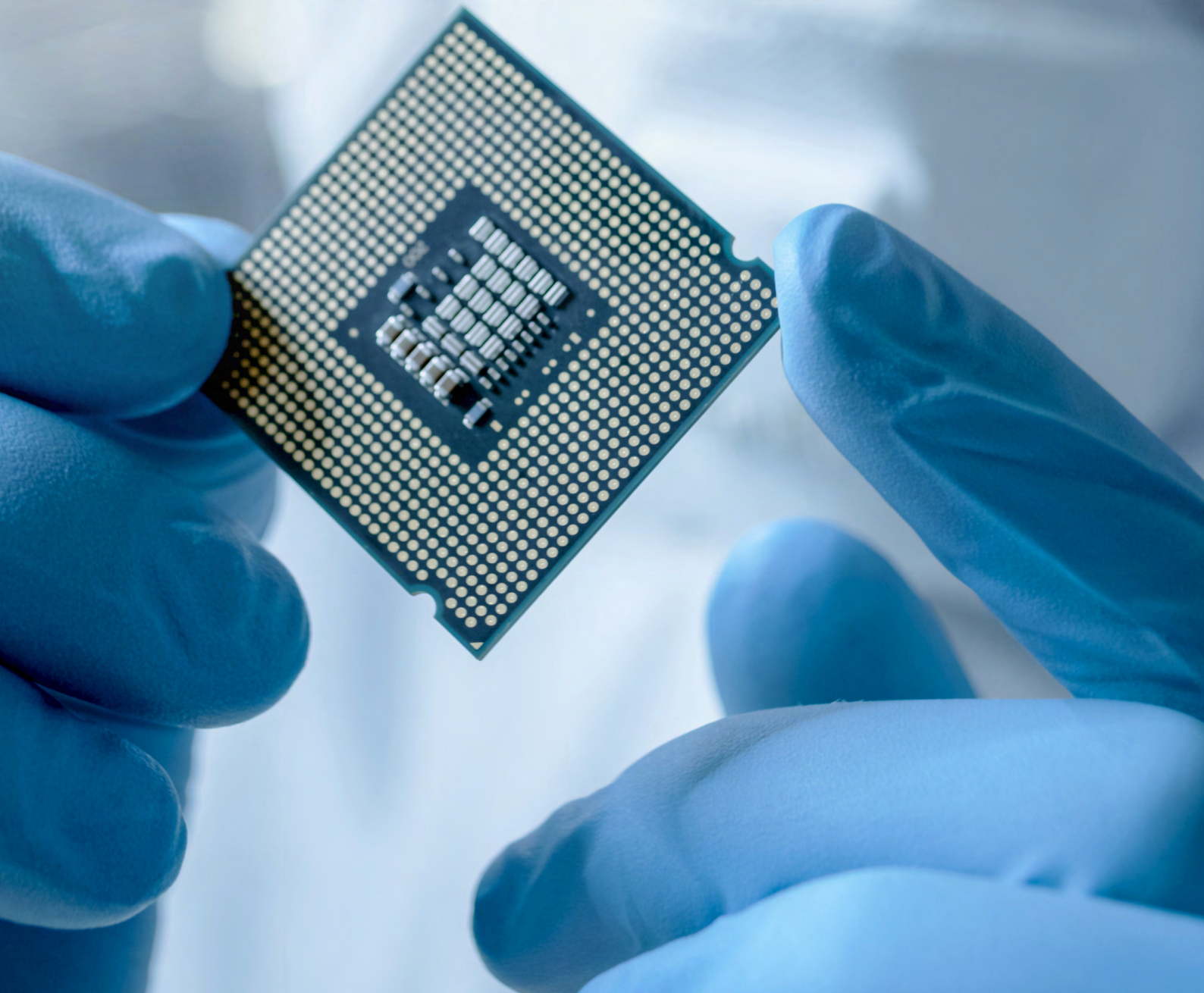


Semicon Logistics

Secure your semiconductor supply chain



Semiconductors— the building blocks of modern life

Semiconductors play a crucial role in twenty-first century life. The demand for them is constantly on the rise in our progressively digitalized world.

The growth in Internet of Things (IoT) technology, increasing use of artificial intelligence (AI), and electrification of the automotive industry are all driving the demand for semiconductors. The growing adoption of 5G technology—that requires advanced, powerful semiconductors to handle faster data transfer speeds and connectivity requirements—is also having a huge impact on the ability of chip manufacturers to keep pace with demand. This seemingly insatiable appetite is straining capacity at all points of the semiconductor manufacturing process and any disruptions to the supply chain can severely hold up production.

Are logistics the weak link in your supply chain?

Shipments damaged or lost in-transit result in negative repercussions for a company's financial performance. For example, chipmakers are under increasing pressure to shave weeks—even months—off their lead-time to meet ever-tighter manufacturing deadlines and, therefore, any shipment delays are detrimental.

In the highly competitive mobile phone industry, manufacturers set strict delivery expectations for component suppliers when rolling out new models. Any disruption in the supply chain, such as damaged or lost shipments, could cause delays in production and reverberate throughout a manufacture's carefully choreographed launch plans.

What does in-transit damage cost your company?

A shipment of semiconductor chips or raw materials for semiconductor production that fails to arrive at the next step in the manufacturing process on time could shut down an entire production line.



The actual cost of semiconductor components and raw materials damaged during transportation is far greater than most businesses realize because the resulting delay in production typically causes a ripple effect throughout the business.

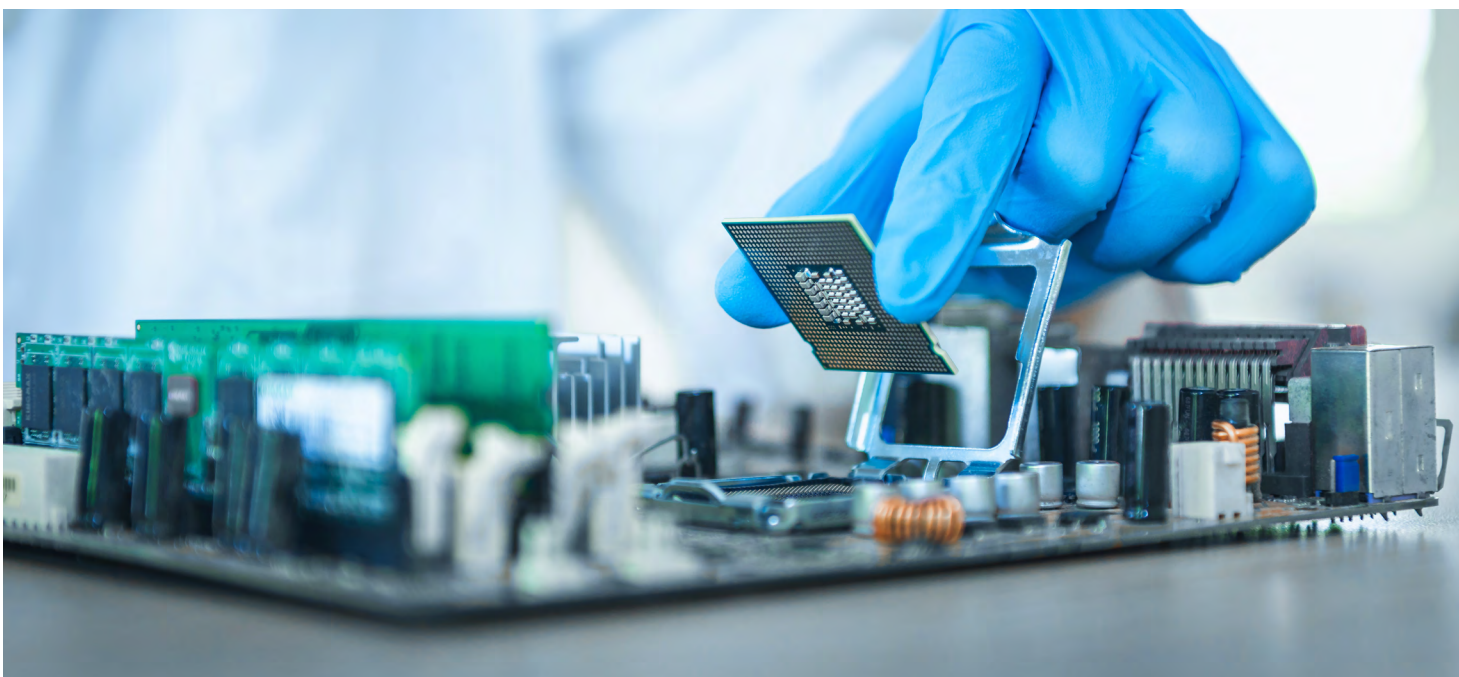
Knock-on effects of supply chain disruptions

* Research has shown that a ten-day disruption at a semiconductor fabrication plant (FAB) in Taiwan can cause a wave of additional disruptions to surge through the entire supply chain, causing delays that could last for almost a year, creating significant financial losses for all supply chain partners.

The production lead-time for a batch of chips—the time from when the FAB begins production to completion—varies from 20 to 60 days, depending on the manufacturing facility and the complexity of the integrated circuit.

From the FABs, the chips are shipped to assembly and testing facilities, almost all of which are in Asia, where the bare semiconductors are processed into finished semiconductor chips. These processes can take 30 to 40 days. Finally, the semiconductor components are used in a variety of parts, modules and systems that are then assembled into finished products. This means that a shortage beginning at a wafer FAB will only become transparent to, for example, a vehicle manufacturer after a long delay when it is notified by suppliers that they cannot ship parts.

(*Harvard Business Review, October 25, 2022)



Stay in control— Take advantage of Kuehne+Nagel's Semicon Logistics.

A quality service for your high-value cargo. When your supply chain spans the globe and your production schedules are tight, transporting your products to the next touchpoint by air is often the best option. In a world where innovation cycles are forever shrinking and sudden shifts in demand require faster time-to-market, agile logistics capabilities are essential.



“When building a resilient supply chain, the first brick in the foundation is quality. Everything else gets layered on top. We give customers the reliability and flexibility to pivot when the unexpected happens.”

**Barry O'Dowd, Sr. Vice President,
Global Head of Business Development High Tech**

Introducing SemiconChain: Kuehne+Nagel's new quality standard

An Air Logistics service specifically designed to meet the unique requirements of the semiconductor supply chain.



The SemiconChain label promises unparalleled quality and adherence to ISO 9001 2015 / IATF 16949 industry standards along the entire supply chain, assuring full transparency, predictability and reliability. The SemiconChain quality standard guarantees process standardization, continuous improvement and service excellence across our dedicated network of SemiconChain certified locations.



SemiconChain network Certified locations planned for 2023

● Certified
● In progress

Unique requirements of the semiconductor supply chain



High technological complexity
Semiconductor manufacturing involves complex and highly sophisticated processes that require specialized equipment, skilled labor, and advanced knowledge of science and engineering.



Long lead times
The development and production of new semiconductor technologies can take several years, requiring companies in the supply chain to plan and invest well in advance.



High capital requirements
Semiconductor manufacturing requires significant investment in equipment and facilities, which can be an entry barrier for new companies.



Short product life cycles
The semiconductor industry is characterized by rapid technological advancements, which can make older products obsolete quickly. This requires companies in the supply chain to constantly innovate and adapt to changing market conditions.



Globalization
The semiconductor industry is highly globalized with manufacturers operating and sourcing materials from multiple countries. This requires coordination and collaboration among companies in different regions.



Intellectual property rights
Many companies in the semiconductor supply chain hold valuable intellectual property rights related to the products they manufacture, which can create competitive dynamics and legal issues.

A global air logistics network you can trust

The SemiconChain quality certified network is a unique dedicated solution for the semiconductor supply chain, providing:



Quality standards

Integrated ISO 9001 2015 and IATF 16949 Quality standard providing a global network of 25+ SemiconChain certified locations ensures the highest quality of service and uninterrupted operations.



People

Highly qualified and experienced personnel, trained specifically in semiconductor logistics, ensure compliance and the highest level of service quality in all countries in which we are active.



Supply chain integrity

The dedicated SemiconChain team drives continuous improvement and ensures the integrity of your supply chain.



Suppliers

All suppliers undergo a strict approval process and are monitored to ensure that our global quality requirements are maintained at all times.



Risk management

Lane risk assessment including analytics and reporting helps mitigate risks and determine the best transportation option.



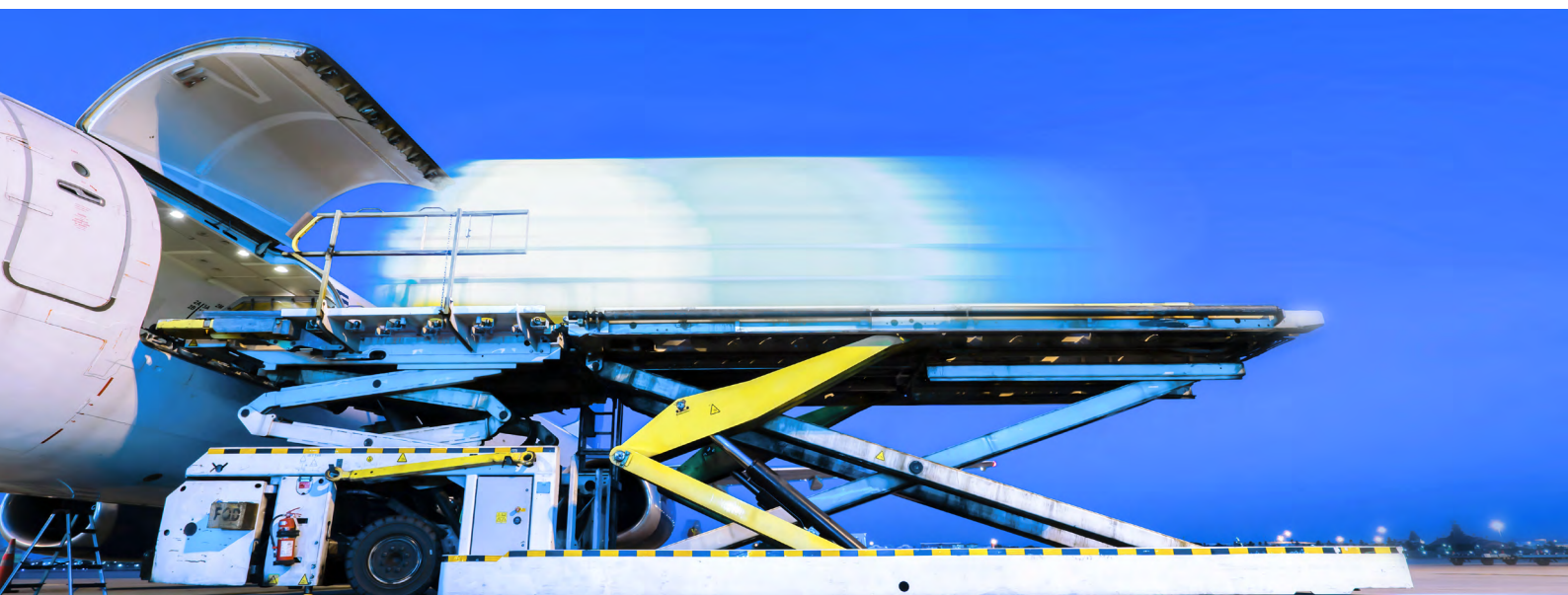
Digital solutions

Dedicated digital solutions provide key information and visibility for improved decision-making.



Time defined services

Select the priority service you need—deferred, standard, express or time-critical—for out of hours situations when you need the fastest solution possible.



Value added services

In addition to our standard Semicon Logistics service, we offer the following value added solutions:



In-transit security

Escorts, geo-fencing, locks and additional protection when extra security, beyond industry standards is needed.



Time critical service

Dedicated express services and charters for air transportation.



Proactive monitoring

Internet-of-things enabled in-transit active monitoring and intervention for your most critical shipments.



Consultancy services tailored to your needs



Risk assessment platform

Your shipment routing is risk assessed; the data output is made visible on our proprietary risk platform, which allows a selection of the best possible routings and service quality, enabling you to pick the right option for your shipment.

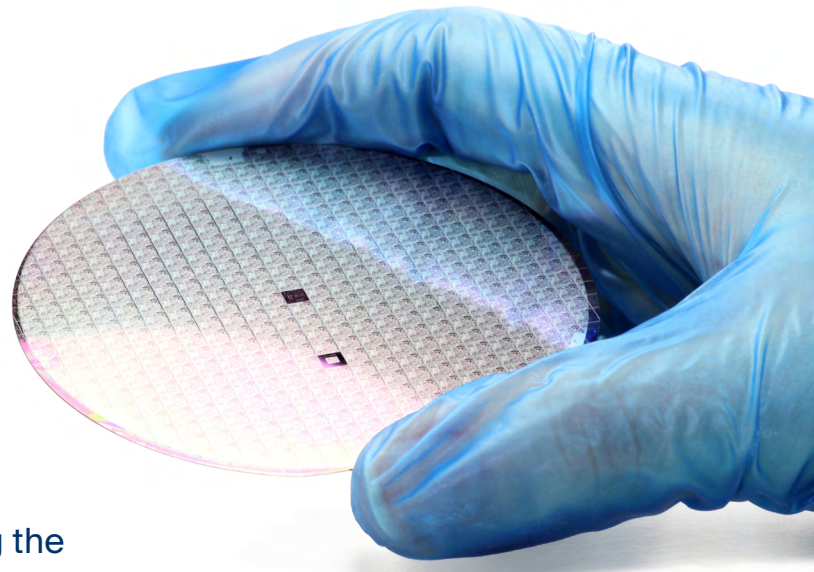


Sustainability

Understand your performance relative to your peers and industry best practices. Contribute to your sustainability targets by assessing the environmental impact of shipping options and considering interventions to reduce your carbon footprint.



Comprehensive logistics solutions for the entire supply chain



Partner with a trusted logistics company that has extensive experience supporting the semiconductor industry with customized services for:



Shipping tools and capital equipment



Inbound flows of materials for production



Managing shipments of fragile goods from front end manufacturing to back end sites



Transportation from assembly and test sites to distribution centers



Distribution of finished chips



Security set-up for shipments at risk of theft



New FAB deployments

Your requirements— our experts

Our experts will assist you at every stage of the supply chain, be it transportation, storage or picking the right value added service for your shipment. We assure you that the following elements are included in all our Semicon Logistics services:



Reliability



Predictability



Safety and security



Industry knowledge



Digital solutions



Risk mitigation

Kuehne+Nagel measures performance in the same way around the network. Your cargo is always transported under the right conditions and is traceable throughout the shipment cycle.

Solutions are designed to reduce your semiconductor transportation risks. No matter where you are in the semiconductor supply chain, or what you ship, you require uninterrupted service and full visibility of your cargo.

