

Sustainable Technology



We create technology for a sustainable world

In ST, we create products for a sustainable world, in a sustainable way.

SUSTAINABLE TECHNOLOGY PROGRAM

Sustainability has been a guiding principle in ST since the early 1990s. Today, it is integrated into every part of our business to maximize opportunities in areas that bring innovative solutions to environmental and social challenges. The Sustainable Technology program was launched in 2011. It implements a global approach to ensure that sustainability is taken into consideration when we develop new products and that it creates value for our company, our customers, and society in general.

LIFECYCLE APPROACH

At ST, Sustainable Technology means improving our social and environmental footprint at every stage of the product lifecycle, from raw material extraction to end of life. We build a responsible supply chain and, together with our stakeholders, we develop innovative, sustainable products that address the challenges and opportunities of today's world.

SUSTAINABLE TECHNOLOGY LABEL

We give our Sustainable Technology label to devices that have followed an eco-design approach, which reduces their ecological footprint in compliance with environmental legislation and ensures they enable innovative environmental or social applications.

ST lifecycle management





We take a holistic approach to make our operations and our products more sustainable

- Building a responsible supply chain
- Designing innovative products that go through an eco-design assessment
- Minimizing the impact of our manufacturing activities on the environment and people
- Creating advanced semiconductor technologies that improve power consumption during end-product use
- Enabling market segments that help to tackle environmental, social and societal challenges
- Acting collectively with our stakeholders to accelerate sustainability



We create technology that paves
the way to responsible applications

Raw material sourcing



Our responsibility begins with the raw materials and the substances we use to manufacture our products. We continuously innovate to reduce hazardous substances, and all our raw materials are sourced in line with the latest environmental and social guidelines.

ECOPACK

ECOPACK is an ST trademark for products that meet or exceed the requirements of the international RoHS (Removal of Hazardous Substances) directive, which defines strict thresholds in the use of substances of very high concern, such as lead or mercury, in end products.

ECOPACK1

compliant with RoHS/ELV directive

ECOPACK2

Exceeds the RoHS directive (free from brominated, chlorinated and antimony oxide flame retardants)

ECOPACK3

Meets ECOPACK2 requirements + free from halogens, and no use of any exemptions allowed by the directive

**>95% of our
products
exceed RoHS
requirements and are
currently rated
ECOPACK2
or ECOPACK3**

ELIMINATING HAZARDOUS SUBSTANCES

We aim to reduce the use of substances of very high concern as much as possible. When there is no alternative to using hazardous substances, we take precautionary measures to protect people and the environment. We also proactively work with our suppliers and researchers to develop suitable alternatives for the near future.

100% OF ST PRODUCTS ARE FREE FROM CONFLICT MINERALS



RESPONSIBLE MINERALS INITIATIVE

Responsible sourcing means companies can identify the origin of the metals contained in electronic components and ensure their extraction, transport, or trade are not associated with serious abuses related to people, working conditions, or the environment, or with bribery and money laundering.

As an active participant in the RMI (Responsible Minerals Initiative), we guarantee responsible sourcing of the 3TG (tantalum, tin, tungsten, and gold) we use, and we monitor our cobalt supply chain.

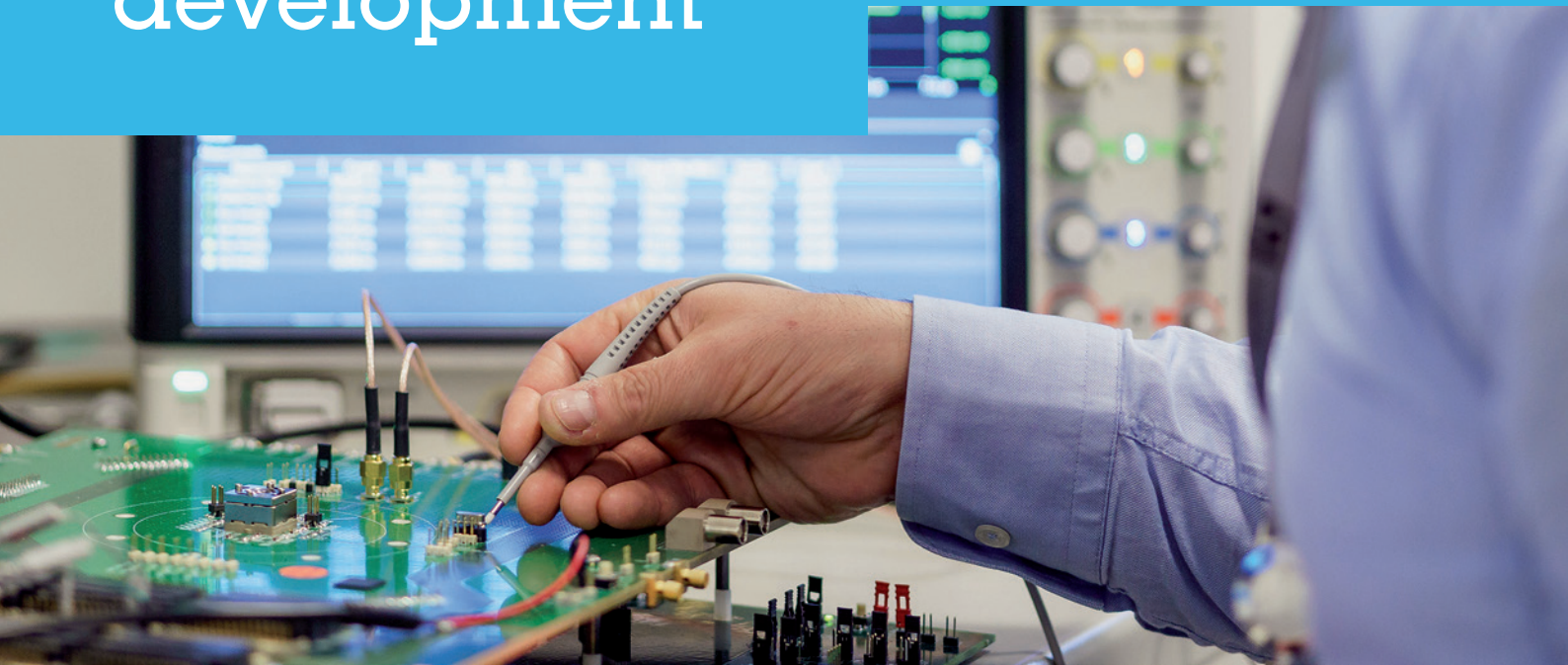
RESPONSIBLE SOURCING OF MATERIALS

We are committed to partnering with suppliers who share our values of respecting people and doing business with integrity and excellence. Our main Responsible Supply Chain program is based on the RBA (Responsible Business Alliance) methodology and addresses labor and human rights, safety, ethics, and environmental risks.

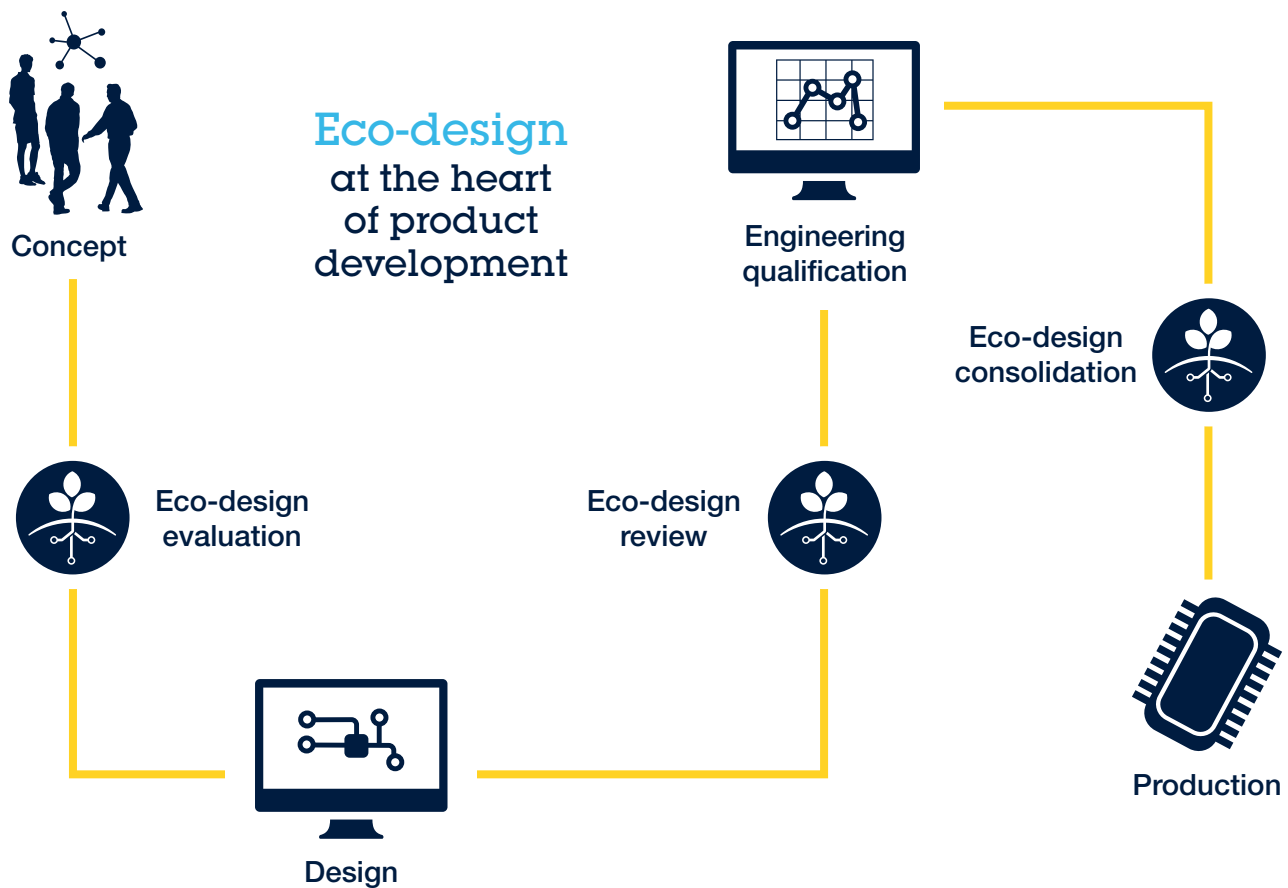
We also require our suppliers of materials and substances to follow our list of EHS-regulated substances (Environmental Health and Safety), which contains more than 3,000 substances, and we verify their compliance through analytical, EHS, and ISO certificates.



Product development



By adopting an eco-design approach, we carefully consider the impact of our future products on our planet's resources.



How many wires
for new
generation
chips?

How can we
reduce the
number
of metal layers?

Is it possible to
reduce power
consumption
even more?

“



How can we
further reduce
die size?

Can the gold
in this chip
be replaced
with copper?

MORE INNOVATION, LESS ENVIRONMENTAL IMPACT

Our eco-design process helps ST's product development teams innovate to reduce our impact on our planet's resources. Using a benchmark approach based on the key technical characteristics of silicon products, they assess the environmental performance of new ST designs.

We have identified two main types of eco-design achievements for semiconductor products:

- **low-carbon products:** thanks to low resource consumption and the lower number of manufacturing steps required, they reduce the environmental footprint of ST's production equipment, utilities, and supply chain.
- **power-efficient products:** state of the art in reducing electricity consumption and power losses, they lower the environmental footprint of all the end-devices they are embedded in.

Each year 100%
of new products
go through the
eco-design process

Product manufacturing



We strive to reduce the impact of our manufacturing activities on natural resources and local communities, while building a responsible supply chain.

SOCIAL RESPONSIBILITY

Committed to ensuring a safe workplace

Protecting people from harm and safeguarding their health is fundamental for us. We maintain and continuously improve health, safety, and welfare at work and support every initiative contributing to a zero-accident workplace. By evaluating and analyzing the risks that can affect our employees and subcontractors and managing them responsibly, we act to make work a better place to be. We also reinforce our safety culture by continuously improving our actions, processes and means to encourage appropriate behaviors.



Safety is more than a priority; it is a value that must never be compromised.

Jean-Marc Chery - President and CEO

Embedding sustainability practices in our Company strategy is essential to our people, our business, and society at large.

Rajita D'Souza - President, Human Resources and Corporate Social Responsibility





Responsible Business Alliance

Advancing Sustainability Globally

We have been a
member of the RBA
since 2005



Promoting human rights

Our human rights policies are in line with international laws and accepted practices including the United Nations Declaration of Human Rights, the International Labor Organization conventions and the United Nations Global Compact. As a member of the Responsible Business Alliance (RBA) since 2005, we uphold the highest standards and apply a comprehensive due diligence process covering our operations and our supply chain.

We apply a zero-tolerance approach to forced labor in our operations and our supply chain.

Our 11 major manufacturing sites are audited every year according to RBA.

These principles promote:



Fair wages and
working conditions



No child labor



No discrimination



Reasonable
working hours

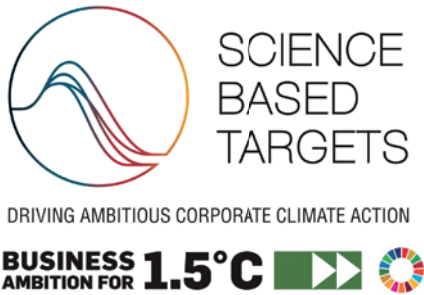


No forced labor

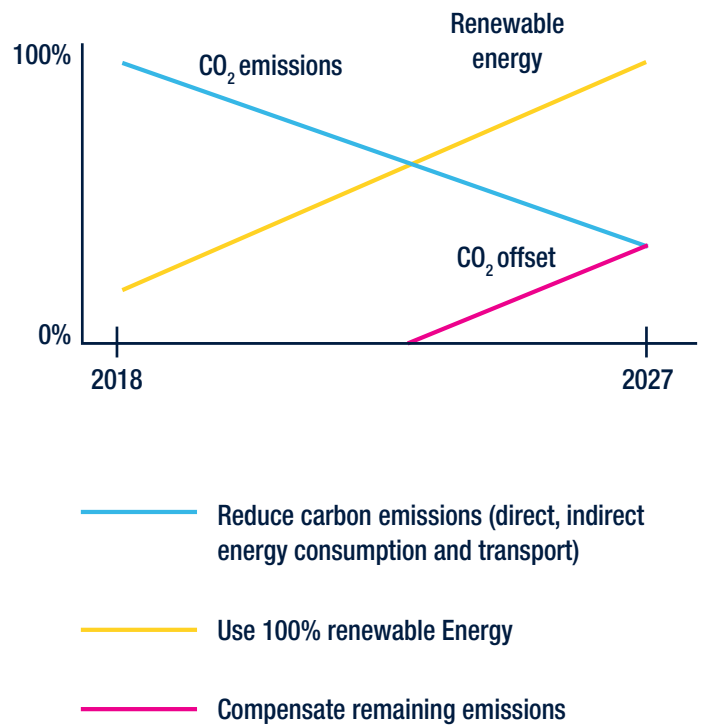


Freedom
of association

We expect our suppliers to adhere to the same principles. We require them to undergo assessments and audits to improve working conditions within our supply chain.



BECOMING CARBON NEUTRAL BY 2027



GREENHOUSE GASES (GHG)

Hitting new targets to tackle climate change

Our direct GHG emissions derive mainly from the PFCs (Perfluorinated Compounds) widely used in our manufacturing processes. To reduce these emissions, we invest in solutions to replace high Global Warming Potential gases with lower ones, and install abatement systems to eliminate all PFCs before discharge into the air. All our sites are also reducing, if not avoiding, the use of natural carbon-intensive gases and fuels.



Reduce direct GHG emissions as much as technically possible by 2027



RENEWABLE ENERGY

Powering our sites with clean energy

ST is committed to using renewable electricity. We have set up on-site solar farms and have signed offsite Power Purchase Agreements for wind farms and other renewable energy sources. We also buy renewable energy certificates to fully decarbonize the electricity procured for R&D and manufacturing operations.



100%
renewable electricity
by 2027

CARBON OFFSET

Becoming carbon neutral

ST is committed to becoming carbon neutral by 2027. To compensate our remaining carbon emissions (from direct emissions, indirect energy emissions, product transportation, business travel, and employee commuting), we invest in reforestation projects and in carbon compensation programs (avoided-emissions projects and carbon credits).



ST will be
carbon neutral
by 2027



Save 150 GWh
energy per year
by 2027

ENERGY CONSERVATION

Improving efficiency

Semiconductor solutions are manufactured in a stable, energy-intensive production environment. Today, we are more committed than ever to reducing energy consumption, through programs designed to increase the efficiency of our operations and utilities. Our sites are committed to using the most advanced solutions to install energy-efficient equipment and to avoid energy leakages during the manufacturing steps. In our buildings we develop new solutions such as heat recovery systems and air or water cooling.



WATER

Optimizing vital resources

It takes significant volumes of ultra-pure water to manufacture semiconductors, and the resulting wastewater can have a negative environmental impact. At ST, we are committed to reducing water use and ensuring high standards in the treatment of effluents and wastewater. We also identify and manage water-related risks and opportunities, including the impact on local communities.



Water
footprint
reduced by 75%
in 25 years



CHEMICALS AND AIR QUALITY

Managing risks and regulations

Many of the substances used for manufacturing semiconductors can be hazardous for the environment, and people's health and safety. We therefore ensure that employees are not exposed to any potential hazard. We also run programs to reduce the use of chemicals and find alternatives to hazardous substances when possible. We implement projects to comply with the most stringent legal and customer requirements to purify the air released into the atmosphere and prevent any risk of environmental pollution.



ST was
PFOA*-free
4 years ahead of the
World Semiconductor
2025 Target

*Perfluorooctanoic acid



WASTE

Reduce, Reuse, Recycle

Waste is a key concern for ST's sites around the world because of its potentially negative impact on the environment. We collaborate with our communities and partners to set up recycling channels and develop the circular economy. We are committed to reducing, reusing, recycling, and managing all waste streams from our sites including hazardous substances, metals, packing, plastics, and other non-biodegradable materials.



95% of ST's
waste
reused, recycled,
or burnt
for energy recovery
by 2025



Product use



We are convinced that technology plays a key role in helping to solve environmental, social, and societal challenges. We develop responsible products that enhance quality of life or user experience and reduce their impact on the environment.

Our product development teams are committed to innovate in application fields that contribute to supporting the megatrends for greener and safer living environments. By contributing to R&D projects with technical universities and start-ups, creating partnerships with key industry players and major manufacturers, ST is at the heart of innovation. This allows us to anticipate future needs and design semiconductor solutions enabling new responsible applications.

Our ambition is to create each year at least 50% of new products that meet our Sustainable Technology criteria with a responsible approach throughout the lifecycle.



SOCIAL APPLICATIONS THAT HELP PEOPLE LEAD A SAFER AND HEALTHIER LIFE



Medical / health

We maintain strong relationships with medical companies to support them in developing innovative healthcare technologies, such as ultrasound imaging systems and pacemakers. Embedded in electronic equipment, our sensors, microcontrollers, connectivity solutions and specialized ICs have been instrumental in the fight against the COVID-19 pandemic, enabling the design of virus testing kits, rapid testers, breathing ventilators, and social distancing applications.



Safety

ST's solutions help our customers design systems and products that reduce accidents on the road, in our homes, cities, and in factories and workplaces. We support the development of passive (ABS, LED lighting) and active (ADAS, pedestrian detection, driver somnolence detection) safety systems in cars. Our wide range of sensors also helps reduce accidents at home and in the workplace, and our galvanically isolated components make industrial systems safer.



Security

Our product portfolio includes a series of secure devices, which, when embedded in connected systems such as alarms and smart door locks, protect against home robberies and car theft. Our secure solutions also enable secure payment and secure authentication in a wide range of IoT devices, to protect privacy and assets by ensuring their confidentiality and their integrity.

ENABLING THE TRANSITION TO ENVIRONMENTAL SOLUTIONS

Electric cars

By enabling vehicle electrification and the supporting infrastructure which makes it possible, ST contributes to the shift from traditional cars to smarter, greener mobility solutions. ST's car electrification solutions enable makers to build better, more affordable electric vehicles, allowing drivers to reduce air pollution and mitigate global climate change.



Renewable energy and smart grids

We contribute to the transition to greener energy sources with high-power, high-efficiency power components that allow for very low loss energy conversion in solar panels, wind turbines and smart grids using wide bandgap semiconductor technologies like Silicon Carbide (SiC) and Gallium Nitride (GaN).

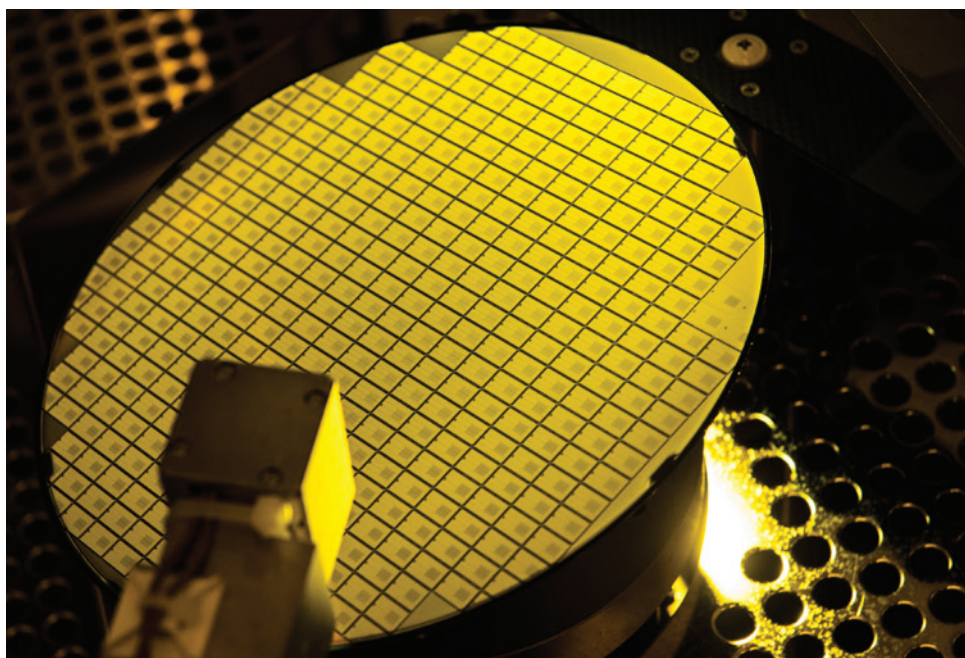


Air quality and energy management

We provide devices to monitor, optimize, and clean gas emissions from automotive and industrial motor engines, to measure air pollution in cities, and to purify the air in homes. We also offer a large product portfolio for energy monitoring and control in homes, cities, and industry.



Our product portfolio supports
a more sustainable world



SAVING POWER WITH ADVANCED TECHNOLOGIES

Innovative semiconductor materials

We are accelerating the transition towards clean and efficient energy management, offering innovative power electronic solutions based on wide bandgap technologies. Wide bandgap technologies, such as SiC and GaN, have many advantages compared to Silicon. Operating temperatures are higher, heat dissipation is improved, and switching and conduction losses are lower. We have been investing in wide bandgap materials since 1996 and have overcome the production challenges, helping to drive down costs and increase supply for the ever-increasing list of applications, including solar

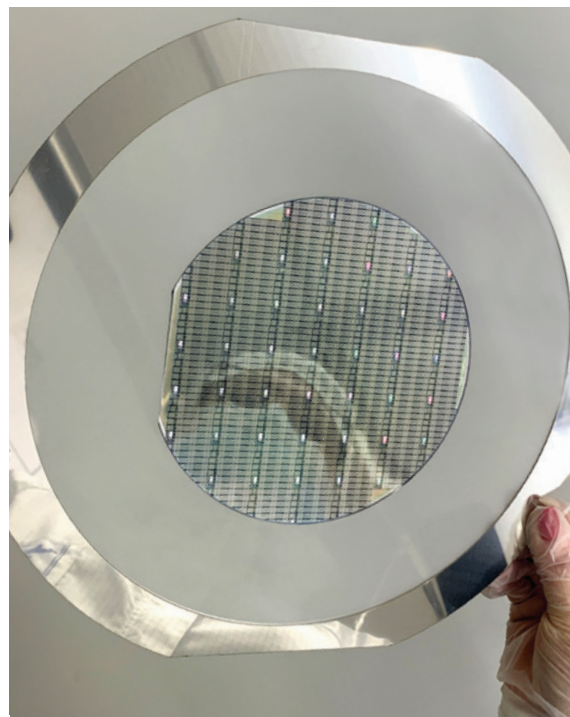
inverters, industrial motor drives, home appliances, and power adapters.

Wide bandgap technologies enable:

- Improved energy efficiency
- Reduced energy consumption
- Minimized application size and weight
- Increased ruggedness and extended life span
- Reduced cost of ownership



We create innovative technologies and devices that have a positive impact on our planet, our business, and people's lives.



Power-efficient products for everyday applications

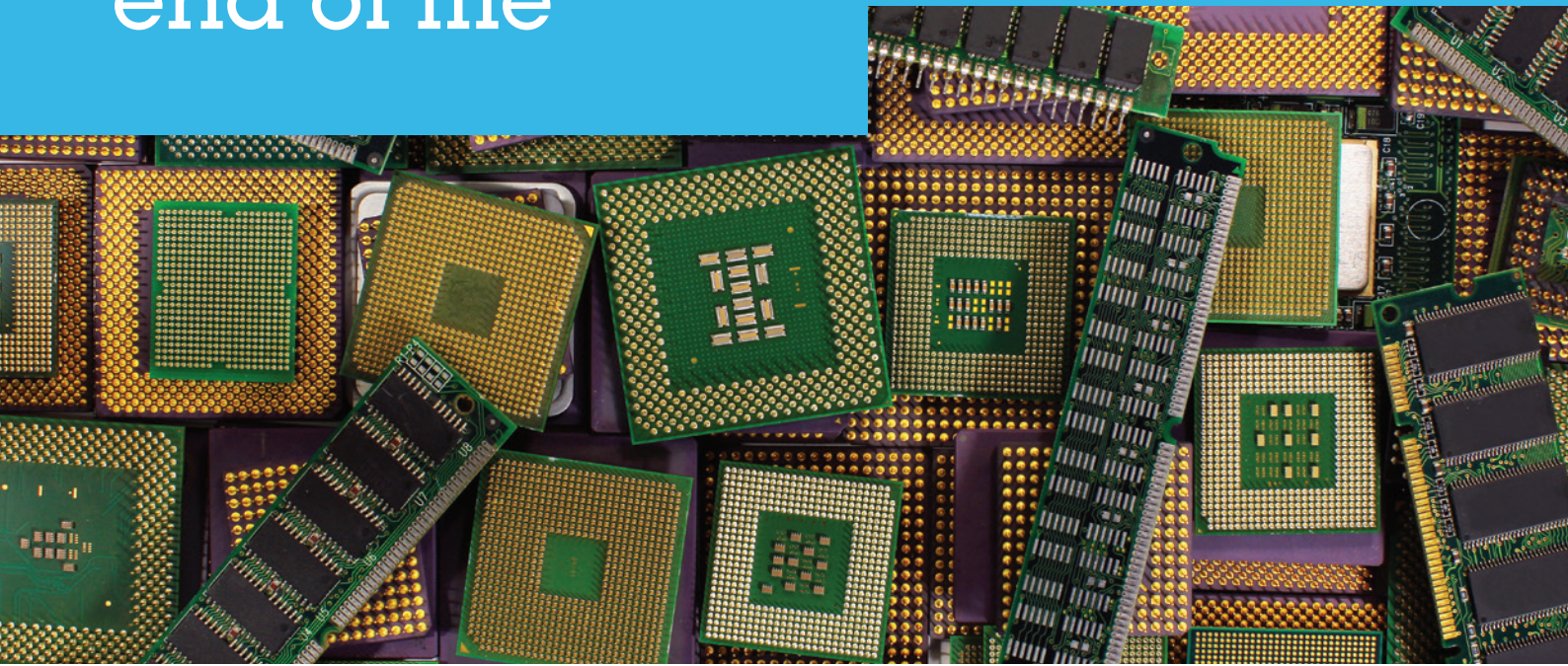
ST is at the heart of today's innovations, fostering sustainable energy consumption in a wide range of application fields. We provide semiconductor solutions that help manufacturers extend the battery lifetime of wearables and personal electronics, with, for example, Time-of-Flight solutions that detect the presence of users in front of their computer (triggering a power-saving sleep mode in their absence), or Artificial Intelligence techniques on ST's microcontrollers and sensors that make embedded

systems more intelligent and enable ultra-low power edge computing.

Multiple ST components are also designed to include specific energy-saving features, such as low power and idle modes, and fast electronic switches to reduce the power consumption of energy-intensive equipment (data centers, industrial robots, and machinery).



Product end of life



We strive to minimize the waste produced when disposing of our devices and facilitate recycling for our customers and end users.

RECYCLING

Hazardous substances

Reduce and monitor

As a supplier of electronic components, as opposed to an equipment manufacturer, ST is not directly affected by the legislations that enforce the recycling of end products, such as the European 2012/19/ EU Waste of Electrical and Electronic Equipment (WEEE) directive (except for ST's evaluation and demonstration boards).

Nevertheless, our ECOPACK program reduces hazardous substances in ST products, and our HSPM (Hazardous Substances Process Management) program monitors the remaining ones. An exhaustive list of substances, the Material Declaration sheet, is also made available for ST products, thereby informing customers and guaranteeing to them that the product complies with environmental legislation. These programs and initiatives thereby facilitate the recycling of our devices when their lifecycle has come to an end.

Optimized packing

Lighter and greener

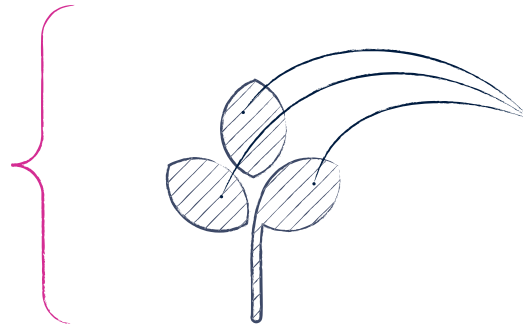
We are constantly improving our lean packing program, which fosters the use of recycled cardboard, the removal of plastics, and the use of recyclable or biodegradable materials to decrease waste disposal and spur the circular economy. This initiative also takes the packing volume and size for transportation into account, to reduce logistic costs, air-freight, and the induced plane GHG emissions.



THE STORY BEHIND THE SUSTAINABLE TECHNOLOGY LABEL

The leaves

The three leaves represent the three cornerstones on which we build our commitment to create technology and products that promote a more sustainable future.



3 leaves for 3 pillars :

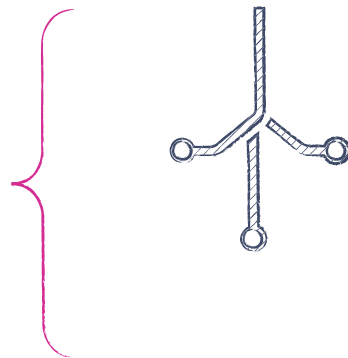
- People
- Business
- Environment

SUSTAINABLE
TECHNOLOGY by ST

Located as the fertile ground between the leaves and the roots, the Sustainable Technology program underpins our vision, actions and products.

The roots

We strive to be a role model and work together with our stakeholders to nurture the roots of a responsible electronic supply chain.



MANUFACTURING SITE EHS* CERTIFICATIONS

ISO14001 certified & EMAS validated (Environment management)

ISO50001 certified (Energy management)

ISO14064 certified (Carbon Emissions verification)

ISO45001 certified (Health and Safety management)

PROFESSIONAL ASSOCIATIONS

WSC (World Semiconductor Council) member

CDP (Carbon Disclosure Project) member

SBT (Science Based Target) committed

RBA (Responsible Business Alliance) member

UNGC (United Nations Global Compact) member

ILO (International Labor Organization) member

ABOUT STMICROELECTRONICS

At ST, we are 46,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An independent device manufacturer, we work with more than 100,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and 5G technology. Further information can be found at www.st.com

*Environment Health Safety



ACCELERATING SUSTAINABILITY TOGETHER



Order code: **BR2112STECH**

For more information on ST products and solutions, visit www.st.com

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