

The German Photonics Market

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Optical and photonic technologies continue to be among the fastest growing high-tech industries. Development is being driven by expanding demand from AI, data centers, advanced semiconductor manufacturing, quantum technologies, defense, and security. Strong public support for research and development, together with a vibrant start-up landscape and world-class industrial and research capabilities, is further strengthening Germany's position as a global photonics and optical technologies leader.

Europe's Photonics Leader

Germany is home to one of the world's most advanced and innovative photonics industries. The country has consolidated its position as Europe's leading photonics nation, accounting for around 39 percent of total European production. The sector has evolved to become a key industry for future technologies; driving innovation across fields as diverse as AI and semiconductor manufacturing to quantum technologies, medical technology, aerospace, and defense. Around 1,000 photonics companies currently operate in Germany. These include global technology leaders such as ZEISS, TRUMF, Jenoptik, Schott, Bosch, Laserline, and ams OSRAM. Employing approximately 188,000 people, the industry generated revenue in the region of EUR 50 billion in 2025 and continues to benefit from strong global demand, high export intensity and sustained investment in research and development. New growth opportunities are emerging in areas including integrated photonics, AI-enabled optical systems, quantum sensing and communication, advanced laser manufacturing, and optical technologies for next-generation data centers and communication networks.

High Demand for German Photonics Products

International business remains a key growth driver for Germany's photonics industry, with exports accounting for around 76 percent of total sales. Germany holds strong global positions in production technology, Industrie 4.0, healthcare, and optical components, which together generate around 60 percent of

The German Photonics Industry in Numbers

188,000

people work in the optical and photonic technologies sector in Germany

39%

market share of continental production – making Germany Europe's leading photonics nation

1,000

photonics manufacturers in Germany including major global players

EUR 50 billion

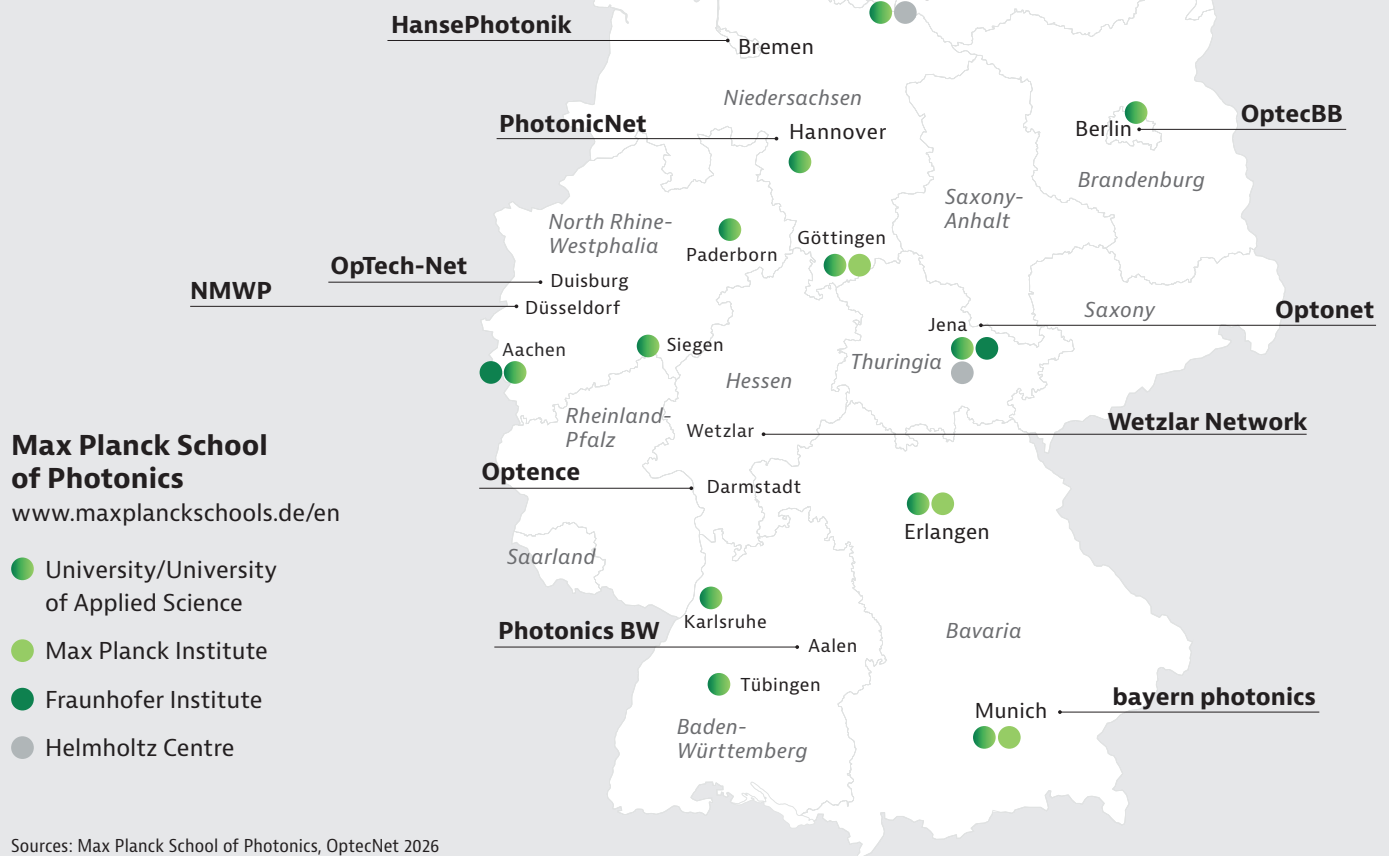
of sales generated in the industry

→ For more information, please visit our website
www.gtai.de/photonics

Source: Spectaris 2026

industry output. The sector's international competitiveness is underpinned by an R&D intensity of more than 10 percent of revenue, while emerging fields such as quantum technologies, AI-enabled optical systems, integrated photonics, and advanced sensing continue to create new growth opportunities.

National Excellence Network for Photonic Research and Optecnet Network



Sources: Max Planck School of Photonics, OptecNet 2026

Connecting World-Class Research

Germany is home to a dense network of regional and national photonics clusters that connect industry, research and government. Supported by strong innovation policies and sustained R&D funding, these networks drive advances in key technologies including AI, quantum technologies, advanced manufacturing, and next-generation communications.

Max Planck School of Photonics

Supported by the Federal Ministry of Research, Technology and Space (BMFTR), the Max Planck School of Photonics unites leading German universities, research institutes, and industry partners in a nationwide excellence network. The program strengthens interdisciplinary collaboration, attracts international talent, and helps connect Germany's most innovative photonics communities within a world-class research and innovation ecosystem.

University Partners

A key strength of Germany's photonics ecosystem is its highly distributed research landscape, where leading universities across the country collaborate closely with industry and research institutes. This nationwide network combines scientific excellence with strong technology transfer capabilities, giving companies access to world-class expertise, talent and innovation hubs in multiple regions instead of one single location.

Research Institute Partners

Germany's photonics strength is built on a unique research landscape that brings together application-oriented institutes, world-leading basic research organizations and large-scale scientific facilities. This close collaboration enables rapid technology transfer, supports breakthrough innovations and gives companies access to expertise spanning the entire innovation chain – from fundamental research through to industrial implementation.

LOCATION ADVANTAGES

Supporting Innovation

Photonics Germany

Photonics Germany enhances the German high-tech industry's standing both nationally and in Europe. The alliance works to boost the competitiveness of companies and research institutions by improving conditions for photonics and quantum technologies and developing targeted funding offers. It serves as a key contact for political matters including funding policy, legislation and workforce development. Additionally, Photonics Germany acts as a central dialogue partner for international associations.

➔ <https://photonics-germany.de/?lang=en>

Industry Association SPECTARIS

Spectaris is the German industry association for the high-tech medium-sized business sector and representative body in the areas of medical technology, consumer optics, analytical, bio- and laboratory technology as well as photonics. Spectaris pools the interests of around 400 member companies from Germany and their 300,00 strong workforce. Through its political activities, public relations and industry marketing, the association gives its members a voice, formulates new responsibilities and opens up new markets. This ensures the international competitiveness of German industry in these sectors and thus safeguards locations and jobs.

➔ www.spectaris.de/en

OptecNet Deutschland

One major advantage of Germany's photonics ecosystem is its strong interregional connectivity. Through OptecNet Deutschland, regional photonics clusters collaborate nationwide, linking companies, research institutions, and innovation hubs across the country. This creates a highly integrated ecosystem that facilitates knowledge transfer, accelerates innovation and provides companies with access to expertise, partners and talent across Germany.

➔ www.optecnet.de/en

Quantum Systems Research Program

The German Federal Ministry of Education and Research (BMBF) has launched its Quantum Systems programme to advance quantum technologies and photonics under a common strategic framework. The initiative aims to integrate photonics with quantum systems, enabling applications such as quantum communication, sensing and computing. With its interdisciplinary focus and strong interfaces to AI and the semiconductor industry, the programme helps strengthen Germany's position in key technologies of the future.

➔ www.quantensysteme.info/information-in-english

High-Tech Agenda Germany

Germany's High-Tech Agenda focuses public investment on key enabling technologies including AI, quantum technologies, microelectronics, biotechnology, and climate-neutral mobility. By accelerating technology transfer and strengthening technological sovereignty, the initiative creates powerful synergies for photonics companies operating at the intersection of these future industries.

➔ www.hightech-agenda-deutschland.de/en/

Start-up and Scale-up Ecosystem

Germany's growing deep-tech start-up ecosystem is helping to accelerate innovation in photonics, quantum technologies and advanced optics. Supported by public funding instruments, technology-transfer initiatives and close collaboration with leading research institutions, start-ups play an increasingly important role in bringing new photonic technologies to market and strengthening Germany's long-term innovation capacity.

➔ www.de-hub.de/en/

Reasons to set up production in Germany

Skilled Workforce

Germany boasts a highly skilled and educated workforce, particularly in engineering and technical fields – areas crucial to the success of the photonics industry.

Diverse Application Markets

Diverse end markets are driving demand and fostering innovation in Germany's photonics industry. Artificial intelligence, data centers, semiconductor manufacturing, quantum technologies, digital health, defense and security, and next-generation communications are creating significant business opportunities.

Supportive Cluster Structure

Notwithstanding the clusters already mentioned, there are also several regional industry clusters that support domestic and international companies and seek to foster strong connections between them.

Find out how your company can profit from Germany's research excellence. Contact our industry experts to make an appointment: **jerome.hull@gtai.de** and **martin.mayer@gtai.de**

Our Support for Your Business in Germany

Germany Trade & Invest (GTAI) is the foreign trade and inward investment agency of the Federal Republic of Germany. We advise and support foreign companies planning to expand into the German market and assist German companies seeking to enter global markets.

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- Market and industry reports
- Market entry analyses
- Business and tax law information
- Funding and financing information

All investment-related services are provided entirely free of charge and all enquiries are treated with the utmost confidentiality.



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