

Proven Thin-Film Wafer Manufacturing for the Next Scale-Up of Integrated Photonics

Advanced Materials | Custom Solutions | Long-Term Partnerships

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DS (Digital Society) group, New Value Business



Activ

■ NGK's mascot "Kuroko-kun"

■ Five Key messages

1. **Global company headquartered in Japan, founded in 1919**
2. **Mass production capacity and experience, especially for Automotive
Long term relationship and joint development with partners**
3. **Global leading supplier of bonded wafer for SAW filters**
4. **Road map; Photonics to realize Digital Society**
5. **Target application ;
Opto-electronic integration, Photonics computing**

■ Summary

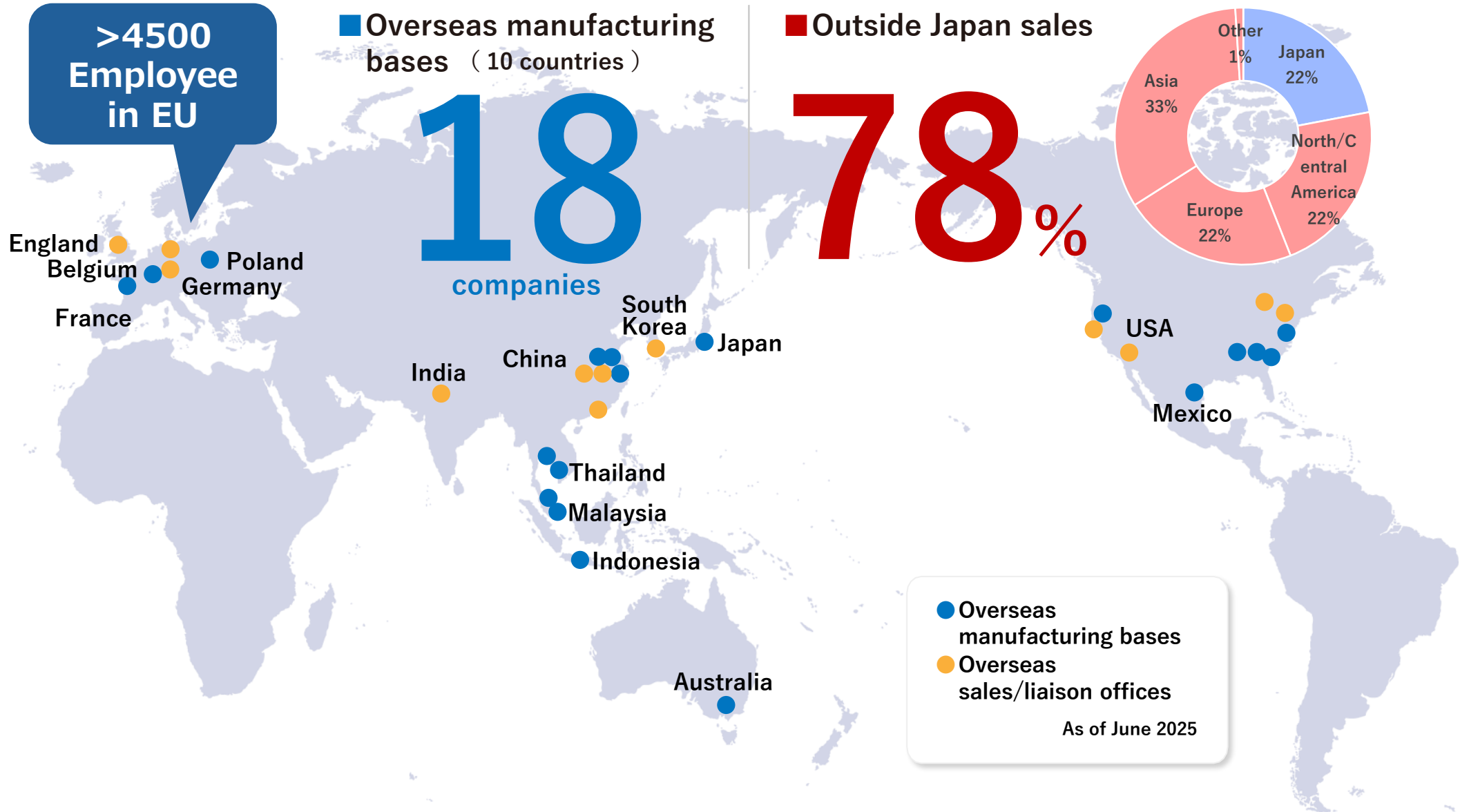
More than a materials supplier

- Global technology company based in Japan with more than 100 years of manufacturing experience
- Strong expertise in advanced ceramics, engineered materials and industrial innovation
- Supporting industries ranging from Automotive to Semiconductor manufacturing and wireless communications.
- Long-term commitment to quality, reliability and scalable manufacturing

Key Message

NGK transforms using advanced materials into next generation telecom and datacoms

Who is NGK? Global bases and offices



NGK's Roadmap

2025

2030

2035

2040

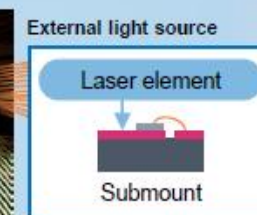
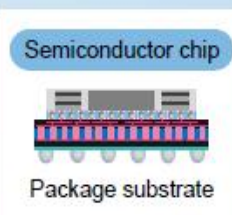
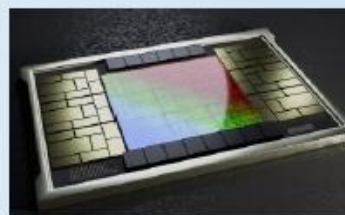
..... Higher computational speed and density, higher data transmission speed, and lower power consumption

Transistor Scaling

Chiplets

Optoelectronic integration

Photonic quantum computing



Ceramic Heaters



Electrostatic Chucks



Translucent alumina ceramics for securing semiconductor chips temporarily



Increases yields of chiplet processes

Core substrates for semiconductor packages



Increases chiplet size and density

Quartz bonded wafers for high-frequency timing devices



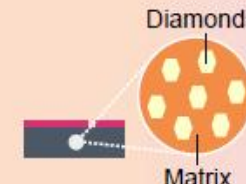
Increases data transmission speed

InP bonded wafers for laser diodes



Increases output and operation stability of lasers

Diamond composite materials with high heat dissipation for laser submounts



Large-diameter, high-quality TFLN wafers for photonic integrated circuits

LN/Si



Realizes high-quality photonic integrated circuits

For semiconductor manufacturing processes

For data center peripherals

Participating in a NEDO project

Published on 28th May 2026

https://www.ngk-global.com/ir/library/assets/pdf/20260528_management_plan_en.pdf

Photonics is becoming essential for

- ◆ **AI Data centers, Optical communications, Photonic Computing**
- ◆ **Quantum technologies**
- ◆ **Advanced sensing**

【 Our Perspective 】

"We do not aim to build complete photonic systems"

We focus on enabling technologies that improve:

- **Performance**
- **Thermal management**
- **Reliability**

Bonded Wafer Technologies for Future Photonic Applications



Telecommunications

APPLICATION

Coherent transceivers & pluggable optics

MARKET NEED

More bandwidth with lower power as network traffic grows



Data Centers & AI

APPLICATION

Optical interconnects & co-packaged optics

MARKET NEED

Overcome electrical interconnect power and scaling limits



Defense & Aerospace

APPLICATION

Photonic radar, secure links & EW systems

MARKET NEED

High frequency, reduced SWaP and harsh-environment resilience



Healthcare & Life Sciences

APPLICATION

Integrated biosensors & diagnostic platforms

MARKET NEED

Rapid, highly sensitive and cost-effective point-of-care testing



Industrial Automation

APPLICATION

LiDAR, machine vision & optical sensing

MARKET NEED

Precision sensing, real-time monitoring and autonomous processes



Quantum Technologies

APPLICATION

Photonic quantum computing & communication

MARKET NEED

Scalable, stable and low-loss photonic platforms



Automotive & Mobility

APPLICATION

LiDAR, in-vehicle optical networks & ADAS

MARKET NEED

Higher safety, autonomy and data-transmission bandwidth

Advanced Wafer Platforms

- Bonded wafers
- TFLN/TFLT
- InP-related platforms
- SiC
- GaN / AlN
- Ceramic wafer technologies

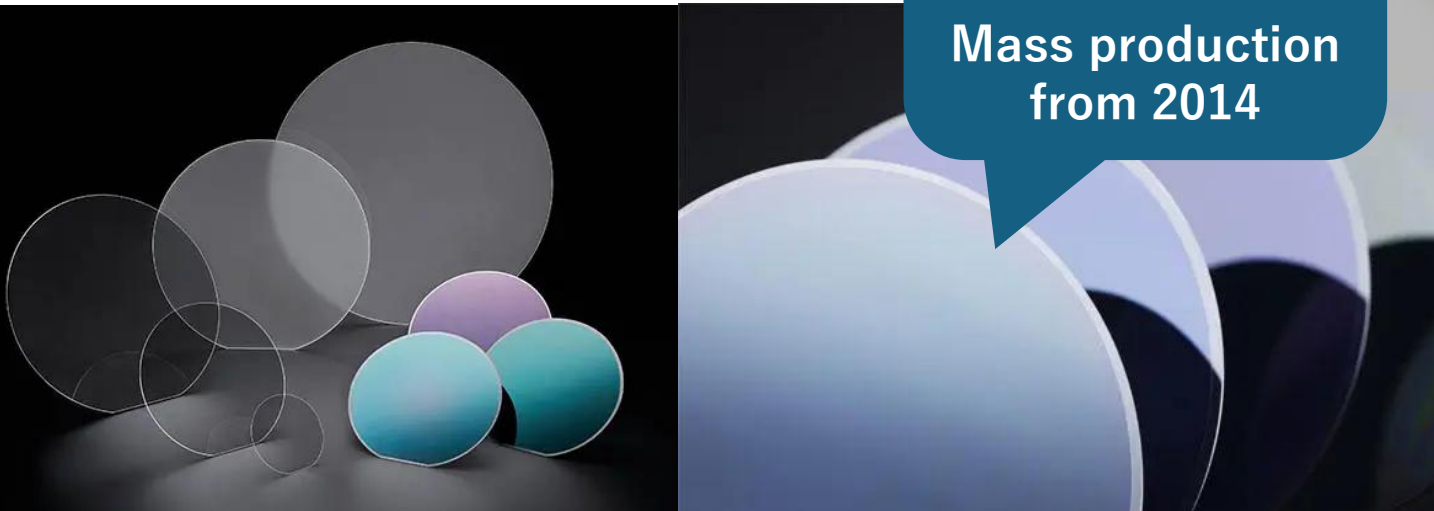
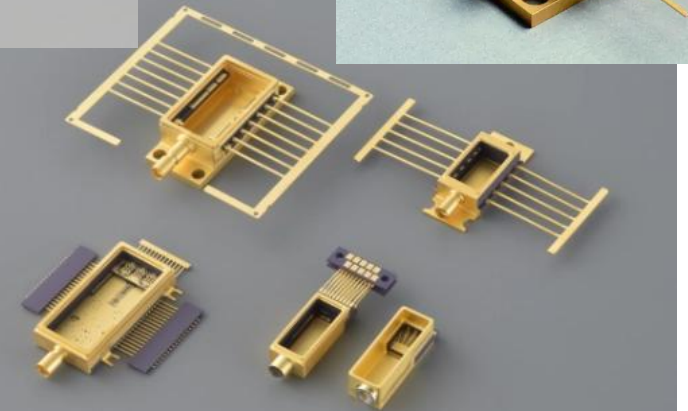
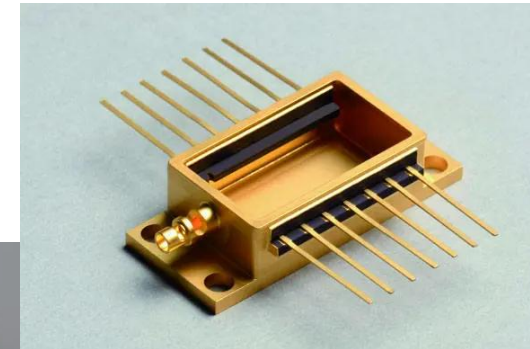
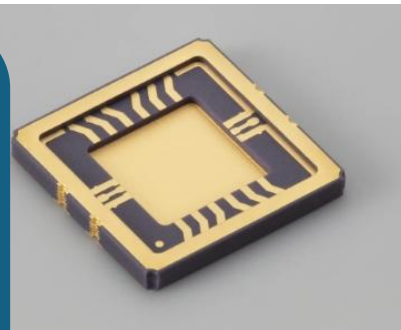
8-inch
Exhibiting now

Global Leading
Wafer Supplier
for SAW filters

Mass production
from 2014

Advanced Ceramic Technologies

- High thermal conductivity materials
- High Precision substrates
- Packaging materials
- Reliability-focused solutions



The Next wave of Photonics requires Ecosystems

Potential collaboration areas:

- Photonic Integrated Circuits (PICs)
- Heterogeneous Integration
- Wafer Bonding
- Advanced Packaging
- Thermal Management
- Quantum Photonics
- Optical Interconnects
- Reliability Engineering

NGK Collaboration Square 



<https://www.ngk-global.com/divers/>

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【 Our Approach 】

From concept → (customized) Development → Industrialization

Why Partner with NGK?



What We Contribute ;

- ✓ Advanced material expertise / Powering the Semiconductor Era
- ✓ Manufacturing know-how
- ✓ Long-term industrial perspective / Building the Next Growth Cycle
- ✓ Ability to customize solutions / Solving the impossible
- ✓ Global technology organization
- ✓ Experience turning research into products

【 Our Goal 】

Become your trusted materials and technology partner for future photonic value chains

Summary ; Let's discuss

NGK Europe 📌 Booth #1263

👤 Dr. Makoto Iwai

👤 Mr. Peter Rohrmann

We are interested in discussing

- Technology partnerships
- Joint developments
- Future material requirements
- New photonic applications

Message from NGK;

"NGK is not only a supplier of advanced materials.

We aim to be your long-term innovation partner for future photonics ecosystem."



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ECOC 2026

European Conference on Optical Communication

21-23 SEPTEMBER 2026 | MALAGA, SPAIN

[Book a meeting with us](#)



Scan the QR code
or
use the link
above



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Thank you for your attention!



**Surprising
Ceramics.**

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