

# HELPING OUR CUSTOMERS BUILD A MORE SUSTAINABLE FUTURE

2023 CORPORATE SOCIAL  
RESPONSIBILITY REPORT

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**QUENTIN DEBUISSCHERT,**  
Chief Executive Officer  
as of February 2024



**“Axens  
is helping  
to deliver  
the energy  
transition.”**

**JEAN SENTENAC,**  
Chairman of the Board  
and Chief Executive Officer  
from 2002 until February 2024



**A**xens has set its sights on guiding its customers through the energy transition. For that purpose, we offer them patented processes in the form of licenses as well as catalysts, adsorbents and special equipment they can use to improve the environmental performance of their operations, boost their energy efficiency and reduce their carbon intensity.

This expertise, developed with support from our parent company and research partner, IFP Energies nouvelles (IFPEN), is widely recognized within our fields of business. Indeed, we now have more than 3,000 process units to our credit, we manufacture over 75,000 tons of catalysts and adsorbents annually, and we have delivered more than 3,500 industrial furnaces and 500 modules to date.

Our solutions provide concrete support in two ways. First, they help our long-standing customers, primarily in the refining and petrochemicals industries, to produce cleaner fuels, reduce their CO<sub>2</sub> emissions and successfully navigate their energy transition. Second, for companies in the chemical and energy industries seeking to capitalize on new processes in the low-carbon economy, they allow us to offer solid proposals in areas such as renewable or synthetic fuels and chemicals, development of a circular economy across a wide range of materials, low-carbon hydrogen and carbon capture and conversion—in all of which we led the field and now have one of the most extensive process portfolios in the world.

One of the major challenges we face is working in partnership with our customers to ensure our low-carbon and circular offerings come to fruition in industry, and that the units deploying our technology generate production that is safe, environmentally friendly, highly effective and has a sustainable cost for society.

Our role is to help those customers de-risk their decisions and reduce their investment costs as much as possible, so this paradigm shift proves a success and helps them take a positive step toward sustainability. To do that, we need to provide both human and technological support over the long term, especially in the light of the steady emergence of new and more stringent regulatory requirements. That is why we continue to enhance our working methods as part of an ecosystem that, in addition to our customers, includes our development partners and IFP Energies nouvelles (IFPEN), which conducts a significant share of our research and innovation.

Our CSR\* roadmap, developed with input from our teams, is wholly aligned with our strategy. Its primary aims are to make it easier to leverage technology in response to climate change and the need to reduce greenhouse gas emissions, at our customers' sites and at our own plants; to reduce our harvesting of resources, particularly water; and to promote the circular economy in the manufacture and use of our products and in our markets.

That roadmap is also designed to ensure safety at both our plants and our customers' sites and to protect the health of the men and women at our company and every company that works with us. Lastly, it aims to foster engagement among our employees and the openness to customers that is the basis for Axens' quality and reputation. To demonstrate and solidify our commitments, we have joined the United Nations Global Compact, we have aligned our actions with the Sustainable Development Goals in the UN's 2030 Agenda for Sustainable Development, and we are regularly audited by independent assessment bodies.

Although global warming is now obvious and posing serious threats to our environment, our communities and our way of life, through our solutions

and technology we are determined to make a tangible, positive impact on the world around us. We have the necessary means to help reduce our customers' carbon and environmental footprint while preserving their competitiveness and meeting society's needs. We are fortunate to have a skilled, engaged workforce, and we offer a comprehensive, robust and effective range of solutions coupled with top-level research and innovation.

On the strength of our technological culture, we have been able to capitalize on our many years of expertise and diversify into new markets, across a playing field that is more global than ever. Naturally, we will not succeed on our own. For that reason, we have made long-term collaborations and partnerships the cornerstone of our operating method and one of the key factors in our success. That is how we are mounting a concrete response to the challenges of sustainable development and the energy transition and building a more sustainable future.

**“We offer  
a comprehensive,  
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with top-level  
research and  
innovation.”**



# ROBUST FUNDAMENTALS, A ROBUST OFFERING

Decarbonizing the industrial world has become critically important for galvanizing the energy transition. Axens has mobilized on every front to make CSR\* a core component of its efforts to meet the sustainability challenge. It builds on robust fundamentals, thanks to an ambitious Climate Strategy, a demanding Research and Innovation policy, expanded offerings to customers, an exemplary ethics and compliance policy and responsible procurement.

\*Corporate Social Responsibility

# Profile

Confronted by Global Warming, faced with a climate emergency and the need to stem losses in biodiversity, Axens is using its vision and its actions to meet the challenges of decarbonization and environmental protection.



Backed by a comprehensive array of technological solutions, equipment and services, the Group provides support to industrial firms as they navigate their transformation. Active for many years in refining, petrochemicals and natural gas, Axens helps those companies take concrete steps to embark on the climate and energy transition. Recognized for more than twenty years of expertise in the conversion of oil and biomass into cleaner fuels, production and purification of the primary petrochemical intermediates and options for processing and converting natural gas and industrial wastewater, Axens is at the heart of today's environmental challenges.

Axens designs, develops and markets patented, licensed procedures and a variety of products ranging from furnaces and modular units to catalysts and adsorbents with which its customers can enhance their energy efficiency, reduce their environmental footprint and comply with regulatory requirements.

Moreover, Axens is working on alternative fuels and biosourced chemical intermediates, resource circularity, carbon capture and utilization, air and water treatment, biogas and low-carbon hydrogen—all emerging fields with promising potential for growth.

Axens has made CSR\* integral to its business model and combines its proven capacity to meet the needs of manufacturers with a keen sense of its responsibilities and operations throughout the value chain. Convinced that tomorrow brings opportunity, Axens is leading the way toward a consistently more carbon-free, sustainable future.

\*Corporate Social Responsibility

**Axens**  
Powering integrated solutions

More than  
**2,200**  
employees

**7** plants

Commercial operations in  
**13** countries

**10** fields  
of expertise

Over  
**3,000** industrial  
units under license

Over  
**500** modular  
unit products

Over  
**75,000**  
tons of catalysts and  
adsorbents sold each year

Over  
**3,500**  
furnaces sold

# “Our Research and Innovation roadmap is both concrete and ambitious.”

Axens' Research and Innovation program is preparing for the future. Founded on close cooperation with IFP Energies nouvelles (IFPEN), its goal is to devise equipment, products and technology that can reduce its customers' carbon and environmental impact while maintaining their competitiveness.



**OLIVIER CALLEBERT,**  
Project Director



**JACINTHE FRECON,**  
Process and Equipment Innovation  
Director

**O.C.:** The second component involves developing products and technologies that can expand our ability to produce renewable chemicals and fuels. These R&D projects address a future need and have a five- to ten-year timeframe. The development campaigns, typically conducted with industrial partners, are designed to fulfill our customers' regulatory, societal and technological objectives. Axens is collaborating on a variety of products in this realm—synthetic or biomass-derived sustainable fuels for use in the aviation industry; chemical plastics recycling; the BioButterfly project with Michelin for producing bio-butadiene from biosourced ethanol—but always with one goal in mind: to offer increasingly

eco-efficient technology that is both competitive and better for the environment.

**J.F.:** The third component, Prepare, consists of diversifying our offerings by investing in new fields connected with the energy transition, such as hydrogen, air and water treatment, electrification and batteries. These topics are closely related to our traditional businesses and generally have a longer timeline.

“One of the challenges we face in our work is to cut the carbon impact to a minimum and/or reduce the environmental footprint.”

**How does this Research and Innovation program have a material impact on customers?**

**J.F.:** The Research and Innovation process involves multiple phases, with clearly defined milestones to be achieved from the start of the project until it reaches the market. The development phases, including a demonstrator if necessary, are led by IFPEN, while Axens handles certification.

Most of our developments with IFPEN that fall into the Develop and Prepare categories are conducted collaboratively. In other words, we routinely operate in consortia in which one or more industrial firms have invested.

**O.C.:** When that process is complete, we provide the customer with a compendium of technical data that it can use to build and operate an industrial unit based on the process. A significant portion of our work focuses on reducing technological risk by creating a robust design.

We also supply our customers with catalysts and adsorbents that we refine or develop for new applications. With catalysts, for example, our work involves making them more selective or reducing the volume of energy they need to work. The challenge we face in that case is to cut the carbon impact to a minimum and/or reduce the environmental footprint. We might also be aiming to lower the cost price or the cost of using the technology.

**What are the flagship projects that the Axens Research and Innovation teams are working on now?**

**J.F.:** Obviously we have the e-fuels project that's especially important to the aviation industry, in which the goal is to produce synthetic fuels from hydrogen and CO<sub>2</sub>. So we need the technological building blocks for producing those fuels, and once those building blocks become available, they need to be made as effective as possible. The first building block involves CO<sub>2</sub> capture. For that purpose, we designed the DMX™ 3D demonstrator, which has been running smoothly for more than a year. It proved the efficacy of our carbon capture process when it was deployed on an industrial scale at the ArcelorMittal site.

The second building block is something called Reverse Water Gas Shift technology, which is used to convert CO<sub>2</sub> and hydrogen into synthetic gas. We joined forces with the Paul Wurth Group to refine the technology and bring the entire process to industrial-scale maturity in less than two years, with certification expected in 2024.

In the subsequent building blocks, those synthetic gases are converted into synthetic fuels, notably sustainable aviation fuel (SAF), using the Fischer-Tropsch process and then hydrocracking. While all that is going on, we're refining the chain of events and obtaining patents to stake out a good position in the e-fuels market.

**O.C.:** Our other flagship project is plastics recycling, where Axens is developing several advanced chemical and physical recycling processes that we're offering to our customers. Specifically, Axens has developed a process for chemically recycling all PET (polyethylene terephthalate) waste (e.g. food packaging and polyester textiles) to create recycled PET that matches the original in quality. That process, known as Rewind® PET, was initially developed by IFPEN. Then in 2020

we partnered with JEPLAN, a Japanese firm, to build a demonstration unit in Japan. That demonstrator started up in September 2023 and is running at full capacity, so we anticipate that we'll be able to get the process certified and begin deploying it commercially worldwide in the spring of 2024. With that process, we decided to go beyond our role as licensor by acting as a co-developer and co-investor in an initial industrial unit. That unit will be built in France with Toray, our industrial partner, which already produces PET. It's an unusual but innovative and very capital-intensive business model aligned with the France 2030 national investment plan. The goal for Axens is twofold: move faster in bringing this new process to market, since it's a rapidly expanding field, but also diversify Axens' sources of revenue by capturing some of the value to be gained from industrial deployment of the process.

## R&I IN FIGURES

More than  
**3,000** licensed industrial  
units

**15+** technologies  
licensed over the past decade

**40+** products  
licensed over the past decade

# A comprehensive and increasingly innovative offering

Axens has committed to expanding into a variety of promising fields while maintaining its refining, petrochemicals and natural gas operations. Here's an overview of the solutions it offers in support of the energy transition and a more sustainable world.



**REFINING**

**Target market**

- Refiners

**Solutions deployed**

- In support of production of high-quality fuels

**Benefits**

- Production of cleaner fuels
- Reduced environmental footprint
- Regulatory compliance

**PETROCHEMICALS**

**Target market**

- The petrochemical industry

**Solutions deployed**

- In support of production and purification of petrochemical intermediates such as olefins and aromatics

**Benefits**

- Reduced environmental footprint

**NATURAL GAS**

**Target market**

- The natural gas industry

**Solutions deployed**

- For treatment, purification and drying in onshore and offshore natural gas production

**Benefits**

- Reduced environmental footprint

**RENEWABLE FUELS WITH LOW CARBON CONTENT AND BIOSOURCED CHEMICAL INTERMEDIATES**

**Target market**

- Refiners, the petrochemical industry and producers of renewable fuels and biosourced chemicals

**Solutions deployed**

- For production of renewable fuels (specifically for aviation) and biomass-derived chemicals as a replacement for fossil fuel products

**Benefits**

- Production of cleaner fuels
- Reduced environmental footprint
- Regulatory compliance

**CARBON CAPTURE, UTILIZATION AND STORAGE (CCUS)**

**Target market**

- All types of industry

**Solutions deployed**

- For capture of CO<sub>2</sub> (pre- and post-combustion) for reuse in e-fuels (alternative fuels produced from hydrogen and CO<sub>2</sub>)

**Benefits**

- Production of cleaner fuels
- Reduced environmental footprint
- Regulatory compliance

**BIOGAS AND LANDFILL GAS**

**Target market**

- Operators of biogas production units

**Solutions deployed**

- For biogas purification and recovery

**Benefits**

- Production of cleaner fuels
- Regulatory compliance

**WATER TREATMENT**

**Target market**

- All kinds of industry

**Solutions deployed**

- For treatment of industrial wastewater (purification and decontamination) for recycling and reuse

**Benefits**

- Production of cleaner fuels
- Regulatory compliance

**PLASTICS RECYCLING**

**Target market**

- The petrochemical industry, operators of recycling units

**Solutions deployed**

- For recycling of various types of plastic

**Benefits**

- Production of cleaner fuels
- Regulatory compliance

**LOW-CARBON HYDROGEN**

**Target market**

- All types of industry

**Solutions deployed**

- For transportation and purification of hydrogen from any source and the production of low-carbon hydrogen

**Benefits**

- Production of cleaner fuels
- Regulatory compliance

**AIR TREATMENT**

**Target market**

- All types of industry

**Solutions deployed**

- For elimination of pollutants found in industrial air emissions and air purification

**Benefits**

- Production of cleaner fuels
- Regulatory compliance

# A virtuous business strategy

With the strategy it has developed, Axens can help its customers take concrete steps and move forward in their energy efficiency and/or environmental protection campaigns, regardless of their progress to date. Thanks to customized solutions and an international footprint, it can respond locally to address their needs anywhere in the world.



*“Guiding our customers through the energy transition is at the heart of our strategy—with one key goal: helping them achieve optimal energy and environmental efficiency.”*

Jean-Luc Nocca,  
Executive Vice President Commercial Business Division

## FOUR LONG-TERM CHALLENGES

- Climate change
- Population growth
- Resource scarcity
- People’s aspiration for progress and improved living standards

## OUR STRATEGY HELPS TO ADDRESS

- **Becoming more competitive in our traditional fields of expertise and helping our customers as they convert their assets**
  - Catalysts and adsorbents for reducing carbon footprints
  - Revamping and co-processing
  - Energy efficiency and decarbonization
- **Expanding our expertise and our offerings in related fields**
  - High-level integration of refining and petrochemicals
  - Plastics recycling
  - Biofuels, sustainable aviation fuels and biosourced chemicals
  - Gas treatment, carbon capture, utilization and storage
  - Transition to digital technology
- **Preparing for the future by reducing our carbon footprint and investing in new fields**
  - Axens Climate Strategy
  - Water and air treatment
  - Hydrogen transportation and purification
  - Production of materials for the batteries of the future

## WITH A COHERENT CSR\* ROADMAP

- **Ensuring safety onsite and protecting the health of our teams**
  - Protecting the health of our employees
  - Keeping Axens sites safe
  - Ensuring safety at our customers’ sites and on assignments
- **Contributing to environmental protection and a low-carbon society**
  - A two-pronged Climate Strategy: reducing our carbon footprint and helping customers reduce theirs
  - Curbing our water use and offering solutions for water and air treatment
  - Reducing our waste production
  - Enlisting our suppliers in our CSR campaign
- **Fostering the engagement of our teams**
  - Striving for gender equality in the workplace
  - Guaranteeing and cultivating dialogue with the employees
  - Developing and recognizing employees’ skills

\*Corporate Social Responsibility

## THAT ADDRESSES SEVEN PRIORITY SDGs\*\*

- 
-   
-  
- 

\*\*United Nations Sustainable Development Goals



# Our CSR\* governance for overseeing the SDGs\*\*

Axens' CSR principles are shared at the highest levels of the company and overseen by the Board of Directors and the Executive Committee. They are correlated with the United Nations Sustainable Development Goals.

## Board of Directors

The directors approve the strategic plan that outlines the Group's sustainable development objectives.







## Executive Committee

The Executive Committee takes account of our stakeholders' CSR standards. It provides for the Group's growth and is committed to improving its performance. The Executive Committee proposes and approves the Safety and Environment policies. It ensures adherence to the Group's values. It supervises the Axens Sustainable Activity Program (ASAP). The ASAP action plan is approved annually by the Chairman and Chief Executive Officer.

## The ASAP Committee (COMASAP)

The COMASAP includes representatives from each of the Group's business entities and from its business partners. The program's manager ensures that CSR initiatives are properly coordinated from both a business and regulatory standpoint.

Axens is a signatory of the UN Global Compact. Of the 17 United Nations Sustainable Development Goals, seven have been selected as priority objectives under the Axens materiality matrix. To respond to those goals in concrete ways, the Group has defined seven quantified commitments:

- 
**40%** of Executive Committee seats and 30% of seats on the leadership team occupied by women by March 1, 2029
- 
**Reduce water use by 20%** from 2019 levels at the industrial sites operated by Axens between now and 2030
- 
**Use at least 30%** low-carbon energy (renewable and nuclear) at the Group's industrial sites by 2030 compared to 2019 levels
- 
**Achieve zero** serious or fatal occupational injuries or illnesses on a lasting basis
- 
**Homologation and market launch of at least five low-carbon technologies** by 2030
- 
**Reduce by 40%** the quantity of non-recycled waste produced at industrial sites operated by Axens between now and 2030, compared to 2019
- 
**Reduce by 30%** the Group's absolute Scope 1+2 emissions by 2030, compared to 2019

\*Corporate Social Responsibility  
\*\*Sustainable Development Goals

# Uncompromising integrity and compliance

Axens has defined foundational ethics and compliance guidelines to ensure employees conduct themselves with the utmost integrity both personally and professionally and follow the most stringent ethics standards, wherever they are in the world.

## An Axens Code of Integrity

Since 2017, Axens has maintained a Code of Integrity that defines business principles every employee must follow and apply so as to fulfill their responsibilities with integrity, honesty and transparency. This Code is binding on all of the Group's companies in France and worldwide. It is based on three main principles:

- treating others with respect;
- acting with honesty and integrity and complying with current laws and regulations;
- protecting the common good.

## A whistleblowing procedure for reporting non-compliance and unethical behavior

Axens has established a procedure for whistleblowers to report actions that are contrary to the principles outlined in the Code of Integrity. In compliance with the applicable regulations, that procedure offers a variety of media and channels for alerting the appropriate contacts (the legal department, human resources, HSE\*, management, the compliance team), to encourage reporting of any failure to comply with integrity rules. In those cases, an investigation is launched. In the event of proven non-compliance, a committee convenes to impose appropriate disciplinary measures on any employee(s) found to have violated the Code of Integrity.

\*Health, Safety, Environment

## Resources for meeting compliance standards

Axens maintains a special Compliance team at its headquarters in Rueil-Malmaison, outside Paris, that handles matters relating to ethics, integrity, compliance and penalties. To that end, it conducts KYC (Know Your Customer) and KYS (Know Your Supplier) audits of future suppliers and customers, conducts a risk mapping, establishes Group-wide policies and procedures, organizes employee training on relevant issues and monitors the Group's compliance with regulatory requirements.



*“Our compliance policy at Axens is in place and operational. Our programs are now mature and continually improved year after year. Everyone at Axens is familiar with the rules and principles they must comply with, and our whistleblower system has been proven effective. In addition, we have converted our past KYC audit reports to digital format, so our sales managers can easily review the audit data and determine, based on the flag color (green, orange or red), whether they can work with the customer or if they should consult the compliance teams before proceeding, so the latter can conduct a more thorough due-diligence analysis. Integrity concerns us all, and we’re counting on the exemplary level of conduct embodied in our corporate culture.”*

Helena Kazamaki, Executive Vice President General Counsel

# A Group-wide responsible procurement policy

Axens has defined and structured a central purchasing policy based on a commitment to efficiency and performance. Its relationships with key suppliers are founded on a spirit of partnership and increasingly focused on CSR\*.



## A SUPPLIER CODE OF CONDUCT THAT REFLECTS THE GROUP'S COMMITMENTS

Axens believes that it needs to act responsibly in everything it does, and consequently defined a Code of Conduct in 2023 that is incumbent on its strategic and sensitive suppliers. Those partners are required to review and sign the Code and comply with its standards in each of three areas: environmental protection and energy use designed to advance the Group's decarbonization goals (Scope 3); health, safety and human rights in the workplace; and ethics and regulatory compliance. Adherence to the Code is an important criterion in our procedures for selecting suppliers and evaluating their performance. Nearly 40% of our strategic and sensitive suppliers have signed the Code of Conduct to date.

## A unit with significant added value

The Purchasing division plays a strategic role in expanding the Group's business. It is actively involved in every expenditure as far in advance as possible, and is responsible for sourcing and approving suppliers and streamlining the purchasing process. It also monitors risks, especially for minerals and raw materials. In 2023, the Group joined the Responsible Minerals Initiative, a nonprofit organization that helps companies make ethical sourcing decisions.



*"The Purchasing division works hand in hand with all of Axens' stakeholders. Our goal is to anticipate and choose the partners that most closely match the Group's needs."*

**Olivier Blatter,**  
Executive Vice President,  
Chief Financial Officer

## Routine supplier evaluations

Axens has pledged to evaluate our strategic and sensitive suppliers. The Group monitors their compliance with social and tax obligations, reviews trends in their financial information and scrutinizes the overall quality of the contractual activities and products they provide. In order to access their CSR performance, Axens also tracks the EcoVadis assessment of our strategic and sensitive suppliers, 38% of whom have been evaluated by the organization. The companies are assessed on the basis of four criteria: the environment, social and human rights, ethics and sustainable purchasing.



*"Purchasing has an essential role to play in reducing the Group's carbon footprint, particularly in terms of life cycle analyses and Scope 3 emissions. Our program is in its infancy and will evolve over time, but we have already briefed our suppliers on the initiative through a preliminary awareness-raising conversation. The next step will be to review their roadmap to decarbonization and factor it into our vetting procedure for our new suppliers."*

**Alain Lecarpentier,** Global Purchasing Director



## TRUST, THE CORNERSTONE OF SUPPLIER RELATIONSHIPS

Axens aims to forge mutually beneficial ties with its key suppliers, a group of some 250 strategic and sensitive partners. This objective is expressed in its philosophy of respect, sharing and dialogue, with the aim of creating healthy, harmonious, flexible and lasting relationships focused on efficiency. Those suppliers, who are subjected to a rigorous vetting process, are not grouped

by their volume of sales but by their risk of potential impact on the Group's operations. Axens chooses to work with suppliers who not only have the desired skills but also offer an optimal total cost of ownership. Through this focus on cost-effectiveness, Axens can bring its projects to fruition; more importantly, it retains credibility in its fields of expertise in the eyes of its own customers.

## Outlook for the future

In 2024, Axens will be revising its vetting procedure for new suppliers to increase the importance of CSR in decision-making and selection of partners. It is therefore considering the possibility of weighting the recycling criterion more heavily and increasing the share of recycled metal purchases in our evaluations, an area where the Group currently receives little information from its suppliers.

The Group also intends to expand its carbon footprint calculations to encompass all Group purchases; those values will be included in its Scope 1+2+3 emissions under the Catalysts and Adsorbents business. Another important topic is the market watch program, which is designed to offer foresight for risk management and control. As a result, it is likely to be expanded to include CSR, compliance and geopolitical risks.

Lastly, a maturity grid will be established for the Purchasing division in 2024, with the aim of mapping the unit's role within the company and making appropriate changes so that, by serving as a decision-making resource, it can generate greater value for the company.

\*Corporate Social Responsibility



# HEALTH AND SAFETY FOR ALL: ABSOLUTE PRIORITIES

At Axens, health and safety are not simply a matter of compliance; they are vital, fundamental priorities. We are actively engaged in protecting not just our own employees and sites but those of our customers as well. Our goal is to reduce the level of risk to a minimum and preserve everyone's health and safety worldwide. Our exemplarity and performance depend on it.



**ALEXANDRE NICOLAOS,**  
Q-Perf, HSE & Transformation Director



**“The health and safety of people are non-negotiable.”**

### What are the major health and safety challenges facing Axens?

We are tackling two major issues. The first is cultural. We need to achieve a steady, ongoing reduction in the number of injuries among our employees and partner subcontractors at the Group’s operational sites. So we know where we want to go, but getting there may take some time. Currently, our workplace health and safety culture is at stage three on the Bradley Curve, which has four stages: Reactive, Dependent, Independent, and Interdependent. We want to go even further and do what it takes to ensure that employees embrace and practice safety and risk prevention at all times. The culture of interdependence to which we aspire calls for team spirit, a sense of collective responsibility and zero serious or fatal occupational injuries or illnesses, consistent with SDG\* 8, over the long term. In other words, we need to take care of each other and forestall risks of all kinds, including psychosocial risks.

The second challenge is to improve security for our personnel in a geopolitical environment that is newly volatile, uncertain, complex and ambiguous. For that purpose, we need to safeguard the physical and psychological integrity of our teams and enhance our ability to prevent, plan and take action. So we have to mobilize all the resources at our disposal to ensure our teams feel safe and protected, regardless of the danger at hand. Accordingly, before we send them abroad, we conduct a security and public health analysis, evaluate risks and conduct onsite audits, either directly or with help from specialists and/or occupational health experts, and we take steps to mitigate any concerns we find.

Both of these are structural challenges and far from negligible: in 2023, for example, about 700 employees

working at Axens’ corporate headquarters carried out assignments abroad. They conducted their work in 55 countries, including 6 countries labeled Red, for a high level of risk, under the classification used by the French Ministry of Foreign Affairs, 13 countries deemed Orange, 25 classified as Yellow and 11 classified as Green.

### What are Axens’ objectives in meeting those challenges?

Axens is pursuing four primary objectives: ensuring the safety of our teams and partner subcontractors; identifying and addressing risks so they can be reduced to a minimum or eliminated altogether; establishing safety rules that are applicable to everyone, everywhere; and promoting practices that protect others. One of the indicators we watch especially closely is the total recordable incident rate, or TRIR, which uses four categories to tally incidents: fatalities, accidents with lost time, workplace accommodations and medical treatment. The number of TRIR incidents within the Group rose in 2020 and 2022, from 6 to 17. That increase can be variously attributed to the Covid pandemic, company reorganizations and more difficult geopolitical conditions. In 2023, however, we saw an improvement, with 10 incidents and a TRIR that fell from 0.99 in 2022 to 0.60 in 2023 for Axens personnel and our partner subcontractors at our sites.

### What action plans has Axens deployed to ensure its sites are safe and the health of its teams is protected?

We have two initiatives that are especially important: *Safety Starts With Me* and *The Shield*. The first, as its name suggests, focuses on safety. It’s aimed at preventing falls from heights, one of the biggest risk

factors we face. We’ve implemented rules, reviewed best practices and focused on steps employees can take to prevent the risk of people or tools falling. We’re communicating with the workforce on this issue and we continue to provide training to reach our goal. The other initiative, *The Shield*, is aimed at improving our security procedures. We partner closely with nearly a dozen specialized security firms around the world that offer security support, and we’ve also acquired a Travel Risk Management tool to facilitate travel by our employees abroad. In addition, as part of our extensive preparatory work, we’ve provided for joint scheduling of upcoming foreign assignments, so we can anticipate and evaluate potential risks more effectively. We also receive training in crisis management, which is now an integral part of our corporate culture.

**“Our programs are effective because they’re consistent with a commitment to continuous improvement.”**

Our goal is to be prepared in the event of a crisis. I’d like to emphasize that Axens’ teams have truly imbued the ethos of responsibility that our policy demands. They notify us of problems they encounter, so it’s easier to take corrective measures as part of a commitment to continuous improvement.

# A daily commitment to health and safety



## ISO 45001 CERTIFIED: US PLANTS THAT ARE MAKING THE DIFFERENCE

### FACT

Axens' Willow Island catalyst production plant in the US state of West Virginia won ISO 45001 certification in late 2023. Its plant in St. Louis, Missouri, which specializes in sulfur scavenging, likewise won certification in early 2024.

### COMMENT

The international ISO 45001 standard on workplace health and safety establishes a safety framework focused on ongoing improvements in worker protection as well as risk reduction.



Christian Vaute, Executive Vice President of the Axens Regional Operations Center, Americas, calls it "a wonderful

step forward and a testament to our quality and efficiency. This certification is awarded to companies that define and comply with specific procedures and that actively manage occupational health and safety, allowing Axens North America to raise all of its offices and production sites to the same level. That means more internal uniformity and greater consistency for our customers."

## Near Misses: key to the HSE\* culture

Axens has introduced a system for routine reporting of Near Misses, i.e. unforeseen safety events that might have caused an injury, illness or damage and that, if they were to recur, could become accidents. Its teams have been trained in the reporting process and now log any situation that poses a potential hazard. Each case is then processed and analyzed, and corrective or preventive measures are taken.

Axens North America facilities are now entering these Near Misses in a new computerized database. According to Christian Vaute, Executive Vice President of the Axens Regional Operations Center, Americas, "We are required to conduct an in-depth review of every Near Miss. In the wake of that review, we can respond in a variety of ways, with new procedures, additional training or technical modifications

as needed. It's a wide-ranging examination that typically combines an analytical methodology and remedial measures." For Thomas Grimaud, Executive Vice President Project Operations, that twofold approach offers a means of fostering, maintaining and disseminating Group-wide "a culture of prevention and safety awareness that needs to be the Group's trademark."

\*Health, Safety, Environment



## A CULTURAL SHIFT IN ATTITUDES TO SAFETY AT OUR SALINDRES INDUSTRIAL SITE

### CHALLENGE

After a significant deterioration in safety results in 2022 at its Salindres plant in southern France, Axens launched a major safety campaign in 2023. The initiative had two goals: to rekindle a safety mindset among the site's managers and operating teams and also halt the downward safety trend.

### SOLUTION

Given the urgency of the situation, the plant organized a workshop devoted solely to safety issues in January 2023.



says Éric Caprani, Executive Vice President Industrial Operations.

"The idea was to lay out a new safety roadmap for the coming year, with a primary focus on organization and behavior,"

On its conclusion, the workshop's participants decided to give every employee at the site, regardless of their job level or position, the power to act and say "Stop" upon witnessing any failure to comply with safety procedures. The site's managers, meanwhile, stepped up their visibility in the field, with regular visits during which they highlighted correct practices, talked to staff about safety, and verified compliance with the rules in place, such as a ban on using mobile phones while walking. "For the most part, we simply needed to enforce the plant's existing rules, without instituting any new procedures," says Éric.

All of the measures adopted in the workshop are now in place and helping to cement the Group's goal of setting the standard for safety. With eight accidents in 2023 compared to twelve in 2022, Salindres has shown a marked improvement. Now that the campaign is beginning to bear fruit, it will continue throughout 2024.

## Zero serious accidents in North America in 2023

Axens' five plants in Canada and the United States are notable for their rigorous attitude to safety and their extremely positive safety record. In 2023, the five plants collectively turned in an impressive performance by logging zero serious accidents, thanks largely to a strong commitment by management and by the assertion that safety affects everyone at the site.



## Safety is everyone's business

All over the world, safety is a high priority for Axens. Consequently, the company's management makes regular visits to operating personnel at international sites, reminding them about the importance of safety and compliance with best practice, such as the need to keep workshop areas clean to prevent the risk of falls and the requirement to follow the pathways marked on the floor. Every action counts, so safety requires a combination of personal focus and collective discipline.



## A Shield Taskforce to keep traveling employees safe

### BACKGROUND

The Shield arose out of Axens' decision to revise its safety and security strategy for personnel whose duties take them to locations around the globe. The program is designed as a system of reliable procedures and clearly identified resources for handling every facet of an overseas assignment anywhere in the world.

regularly scrutinized to ensure the utmost protection for the work and safety of operations personnel.



**Thomas Grimaud**, Executive Vice President Project Operations says: "We try not to

leave anything to chance. Our taskforce conducts a systematic, detailed analysis of every region where our work takes us. We now have procedures firmly in place and work with an entire ecosystem of service providers who are experienced in the security issues we face. We strive to ensure that our teams can carry out their responsibilities under the best possible conditions."

### SOLUTION

Every aspect of the process—selecting service providers who specialize in working in difficult regions, addressing logistical and operational concerns, defining daily rules to follow and precautions to take, devising exfiltration scenarios—is



## Construction site safety under control

Axens is meeting the Group's safety targets at our construction worksites. Those positive results can be attributed to best practice: compliance with site safety rules, systematic reporting of Near Misses, a discussion of safety at the start of every important meeting, regular site tours, cause tree analyses and more.



**SAFETY**  
Starts with me

## Outlook for the future

Axens plans to continue the rollout of the Safety Starts With Me campaign in 2024. That involves a long-term effort to establish a culture of continuous improvement while also transforming its existing safety culture. The idea is to move toward interdependence as a basis for taking care of each other. To facilitate that cultural change, Axens draws on standardized change

methodologies and uses communications, training and management to ensure that the teams buy into the need for change. Axens will continue to encourage routine reporting of incidents and events related to health, safety and security and capitalize on what's been developed in the United States. The system in place for receiving and responding to concerns will also require improvement.



# THE CHALLENGE OF A MORE SUSTAINABLE WORLD

Axens' goals are ambitious and its standards are high, but the Group has all the assets and expertise it needs to guide its customers through their transformation to meet their objectives, while it advances its own decarbonization. That value to its customers, combined with its resolute determination, gives Axens the strength and legitimacy to take action to protect the environment.



# “Our environmental ambitions are reflected across our entire value chain.”



**FABRICE BERTONCINI,**  
Executive Vice President, New Development  
& Transformation Business Division

## What are the goals that Axens is pursuing on behalf of a low-carbon society? How does the company intend to meet those goals?

Axens has defined a Climate Strategy with two primary components. The first is to reduce our carbon footprint by 30% across Scopes 1 and 2 by 2030. That contributes to two major UN Sustainable Development Goals: SDG 13, which calls for urgent measures to combat climate change and its consequences, and SDG 7, for which Axens has pledged to increase the percentage of low-carbon energy at its production sites.

To reduce our own emissions, we're not only boosting the share of low-carbon energy at our industrial sites, we're also constantly trying to make our facilities more energy-efficient, particularly through the adoption of digital tech.

For Scope 3 emissions, we will set a target once we have calculated the carbon footprint of all our businesses at customer sites.

The second part of our strategy is to help our customers reduce their emissions and meet their climate objectives. That also contributes to SDG 13. On projects where Axens solutions help prevent greenhouse-gas emissions, those reductions will be quantified. Axens offers an array of solutions for achieving that goal: we can provide technology and equipment for improving energy efficiency, convert industrial furnaces to electricity, promote processes for recycling used plastics, deploy carbon capture technology and develop renewable fuels and biosourced chemicals with a low carbon content. We also offer a range of decarbonization-related services under the banner Decarbon'us. They include studies, audits and consulting services to help our customers identify their needs and build a strategy.

## Protecting the environment is also a core component of the Axens roadmap. How is the company supporting its customers in that field?

Axens goes a step beyond by focusing on other environmental challenges in addition to climate change. For example, we've set targets inspired by SDG 6, "Ensure availability and sustainable management of water and sanitation for all," and SDG 12, "Ensure sustainable consumption and production patterns."

## “2023 was the year we began implementing the Climate Strategy.”

In 2023 we pledged to reduce water use at our industrial sites by 20% from 2019 levels by 2030, thanks to solutions for improving wastewater quality and recycling as much of that wastewater as possible after purification. We also intend to reduce the quantity of non-recycled waste we produce at our industrial sites by 40% from 2019 levels by 2030. Our industrial facilities are on the front lines for both of those issues, and they're mobilizing a variety of processes, solutions and investments to achieve those goals.

We also offer concrete support to our customers for environmental protection, with an increasingly integrated range of solutions.

Axens has made two acquisitions along those lines in the past few years. In 2022 we acquired HydroThane, a company based in the Netherlands with proven expertise in industrial wastewater treatment; they supply biotechnology for improving water quality and

recyclability. And in 2021 we acquired Denmark's Flowvision, which markets air treatment solutions that reduce nitrogen oxides in industrial flue gas.

## What were Axens' main accomplishments in 2023 in connection with that roadmap?

First of all, 2023 was the year we began implementing our Climate Strategy. We shared the policies and objectives in the strategy at the highest levels of the organization and communicated our commitments to our customers. Another major accomplishment is that we defined targets for 2030 in connection with the SDGs.

Lastly, to spur industrial decarbonization, Axens stands out for three initiatives. First, the project we conducted with Elyse Energy in the Lacq industrial zone, in southwestern France, to commission the production plant for BioTJet sustainable aviation fuel.

Plus we have the e-SAF project in Norway with Norsk e-Fuel and the start-up of our first demonstration unit for PET\* recycling, in partnership with Japan's JEPLAN.

With those initiatives, we're firmly on the right path.



# Our 2030 Climate Strategy

Axens launched an initiative to draft its Climate Strategy in early 2021. The purpose of that project was to define the Group’s ambitions for mitigating climate change. The resulting Climate Strategy rests on two pillars (referred to here as Pillar 1 and Pillar 2) that represent complementary commitments.

## PILLAR 1

Reduce our carbon footprint across the entire value chain

## PILLAR 2

Help our customers reduce their carbon footprint and achieve their climate goals



### SCOPES 1 & 2

2030 target  
**30% reduction**  
 from 2019 levels  
 BENCHMARK:  
**87.4 thousand tons of CO<sub>2</sub> equivalent**

#### Our action

- Optimizing our operations
- Investing in energy efficiency
- Introducing digital technology at our industrial facilities
- Generating and/or purchasing renewable energy

### SCOPE 3

2030 target  
 yet to be defined

#### Our action

- Collaborating with suppliers to reduce GHG\* emissions connected with Axens’ purchasing
- Continuously improving the technology we offer to improve energy efficiency
- Developing and marketing electrical furnaces
- Diversifying our technological portfolio in “low-carbon” disciplines

\*Greenhouse gas

Our products and services help to avoid GHG emissions across the entire project lifecycle

We provide technology and related solutions in the following fields:

- Renewable fuels and bio-based chemicals with low carbon content
- Carbon capture and use
- Circularity of resources
- Energy efficiency
- Equipment electrification
- Low-carbon hydrogen



# Reducing our own emissions

**Pillar 1 of the Axens Climate Strategy involves reducing the Group’s carbon footprint. That entails a variety of measures and initiatives to reduce greenhouse gas emissions directly or indirectly tied to Axens’ business operations—i.e. those included in Scopes 1, 2 and 3 of the GHG\* Protocol Corporate Standard.**

\*Greenhouse Gas

## Reducing Scope 1 and 2 emissions by 30% in absolute terms

Although the Group is not eligible for the Science Based Targets Initiative (SBTi), given the share of its revenue derived from the oil and gas industry, it has nonetheless chosen to align its 2030 Scope 1+2 GHG emissions reduction targets with the pathway for capping the rise in global warming at Well Below 2 Degrees (WB2C) by the end of the century.

Accordingly, the Group intends to curb Scope 1+2 emissions by 30% in absolute terms. That target includes both direct greenhouse gas emissions at Axens sites and indirect emissions related to energy use at those sites, whether industrial or commercial.

### Change in greenhouse gas emissions (Scopes 1 and 2)

Year	2019	2020**	2021**	2022**	2023
GHG* in thousands of tons of CO <sub>2</sub> equivalent	87.4	80.0	76.6	78.2	83.2

\*Greenhouse gas

\*\*The decline over 2020-2022 is attributable to a decline in production from the benchmark year of 2019, primarily as a result of the Covid pandemic. Plant production levels in 2023 are roughly equivalent to those of the benchmark year.

## Assessing Scope 3 emissions

Axens has been calculating its Scope 3 greenhouse gas emissions, i.e. indirect emissions connected with all activities upstream and downstream from Axens sites. It was able to assess the Group’s total greenhouse gas emissions connected with catalyst and adsorbent production and sales at 778 million tons of CO<sub>2</sub> equivalent for the benchmark year of 2019. Scope 3, Category 11 emissions from the use of its equipment and process licenses are currently being assessed; once those calculations have been completed, the Group will announce a Scope 3 emissions reduction target for 2030.



Achieve a 30% reduction in absolute terms from 2019 levels in the Group’s Scope 1+2 emissions by 2030



Use at least 30% low-carbon energy (renewable and nuclear) at the Group’s industrial sites by 2030 versus 2019 levels

*“Axens’ pledge to reduce Scope 1 and 2 emissions affects all of our industrial sites. We are focused on studying and implementing the most appropriate, effective solutions in the light of local conditions and the specific nature of each site.”*



**Frédéric Kuntzburger,**  
Industrial & Technical Director

**Maxime Montillet,**  
Salindres Plant Manager,  
France



## A diminishing carbon footprint at Salindres

Our Salindres plant in southern France, which specializes in the manufacture of adsorbents and catalysts, is adhering to the Group’s roadmap by adopting the target of reducing Scope 1 and 2 greenhouse gas emissions by 30% by 2030. Most of those emissions come from combustion of the natural gas used to supply process heat and generate steam. The ISO 50001 certified plant has adopted two complementary strategies for meeting that decarbonization target: improving energy conservation and transitioning to zero-carbon energy sources. The hunt for greater efficiency is reflected in a campaign initiated in 2015 to reduce the plant’s energy use. That campaign includes advanced monitoring, investments in the plant’s production workshops and optimized process control using digital tools. Salindres is the first of the Group’s plants to adopt the Optimistik system, a high-performance, data-driven tool for transforming the site’s industrial organization. In addition, the plant’s engineering teams have been expanded to improve the site’s energy management.

And the plant’s employees have attended the Climate Fresk workshop to learn more about the challenges posed by global warming.

As part of the second strategy, to be outlined in a 2030 decarbonization roadmap expected by the end of 2024, the plant plans to replace the current gas furnace with a biomass furnace. That project, launched in the second quarter of 2024, will be operational by late 2025.

*“Energy conservation has been an essential part of our practice for years.”*

“These technological upgrades will shrink the plant’s carbon footprint by 25%,” says plant manager Maxime Montillet. Although the use of biogas and green hydrogen and a proposal to electrify the plant’s furnaces are still under examination, the energy plan has already borne fruit: in just three years, the plant’s use of natural gas, power and steam has fallen by 4%. “Our efforts are undoubtedly yielding results,” says Maxime, “but we need to go even further. That’s why we’re now targeting a 1.5% annual reduction.”

## Measuring our products’ carbon impact

Just over a year ago, Axens pledged to assess the carbon footprint of some representative products from its portfolio of catalysts and adsorbents. That undertaking, conducted in accordance with the ISO 14040, 14044 and 14067 standards, drew on a cradle-to-gate analysis, i.e. from the time the raw materials were extracted until the product left the plant’s door. The project is designed to help the Group fulfill two major aspirations: it wants the ability to measure the carbon footprint of many different products in response to customer requests, and it wants to identify potential measures for decreasing that footprint.



# Helping our customers cut their emissions and achieve their climate goals

As part of the second pillar of its Climate Strategy, Axens plans to help its customers reduce their carbon footprint and thereby fulfill their own climate objectives. To do that, it needs to broaden the scope of its actions, looking beyond its own carbon impact and taking steps to create a zero-carbon ecosystem in any way it can.

## Fruitful solutions

Axens is unique in that it offers a very wide range of technological solutions with positive benefits for its customers and their carbon footprint. Working in conjunction with its parent company, IFP Energies nouvelles (IFPEN), and other partners, the Group has designed and developed solutions for converting biomass into renewable fuels or biosourced chemicals, producing low-carbon hydrogen, recycling used plastics, capturing CO<sub>2</sub> and much more.

These tools can significantly reduce greenhouse gas emissions by Axens customers. Their environmental benefits will have a positive impact on its customers' Scope 1+2+3 emissions.

And Scope 3 emissions downstream of its customers (specifically Category 11 emissions from the use of the products) have a much wider scope than Axens' own carbon footprint, which is why it is so important to quantify the emissions prevented by stakeholders in projects that make use of an Axens solution, across the entire project lifecycle.

## Calculating the avoided GHG\* emissions

Axens has a variety of tools in its portfolio (licensed processes, equipment, catalysts and adsorbents, etc.) that can help avoid GHG emissions across a project's entire lifecycle.

The Group has not made an exhaustive calculation of the avoided emissions, but in 2022 it began to tally those emissions on selected projects for which Axens was chosen as the process licensor.

Assuming that all these projects reach completion, total avoided emissions will amount to 33.7 million tons of CO<sub>2</sub> equivalent, thanks to help from each project stakeholder.

Avoided emissions were calculated by comparing the greenhouse gas emissions from the Axens projects to fossil-fuel equivalents across their entire lifecycle over a 25 year operating period.

**33.7**  
million  
tons of CO<sub>2</sub> likely  
to be avoided

Homologation and market launch of at least five low-carbon technologies by 2030



## RENEWABLE FUELS: IMPRESSIVE PROGRESS FOR AXENS

### FACT

Axens offers a variety of options for capitalizing on sustainable aviation fuels (SAFs) and has already been awarded several projects.

### RESPONSE

In 2023 Axens announced the introduction of its Alcohol-to-Jet technology under the Jetanol™ brand name.

This technology, which produces SAF from bioethanol, is currently being deployed on multiple projects with partners including Gevo and Idemitsu Kosan to generate 3 million tons of sustainable aviation fuel annually.

The Futurool® technology to create advanced bioethanol from biomass has been selected for a variety of applications: ECARU is using Futurool® with Jetanol™ for SAF applications, while Allotrope Partners is using it for ethanol applications.

The Vegan® lipid processing technology offers another route to SAF. China's Haike Chemicals is among the companies that have recently opted for this hydrotreating technology.

BioTfuel®, which combines gasification of lignocellulosic biomass and the Fischer-Tropsch (FT) process, also saw remarkable success this year with its first commercial customer: Elyse Energy has chosen BioTfuel® as part of its BioTJet project.

Another notable event in 2023 was the emergence of the e-fuel chain using Reverse Water Gas Shift technology and Fischer-Tropsch to convert CO<sub>2</sub> and hydrogen into SAF, notably through our partnership with EDF on the Take Kair project and our Norwegian customer Norsk e-Fuel.



## New advances in biosourced chemicals

This year has brought the commissioning of an industrial demonstrator at Michelin's Bassens site near Bordeaux, in southwest France, that will produce bio-based butadiene—used in the manufacture of synthetic rubber—from low-carbon ethanol. Developed as part of the BioButterfly project, a joint venture between Michelin, IFPEN and Axens (which will market the finished product), the demonstrator is being used to validate each step in the manufacturing process to prove its technological and financial viability.

In low-carbon ethylene, Axens has activated a green ethylene production unit at Sumitomo Chemical, and Syclus has tapped Axens to supply its Atol® technology to the Dutch firm's first plant, located in the city of Geleen. Boasting annual production capacity of approximately 100,000 tons, that facility represents major progress towards producing plastics more sustainably.



\*Greenhouse gas

## A BOOM IN NEW SOLUTIONS FOR LOW-CARBON HYDROGEN

Axens stands out in the market for low-carbon hydrogen, with major advances allowing it to position itself across the value chain. Its LOHC\* technology is a compelling solution for hydrogen storage and transportation.

The Group is also active in production of low-carbon hydrogen, produced primarily via steam methane reforming (SMR) in conjunction with carbon capture technology, as an easier method for reducing CO<sub>2</sub> emissions from production assets.

Axens also offers solutions for purifying hydrogen from any source (SMR, electrolyzers, native or underground storage) for all types of applications.

\*Liquid Organic Hydrogen Carrier

## Electrifying our furnaces

### CHALLENGE

The energy transition is driving manufacturers to find quick, concrete ways to decarbonize. Given its attributes and its ability to reduce gas emissions from combustion, process electrification is poised to play a significant role in that shift.

### SOLUTION

Through its Heurtey Petrochem Solutions brand, Axens has designed and developed an array of electric furnaces that, depending on their capacity, can help industrial firms reduce their carbon footprint by anywhere from 50% (for traditional furnaces) to 100% (for new furnaces connected to a grid carrying zero-carbon electricity).



## UNVEILING THE FULL POTENTIAL OF ENERGY EFFICIENCY

Energy costs are a significant burden on industry, accounting for some 60% of a refinery's operating expenses. As a result, energy efficiency, with its attendant and sizable financial and environmental benefits, is now recognized as one of the most promising and least costly options for reducing industrial greenhouse gas emissions. To help manufacturers commit to that path and find concrete savings from energy efficiency, Axens is supplementing its existing audits and research with new and detailed solutions for improving energy efficiency. That process includes conducting audits at its customers' sites, refining its processes, supplying high-performance catalysts and deploying advanced digital technology. Axens works to make industrial furnaces—one of the biggest energy users in a refinery—more energy-efficient, and develops cutting-edge industrial equipment.



According to Jacques Rault, Executive Vice President Technology & Technical Support, "Axens partnered with China's ZPJE to create Nectis, a joint venture for the promotion and sale of spiral tube heat exchangers, which are used to handle heavy or fouling refinery streams. Its goal is to help refineries and petrochemical and gas treatment firms worldwide shrink their carbon footprint and become more energy-efficient."

## With the DMX™ process, carbon capture enters a new era

After a year in operation, our pilot carbon capture unit has successfully completed a demonstration of the DMX™ process at ArcelorMittal's steel production site in Dunkirk, France. The 3D demonstrator—a true showcase for IFPEN's carbon capture expertise—was designed to be the smallest unit typical of industrial-scale operations. Part of the 3D and DinamX projects\* that include partners ArcelorMittal, Axens, IFPEN and TotalEnergies, the demonstrator's primary goal was to prove the efficacy of a process that uses an innovative demixing solvent, DMX™. The pilot unit, which can capture 4,000 tons of CO<sub>2</sub> annually, offered evidence of several key aspects of the technology across a wide range of CO<sub>2</sub> concentrations, including the process's operability, the stability of the solvent, its minimal energy consumption and the purity

of the captured CO<sub>2</sub>. The DMX™ technology, which is being marketed by Axens and will be available for a wide range of industrial applications that emit CO<sub>2</sub>, will play a major role in reducing greenhouse gas emissions. Backed by the high-quality results from the 3D demonstrator, IFPEN and Axens continue to focus on developing new generations of the DMX™ solvent that offer even higher levels of performance, as well as other innovative solutions for carbon capture.

\*The European Union's 3D project, part of the H2020 program and coordinated by IFPEN, has ten partners from research and industry spanning six European countries: ArcelorMittal, Axens, TotalEnergies, Air Products, Brevik Engineering, CMI, DTU, Gassco, RWTH and Uetikon. The partners in the DinamX project, which receives support from the French Environment and Energy Management Agency (ADEME), are IFPEN, Axens, TotalEnergies and ArcelorMittal. The 3D and DinamX projects have two sponsors, Lhoist and Suez.



## A PARTNERSHIP WITH CHINESE GIANT LICO TO FOCUS ON ELECTRIC BATTERIES

**200,000**  
batteries  
for electric cars by 2027

In early 2023, Axens signed an exclusive partnership with Hunan Changyuan Lico, a Chinese firm specialized in battery materials. Between now and 2027, the two companies plan to set up a production plant in France for cathode-active materials that, each year, will power the batteries in some 200,000 electric vehicles. This initiative is designed to build European production capacity for cathode-active materials, which is currently concentrated almost entirely in Asia.

## Innovative processes for plastics recycling

Axens offers innovative solutions for making the circular economy for plastics a compelling reality. Its Rewind® PET recycling process, developed with IPFEN and the Japanese recycling specialist JEPLAN, boasts technology for recycling all types of polyethylene terephthalate (PET), whether in the form of bottles, films or polyester clothing. To validate the PET

recycling process and show that it can be incorporated into production and recycling facilities managed by customers who obtain the license marketed by Axens, a semi-industrial unit known as Rewind® PET, offering production capacity of 1,000 tons per year, was commissioned in late 2023 at JEPLAN's site in Japan. The Rewind® PET process will yield high-quality recycled PET

comparable to virgin PET and suitable for all PET applications, including packaging in contact with food and apparel. Moreover, alongside its partners Repsol and IPFEN, Axens offers Rewind® Mix, a solution for purifying pyrolysis oils in plastic that will aid in the chemical recycling of plastic waste.

# Tackling Environmental Challenges

Of all environmental concerns, the challenge posed by climate change and greenhouse gas emissions undoubtedly has the most material consequences for the Group. But other environmental issues are important to Axens as well, and it has recently adopted commitments for lessening the impact of its operations.

## REDUCING WATER USE AT OUR INDUSTRIAL SITES

By 2030, Axens is aiming to reduce water use at our operated industrial sites by 20% in absolute terms from the benchmark year of 2019.



Year	2019	2020	2021	2022	2023
Water use at industrial sites operated by Axens (in m <sup>3</sup> )	257,829	208,227	222,091	223,974	242,475
Change in quantity of water used at industrial sites operated by Axens vs. 2019 (benchmark year)	-	-19%	-14%	-13%	-6%



## Valorizing wastewater with HydroThane

With the 2022 acquisition of the Dutch company HydroThane, an engineering company specialized in the biological treatment of industrial wastewater, water recycling and biogas treatment, Axens is now contributing to protecting the environment by treating industrial wastewater and reducing its water footprint. And by coupling its processes for renewable fuel production with HydroThane's technology, it can offer customers integrated, high-value-added solutions while preserving the environment.

## REDUCING WASTE PRODUCTION AT OUR INDUSTRIAL SITES

Axens will pursue its goal of reducing the quantity of non-recycled waste produced at the industrial sites it operates by 40% in absolute terms by 2030, by comparison with the benchmark year of 2019. In particular, to achieve that objective, it intends to reduce the use of natural resources by recovering and recycling products that fail to meet its production specifications.



Year	2019	2020	2021	2022	2023
Quantity of non-recycled waste produced at industrial sites operated by Axens (in tons)	2,352	1,927	1,548	889	1,160
Change in the quantity of non-recycled waste produced at industrial sites operated by Axens vs. 2019 (benchmark year)	-	-18%	-34%	-62%	-51%

## Improving air quality with Flowvision



### CHALLENGE

Many industrial firms—including Axens at its own industrial sites—are now seeking technological solutions that will help them comply with environmental standards and also contribute to improved air quality and protect the environment more effectively.

### ACHIEVEMENT

With the 2021 acquisition of Flowvision (a Danish company), specialists in systems for reducing nitrogen oxide emissions in industrial flue gas, Axens can now offer an expanded range of technologies for air pollution control and clean-up.

Flowvision's expertise ranges from selective reduction (SCR and SNCR\*) of nitrogen oxides to treatment of a variety of pollutants, including energy recovery systems when needed. With this expansive line-up of solutions, Axens is making a firm commitment to air quality and to addressing environmental challenges more effectively.

\*SCR: Selective Catalytic Reduction. SNCR: Selective Non-Catalytic Reduction.



## EURECAT: SOLUTIONS FOR ADVANCING THE GREEN TRANSITION

Eurecat, an Axens joint venture with specialized expertise in catalyst (re) treatment, develops and markets technological solutions for the green transition.

Eurecat's solutions focus on three objectives correlated with the United Nations Sustainable Development Goals:

- Contribute to carbon neutrality through its products and services while reducing the impact from its own activities and offering low-carbon solutions to its customers.
- Develop and market solutions based on mineral circularity, with the aim of reusing those minerals in full within open or closed business loops.
- Conserve metals, which are strategic planetary resources, through its core business activities and diversification.

## PLANET', THE IN-HOUSE NETWORK FOR ENVIRONMENTAL ISSUES

Founded in 2020 and sponsored by members of the Axens Executive Committee, PlaNet' is an internal network of more than 400 employees who take part in a variety of activities designed to advance the environmental transition: they organize educational workshops with outside experts, conduct awareness-raising sessions aligned with the Climate Fresk workshop, encourage alternative forms of transportation such as bikes and e-bikes, and more.





# A STRONG, ATTRACTIVE COMMUNITY

Axens' teams drive its growth. They are a core focus of its attention. It delivers programs aimed at maximizing their individual and collective performance. The Group believes that diversity, equity and inclusion are essential to each person's stability and well-being. It makes a daily commitment to advance that vision of the working world through concrete, exemplary actions.



**“Our commitment is a tangible reflection of our desire to grow as a team and be a member of the community.”**



**STÉPHANIE PARISSÉ-FAUX,**  
Executive Vice President  
Human Resources &  
In-House Communication

### What are the basic components of Axens' corporate culture?

The first is our teams' passion for their work. That's our trademark; it's something that truly unites all our employees. I often say they have a twinkle in their eyes because they love what they do and they want to get it done.

The second is that we work and act "together." That's a word that truly reflects us: our teams are committed to working not only with each other but also with our customers, shareholders and all our partners. That relationship with others is one of the company's strengths. It's what allows us to resolve the difficulties we sometimes face, come up with solutions and, more broadly, surpass ourselves.

The third factor, our employees' engagement, can be seen in their search for excellence, one of our core values, and their sense of responsibility, another Axens value. One clear example of that is the way our employees, at their own initiative and with the company's encouragement, have set up three separate networks on gender equality, the climate transition and caregivers, each of which is sponsored by two members of the Executive Committee.

And the last thing is that our workplace dialogue at Axens is based on a sincere commitment to collaboration, in complete candor, and a desire to move forward, rather than on adversarialism.

### What are Axens' major objectives for human resources?

First of all, we want everyone at the company to feel that they belong, that they support the company's objectives and that they're in a fulfilling job which gives them purpose. That's one of the keys to individual and collective performance. With that in mind, we have an ambitious skills development policy backed by

our Axens Academy, which offers everyone the resources and content they need to grow and develop. We also have our People Reviews and, more recently, our mentoring program, which is designed to give interested employees an additional perspective on the company, its businesses and its concerns.

Another of our objectives is to ensure that everyone feels accepted for who they are. We respect differences of all kinds and promote diversity, equity and inclusion—that's another key to success. No subject is off limits at Axens. For example, we decided to address the issue of disability by creating a disability office and forging a partnership with two Paralympic athletes, Manon Genest and Maxime Thomas.

Our third objective is that everyone at Axens wants to develop and knows how to make that happen. Our motto is, "You've got the power." That means ensuring that everyone can define their own career path in building their future here.

Last but not least, we want everyone to be proud to work at Axens. To that end, we lead a variety of campaigns to get our teams involved in developing the company's strategy. We also conduct in-house communications in the form of major gatherings and annual events to ensure buy-in for Axens' strategic and operational objectives.

### What were the Group's major 2023 achievements in terms of employee engagement?

Our efforts to improve engagement in 2023 can be summarized in a few major accomplishments. First, in France we opened offices in Lyon and Nantes to support our headquarters in Rueil-Malmaison and our plant at Salindres. We also gave employees in France the opportunity to acquire share capital in the company, since engagement is closely connected to a sense of belonging, particularly when you become "more than just an employee." And then there are our efforts in diversity, equity and inclusivity, an issue where we've

moved from quiet conviction to a vocal commitment that's handled at the highest levels of the company. As you might expect of a company of engineers, we've calculated our social footprint using an analysis that combines data with employee perceptions. Based on those results, we've defined some areas for progress over the next year.

**“Everyone at the company needs to feel that they belong; that's one of the keys to individual and collective performance.”**

Another of the year's highlights was the Axens Learning Festival in October 2023, because engagement requires skills. Axens also has a role to play in the community. Our commitment, and that of our employees, doesn't stop at the company's doors. The strength of our engagement lies in our willingness to play an active role in social issues, such as the bullying of children living with disability, violence against women (and against men), equal opportunity and the need to break down stereotypes, by taking action with our target audience, forming partnerships with nonprofit organizations and more. We are an active participant in the world around us—we can't seal ourselves off from the community at large—so Axens has chosen to engage with that world as one citizen among many.

Let me conclude by stressing that the company's performance depends on commitment, and that such a commitment depends on an appealing work environment and a meaningful collective project in which everyone can feel involved.

# The desire to build the future today

## The Axens Learning Festival: a resounding success

### BACKGROUND

To convince its employees of the need to keep training and refine their skills on a daily basis, Axens decided to bring the workforce together as part of a festive annual event held worldwide.

### ACHIEVEMENT

Axens launched the first annual Axens Learning Festival in October 2023. Under the banner “Knowledge Is Power,” the week-long festival gave the Group’s entire workforce an opportunity to attend a variety of learning experiences designed to raise their awareness about the need to expand their horizons, learn and develop.

Employees were treated to a keynote address by Donald Taylor that offered a perspective on the need for ongoing training and soft skills. They were also able to experience a variety of unique events, such as the Paint of Learning, held in Rueil-Malmaison, where two employees offered an informative explanation of Axens’ proprietary technology in a local bar. The idea was to show that seemingly complex topics can be made accessible to a wide audience and that employees can learn and discover new fields beyond the confines of a classroom and computer screen. Other highlights that sparked interest included a digital quiz, “What kind of learner are you?,” designed to reveal each employee’s learning profile; “Move to Learn,” a look at podcasts that employees can listen to while walking or running; and a virtual reality workshop where participants immersed themselves in an industrial unit over pizza. Employees in Saudi Arabia took part in serious games, while workers in India attended group training in a hybrid format.

With this inaugural Learning Festival proving a success, as reflected in the increased number of visits to the Axens Academy online training catalog as soon as the festival was over, the event will be repeated in 2024.



Nearly **900 people** attended the 1<sup>st</sup> annual Axens Learning Festival held in 2023.

## Say hello to Axens Millennials Day

Some 130 employees under the age of 25 were invited to take part in the launch of Axens Millennials Day and reflect on the company’s future. The purpose of the event was to provide a forum for often overlooked younger workers who may be wondering, even more than earlier generations did, whether it makes sense to work in the oil and gas and energy sectors. The event aimed to instill a desire among these employees to use Axens as their base to help change the energy world. The program included the Climate Fresk\* workshop in the morning and, later in the day, a World Café session to answer the question: “Axens is at the heart of the climate equation and a leader in the energy transition. If you were a member of the Executive Committee, what kind of company would you be proud to lead?” Following this collective brainstorming process, smaller groups compiled their thoughts, which were then reviewed by the Group’s management team; many of the participants’ ideas were later put into action.

\*The Climate Fresk workshop has now been conducted across France and will be expanded to include international employees during 2024. The workshop is unique in being led by Axens employees.



*“It’s an opportunity to be actively involved and contribute tangible solutions for climate change, particularly in a company that has an impact on energy and CO<sub>2</sub> emissions.”*

Marie Duverne, Technical Support Digital Transformation Leader

**130 employees** under the age of 25 took part in the event.

## RETURN OF THE PERSONALIZED BENEFIT STATEMENT

In the spring of 2023 Axens reintroduced personalized benefit statements for all its employees in France. Its aim was to give each employee an accurate and complete picture of their employee benefits at Axens and at the same time enhance Axens’ brand as an employer.

Every employee received a digital document with a summary and comparison of their previous year’s compensation, both fixed and variable, direct and indirect. The statement includes their annual salary, an overview of the company’s employee savings plan and its insurance and retirement programs, a breakdown of the employee’s work hours and absences and a list of the training they attended during the year. It also lists some extra perks to which the recipient is entitled.

The personalized benefit statement will be sent to each employee annually and will be expanded over time.



*“It packs a lot of information into a snappy format for employees! We get an overview of everything that goes into our compensation, and it puts a value on the related benefits we receive. Because it’s so clear and concise, the statement gives each of us a better understanding of where we stand compared to the job market and provides a more detailed look at Axens’ benefits policy.”*

Mathieu Provost, Project Manager



## AN INTERNATIONAL WEEK FOR WOMEN'S RIGHTS

### FACT

**March 8 is International Women's Day. It's a vital time to raise awareness and mobilize employees on behalf of gender equality and take stock of women's rights.**

### RESPONSE

**For the past two years, Axens has chosen to devote not just a day, but an entire week to women's rights.**

In 2023, film director Anastasia Mikova was on hand to talk about her documentary entitled *Woman*; the theme of this year's event was: "Having rights and daring to assert them!"

Axens employees were able to attend a videoconference given by scientist Claudie Haigneré, who in 2001 became France's first woman astronaut aboard the International Space Station. Axens' various international units also organized local events during the week aimed at promoting women's rights. Notably, the various sessions tackled women's rights in the workplace but also in society. With events ranging from an escape game aimed at combating sexism to a quiz on women's rights and a webinar on street harassment, each employee was invited to dare to confront sexism, dare to say stop and dare to learn more and become informed, in keeping with this year's theme.



## Unique initiatives around the world

Employees in Asia marked International Women's Day with a campaign called "Get to know your female co-workers." Participants completed a short questionnaire for publication to describe their own ways of being daring and pushing their personal limits.

In India, teams organized a session for women entitled "Bring Back the Zing," led by a well-known psychologist.

And in the United States, employees organized a workshop on how language can contribute to men and women being perceived differently.



Says Judith Perez, Director of Procurement in the United States, "Our goal was to give women access to the tools they need to express themselves more confidently and master the ability to speak out."

## In India, CSR\* initiatives to encourage education and the social safety net

In India, where companies are required by law to set aside at least 2% of their average net profits for positive contributions to society, Axens has been supporting two initiatives relating to education and social welfare as part of its CSR policy.

The first provides funding to early childhood education centers operated by Ramakrishna Mission in the Bengali cities of West Midnapore and Murshidabad. Those centers offer underprivileged communities an opportunity to ensure their children receive a quality education. The funding from Axens is helping to improve educational infrastructure in rural areas, boost educational standards and provide concrete support to both teachers, through training programs, and students, through grants for the purchase of materials.

In addition, Axens is partnering with the TARA Foundation in support of a planned TARA Boys home in New Delhi, where underprivileged youths can receive shelter, healthcare and vocational training designed to offer them a better future. That financial support has also been used to operate community programs on behalf of marginalized families.



*"Axens' support has helped to fund the Vivekananda Child Development program and the TARA Foundation. For Vivekananda, these funds enabled the early childhood education centers in West Midnapore and Murshidabad to acquire blackboards, uniforms and game supplies. With the TARA Foundation, they are being used to support and protect the lives of children ages 2 to 18 and help them succeed academically."*

Siddhartha Saha, Managing Director, Axens India Private Limited



\*Corporate Social Responsibility



## Identifying metrics for diversity, equity and inclusivity

On the principle that if you don't count it, it doesn't count—and since Axens employees love numbers—the Group has pledged to measure diversity, equity and inclusivity within the company. With help from an outside consulting firm, it began the task of calculating its social footprint for the first time. That process is designed to assess the company's maturity on a variety of diversity issues, to gain an overview or benchmark for targeting future campaigns more effectively. Diversity, equity and inclusivity are critical for making companies stronger and giving every employee the role and recognition to which

they're entitled. They also make the company more transparent to its employees and help them become more invested.

To measure its footprint, it combined factual data with employees' expressed opinions, to uncover potential disparities between what Axens is doing and what it thinks it's doing versus how those actions are perceived by its teams. The social footprint will be calculated again in 2024 to measure its progress.

## THE PATH TO GENDER EQUALITY IN THE WORKPLACE

In 2023, to create a more equitable workplace, Axens' Executive Committee—inspired by SDG\* 5—defined numerical targets for the first time, which were subsequently approved by the Group's Board of Directors. By March 2029, the Group plans to ensure that women make up at least 40% of its Executive Committee, compared to 20% in March 2023. Similarly, it wants women to comprise at least 30% of its leadership team in March 2029, versus 20% in March 2023.

Axens' existing talent development programs for women employees should help meet those objectives. The Group is also involved in a variety of initiatives that should catalyze further success, including the intergenerational mentoring program initiated jointly with Cap Ten in 2022 and the Women Talent Pool Leadership Program, affiliated with the European Network for Women in Leadership, that offers networking opportunities for talented women.



\*Sustainable Development Goal

## Outlook for the future

In 2024, Axens signed the Diversity Charter, which encourages action by businesses to promote diversity and non-discrimination. With several thousand signatories drawn from the business and nonprofit sectors, the charter includes a commitment to go beyond what is required by law and take proactive steps to combat discrimination. That pledge will provide an opportunity to raise issues at Axens that some consider taboo. Moreover, insofar as cultural or ethnic diversity does not always ensure an inclusive workplace, Axens has decided—with the backing of employee representatives—to mount campaigns that will help its workers in France learn more about the problems faced by co-workers who may be discovering France for the first time, individually or as a family, and are trying to integrate into society.

In addition, as part of the 2024 Paris Olympic and Paralympic Games, Axens employees will have the opportunity to offer support, both before and after the Games, to two Paralympic athletes—Manon Genest, competing in the long jump,

and Maxime Thomas, in table tennis—who have partnered with the Group.

Employees will be able to hear those athletes during a series of roundtable discussions on disability that the Group is organizing on the theme of "How we see ourselves and how others see us." Axens is also promoting a culture of equality as well as STEM topics among girls and young women.

Lastly, 2024 will also bring the return of the Happymeter worldwide. That in-house survey focusing on seven topics (employees' views of Axens, their work, their working environment and conditions, their team, their management, their unit and their future) will be conducted online. Once the results, broken down by unit and country, have been analyzed, the Group will develop action plans for addressing any shortfalls or inadequacies. The survey is designed to measure the level of engagement in the workforce and ensure that Axens continues to grow as a company.



# Indicators

Indicators	2019	2020	2021	2022	2023	Objective
<b>Safety and Environment (Internal)</b>						
Safety (TRIR)	0.61	0.23	0.55	0.99	0.6	0.50
Scopes 1+2 GHG* (in kt CO <sub>2</sub> -equiv.)	87.4	80.0	76.6	78.2	83.2	30% reduction by 2030 (vs. 2019 benchmark)
Base index 100 (2019) – Scopes 1+2 GHG emissions	100	91.5	87.6	90.0	95.2	70 by 2030
Energy consumption (in MWh) (and share of renewable or nuclear low-carbon energy) at the Group's industrial sites	438,019 (11%)	409,148 (11%)	387,616 (11%)	397,653 (11%)	422,210 (11%)	At least 30% low-carbon energy (renewable and nuclear) at the Group's industrial sites by 2030 versus 2019 benchmark
Quantity of non-recycled waste produced at industrial sites operated by Axens (in tons)	2,352	1,927	1,548	889	1,160	-
Change in production of non-recycled waste at industrial sites operated by Axens (versus 2019 benchmark)	-	-18%	-34%	-62%	-51%	40% reduction in non-recycled waste produced at industrial sites operated by Axens in 2030 (versus 2019 benchmark)
Water consumption at industrial sites operated by Axens (in m <sup>3</sup> )	257,829	208,227	222,091	223,974	242,475	-
Change in water consumption at industrial sites operated by Axens (versus 2019 benchmark)	-	-19%	-14%	-13%	-6%	20% reduction in water consumption at industrial sites operated by Axens by 2030 (versus 2019 benchmark)

\*Greenhouse Gas

Indicators	2019	2020	2021	2022	2023	Objective
<b>Environment (External)</b>						
Homologation and market launch of at least new five low-carbon technologies	-	-	-	-	0	<b>At least five by 2030 (target set at year-end 2023)</b>
<b>Responsible purchasing, social and governance issues</b>						
Largest and/or most relevant suppliers evaluated by EcoVadis	-	-	28%	31%	38%	-
Employees receiving training	-	90%	90%	90%	98%	-
Training hours per employee	-	20	22	23.5	27.2	-
Percentage of women on the Executive Committee and leadership team	-	-	-	20%	20%	<b>At least 40% of Executive Committee seats occupied by women by March 1, 2029</b> <b>At least 30% of the leadership team comprising women by March 1, 2029</b>



**Axens has received the EcoVadis gold medal for the second consecutive year, placing the Group among the top 5% of companies scored worldwide**

June 2024

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