

Netherlands economic mission to the USA and Canada

9 - 14 June 2024



Netherlands

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Foreword



Liesje Schreinemacher

It's a great privilege to lead this vital economic mission on semiconductors and integrated photonics alongside Marc Hendrikse, a prominent figure in our high-tech systems and materials (HTSM) top sector. I'm honoured by the fact that our mission to Connecticut, New York and Ontario is taking place in parallel to the visit by His Majesty King Willem-Alexander and Her Majesty Queen Máxima to the states of Georgia and New York. They will join a segment of our programme in Albany, New York.

As we embark on this journey, we acknowledge the pivotal role this sector will play in shaping the future prosperity of the Netherlands and the rest of the world. By strengthening cooperation, we can enhance our collective economic resilience and foster more robust and diversified supply chains.

Our Prime Minister and Minister of Economic Affairs and Climate Policy led a successful mission to the West Coast in December 2023. The legacy of that visit adds momentum and helps us reinforce ties here on the East Coast.

The Netherlands is home to many leading players in global semiconductor and integrated photonics ecosystems. Companies that occupy leading positions in Europe and are recognised worldwide as standard bearers of innovation and progress. I am proud to be accompanied by a delegation of businesses with enormously wide-ranging expertise: chip production equipment, chip design, integrated photonics, advanced packaging and R&D, to name just a few.

Around 30 companies and research institutions – ASML, ASM, NXP, PhotonDelta TNO and Imec, but also many others – join us on this mission. We will visit major firms such as ASML and IBM and important research centres including Global Foundries, NY Creates and the University of Toronto.

This mission is a collaborative effort by the Ministry of Foreign Affairs, the Ministry of Economic Affairs and Climate Policy, the Netherlands Enterprise Agency (RVO), VNO/NCW and High Tech NL. I am pleased that we will also be joined by the Director-General for Foreign Economic Relations at the Ministry of Foreign Affairs, Michiel Sweers, and the Director of Top Sectors and Industry Policy at the Ministry of Economic Affairs and Climate Policy, Serpil Tascioglu.

I am confident that this mission will boost trade and investment and help forge new, innovative partnerships. I look forward to an inspiring and successful few days.

Liesje Schreinemacher

Minister for Foreign Trade and Development Cooperation

Foreword



Marc Hendrikse

I'm honored to lead the business delegation in this Semicon mission to the northeast of the US & Canada. During our trip, we will meet His Majesty King Willem Alexander & Her Majesty Queen Máxima in Albany. Liesje Schreinemacher, Minister for Foreign Trade and Development Cooperation, will accompany us on the first days of the mission in Connecticut and New York State.

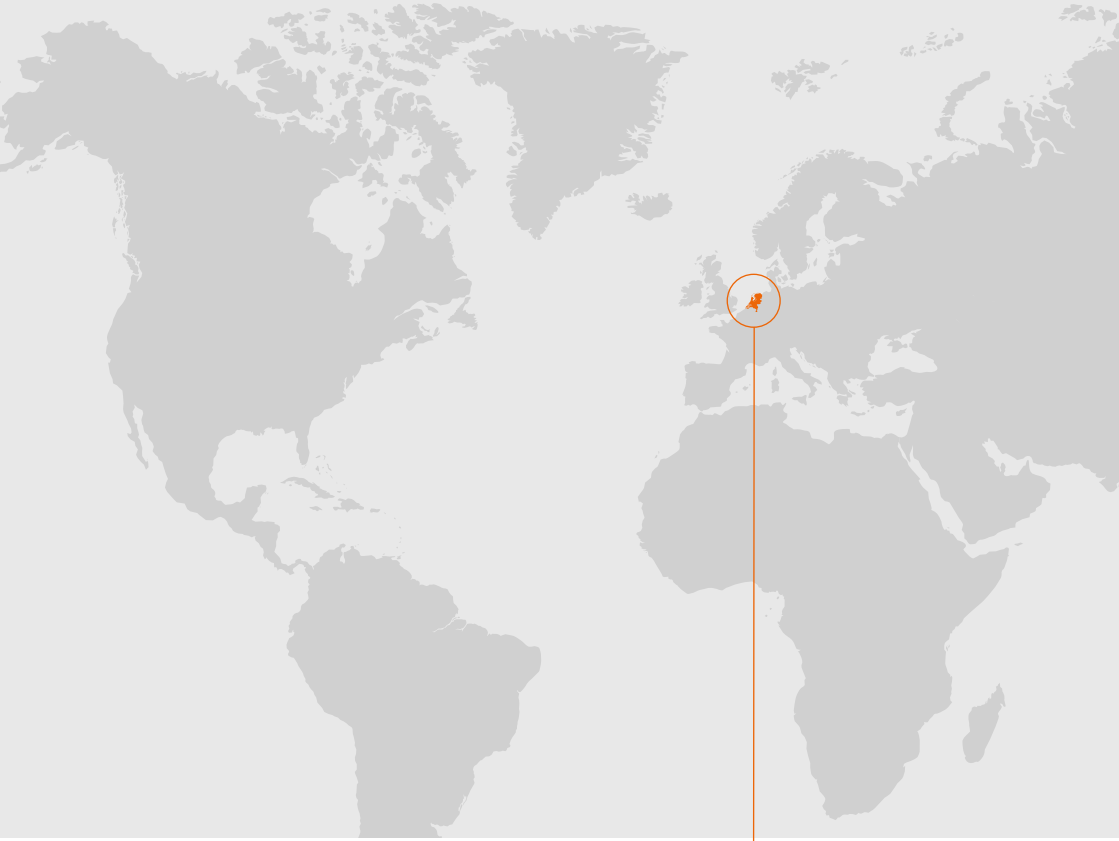
In a range of 125 miles, the Netherlands hosts more than 300 companies that are active in the broad semiconductor industry. From chip design to the production of computer chips, from front-end production equipment to metrology, testing and advanced packaging, from research and development to component production, the Netherlands is among the few countries to have the complete semiconductor value chain at such a short distance.

Still, it is important that we stay connected to developments in all parts of the world. Whether it is latest development in equipment production or the rise of photonics- or quantum computing. The semiconductor value chain highly depends on cooperation and the actual global political developments make it even more important to join forces with likewise oriented partners. This mission brings an excellent opportunity to mutually investigate possible partnerships or even conclude cooperation. I'm convinced that these will lead to win-win situations for all in this strongly growing market.

Marc Hendrikse

Chairman Holland High Tech

Leader of the Business Delegation



Map of the Netherlands

Locations

- | | |
|--|----------------|
| 1. Amsterdam
(and Airport Schiphol) | 9. Haarlem |
| 2. Arnhem | 10. The Hague |
| 3. Assen | 11. Leeuwarden |
| 4. Breda | 12. Lelystad |
| 5. 's Hertogenbosch | 13. Maastricht |
| 6. Eindhoven | 14. Middelburg |
| 7. Enschede | 15. Rotterdam |
| 8. Groningen | 16. Utrecht |
| | 17. Zwolle |



Introducing the Netherlands

How do the Dutch make a difference?

Through their interactive approach to finding innovative solutions to the big challenges facing the world today. The Dutch way of thinking and working has been shaped by centuries of living in the low-lying delta of the Netherlands. Through the ages, the Dutch have joined forces to find ingenious ways to tackle challenges like water, urbanisation, energy, food, health and security. By being inventive, pragmatic and open to new challenges, the Dutch have created a flourishing and resilient land.

The Netherlands is a constantly evolving ecosystem of cities, industry, agriculture and nature, all integrated through smart infrastructure. It is a source of knowledge and experience that the Dutch are keen to share with others. Learning from the past to create a better future. Together, seeking sustainable solutions for the most liveable world.



Worldwide ranking

1st

At WEF's ranking of most competitive economies in Europe. 4th in the world. (WEF, 2019)

Production and auctioning of cut flowers and flower bulbs

World's largest flower exporter

2nd

Largest exporter of agricultural products in the world (WTO, 2019)

5th

Greatest place to live (World Happiness Report, 2022)

6th

Best at Global Innovation Index (GII, 2021)

7th

Largest exporter of goods in the world (CIA World Factbook, 2020)

Largest foreign investor in the world (1,256 billion US dollars)

Largest recipient of foreign investment in the world (801 billion US dollars)

8th

Largest importer of goods in the world (507 billion US dollars)

Facts & Figures

Official name:
Kingdom of the
Netherlands

Capital:
Amsterdam

Seat of government:
The Hague

Form of government:
Parliamentary
democracy (cabinet
of Prime Minister
and Ministers) within
a constitutional
monarchy

Head of State:
His Majesty King
Willem-Alexander,
King of the
Netherlands, Prince
of Orange-Nassau

Location:
Western Europe,
bordering Germany,
Belgium and the
North Sea

Administrative structure:
The kingdom consists of four entities.
The Netherlands and three territories in the
Caribbean: Aruba and Curaçao and St. Maarten

Special municipalities:
The overseas islands of Bonaire, Saba and
St. Eustatius, all three of which are situated in the
Caribbean

Surface area:
41,545 km²

Number of inhabitants (2022):
17,564,623

Monetary Unit:
Euro

Languages:
Dutch, Frisian and on the
overseas islands also
English and Papiaments

GDP per capita
(World Bank, 2021):
58,061 US dollars

Number of provinces:
12

Number of inhabitants
per km² (2022):
423

Unemployment rate
(CBS, 2022):
3.3%

English speaking Dutch
people:
90%



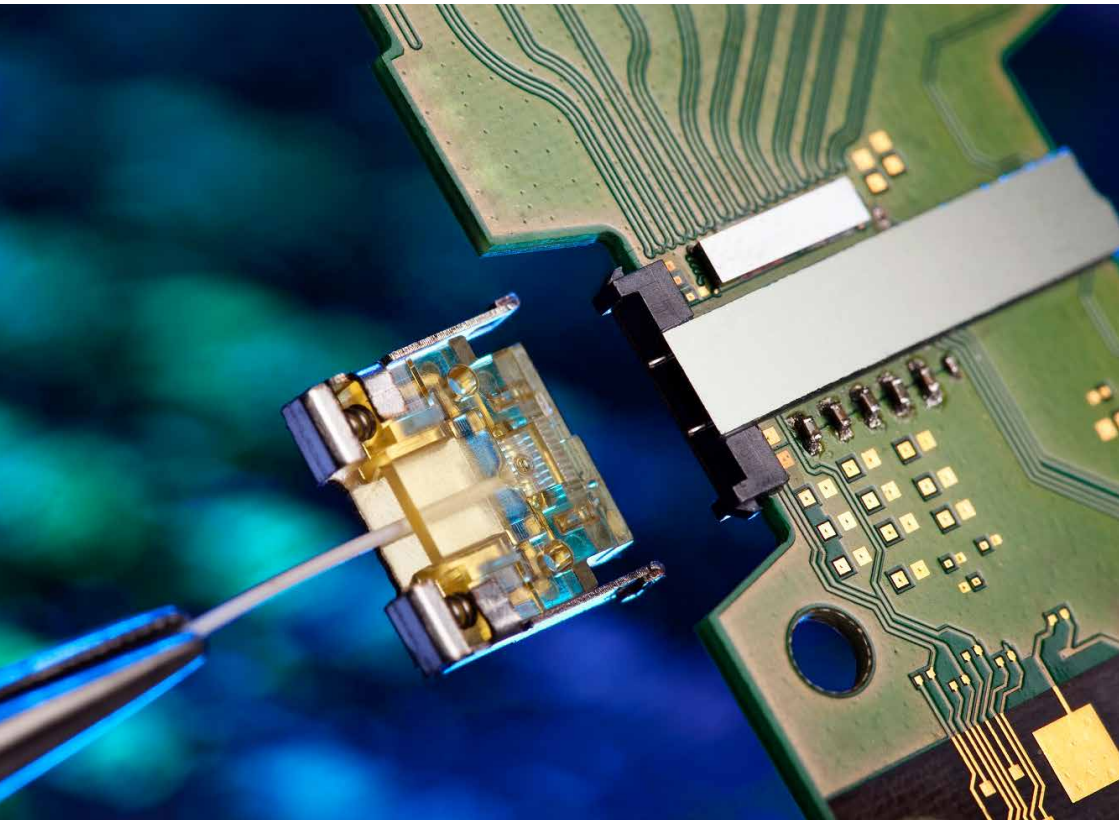
Canada, the USA and the Netherlands

Enabling a smart future through high-tech innovation

The diplomatic relations the USA, Canada and the Netherlands share are among the oldest continuous bilateral diplomatic relationships. This open relationship has resulted in mutually beneficial trade relations and the exchange of knowledge that has driven innovation. As Dutch Nobel laureate Ben Feringa said “our common goal is... bringing forward human knowledge”. In the last 50 years, semiconductors have revolutionised all of our lives. This key enabling technology is an essential component driving innovations. This mission aims to further connect the Dutch high-tech ecosystem to that of the North-East of the United States and the Toronto metropolitan region in Canada.

The high-tech gateway to Europe

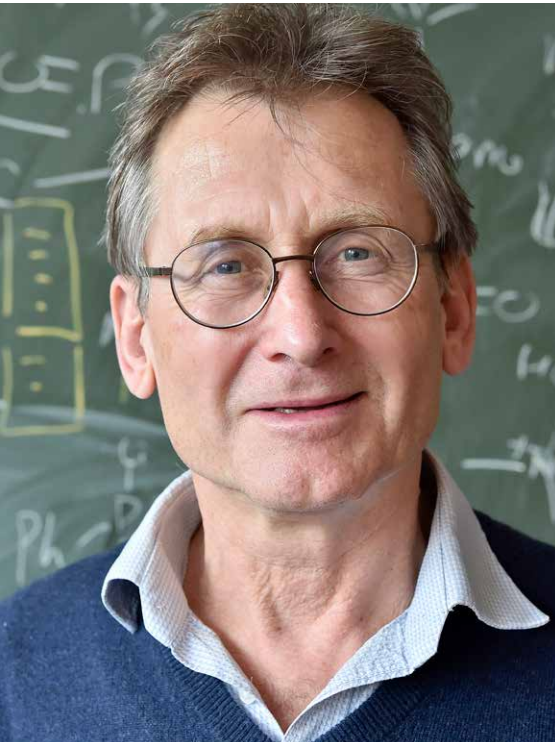
Semiconductors have transformed our lives and will continue to do so. This technology plays a crucial role in creating chips for computers, smartphones, cars, drones, and more. Without it, much of today's technology wouldn't exist as we know it. The Netherlands is one of only three countries to have all 6 steps of the value chain - from design and fabrication to packaging, testing and assembly of the end product - all within a 200-km radius. The close proximity of members of the ecosystem keeps the lines of communication short and accelerates innovation. Similarly, in the Netherlands, governments, businesses, research and local stakeholders work together in what is known as the quadruple helix. This model reinforces the effectiveness of the ecosystem, by nurturing interaction at all levels.



The Netherlands is one of the countries leading Europe in integrated photonics. With global data traffic doubling every two years, this innovation has huge potential for making technology more sustainable. Acknowledging the world's demand for chip production, the Netherlands is committed to co-creating sustainable solutions that promote innovation and partnerships in the global semiconductor value chain.

Innovating together

Together, we are shaping the future of advancements in an industry that has captured the world's attention. The United States and Canada are valuable partners in our mission, and we consistently collaborate to advance the latest semiconductor generation. As hubs of semiconductor innovation, these two countries offer numerous opportunities for Dutch

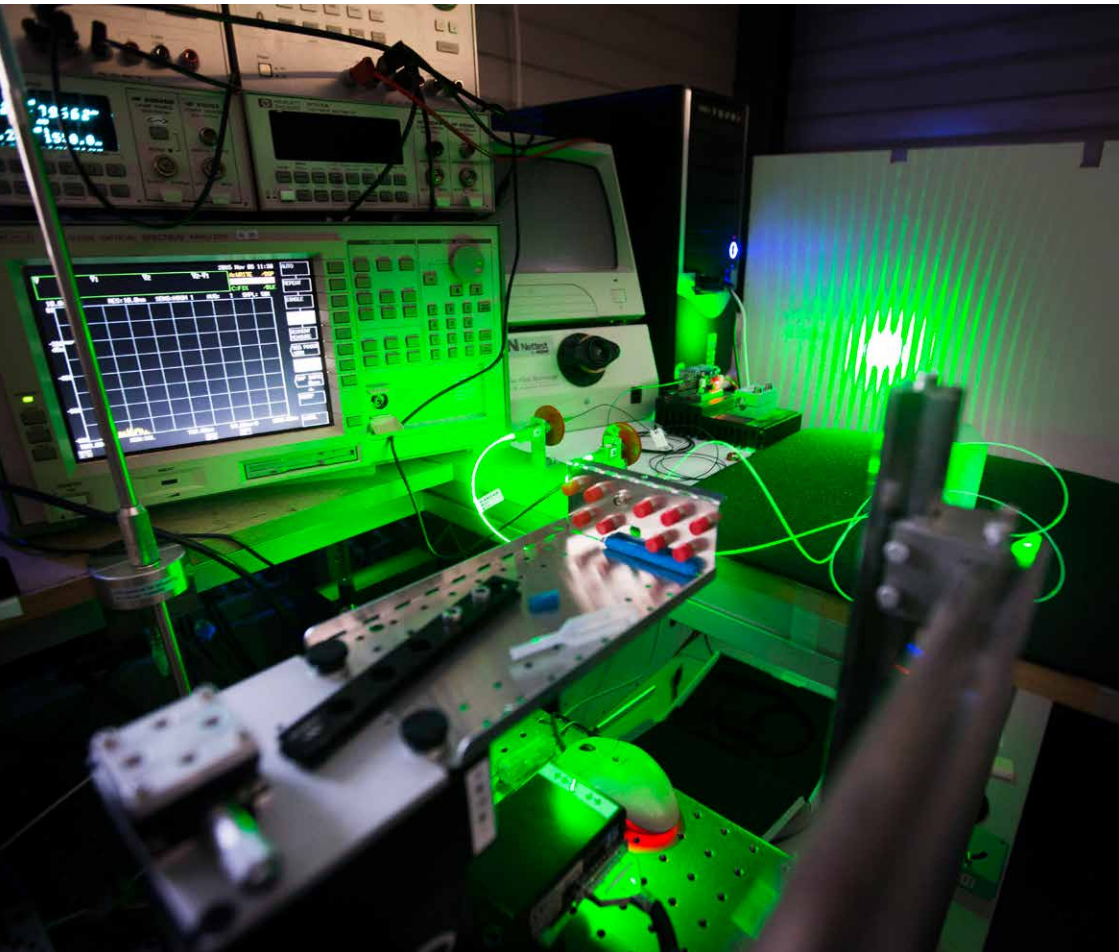


Dutch Nobel prize laureate
Ben Feringa (2017):

“Our goal is...
bringing
forward human
knowledge.”

Picture credit:
University of Groningen

companies to exchange knowledge and establish meaningful partnerships. We share best practices and look for opportunities in areas that matter: supply chain resilience, diversification and sustainability. As the semiconductor industry is truly global, we foster knowledge building programs and collaboration with other nations. That is why the Netherlands is on this economic mission, with the goal to seize opportunities and accelerate innovation together.



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ASML

ASML is an innovation leader in the semiconductor industry. We provide chipmakers with everything they need – hardware, software and services – to mass produce patterns on silicon through lithography.

We believe that technology can be a force for good in the world.

We enable groundbreaking technology to solve some of society’s toughest challenges. Together with our partners, we provide leading patterning solutions that drive the advancement of microchips.

ASML is one of the world’s leading manufacturers of chip-making equipment. It’s a common misconception that we make chips, also called microchips or integrated circuits (ICs), but we actually design and manufacture the lithography machines that are an essential component in chip manufacturing. Our customers are companies such as Intel, who use our machines in ‘fabs’ – microchip manufacturing plants – to create microchips that are eventually used in many electronic devices, including smartphones, laptops and much more.



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Astrape Networks

Founded in 2022, Astrape Networks is dedicated to advancing data network efficiency with cutting-edge optical technologies. The company specializes in optical networks that rival the flexibility and low-latency of electro-optical systems, tailored especially for handling the rigorous demands of AI applications. Their flagship innovation, OPTINET, is a pioneering optical switching solution crafted to cater to the dynamic requirements of the data center sector. This technology dramatically cuts reliance on transceivers by 60%, facilitates various traffic types in real-time, and boosts network reliability and maintenance by reducing faults.

The OPTINET framework includes a Network Interface Card (NIC) and a Network Switch that collaborate to enable efficient optical routing between servers, thus eliminating the need for high-speed transceivers. It achieves this through self-configuring optical switches and smart traffic management that automatically adjusts to fluctuating data center traffic demands. Astrape offers OPTINET configurations designed to meet diverse network architectural needs, including cluster, superpod, and rack networks, maintaining consistent hardware across different setups to meet varying requirements in capacity, bandwidth, and latency. This ensures robust support for various network types using uniform components.

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Axelera AI



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Axelera AI is the leading provider of purpose-built AI hardware acceleration technology for computer vision and generative AI inference. Its first-generation product is the game-changing Metis™ AI platform – a holistic hardware and software solution for Edge AI inference – delivers world’s highest performance and usability at a fraction of power consumption and cost of alternative solutions.

Headquartered in the AI Innovation Center of the High Tech Campus in Eindhoven, The Netherlands, Axelera AI has R&D offices in Belgium, Switzerland, Italy and the UK, with more than 180 employees in 18 countries. Its team of experts in AI software and hardware hail from top AI firms and Fortune 500 companies.



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BKB Precision

The plastics machining company for the High-Tech industry



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bkbprecision.com

The core activity of BKB Precision is accurate machining of high-performance plastics up to a precision of 3µm. BKB Precision is a specialist in the production of high performance plastic parts for more than 40 years. We are active in various high-tech market segments such as semicon, medical, analytical and food. We process technical plastics, high performance plastics and foam materials.

The years have learned that BKB Precision has been a reliable partner for machining high performance plastics for the High Complexity, Low Volume, High Mix high tech markets. BKB Precision is not only your manufacturing partner but also your supplier when it comes to realizing your assembly and supply chain needs.

For complex products, we use 5-axis milling. When working with large plates, we rely on our portal milling machines. Turning parts are crafted using CNC turning machines and turning/milling combinations. Moreover, we provide services like assembly, cleaning, careful packaging, and product testing.

Clear, strong and effective communication between engineers, clients', buyers and our associates is of the upmost importance to us. From prototypes and single pieces to medium-sized series, we deliver the precision you need worldwide.



BKB Precision

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BKB Precision, along with ANKRO Kunststof Verspaningstechnieken and BLW Kunststoffen, is part of BKB Precision Holding BV, the specialists in plastics machining.



Brabant Development Agency

Catalyzing Change



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Entrepreneurship is the driver of innovation – from sustainable food sources to a healthy future, climate-neutral energy, and developing promising key technologies. The Brabant Development Agency (BOM) ensures that startups playing a role in these fields receive the right support and funding to get off to a flying start and grow into scaleups, and that companies that aspire to go global can actually do so. Every year BOM works with dozens of companies to create this impact. BOM is an executive body of the Province of Brabant and the Ministry of Economic Affairs and Climate Policy.

We work together with businesses that embrace new developments and who understand that they can achieve more by partnering with other pioneers in Brabant's corporate world, our knowledge institutes, and an incentivizing government. By encouraging activities that anticipate the fourth industrial revolution, we are creating the economy of tomorrow. We create an appealing climate for foreign businesses and for retaining employment levels. We aid Brabant companies that want to spread their wings abroad and we stimulate the development of sustainable energy products.



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Lead Customized Flow
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Bronkhorst High-Tech

Bronkhorst High-Tech is a leading manufacturer in the field of flow measurement and control technology. With more than 40 years' experience, we offer an extensive product range of thermal, Coriolis and ultrasonic flow meters and controllers for low flow rates of gases and liquids.

Our instruments - partly produced in a cleanroom - are used for a variety of applications in laboratories, test-benches, machinery and a wide variety of industries. Examples where Bronkhorst instruments are successfully used: layer deposition and MOCVD processes, spray coating, nitrogen purge of wafer load port and FOUF systems.

By sharing our knowledge and closely cooperating with OEM customers, we develop customer specific low flow solutions, e.g. of multi-functional, pretested modules or skids for gas, liquid of vapor flow control.

With our headquarters based in Ruurlo (The Netherlands), Bronkhorst is represented by 12 wholly owned subsidiaries in Europe, in the USA and in Asia and additionally by a network of distributors in more than 30 countries worldwide. To serve customers in USA and Canada, our professional sales and service team is located in Bethlehem, Pennsylvania, and we have representations throughout the continent.



Bronkhorst High-Tech

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Demcon



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We are working on solutions to social challenges in the areas of semiconductor, photonics, aerospace, life sciences & health and production technology. We do this by developing, manufacturing and supplying high-quality technology and innovative products.

We mainly do contract R&D work for other companies and we have all the technical disciplines necessary for the development of complex systems available in-house. The way of working is based on applying system engineering throughout the development process.

We develop systems and solutions that comply with the highest demands of our customers and end-users. We do this by using a structured project approach that provides room for our analytical capacities, creativity and pragmatism. With the help of our quality system we supply high-quality and safe products.



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FabMax



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Development and implementation of advanced lithography especially for low volume production and R&D operations. Applications are wide e.g. traditional Silicon, MEMS, III-V but also advanced security and photonics.

Technologies include traditional optical, single e-beam, multi e-beam and laser direct write.

FabMax created with BCS and Noviatech Campus the FS for the realization of CITC – Nijmegen.

FabMax is the founding company of SandGrain an European Aeneas/Penta Innovation Award 2022 winning technology with the SunRISE consortium. SandGrain provides a new platform for trust chip based authentication in IOT - connected systems and manufactured in sovereign semiconductor fabs”.

Extensive work experience and network in the USA, Europe and Asia.

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HQ Pack

At HQ Pack, we create to protect. We cover the complete lifecycle of high-tech packaging from the design to reuse, including collecting, cleaning, recertifying, storing and distributing packaging anywhere in the world.

We ensure that your technology can be transported safely from one location to another while, taking care of the entire process. We ensure everything we do and touch is focused on providing the most reliable shipment solution possible, in the most responsible way promoting a circular approach.

A local approach with a global footprint

HQ Pack has locations in three key regions, with state-of-the-art cleanrooms adhering to the strictest cleanliness requirements. Our head office is in Eindhoven, the Netherlands. Our other locations are in Johor, Malaysia, Singapore, Taiwan and three facilities in the United States of America: Brookfield (CT), Newark (CA) and San Diego (CA). Each location applies the same standards, works with the same materials and machines, and uses the same techniques. So wherever in the world you place your order, you are assured of the same high quality, with a fast time-to-market due to our inhouse production capabilities.



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IBM

What does IBM do?

We bring together technology and services to help our clients solve their business problems. Our software enables clients to leverage hybrid cloud and AI, with strong demand for open source innovation. Our Red Hat portfolio unlocks greater velocity for clients to increase productivity, reduce costs and improve business outcomes. We deliver the storage, servers and mainframe systems that build hybrid cloud foundations. Our ecosystem brings together the world's leading platform and infrastructure partners who add critical value to solutions. And, IBM Consulting is a trusted partner to clients that delivers meaningful impact faster.



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Technology and expertise

AI and hybrid cloud continue to drive value creation, allowing businesses to scale, increase productivity, and seize new market opportunities. IBM has built two powerful platforms to capitalize on the strong demand for both technologies: watsonx for AI, and Red Hat OpenShift for hybrid cloud.

Watsonx is our comprehensive AI and data platform, built to deliver AI models and give our clients the ability to manage the entire lifecycle of AI for business, including the training, tuning, deployment, and ongoing governance of those models.

Red Hat hybrid cloud enables companies to run workloads seamlessly across multiple clouds, both public and private, to simplify operations, unify data and applications, and accelerate new innovations.

Finally, IBM Research advances the fundamental science of several critical technologies, including AI, quantum computing, and semiconductors.



IBM

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Imec is the world's leading independent nanoelectronics R&D hub. The combination of our talent, infrastructure, and partner network enables breakthroughs towards microchips that are smaller, faster, more affordable, and more sustainable. We combine that nanotech expertise with data and AI to create and support applications for a smarter, better future.



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Innovation Industries

Innovation Industries is a Dutch deep tech venture capital firm with ca €900 million capital under management. We invest in deep tech throughout Europe with the potential to solve global challenges.

Our portfolio companies are in the areas of

- industrial technology (semiconductor, integrated photonics, high-precision engineering equipment, batteries, etc.)
- med-tech
- agri & food technology

All our portfolio companies operate on a global market.

Our team consists of 22 professionals that understand the dynamics of deep-tech. We operate from our offices in Amsterdam and Eindhoven, and take a hands-on approach to investing.



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InPhocal



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Established in 2019 as a spin-off from CERN, inPhocal is revolutionizing laser beam technology. Our cutting-edge optical innovation has the power to enhance production line efficiency in terms of output, speed, sustainability, and cost.

Our groundbreaking technology can be utilized for diverse purposes such as marking, cutting, welding, and even for the semiconductor industry. By surpassing prevailing inkjet and laser marking methods, we are ushering in the next-gen laser-based wafer singulation technology, catering to both traditional semiconductor and the next step in heterogeneous integration phase for semicon.



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Integrated Mechanization Solutions

We are IMS. That is short for Integrated Mechanization Solutions. We develop and produce high-quality, automated production solutions for the most precise products. Whether you are looking for a lab setup or a complete turn-key production line. We provide the best automation solutions in high demanding industries. Industries such as medical, integrated photonics, automotive and electronics. Our work starts with complex challenges in micron range, or even in nanometer range.

We are taking Integrated Photonics steps ahead by automating inspection of Photonic Integrated Circuit (PIC) production. With this, we make it possible to scale up the production by a lot, and make it more cost efficient in the long run. Besides that, our systems are here to ensure a better yield in front-end production. Our systems use neural network supported algorithms to improve and expand capabilities. This keeps them ahead in the game.

With our pragmatic approach to complex manufacturing challenges, we are able to solve anything that keeps you behind. We add a lot of value by automating complex processes with our smart solutions. Ready for any challenge that crosses our path. Ready to take your production steps ahead?



**Integrated
Mechanization
Solutions**

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LioniX International

LioniX International is a leading global provider of customized microsystem solutions. We have driven technological and commercial development in our specialist fields—photonic integrated circuits and MEMS—since 2001.

Our core photonic integrated technology (TriPleX®) is based on silicon nitride.

As a vertically integrated company, we work across all stages of the production process from design to delivery of a finished module. And with world-class fabrication facilities, we scale production volumes as your requirements grow.

Our strength lies in the service we provide as well as the creativity of our problem solving. By building a project team with you at the center and by asking the right questions, we make sure to deliver solutions that not only solve a problem, but drive your business.



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MECAL High-tech / Systems is an independent global engineer with an OEM product base that specializes in being in control of critical conditions for research, development and production in high-tech materials and high-tech systems. Our technology is developed in and for the semiconductor industry, and adapted in other high-tech markets. We work at nanometer operations scale, and our business and operations is on a global scale.

We focus on applied research and engineering and have been developing a vast IP base, and a very strong OEM product base.

We are involved in multiple co-developer relations with high-end developers and demanding top tier customers.

We have been working in the US with clients' partners for more than 15 years. We focus to advance technology for and with our Japanese partners and co-makers relations to create and build specializations and uses of our know how and IP-base in multiple technology agendas, like EUV Lithography, Photonics, Sensors and Quantum intelligence.



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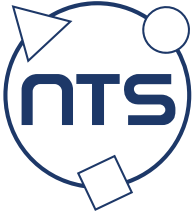
Headquartered in the Netherlands, Nexperia is a global semiconductor company with a rich European history and over 14,000 employees across Europe, Asia, and the United States. Nexperia develops and produces highly energy efficient semiconductors which enable the basic functionality of a broad set of commercial electronic designs – from automotive and industrial to mobile and consumer applications.

The company serves a global customer base, shipping more than 100 billion products annually. These products are recognized as benchmarks in efficiency – in process, size, power and performance. Nexperia's commitment to innovation, efficiency and stringent industry requirements are evident in its extensive IP portfolio, its expanding product range and its certification to IATF 16949, ISO 9001, ISO 14001 and ISO 45001 standards.



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NTS Group

With a 75-year industry track record, NTS is your first-tier contract manufacturing partner, helping our customers achieve faster time-to-market for reliable, high-quality semiconductor modules and systems. We provide comprehensive support through complex co-development, engineering, industrialization, and the precision manufacturing of semiconductor solutions.

NTS is dedicated to assisting high-tech OEM customers engaged in cutting-edge product and system solutions for semiconductor production processes, such as e-beam photo mask writing, lithography, etching, deposition, metrology, inspection, and wafer dicing.

Our customers thrive in fast-evolving environments, demanding swift, innovative solutions for their unique needs. We invest in semicon critical competences like advanced motion systems, optics & opto-mechanics, accurate positioning, dynamics and vibration isolation, cleanliness, vacuum and temperature stability.

This unique blend of capabilities, combined with our global presence, positions us as the partner of choice for high-tech OEMs throughout Europe, Southeast Asia, and the United States of America.



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NXP Semiconductors is a NASDAQ-listed (NXPI), S&P 500, Dutch semiconductor company with its headquarters in Eindhoven, The Netherlands.

NXP Semiconductors brings together bright minds to create breakthrough technologies that make the connected world better, safer and more secure.

As a world leader in secure connectivity solutions for embedded applications, NXP is pushing boundaries in the automotive, industrial & IoT, mobile, and communication infrastructure markets while delivering solutions that advance a more sustainable future.

Built on more than 70 years of combined experience and expertise, the company has approximately 34,500 employees in more than 30 countries and posted revenue of \$13.3 billion in 2023.



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PHIX Photonics Assembly

PHIX offers assembly services and contract manufacturing for photonic integrated circuits (PICs) and micro-electromechanical systems (MEMS). We build optoelectronic modules based on all major PIC platforms, such as indium phosphide, silicon photonics, silicon nitride, and planar lightwave circuit. We specialize in chip-to-chip hybrid integration, fiber (array) attachment, and interfacing of DC and RF electrical signals. By offering our knowledge already at the chip design stage, we ensure ease of scale-up towards volume manufacturing. We have a state-of-the-art production facility located in Enschede, The Netherlands, supporting the global industrial development of PIC and MEMS enabled modules.

Going from a PIC to a functional module is a multi-disciplinary design process. It involves product design (of the chip and the module), assembly process development, and equipment management. Our engineering and management teams contain people from each of these backgrounds. This gives us the overview and maturity to optimize the product's performance and cost while keeping the countless parameters within these disciplines in mind.

Our knowledge and experience in the fields of optics, electronics, and mechanical engineering allows us to produce first-time-right results, achieve a short time-to-market and facilitate a smooth scale-up to volume manufacturing.



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PhotonDelta

Accelerating next-generation chip technology



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PhotonDelta is a growth accelerator for the photonic chip industry, representing an end-to-end value chain with over 70 organizations that design, develop, and manufacture innovative solutions that contribute to a better world.

Photonic Integrated Circuits (PICs) are chips that use photons instead of electrons to sense, process and transmit data at unparalleled speed and sensitivity. The use of PICs allows for the creation of devices that are smaller, faster, and more energy-efficient compared to traditional solutions.

Backed by a €1,1 billion National Growth Fund of the Dutch government, PhotonDelta is accelerating the industry through programs on industrialization, ecosystem development and application technology.

Connecting pioneers in the field with viable markets and investors, PhotonDelta helps to take the industry forward.



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Quantum Nanotechnology Twente (QUANT)



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The Quantum Nanotechnology Twente (QUANT) centre is a co-creation hub where education, research and industry find each other to address challenges in the quantum domain together. The technological backbone of the centre is shaped in pursuit of the fundamental understanding of quantum photonics, quantum electronics and quantum materials. Across these 3 disciplines the training of talent, be it talent from industry or academia, is the connecting element.



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SCIL Nanoimprint Solutions

Making complex structures easy



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We offer high volume production solutions for patterning nano-structures on large wafers by using a unique and proprietary imprint lithography technology (SCIL).

SCIL enables producers of lenses, lasers, waveguides, 3D sensors and many other products to create high quality nanostructures on wafer areas up to 300 mm. SCIL is proven for high volume manufacturing of patterns with feature sizes down to less than 10 nm and overlay alignment below 0.5 μm .

SCIL Nanoimprint solutions helps customers with optimized equipment, consumable materials and processes for high volume production. Our solutions enable manufacturers of optics and semiconductor products to increase performance, lower end-product costs and increase functionality.



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Sioux Technologies

Sioux Technologies is a high-tech solutions provider for equipment companies in the semiconductor industry. Sioux develops, innovates, and assembles complex high-tech systems with advanced software, mathware, electronics and mechatronics. With more than 1100 employees, Sioux supports or acts as the R&D departments of leading high-tech companies. Sioux is happy to take responsibility; from thinking along in the concept phase up to and including the delivery of series production.

Sioux wants to add value together with its customers and build innovative solutions that can contribute to a society that is smarter, safer, healthier, more sustainable, and more fun.



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Technolution

As a technology integrator, we work closely with our customers to create practical, applicable technological innovations that will produce real value for their business case. Technolution strives to create the best solutions at all stages of product development, from concept to valuable product or service. We excel when it comes to electronics, programmable logic (FPGA), embedded software and application software.

For the high-tech industry and leading science institutions we are the expert technology partner. We are the Dutch knowledge leader in the field of FPGAs and programmable logic. Thanks to years of experience in designing and developing advanced instrumentation, we have accumulated an extensive in-house knowledge base.

Our customers are globally operating businesses and scientific organizations active in (among others) semiconductor equipment, optics & imaging, medical technology and life sciences.

Our preferred way of working is to cooperate with you through co-creation and the exchange of technological knowledge, domain knowledge and practical experience. This is the best setting to realize your ambitions. And we are happy to let you share in our long experience with project management, systems engineering and life cycle management. That means you can focus on your core business!



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As an independent research organization, we're the driving force behind innovation. Our work makes an important contribution to resolving societal issues. Together with companies, from start-ups to multinationals, we work on innovations that define the future. We boost the competitiveness of companies and well-being in society – and we do it sustainably. TNO sets ambitious goals for the next decade in the areas of safety and security, health, digitalization, and sustainability.

Nano instrumentation for ultra-clean lithography

When tech leaders such as ASML and Carl Zeiss encounter critical contamination issues, they turn to us for support. We have a team of 50 highly qualified Nano Instrumentation technologists and scientists who develop and assemble experimental set-ups on which they carry out experimental test programs. We develop and own these set-ups, develop them together with our clients, or transfer full ownership to them. Our aim is to prevent, diagnose, and remediate critical issues. We apply the principles of contamination control to design, build, and validate ultra-clean equipment for lithography. We continue to grow our extensive knowledge of molecular and particle contamination, vacuum and flow technology, and high-energy radiation, and apply this knowledge for our clients.

Furthermore TNO is fostering other areas of science, as Quantum Technology and Metrology in Semicon and in Medical applications.



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TNO-PITC

With approximately 5,000 employees, TNO is the largest fully independent research, development, and consultancy organization in The Netherlands. TNO innovates, investigates, and orchestrates, collaborating closely with governments, universities and the private sector. By building national and international consortia and ecosystems, we drive technological and methodological breakthroughs that help to realise a secure, sustainable, healthy, and digital society, and strengthen the earning power of the Dutch economy.

As part of the Photonic Integration Technology Center (PITC), TNO collaborates closely with the Dutch government, PhotonDelta and Dutch universities to carry out well-defined research programs that accelerate industrial adoption of integrated photonics and contribute to sustainable well-being and prosperity.



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University of Groningen



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The University of Groningen (UG) is an internationally oriented university with a rich academic tradition. Since the establishment in 1614, the UG has brought forward striving academics, like the first female student, the first Dutch astronaut and two Nobel prize winners. While rooted in the North of the Netherlands, the UG hosts students and staff from 120 different nationalities, with close to 30% of the total 37,000 students being international.

Within the UG, the Groningen Cognitive Systems and Materials Center (CogniGron) is a multidisciplinary research center created in 2018 to address the challenge of bringing novel functional materials into the design of the new generation of cognitive computers: computers that have the ability to process information in a super-efficient way, inspired by how the human brain works, with the goal of drastically reducing the energy consumption and carbon footprint of AI. This means rethinking the computer as we know it. CogniGron hosts researchers from materials science, physics, chemistry, mathematics, computer science and AI with a common mission: to find a new blueprint for future-proof computing.



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The MESA+ Institute of the University of Twente encompasses about 500 fte researchers working in the areas of Nanotechnology, Electronics, Photonics and Fluidics.

MESA+ houses the MESA+ NanoLab, a 1250m² cleanroom facility in which academic research and industrial innovations go hand in hand.

MESA+ is involved in several large scale national programs in areas such as Photonics, Quantum Technologies, Battery and Solar Cell Technologies, High Tech Systems & Materials, Energy-Efficient (Neuromorphic) Computing, etc.

The University of Twente is a modern university of technology in the city of Enschede, in the east of The Netherlands. The research and education profile entails the STEM disciplines as well as MedTech and Social Sciences. It has an extensive track record in the creation of spin off companies.



University of Twente

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Holland High Tech
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Holland High Tech, the top sector High Tech Systems & Materials (HTSM), develops and produces high-quality end products, semi-finished products, components and materials for customers around the world. Our ecosystem consists of 89,000 companies employing more than 500,000 professionals. Multinationals, SMEs, start-ups and scale-ups that together represent 165 billion euros in production value and over 70 billion euros in export value.

Dutch high-tech products are intelligent, precise and efficient. They are used worldwide in, for example, medical devices, semiconductor production, cars, logistics systems, aircraft, satellites and energy systems. As one of the ten top sectors, we are the great coordinator for high-tech innovation in public-private partnerships in the Netherlands and abroad.

We realize a positive impact for urgent transitions in society: we turn innovation power into a serious business model. We initiate and stimulate technological solutions and thus contribute to the mission-driven innovation policy of the Netherlands. Together with our ecosystem, we arrive at solutions to societal challenges. How can we contribute to the urgent transitions we are now facing? How do we make the Netherlands circular, sustainable, safe, habitable and keep ourselves healthy? We share that and more in our VISION 2030.



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The Confederation of Dutch Industry and Employers, known as VNO-NCW, is the largest employers' organisation in the Netherlands. It has 150 branch organisations and more than 400 individual enterprises as affiliate members, representing a total of over 120,000 companies.

It covers practically all sectors of the Dutch economy: industry, commercial services, construction, the retail trade and the health sector; from the smallest firms to the largest corporates. It represents 80% of companies with more than ten employees and 95% of companies with over 100 employees and all companies in the Netherlands employing more than 500 staff.

In cooperation with governments and other social parties, VNO-NCW strives for an inclusive and sustainable Netherlands, where everyone benefits from increasing prosperity. This requires sustainable economic growth and a high quality business and investment environment.

VNO-NCW represents the interests of its members by active ongoing contacts with the government, politicians, public authorities, trade unions and non-governmental bodies. VNO-NCW sits on numerous government advisory and consultative committees in The Netherlands, in Brussels and in international bodies as the International Labour Organisation and, through the BIAC, in the OECD.

Delegations & contact details

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