

STMICROELECTRONICS

30 Years of Sustainability in the Semiconductor Technologies

STMicroelectronics (ST) is a team of over 50,000 innovators dedicated to advancing semiconductor technologies. ST collaborates with more than 200,000 clients and numerous partners to design and develop products, solutions, and ecosystems that address their challenges and opportunities, all while supporting a more sustainable world. Globally, the company reported revenues of USD 17.3 billion in 2023.



ST has had a presence in Singapore since 1969 and employs more than 5,000 people in its Singapore operations. ST is the first semiconductor company, still in operation, to have established a semiconductor activity in Singapore. Today, ST has four major sites in Singapore: a front-end production plant (wafer fab), a global logistics centre, a back-end R&D centre (assembly and testing), as well as its regional headquarters for the Asia region.

The company is steadfast in its commitment to achieve carbon neutrality for Scope 1 and Scope 2 emissions, and partially for Scope 3, by 2027.

KEY MILESTONES IN STMICROELECTRONICS' SUSTAINABILITY JOURNEY

Sustainability has been part of STMicroelectronics' DNA for nearly 30 years. In the early 1990s, ST was one of the first multinational companies to implement an environmental policy with publicly disclosed targets that exceeded legal requirements.

Over the years, ST has achieved several significant milestones in its sustainability journey. In 1993, the company introduced its first environmental policy, followed by the

publication of its first environmental report in 1997. The ST Foundation was established in 2001, reinforcing ST's commitment to social responsibility. In 2002, ST became one of the first semiconductor companies to be certified under OHSAS 18001, a safety management system later replaced by ISO 45001 in 2022.

ST's dedication to sustainable practices continued in 2005 when it became one of the founding members of the Electronic Industry Citizenship Coalition (EICC), now known as the Responsible Business Alliance (RBA). This initiative promotes sustainable and responsible practices within ST's operations and encourages suppliers to adopt similar standards.

A major milestone was achieved in 2019 when ST reached its 2025 CO₂ reduction goal six years ahead of schedule. This accomplishment was made possible by implementing robust measures across its sites and leveraging standardised management systems such as ISO 14001 and ISO 50001. In 2020, ST announced its commitment to becoming carbon neutral by 2027 for Scope 1 and Scope 2 emissions, and partially for Scope 3 emissions. Most recently, in 2024, ST issued its 27th Sustainability Report, highlighting the company's ongoing efforts and progress in sustainability.

DRIVING RESEARCH AND INNOVATION

In 2023, STMicroelectronics (ST) invested US\$2.1 billion in research and development (R&D) to drive innovation. ST's Sustainable Technology programme, launched in 2011, classifies products into four categories: low-carbon products, power-efficient products, planet-friendly applications, and human-welfare applications. In 2023, the company classified 82% of its new products as responsible, an increase from 77% in

2022. The company also made significant progress towards its 2027 goal of generating at least 33% of its revenues from responsible products, reaching 23.2% in 2023, compared to 22.6% in 2022. Furthermore, ST ensures that all new products undergo its eco-design process, underscoring the company's commitment to sustainability and innovation.

STELLAR AUTOMOTIVE MICROCONTROLLERS (MCUS)

ST's Stellar automotive microcontrollers (MCUs) are advanced microcontrollers designed for automotive applications, they exemplify reduced energy consumption, significantly improving car efficiency and reducing CO₂ emissions. These MCUs offer a reduced lifetime carbon footprint compared to previous-generation MCUs.

A case study on the body platforms of a major original equipment manufacturer (OEM) compared the emissions of a next-generation platform using Stellar MCUs with a current platform using existing MCUs. The results demonstrated that the manufacturing process for the Stellar device produced 40% less CO₂ emissions than the previous generation solution for the platform.

ENERGY EFFICIENCY

In 2023, ST reduced energy consumption per unit of production by 17% compared to 2016, aligning with the company's 2025 goal of a 20% reduction. By the end of 2023, ST achieved an annual energy saving of approximately 139 GWh—comprising 115 GWh of electricity and 24 GWh of methane gas—compared to 112 GWh in 2022. This progress is in line with the objective of saving at least 150 GWh per year by 2027.

In France

The Rousset site in France completed a project to retrofit 27 scrubbers, saving 3.0 GWh and reducing CO₂ emissions by 600 metric tonnes. To explore additional energy savings, ST collaborated with EDF DALKIA to conduct assessments across all French sites. This collaboration led to the implementation of adiabatic cooling towers at the Crolles site in France. This method, which uses evaporation to cool water, proved more efficient than traditional chillers, resulting in an energy saving of 0.9 GWh in 2023.

In Singapore

Throughout, ST sites implemented various energy-saving initiatives. At the Ang Mo Kio site in Singapore, a programme was initiated to replace older auxiliary vacuum pumps and chillers with more efficient models and upgrade of CDA dryer systems, resulting in an aggregate saving of 9.2GWh annually. These equipment upgrades have since been adopted at most front-end manufacturing sites. Additionally, ST's sustainability initiatives in Singapore and ASEAN include decarbonisation efforts through GHG abatement and energy efficiency management programmes, featuring the installation of an industrial District Cooling System (DCS) on the Ang Mo Kio TechnoPark.

This project involves a central plant that cools water and distributes it through a network of underground pipes to various buildings. This centralised approach enhances efficiency, reduces environmental impact, and saves space, as individual buildings no longer require their own chillers. This setup also lowers power and maintenance costs.

The AMK TechnoPark is ST's largest wafer-production fab by volume. Bringing DCS to AMK will thus have significant ripple effects. Conventionally, projects of this size

target mainly urban developments. The ST and SPGroup infrastructure is thus unique because it's one of the first at such a scale to cool an industrial manufacturing plant and the largest in Singapore. Most projects from competing fabs retrofit new chillers. Beyond energy savings, removing chillers and cooling towers within the ST plant becomes a strong key enabler for ST decarbonisation journey.

Footprint and Handprint

In addition to consistently working on reducing its product footprint, STMicroelectronics also strives to increase its product handprint. Handprint refers to the positive impact of ST's products on the systems or applications they are integrated into. This can involve enabling environmentally friendly or socially beneficial applications, contributing to a reduction in the overall footprint of the application, or consuming less energy than existing alternatives.

RESPONSIBLE BUSINESS AND SUSTAINABILITY EXCELLENCE

ST has been an active member of the Responsible Business Alliance (RBA) since 2005. With over 6,000 direct suppliers worldwide, ST's supply chain has a significant potential impact on people and the environment.

In 2023, all new material suppliers were assessed for sustainability risk, identifying 373 suppliers across 541 facilities as being at risk. That year, ST launched a company-wide programme dedicated to carbon footprint assessment, covering 95 suppliers representing more than 60% of their annual spend in 2022.

ST participated in the Dow Jones corporate sustainability assessment for the 25th consecutive year in 2023, maintaining its presence in the Dow Jones Sustainability Index

World and Europe indices, as well as other major sustainability indices, including FTS-E4Good, EuroNext VIGEO Europe 120, Eurozone 120, Benelux 120, CAC 40 ESG, MIB ESG, ISS ESG Corporate Rating, and VÉrité40. As of 2023, ST received an MSCI ESG Rating of AAA(1).

Furthermore, ST has been included in the Bloomberg Gender Equality Index since 2018. They received an A- score for CDP water security, placing them in the 'leadership' band, which is higher than the Europe regional average of C and the electrical and electronic equipment sector average of C. Additionally, they received an A- for CDP climate change, also in the leadership band, surpassing the Europe regional average of B and the electrical and electronic equipment sector average of C.

COMMITMENT TO SUSTAINABILITY AND COMMUNITY IMPACT

Over the past 28 years, ST's sustainability efforts have yielded significant results: an 84% reduction in perfluorinated compounds emissions, a 76% decrease in water consumption, a 56% reduction in electricity consumption, and a 336% increase in waste recycling.

In 2023, ST implemented over 810 community and education initiatives across 42 sites in 23 countries. These initiatives included US\$3.5 million in cash donations, US\$2.6 million in in-kind donations, and more than 156,000 hours of company time, accounting for 50% of the total contribution. Through the "STEM Your Way" programme, ST raises awareness among young people about the importance of STEM subjects and inspires them to explore STEM-related careers. In 2023, ST organised over 610 STEM events and initiatives, marking a 35% increase from the previous year. These efforts benefited over 100,000 individuals, including students and teachers.