



The semiconductor ecosystem Insight into the world of semiconductors

The same topic appears over and over again in the headlines: European Chips act, support for semiconductor companies in Europe, microchips and their role in the issue of digitalizations. Nonetheless, this incredibly large global sector remains a mystery to many people. The fact that this industry conceals a highly complex ecosystem is less well-known. The following article is therefore intended to illuminate this issue a little.

The semiconductor ecosystem is a highly specialized global network. It comprises companies that specialize in the development and manufacturing of semiconductors, as well as suppliers, service providers, research institutes and teaching institutions. Some of the most well-known companies in this area are Intel, TSMC (Taiwan Semiconductor Manufacturing Company), Samsung Electronics and ASML. This ecosystem is immensely significant and influences the world in many ways. Everyone interacts with microchips and other semiconductor products in their day-to-day life.

Facets of the semiconductor industry

For GEMÜ and its Semiconductor business unit, two sectors of the ecosystem play an important role. GEMÜ participates in this ecosystem with its components and system solutions, and the GEMÜ CleanStar series enjoys an absolutely dominant role in the industry. In order to understand how the individual companies collaborate, they must be broken down into their sectors and segments.

Semiconductor manufacturers

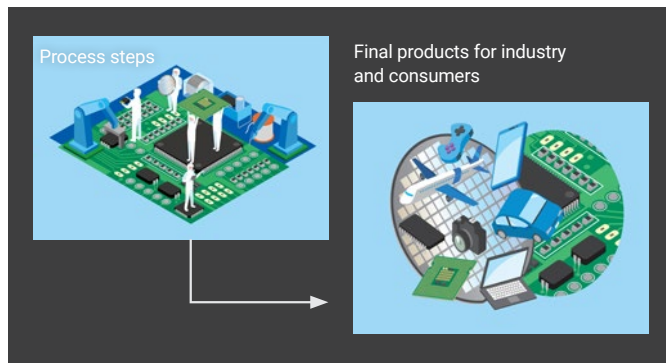
The manufacturers of semiconductors are the core of the ecosystem. They invest considerable sums in research & development to produce more and more powerful and energy-efficient chips. These companies operate cutting-edge production facilities known as fabs or foundries (foundries = contract manufacturers like TSMC, without proprietary products like Samsung). In these facilities, the semiconductors are produced on silicon discs, known as wafers, and then sold in billions. One such fab can cost up to 10 billion dollars. The operators of these fabs are the end users for GEMÜ.

Suppliers and service providers

Suppliers and service providers play a crucial role in the semiconductor ecosystem. They provide the machines, tools and materials required for manufacturing semiconductors. Companies like Applied Materials and Lam Research are global leaders in providing manufacturing equipment for the semiconductor industry. Without the highly specialized services and products provided by these companies, production of semiconductors would not be possible. GEMÜ is strongly represented in this sector with its Semiconductor business unit. GEMÜ counts these companies among its customers.

In addition to these two groups, the ecosystem also comprises the following sectors:

- ⇒ Design and development
- ⇒ Software and tools
- ⇒ Packaging and integration



All companies that are part of this ecosystem are synonymous with the process steps that are necessary to manufacture the microchips that have become so valuable.

Challenges, but also potential

The semiconductor ecosystem is faced with a variety of challenges and opportunities. The increasing complexity of semiconductor technology due to ever smaller structure sizes requires advances in manufacturing technologies, materials science and design. At the same time, sustainable raw materials procurement and reducing the environmental footprint are highly important. Companies in the industry are working on environmentally friendly production methods and increasingly relying on renewable energy sources.

On the other hand, huge opportunities are presenting themselves. The growing demand for electronics in fields such as artificial intelligence, the Internet of Things (IoT) and electromobility is driving development of increasingly efficient chips. This opens up new markets and business opportunities for companies in the semiconductor sector.

The role of SEMI Europe

As part of the worldwide SEMI association, SEMI Europe is an important organisation that represents the interests of the semiconductor industry in Europe. SEMI Europe promotes collaboration between companies, research institutes and governments, and advocates for promotion of semiconductor technology in the region.

Semiconductor technology – a driving force for progress

The semiconductor ecosystem is a fascinating and extremely complex network that is only possible thanks to our modern electronics. It is crucially important for economic development and technological progress in the world of today. Engineers and experts from the semiconductor sector play a key role in this ecosystem by developing the latest technologies and finding innovative solutions for overcoming the challenges faced by the industry.

GEMÜ is a part of this strange yet fascinating universe, where it makes a valuable contribution and aims to grow further along with the industry. GEMÜ contributes to this exciting development with commitment and enthusiasm. In future, the semiconductor ecosystem will continue to shape our world and make a substantial contribution to fighting climate change.

Growth drivers and opportunities for the economy

In order to seize these opportunities, all players in the sector are strongly reliant on international collaboration. Supply chains are global, and companies from different countries work closely together to develop and produce the latest technologies. The semiconductor industry is a prime example of the need for global collaboration in our high-tech modern world.

Automotive



E-mobility is our future. Semiconductor technology is used not only in the electronic systems of vehicles, but also in storage media.

Energy



Our environment is our greatest asset. It is vital that we protect it. This is why renewable energy sources are needed, and establishing them in a sustainable way requires advanced chips.

Industry



AI, big data, Industry 4.0 – these are all issues that play an increasingly important role in our industrialized world.