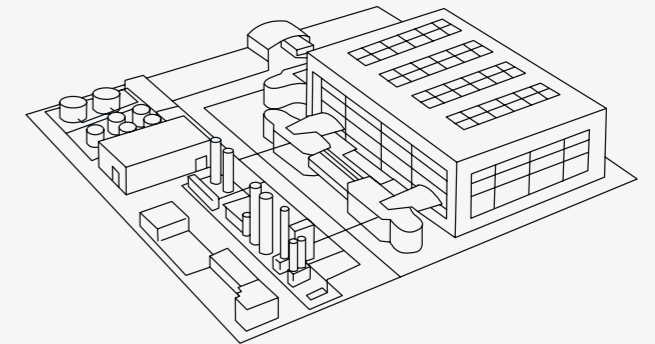
We are your total solutions provider to the Semiconductor industry.

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.



Metal Organic Chemical Vapor Deposition (MOCVD)

Serves for deposition of Compound Semiconductor Thin Films for Electronics and Optoelectronics.



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.

Learn more

nippongases.com

Contact

info@nippongases.com

Social Media

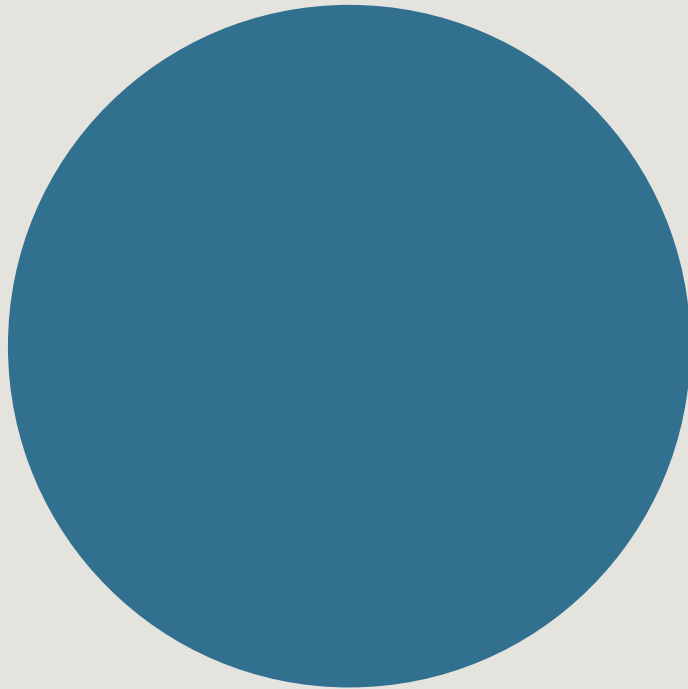
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