



Acting Together

SUSTAINABLE DEVELOPMENT
A PERMANENT COMMITMENT

Eco efficiency

THE DRIVING FORCE BEHIND OUR GROWTH



Jean Sentenac
Chairman & Chief Executive Officer

The growing scarcity of resources, climate change, and population growth but also Man's aspirations for success and for a better quality of life are the many parameters that define the context in which Axens evolves. On dynamic markets, big consumers of raw material, committing to sustainable development is no longer an option for manufacturers. It has become a responsibility coupled with levers for innovation, performance and growth.

Sustainable development is at the heart of our strategy: it is the absolute prerequisite to maintaining the added value to our clients as well as our economic, environmental and social performance. Our objective: provide our clients with ever more eco-efficient technologies, reconciling environmental performance and competitiveness. These technologies associate products and services whose environmental impact is limited throughout their lifecycle.

Our approach to energy efficiency, which contributes to reducing the ecological footprint of our activities, is also an area we improve on everyday. As a result, our industrial sites are subjected to natural resource consumption optimization programs (energy, water, raw material) and other programs to reduce our impact in terms of atmospheric pollution, effluents and waste.

Numerous economic, social and environmental challenges await us. They make our business activities even more interesting and are an important source of motivation for our teams. Turning challenges into opportunities is a concern to all those who wish to contribute to a better future for us and generations to come. This affects our employees as well as our suppliers, clients and stakeholders. "Succeed together", one of Axens' values, perfectly reflects our company's Corporate Social Responsibility approach.

Who are we?

Founded in 2001, Axens is a 100% owned IFP Energies nouvelles subsidiary and international provider of advanced technologies, products and services for the refining, petrochemical, gas, alternative fuel and biosourced chemical products industries.

It is our commitment to our stakeholders - clients, employees, suppliers, partners, subcontractors and local communities - to guaranteeing the **safety** of our industrial operations, the **reliability** and the **performance** of our processes, products and services and to **safeguarding the environment**.

Corporate Social Responsibility: Axens' priorities

Axens built its sustainable development policy on the results of a materiality study that allowed identifying the major challenges of its business activities as well as its stakeholders, by following the guidelines of the *Global Reporting Initiative 4* (GRI). This analysis allowed the identification of 5 strategic challenges for Axens and its stakeholders:

- **Health and Safety**
- **Emissions, effluents and waste**
- **Resource consumption (water, energy and raw material)**
- **Training and education**
- **Fairness and equal opportunities**

This analysis led to the elaboration of an action plan in terms of sustainable development.

OUR KEY MARKETS



Refining



Petrochemicals



Gas



Renewables
& Alternatives



Water

Our ambition is to offer sustainable solutions that are also economically efficient to produce cleaner fuels and chemical intermediates from all carbon sources including bio resources.

Axens worldwide

**AXENS CANADA
SPECIALITY
ALUMINAS INC.**
Brockville, Ontario

AXENS S.A.
Rueil-Malmaison, France
(Head Office)
Salindres, France
Solaize, France

AXENS VOSTOK
Moscow, Russia

**AXENS BEIJING
TRADING CO.**
Beijing, China

AXENS FAR EAST KK.
Tokyo, Japan


**AXENS INDIA
PRIVATE LTD.**
New Delhi, India

**AXENS CATALYSTS
ARABIA LTD.**
Dammam, Saudi Arabia

**AXENS MIDDLE
EAST SPC.**
Manama, Bahrain

**AXENS
SOUTH EAST ASIA
SDN BHD.**
Kuala Lumpur, Malaysia

AXENS NORTH AMERICA INC.
6 sites in the United States:
Houston, Texas
Princeton, New Jersey
Willow Island, West Virginia
Savannah, Georgia
Calvert City, Kentucky
O'Fallon, Missouri


9
SUBSIDIARIES
AND JOINT VENTURES


7
PRODUCTION
SITES

● Axens S.A.
● Subsidiaries and joint ventures
● Offices
● Production sites

Our business

- Process Licensing Business Unit
- Catalysts & Adsorbents Business Unit
- Performance Programs Business Unit
- Operations' assistance (all Business Units)
- Outside Axens' perimeter



OVER
5
MARKETS
COVERED



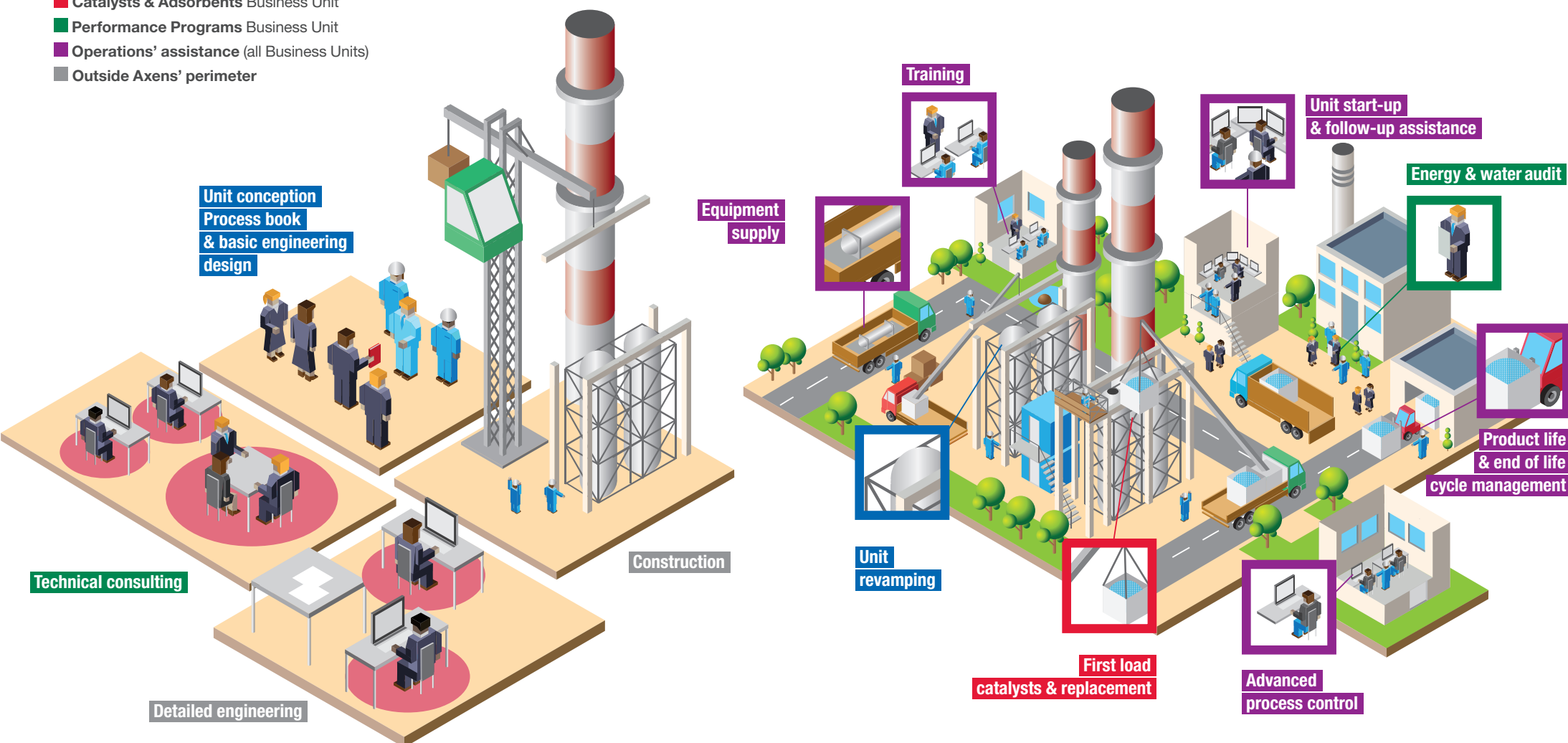
OVER
40%
OF REFINERIES
WORLDWIDE
HAVE AT LEAST
ONE UNIT
LICENSED BY AXENS



OVER
60,000
TONS OF CATALYSTS
AND ADSORBENTS
PRODUCED
EACH YEAR



OVER A CUMULATED
2,600
INDUSTRIAL UNITS
UNDER LICENSE
TO THIS DAY



Our solutions

PROVIDING ENVIRONMENTAL PERFORMANCE

Through an innovative offer of processes, products and services, Axens actively contributes to addressing environmental challenges.



Improving air and water quality

Axens offers cutting-edge technology to produce cleaner fuels. Axens also offers solutions for the treatment of industrial sites' gases and water treatment.

Cleaner fuels

Axens is considered as a reference in terms of technologies to produce fuels that comply with the most stringent regulations. These regulations aim at improving air quality by, for instance, reducing pollutants of engines. Axens supplies the refining industry with hydrotreating technologies and related catalysts that lower sulfur levels of gasoline and diesel to figures below 10 parts per million (ppm). The removed sulfur turns into hydrogen sulfide in refining tail gases, and is then transformed into elemental sulfur using the Claus process. Refineries and natural gas fields alike are equipped with Claus industrial units using catalysts for which Axens is one of the known industry leaders.

Purified Natural Gas

When they exit the wells, natural gas or condensates must be purified for environmental and technical reasons in regards to their future treatment. Indeed, they may contain contaminants which must be brought down to figures in the order of parts per billion. Adsorbents capture those contaminants to prevent their release in the environment and to reach that level of performance.

Decontaminated water

Axens offers a range of adsorbents dedicated to the purification and decontamination of remediation water and drinking water treatment. Among the applications related to water remediation treatment can be found, in order to protect the marine ecosystem, the elimination of phosphate, zinc and copper. Regarding the quality of the drinking water, Axens adsorbents allow for the elimination of undesirable elements that contaminate the water resources of certain parts of the world.

Reduce greenhouse gas emissions

Axens' three Business Units (Process Licensing, Catalysts & Adsorbents, Performance Programs) take an active part in reducing their clients' greenhouse gas emissions.

Axens offers a complete range of solutions to significantly improve the energy efficiency of their clients' industrial sites and to reduce operating costs:

- Linear programming **software** to optimize flows and advanced process control software to follow-up on operations within units, adjust operating conditions and thus reducing utility consumption (electricity, natural gas, steam...) whose generation is synonymous with greenhouse gas emissions.
- **Consulting** in the form of an energy audit of an industrial site which results in recommendations to limit energy consumption.

“

The major challenge in water treatment

Bill Reid,
Global Market Manager Water Treatment,
Axens North America

“Activated alumina, thanks to its physicochemical properties, is a perfect material to capture the contaminants present in water. The removal of arsenic and fluoride are the current most common application for Axens products. Demand in the field of industrial water remediation is on the rise, driven by new and stricter regulation. The demand for our products is therefore expected to grow in the future.”

”



Catalysts and adsorbents samples produced by Axens

OUR SOLUTIONS

...

In order to reduce the environmental impact of its catalysts and adsorbents throughout their lifecycle, Axens innovates in several aspects:

- **By commercializing ever more efficient catalysts** that can operate at lower temperatures (that will therefore require a minimal utility consumption) leading to a real economic and environmental advantage.
- **By offering innovative solutions throughout the catalysts and adsorbents' life cycle.** Therefore, certain catalysts, through different stages of regeneration, can be reused for a similar or different application.

However, it is as a **Licensor of technologies** that Axens' lever for action to **reduce greenhouse gas emissions** is at its most important.

Each licensed process is subjected to thorough energy optimization engineering during the units' design. This optimization relies on the know-how and tools that allow minimizing energy needs and maximizing energy recovery. This also leads to offer high-performance equipment associated with Axens technologies.

Axens also offers processes of biomass transformation into biofuel which, throughout their life cycle, allows for a considerable reduction in greenhouse gas emissions in comparison to fossil fuels. Axens is present in several segments with processes that are already being commercialized or that are currently being researched on.

BIOSOURCED MATERIALS

Vegan®

H₂ Hydrotreatment

Gasel®

Fischer-Tropsch Synthesis

H₂ Hydrocracking

Futurol™

Pretreatment

Hydrolysis & fermentation

Atol®

Dehydration

E Ethylene

Bio-TCat™

Pretreatment

Pyrolysis

H₂ Hydrotreatment

BZ Benzene

TOL Toluene

XYL Xylenes

BioButterfly™

Alcohol

Catalysis and separation

BD Butadiene

Vegan®

Production of biofuel through the hydrotreatment of vegetable oils and fats

Gasel®

Production of high-quality biofuel through the gasification of 2G biomass

Our partners: ENI / IFPEN

Gasel® is part of BioFuel project (partners: Avril, Axens, CEA, Total, IFP Energies nouvelles and ThyssenKrupp Industrial Solutions).

Project Futurol™

Production of bioethanol through the enzymatic hydrolysis of 2G biomass

R&D Partners: ARD / IFPEN / INRA / Lesaffre

Atol®

Production of bioethylene through dehydration of 1G or 2G bioethanol

Our partners: IFPEN / Total

Project Bio-TCat™

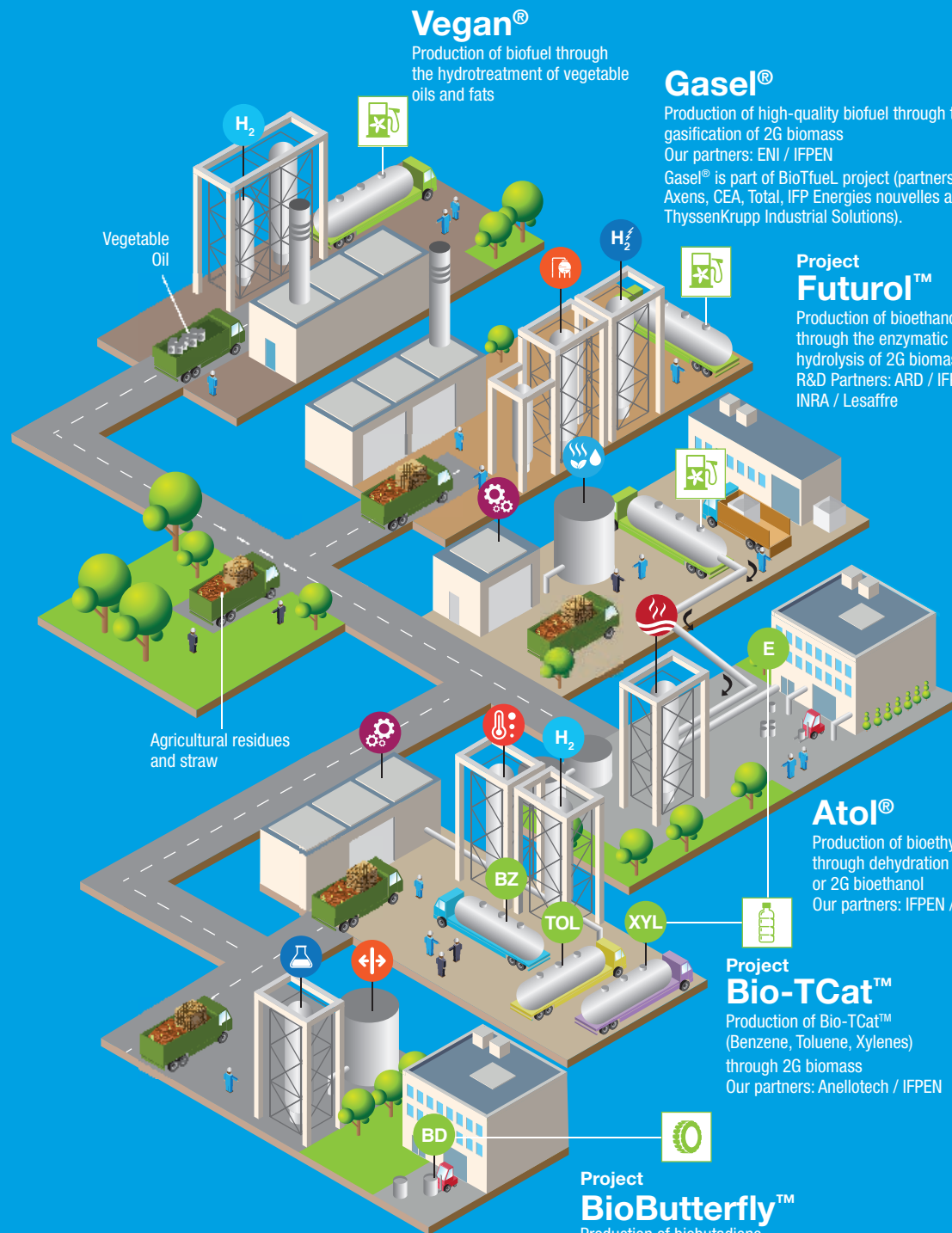
Production of Bio-TCat™ (Benzene, Toluene, Xylenes) through 2G biomass

Our partners: Anellotech / IFPEN

Project BioButterfly™

Production of biobutadiene

Our R&D partners: IFPEN / Michelin



Our sites

EFFICIENT AND INTEGRATED
INTO THEIR ENVIRONMENT



Axens innovates to reduce the environmental footprint of its sites and stimulate their local integration.

Axens S.A. production site
(Salindres, Gard, France)

Optimize the consumption of natural resources

Axens reduces the environmental impact of its products by optimizing the natural resources used during their production process: raw material, energy and water. The implementation of indicators based on the consumption of those resources per ton produced enables its monitoring and management.

Reducing the sites' environmental impact

Limiting the environmental impact of industrial sites is a regulatory requirement as much as our environmental and social responsibility. Related actions concern atmospheric and aqueous releases. The same level of environmental performance is required for all of Axens' industrial sites.

Blending in at a local level

Axens' ambition is to be a recognized actor where its sites are present by adding value to the social impact of its activities and by integrating its stakeholders. This integration is achieved primarily by recruiting locally and encouraging the local population to take part in the sites' everyday life. By thinking this way, the population of Salindres can be led to intervene in the environmental monitoring of the site.



Axens Head Office (Rueil-Malmaison, Île-de-France, France)

The sponsorship policy of Axens also contributes to the local integration of its sites. For example, in order to encourage child development through sport, Axens decided to sponsor the Under-13 rugby team of Rueil-Malmaison, the Under-12 female hockey team and the junior soccer team of the city of Brockville, Canada. Axens employees take part in these initiatives and participate in sporting events. In Malaysia, Head Office to its South-East Asian subsidiary, Axens sponsors the operation "Christmas Market" which raises funds for underprivileged children.



Axens Catalysts Arabia Ltd. production site
(Dammam, Saudi Arabia)

“

The same level
of environmental
requirements for all
our industrial sites

Gilles Fournier,
Industrial Director,
Business Unit Catalysts & Adsorbents

"Since its creation and at its scale, and aware of its own environmental impact, Axens has continuously dedicated a significant amount of its investments relating to industrial sites to safeguarding the environment, whether water (construction of two water treatment plants in Salindres), air (implementation of dust-removal systems, nitrogen oxide and volatile organic compounds treatment systems) or energy consumption reduction is concerned.

All our industrial sites apply the best available techniques (BAT). For instance, the strictest standards in terms of atmospheric emissions linked to these BATs have recently been implemented by our industrial site Axens Catalysts Arabia Ltd. This strong decision is a testament to our commitment to safeguard the environment."

”

Safety

A DAILY
PRIORITY

Axens is committed as a priority to guaranteeing the safety of its employees, its clients, subcontractors and stakeholders.

Safety on Axens sites

Axens permanently follows the performance of its sites in terms of safety thanks to the monitoring of several indicators integrated to the company's development plan and related dashboard. ISO 9001, ISO 14001, OHSAS 18001 and ISO 50001 certifications demonstrate Axens' commitment, which agrees to be audited each year on the quality, hygiene, safety and environmental aspects.



Axens Canada Specialty Aluminas Inc. production site
(Brockville, Ontario, Canada).
In the foreground: sign indicating number of days
without an accident

Safety on the sites of our clients

In order to reinforce the safety of its employees intervening on its clients industrial sites during start-up and technical support missions, Axens has firmly committed to the "Secur'Ax" project. This project, especially for activities that present the greater risk, aims at a close partnership between Axens clients, employees and subcontractors. The result is a new training program, reviewed safety measures and a better management of personal protective equipment.

“

No compromising with safety
on our clients' and our own industrial sites

Pierre Planquart,

Hygiene, Security and Environment Manager (HSE),
Business Unit Catalysts & Adsorbents

“Creating and implementing HSE management standard for all industrial sites of the Business Unit Catalysts & Adsorbents show our willingness to standardize our practices in terms of safety on the workplace and the safety of processes. These standards constitute a common HSE basis and are in accordance with the guidelines provided by the international standards and reference documents in terms of Hygiene, Health, Safety and Environment.”

Sharing experience feedback when incidents occur and sharing the best practices also constitute the founding principle of this approach. The community of HSE Managers evolving on our industrial sites must add to this approach by drawing their inspiration from the industry's best practices in order to anchor safety at the heart of all our processes in the long term.”

”



Our teams

OUR FIRST WEALTH

Employees at Axens' Head Office (Rueil-Malmaison, Île-de-France, France)

Thanks to passionate and committed teams, Axens innovates to answer the numerous expectations of its clients and stakeholders.

“

Fairness, equal opportunities and training are our priorities

Stéphanie Parisse-Faux,
Executive Vice President Human Resources

“Among our priorities in terms of Corporate Social Responsibility (CSR) are fairness, equal opportunities for all and the development of our workforce's skills. In order to reach excellence and therefore continue to answer the needs of our clients, we are committed to assisting our employees and developing their expertise throughout their careers, regardless of their age and position.”

”

Attracting diverse talents

Axens is convinced that the talents' diversity within its teams is a factor of excellence and anticipation of future industry challenges. In order to reach economic, environmental and social objectives, Axens hires committed and talented personalities. This desire is translated by:

- signing a cross-generation contract to promote the recruitment of young talents who comply with industry requirements,
- a partnership with IFP School in order to build lasting relationships with students and graduates.

Promoting fairness and equality

Respect of fairness is a fundamental commitment for Axens' HR department. If diversity is the driving force behind collective fulfillment, fairness and equal opportunities are the foundation for a company's social cohesion. Their alliance constitutes a powerful driver for economic and social performance.

Axens anchored this policy since its founding and more recently through the Men and Women Professional agreement adopted in 2011 and renewed in 2014 for the 3 years to come.

This agreement lays down the basic principles concerning equality in terms of professional development, mobility, income, recruitment and balance between professional and personal life. Recruitment of female Managers has progressed in the past few years. In a sector where female executives are a minority, the percentage of female executives working at Axens is greater than that of female students in French Engineering Schools. *“Equality between men and women is a reality at Axens and is a part of the teams' everyday lives, taking into account the diversity of our employees and the respect of their individualities”* testifies Amandine Teillet, Process Group Manager since July 2014 and Manager of a team of 40-some engineers within the Process Licensing Business Unit.

Developing and enhancing our employees' skills

Axens' HR policy is centered around the guarantee of our employees' long-term skill and talent development. One of Axens' priorities, “growing together”, will allow for the necessary adaptation and adaptability of each and of the company to an environment in constant evolution.

Axens is committed to providing its employees with the necessary training to properly carry out their missions, increasing the scope of their skills throughout their career. The company's training policy has three focus points: training related to Axens' business, managerial culture, safety and respect of the environment (HSE).

In 2014, the Axens Competency & Talent Performance Program was launched not only in order to give a direction to future recruitments and training programs but also individual and collective needs for competency improvement. This program relies on evaluating technical and non-technical competencies of employees based on a “Competency frame of reference” put together by the company's Managers in accordance with Axens' core business.



MORE THAN
80 %
OF AXENS
EMPLOYEES
ARE TRAINED
EACH YEAR



OUR TEAMS

Ax'In



Participants in an Ax'In session with Thierry Birchem, Technical Director (Business Unit Catalysts & Absorbents), who initiated the Ax'In program with Human Resources team in 2013

The integration program for employees from various Axens subsidiaries

Integration sessions and training of employees who joined Axens subsidiaries are frequently put together at Axens' Head Office. Over a span of several weeks, speakers take turns in order to play an active part in instilling a sense of belonging into

newcomers, which is essential to the Axens Group in the years to come. Objective: Make Axens' value "succeed together" a reality stronger than kilometers and cultural differences.

“

"The Axens' Integration (Ax'In) Program was a wonderful opportunity to meet not only the Top Management of Axens but also many new joiners in Axens from across the globe. I really appreciated the right mix between technical & training sessions."

Varun Ginotha,
Deputy Sales Manager,
Process Licensing Business Unit,
Axens India

"Ax'In is a great platform to get acquainted with people and technologies in Axens. It enabled us to understand the core values of the company and share ideas with people from different cultural and technical backgrounds."

Endanna Pallula,
Tech Service Engineer,
Catalysts & Adsorbents Business Unit,
Axens South East Asia

”

Our values

Our values, the foundation of our achievements, inspire our management policy and guide us in our everyday activities.



Strive for excellence

Our objective is to provide our clients and partners with irreproachable products and services.



Engage in our profession with passion

We love our job and carry it out with pleasure, pride and professionalism.



Cultivate innovation

We cultivate new emerging ideas to answer our clients' challenges and ensure their sustainability as well as ours.



Succeed together

Succeed is a shared concern, by our teams and our clients. Responsibility, flexibility and adaptability make us who we are.

Excellence



Passion



Innovation



SUCCEED TOGETHER



Shareholder, clients, employees, suppliers, partners, other stakeholders



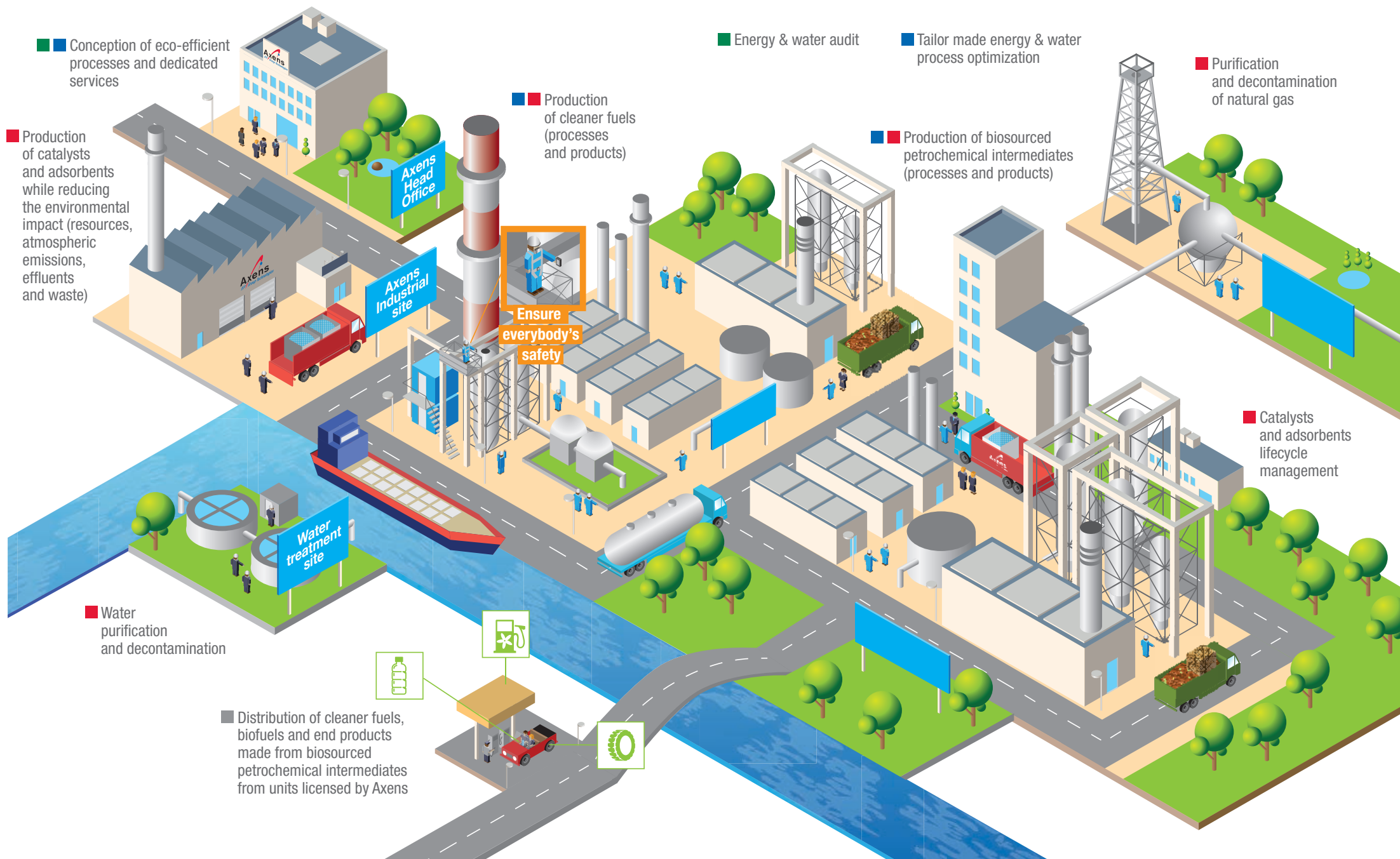
Axens employees during a relay race for the association *Special Olympics* (for the development of physical and sporting activities for people with mental disabilities) in Rueil-Malmaison (France)

Axens employees during a race in la Grande Motte (France) for the *Étoile de Martin*, association that supports pediatric cancer research

SUSTAINABLE DEVELOPMENT: A STRATEGIC COMMITMENT TO SERVE ENERGY PERFORMANCE

■ Process Licensing Business Unit
■ Catalysts & Adsorbents Business Unit

■ Performance Programs Business Unit
■ Outside Axens' perimeter





89 Boulevard Franklin Roosevelt
92500 Reuil-Malmaison - FRANCE

axens.net - axens.net/blog



SlideShare

Photo Credit: All rights reserved,
Sly, iStock, Fotolia, L'Œil du Diaph
Pictos: © thenounproject, flaticon
Design: All Contents



2018-07_500_Graphicplus/imprimerie, établissement certifié Impr'Im'Vert