AMBASSADE DE FRANCE AU JAPON
Liberté Égalité Fraternité

Alliance INDUSTRIE DU FUTUR

Green Manufacturing Seminar
MADE IN FRANCE

Wednesday, March 13th | 10:50 – 13:00
@Smart Manufacturing Summit, Aichi Sky Expo

Program

10:50 – 11:00 **OPENING REMARKS**

M. Philippe SETTON, French Ambassador to Japan
M. Roland LESCURE, Minister Delegate for Industry (video message)

11:00 – 11:50 **PANEL 1 : What is 'Green Manufacturing Made in France' and how French industrial subsidiaries in Japan tackle sustainability challenges through innovative solutions**

> Moderator: **M. Raphaël KELLER**, head of the Economic Department
AIR LIQUIDE: **M. Kenji TERADA**, Commercial Director, Energy Transition Business Development, Large Industries & Hydrogen Energy Division
FORVIA: **M. Takashi INOUE**, General Manager, Faurecia Clean Mobility Japan
METRON: **M. Kevin LESAULNIER**, Head of Japan activities
VALEO: **M. Ali ORDOOBADI**, President Valeo Japan

11:50 – 12:00 **KEYNOTE SPEECH : Virtual Twin, the enabler for Green Manufacturing**

DASSAULT SYSTEMES: **Mme. Misae HASHIDA**, Japan Marketing Director

12:00 – 13:00 **PANEL 2 : Complementarity of French and Japanese activities in Green Manufacturing, and how groups from both countries can work hand in hand to enhance their solutions**

> Moderator: M. **Tomoa ISHII** – Japan Country Representative, Alliance Industrie du Future (AIF)
SCHNEIDER ELECTRIC: M. **Akihiko SHIRAHATA** – Cluster President, Member of EU-Japan Business Round Table
AD-SOL NISSHIN: M. **Yoshifumi MURAKAMI** – Operating Officer, Deputy Chief of Department, Solution Business Headquarters
FIVES: M. **Jean-Marie CAROFF** – Chief Representative
ARKEMA: M. **Taisuke YONEDA** – Business Director
HONDA: M. **Aoi INOUE** – Honda R&D Institute Materials Research Center Engineer
PLASTIC OMNIUM: M. **Koichi YOSHIOKA**, Business Development Manager, e-power
TOSHIBA: M. **Hajime EDA**, Expert, Business Development Department, Battery Sales & Business Development Division
BUSINESS FRANCE: Mme. **Marie-Cécile Tardieu** – COO Invest
SUMITOMO CORPORATION: M. **Gakuro AKIYAMA**, Head, Renewable Energy Team No. 1, Power Infrastructure Dept. No. 2

PANEL 1

What is ‘Green Manufacturing Made in France’ and how French industrial subsidiaries in Japan tackle sustainability challenges through innovative solutions

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Air Liquide's Energy Transition Activities

March 2023
Large Industries & Hydrogen Energy Division
Air Liquide Japan

Air Liquide in Brief (2022 Data)

~67,100 EMPLOYEES

PRESENT IN **73** COUNTRIES

MORE THAN **3.9** MILLION CUSTOMERS & PATIENTS

REVENUE **€29.9bn**

FOUNDED IN 1902 more than **120** Years

INVESTMENT DECISIONS **€3.9bn** 40% ET Related

Separating the components of **air**

- O_2 — **OXYGEN**
- N_2 — **NITROGEN**
- Ar — **ARGON** AND **RARE GASES**

Producing molecules from **natural resources**

- H_2 — **HYDROGEN**
- He — **HELIUM**
- SiH_4 — **SILANE**
- C_2H_2 — **ACETYLENE**
- CO — **CARBON MONOXIDE**

HYDROGEN as a cornerstone of the energy transition…
… and a tremendous growth potential

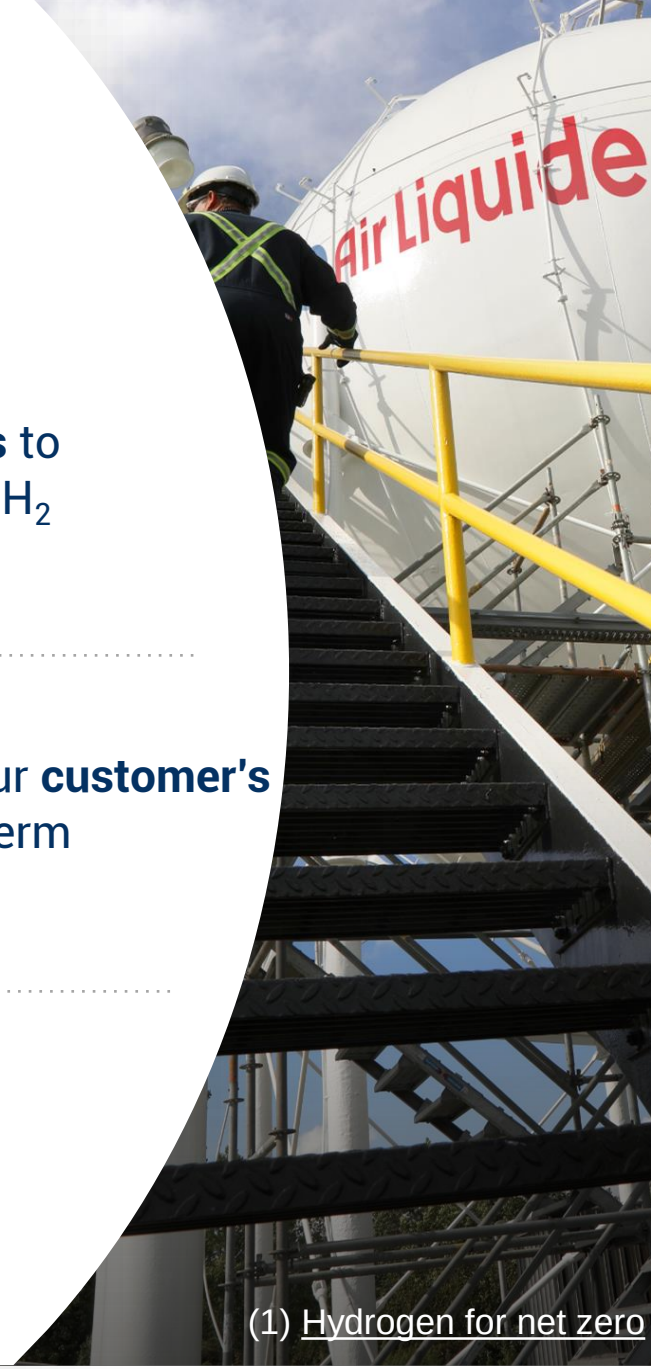
2050

>20% of final world energy demand(1)

- Power generation, buffering
- Transportation
- Industry energy
- Building heating and power
- Industrial feedstock (CCU, DRI)

Our ENGAGEMENT

- **Decarbonize** our **production assets** to develop a competitive low-carbon H_2 offering at large scale.
- **Create value** by **decarbonizing** our **customer's processes**, leveraging our long-term relationships.
- Be a **key enabler** of the **Hydrogen society** thanks to our assets, technology, and expertise.



(1) Hydrogen for net zero

Our expertise in H2 address the challenges of industry and mobility

Air Liquide core

Energy sourcing

Clean power, Biogas

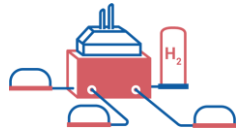
Production

Production, Carbon Capture

Conditioning

Liquid and gas supply chain

End-use



Industry

Mobility

Hydrogen: a unique expertise and experience

60
YEARS OF EXPERTISE

>1,000
EMPLOYEES IN HYDROGEN

€2.2bn
ANNUAL SALES

1.2 Mt
ANNUAL PRODUCTION

~200
HYDROGEN REFUELING STATIONS DELIVERED

~2,000
KM OF PIPELINES

Air Liquide - A key Player in the CCUS value chain

Capture | **Pressurisation/ Liquefaction** | **Transport / Distribution**

CO2 Emitter Plant
(e.g. SMR)

G-CO2

CO2 Capture and Liquefaction Unit
(Cryocap)

Liquefaction Unit incl. Intermediate storage

L-CO2

Loading facility

Rail, barges or pipeline logistics to the harbor LCO2 terminal

Un-loading facility

Harbor Export Terminal

L-CO2 Terminal

Shipping

Air Liquide expertise:

- Various CO2 capture technologies (Cryocap, Amine wash, Rectisol) for different flue gas compositions
- CO2 compression, liquefaction and storage expertise
- CO2 pipeline experience

H2E Activities: Building HRS Network

ALJ supplying H2 to more than 20 Hydrogen Refueling Stations
(+ 1 under construction)
(+ 2 upgrading)

Chubu


Kamagori (2019)


Oguchi (2019)


Kitanagoya (2020)


Kasugai (2020)


Nakagawa (2020)


Odaka (2020)


Handa (2022 *onsite)


Toyokawa (2022)


Toyohashi (2022)


Tobishima (2022)

Numazu (2023)


Upgrade in 2024
Atsuta (2015)


Upgrade in 2024
Toyota IC (2015)

Kanto


Tokorozawa (2019 *onsite)


Kawasaki ★ (2018)

★*unmanned operation to extend operating hours*

Tohoku

To be opened in 2024

Fukushima (2024)

Kansai


Kobe ★ (2017)


MK Kobe (2023)

Kyushu


Fukuoka (2017)


Saga (2016)

METRON

Increase Sustainability,
Energy Efficiency and Productivity
for your Industrial Facilities

LA FRENCH TECH GREEN20 2022

SOLAR IMPULSE EFFICIENT SOLUTION

GLOBAL CLEANTECH 100 2022

Bloomberg NEW ENERGY FINANCE

SUPPORTING JAPANESE INDUSTRIALS
IN THEIR SUSTAINABILITY JOURNEY

OPENING

2020

INVESTORS

3 Japanese investors

ALLIANCES

NTT ファシリティーズ

AI Facility Concierge powered by METRON

1 new alliance in Japan to be announced in April

ECOGEN 360° inteligência muito além da energia

Part of the Group MITSUI & CO.

EUROPEAN CLIENTS FROM JAPANESE GROUPS

Asahi

JTEKT 株式会社ジェイテクト

Autotec

AN INNOVATING SPIRIT

PROJECT 1

Decarb Fast Track

4 partners

METRON · dalkia GROUPE EDF · BNP PARIBAS · aws

An unprecedented European decarbonization program for industries.

+60 Pioneers
8 countries
+10 sectors

100,000t of CO_2 to save in 2 years

PUIG · ZIGNAGO VETRO · Aptar · WPW innovative packaging · CARMEUSE

PROJECT 2

POCHET DU COURVAL

Premises of the project

- Implementation of the solution in less than 6 months
- Digitalization of the processes

Results

- Creation of best practices
- Optimization of the process
- **27% reduction** energy consumption of annealing lehrs

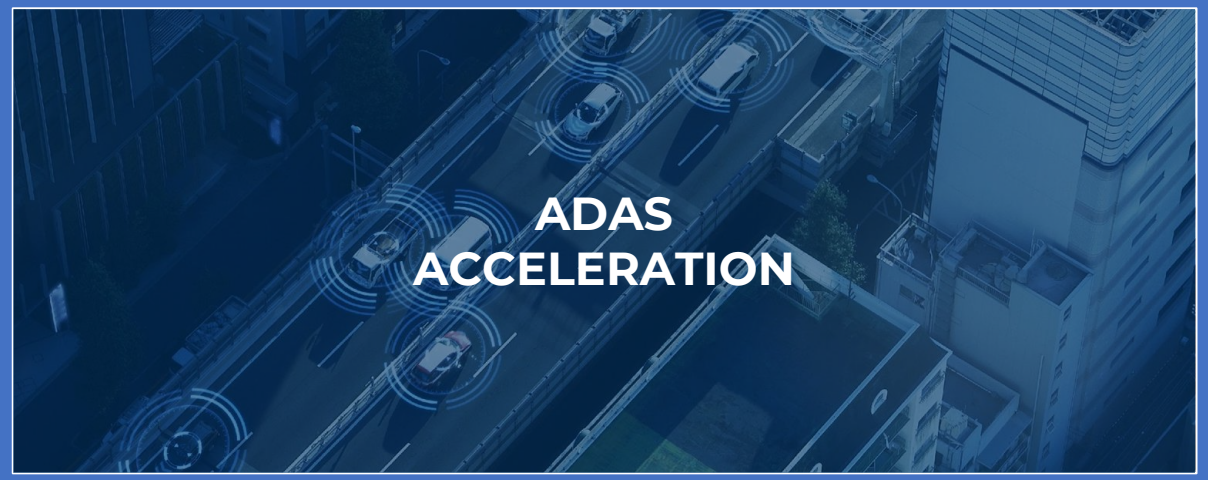
Towards Green Manufacturing

Valeo Japan

Ali Ordoobadi
March 13, 2024

VALEO RESERVED

MOBILITY REVOLUTION



VALEO RESERVED

VALEO TODAY

100 YEARS OF INNOVATION TO BUILD CLEANER, SAFER AND SMARTER MOBILITY

COMFORT & DRIVING ASSISTANCE

VISIBILITY

THERMAL

POWERTRAIN

VALEO SERVICE

2022 KEY FIGURES

€20 BN
Sales

109 900
Employees

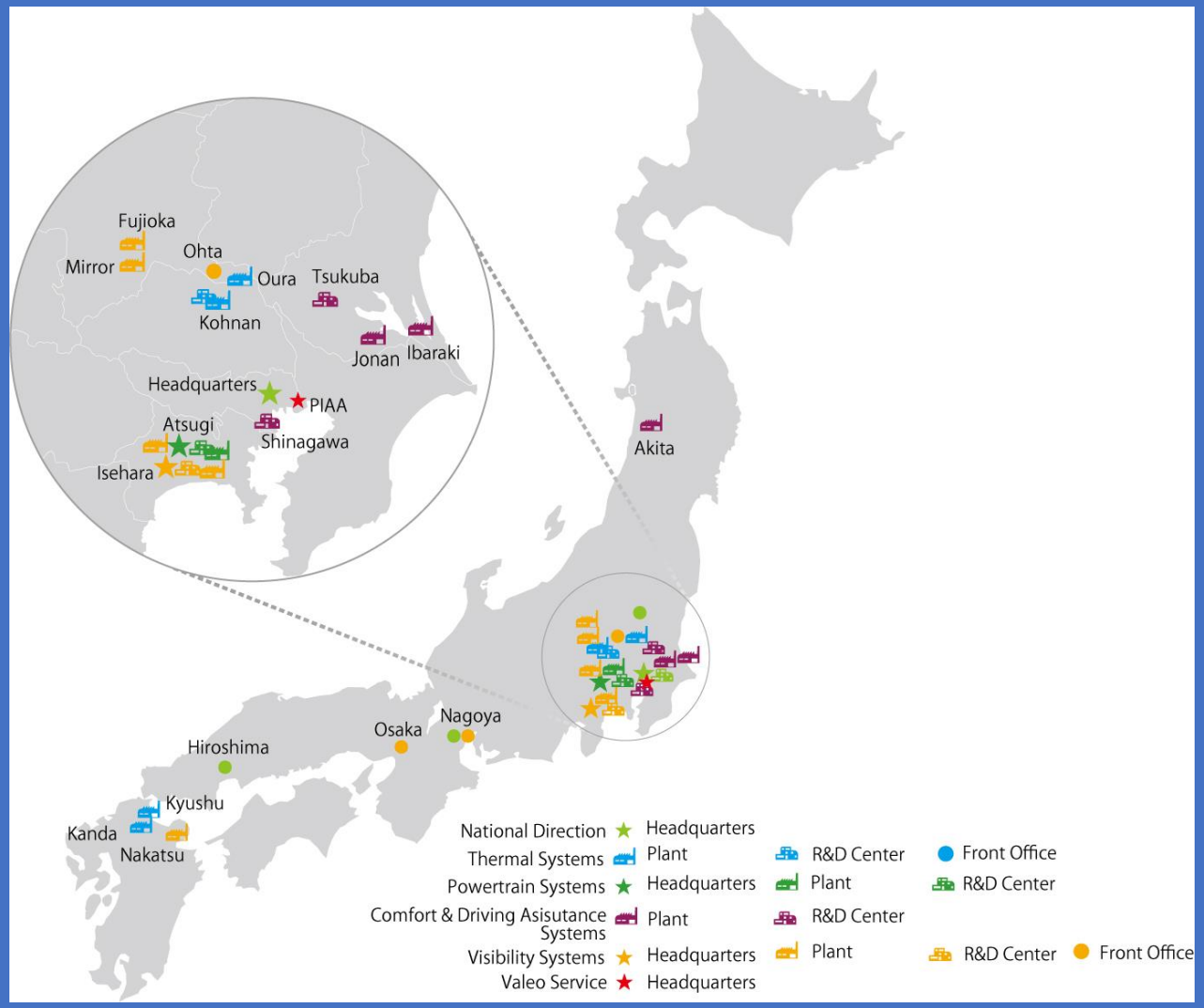
183
Productions Site

65
R&D Center

29
Countries

> €2 BN
R&D investment

VALEO IN JAPAN



With deep roots in Japan, Valeo provides full range of innovative products and systems for the Japanese mobility industry.

5,000 employees
including **1,000** engineers

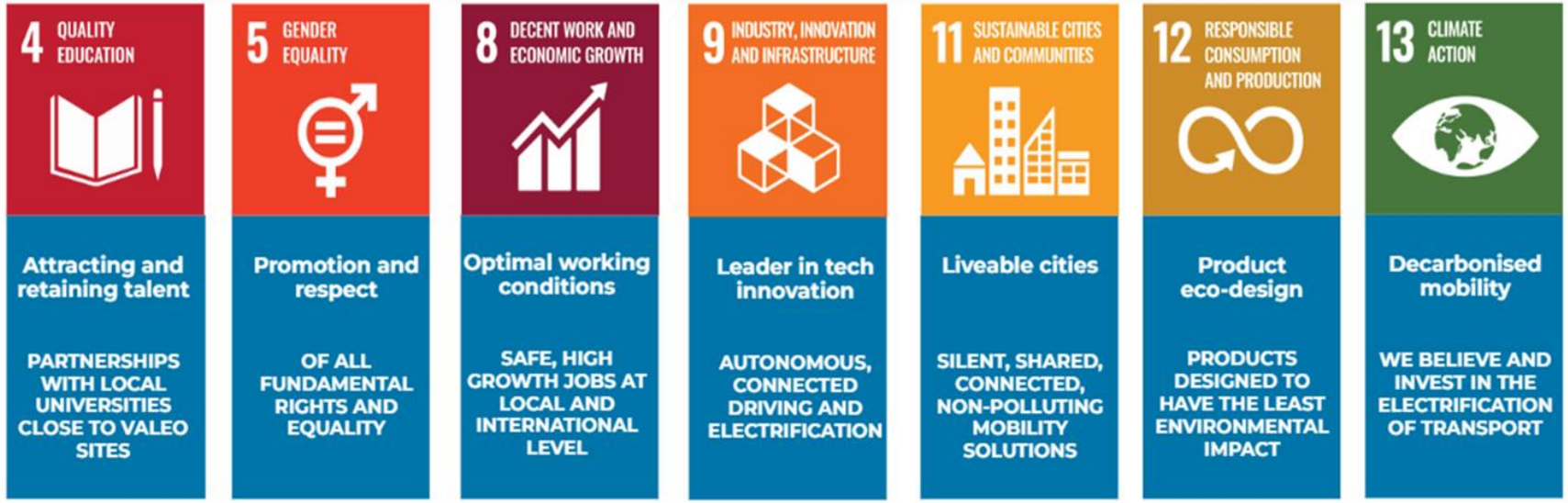
12 production sites
5 R&D centers

VALEO Commits to the

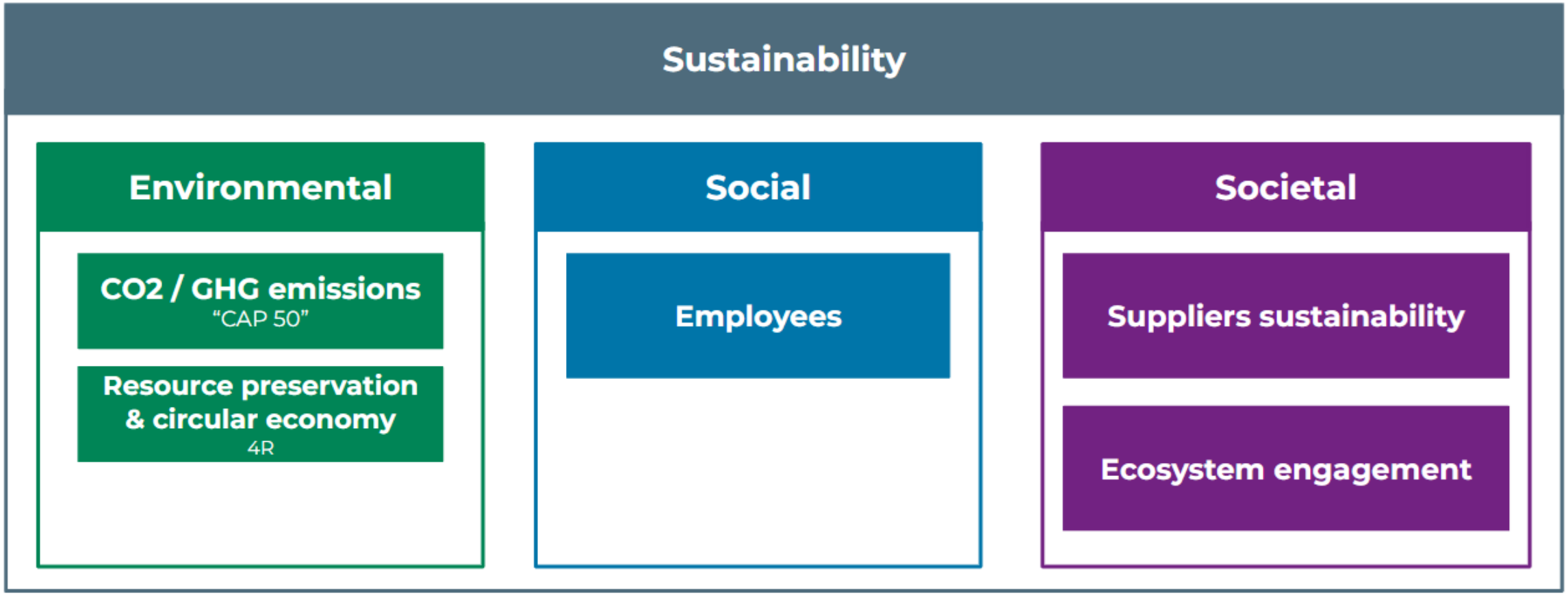
UN Sustainable Development Goals

SDG

A COMMITMENT ON SEVEN PILLARS



How Sustainable Development is structured at Valeo



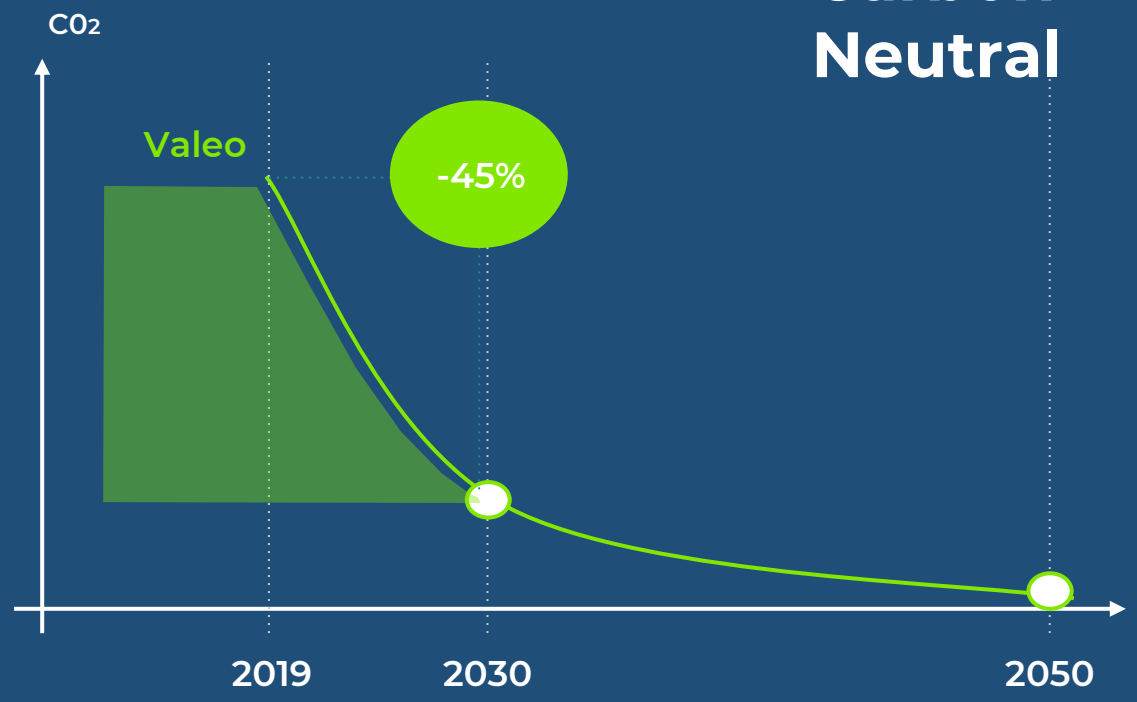
CAP 50

Our mission

"Carbon neutrality plan is going to drive our transformation towards a low carbon production and business model for the next decade.

We call it CAP 50, towards the reduction to 0 in 2050 of our 50Mt CO2 eq 2019 baseline."

Christophe Périllat, CEO
March 2021

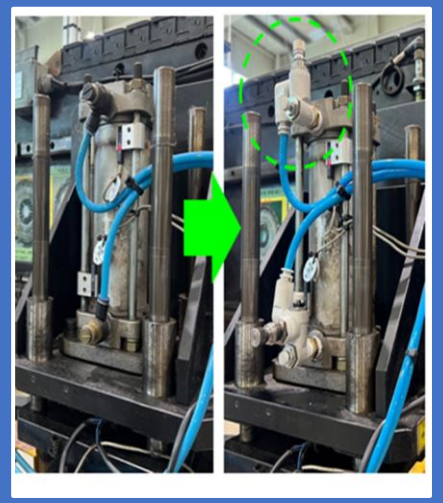


Scope 1: Energy efficiency and gas elimination

SCOPE 1

VALEO'S FACTORIES

PTS: Nanjing-HTT RX **Gas Process elimination**
377 Ton CO2e per year.



PTS: Daegu
Compressed air/leakages fixed
371 Ton CO2e per year.

VIS: Chatellerault
Calories recovery compressor
38 Ton CO2e per year.

PTS Nanjing
Energy efficient Inverters
289 Ton CO2e per year.

Lighting Chrzanow
Controlled air flow on injection machine
246 Ton CO2e per year.

Scope 1 and 2: Low carbon energy self production

SCOPE 1

VALEO'S FACTORIES

SCOPE 2

ENERGY SUPPLY

Solar Panel VIS: VLS
SHENYANG, China = 3,444
Ton CO2e reduced per year.

Solar panels CDA Penang, Malaysia =
2,920 Ton CO2e reduced per year.

VALEO RESERVED

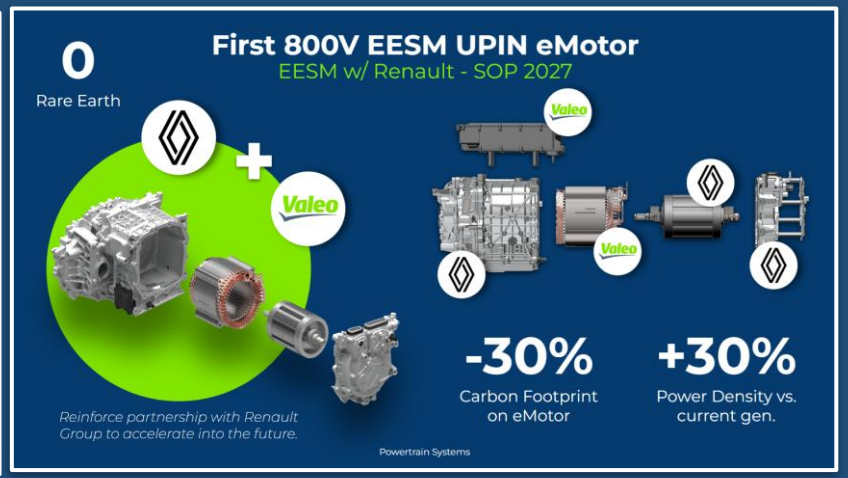
Scope 3 Downstream: Energy efficiency and lighter materials

Front lamps

Full halogen to full LED technology

-40% CO2e reduction

eMotors



Elimination of rare earths

-30% CO2e reduction

Front End Module Or Battery cooling

Replaced steel & aluminum by Organosheet

-50% CO2e reduction.

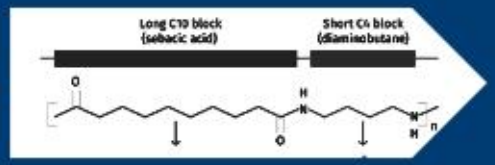
Bio-Sourced Development : a Material Success Story

FROM PLANTS TO PLASTIC PARTS: Polyamide materials

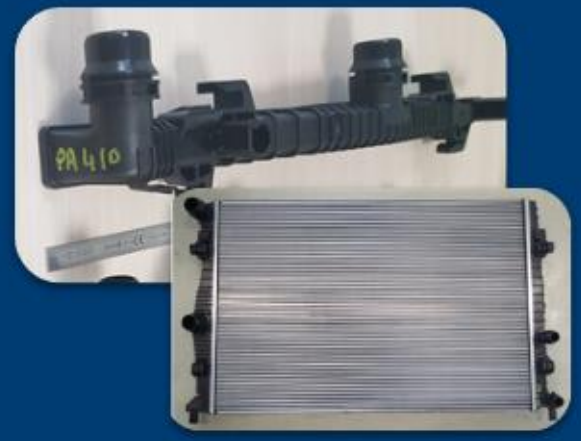
Castor plant

Seeds

Oil extraction



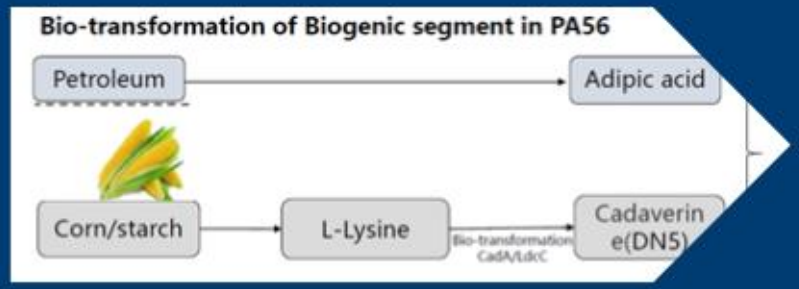
PA4-10

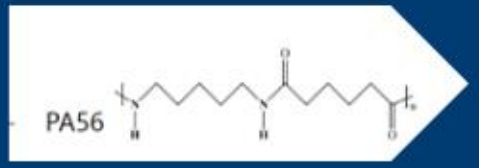


PLANT

PLASTICS

PARTS





PA5-6

Crude oil Polyamide substitution by bio-based

RESPONSIBLE SOURCING
NO COMPETITION WITH FOOD
 # 30-50% BIO-BASED in PA-GF30
(in weight on total compound)

Bio-Sourced Development : a Material Success Story

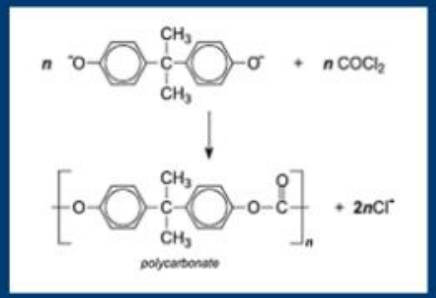
FROM PLANTS TO HEAD LAMP

PLANT

CHEMICAL PROCESS:
BIO PHENOL

PLASTICS

PARTS

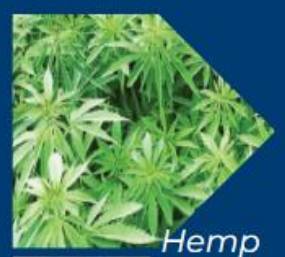


Synthetic PC towards bio-PC

RESPONSIBLE SOURCING
70% BIO-BASED
(in weight on total compound)

Bio-Sourced Development : a Material Success Story

FROM PLANTS TO PLASTIC FILLERS FOR PLASTIC PARTS



PLANTS

BIO-FILLERS

PLASTICS

PolyPropylene PP with Natural Fibers

Recycled

HVAC (recycled PP)

Headlamp

Fan system (recycled PP)

Structural part

RESPONSIBLE SOURCING
20-50% BIO-BASED
(in weight on total compound)

VALEO'S CIRCULAR ECONOMY 4R FRAMEWORK

- OPTIMIZE THE **USE OF MATERIALS**
- REDUCE **WATER** CONSUMPTION
- REDUCE **WASTE** GENERATION

... FOR THE SOCIETY AND THE PLANET!

ROBUST DESIGN

RECYCLE(D)

CIRCULAR ECONOMY
VALEO 4Rs

REMANUFACTURING

FROM 1Mu TO 2Mu BY 2030

- **40** YEARS OF EXPERTISE FOR **PASSENGER CARS** & **TRUCKS**
- **ALL BRANDS PROGRAM**
- **REMAN 2.0** EV & electronics

REPAIR

ADAS
FRONT CAM

VALEO RESERVED

Valeo

SMART TECHNOLOGY
FOR SMARTER MOBILITY

FORVIA

A SUSTAINABLE MOBILITY TECH LEADER

FORVIA
Inspiring mobility

Agenda

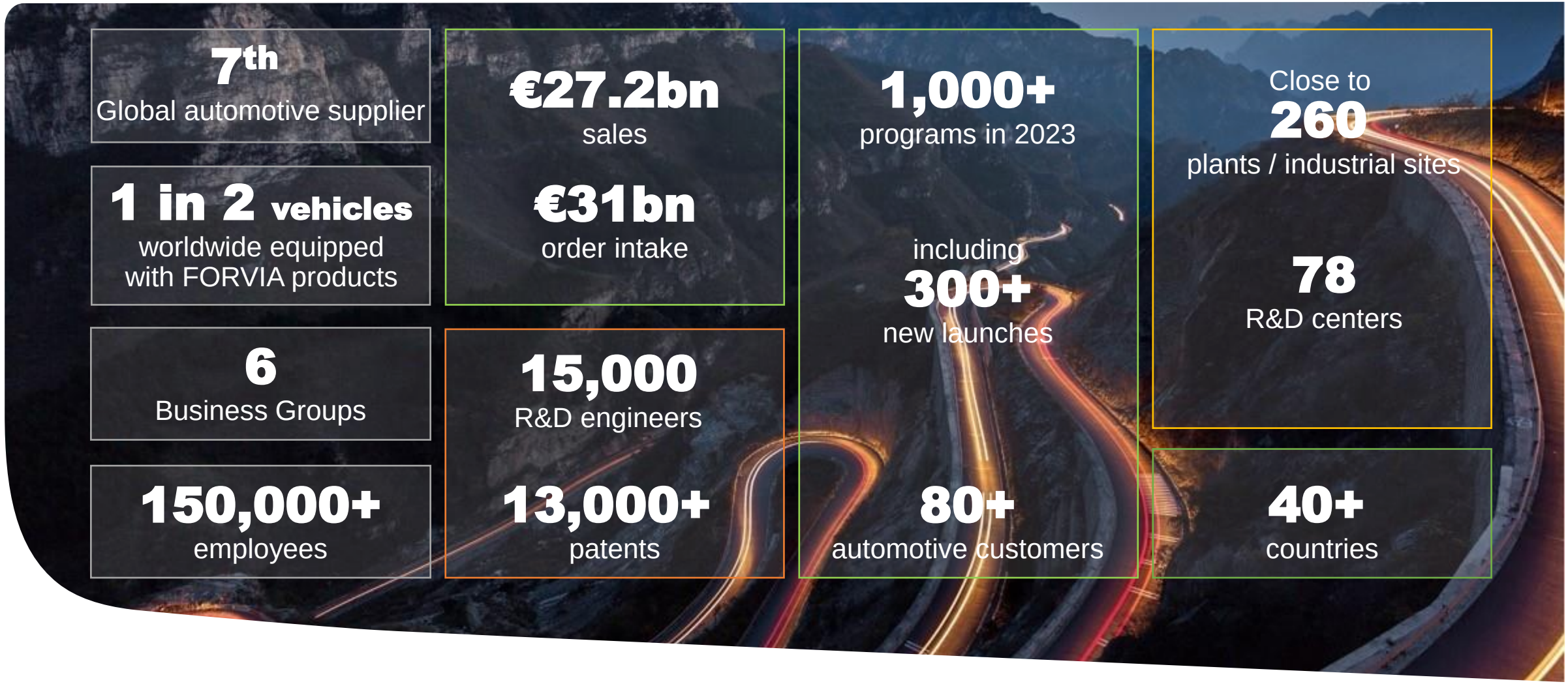
01 About FORVIA

02 For Green Future

01

ABOUT FORVIA

FORVIA: A GLOBAL LEADER IN AUTOMOTIVE TECHNOLOGIES



All figures at December 31, 2023

32

A COMPREHENSIVE PORTFOLIO: SIX INTERNATIONAL BUSINESS GROUPS WITH DIFFERENTIATING PRODUCT LINES

Seating

- Seat structures
- Complete seats

47,000+ employees

Interiors

- Instrument Panels
- Door Panels
- Center Consoles
- Sustainable Materials

33,000+ employees

Clean Mobility

- Ultra low emissions solutions for passenger and light commercial vehicles
- Zero emission hydrogen solutions for mobility, energy storage and distribution

19,000+ employees

Electronics

- Sensors & Actuators
- Automated Driving
- Lighting/Body Electronics
- Energy Management
- Cockpit Electronics
- Cockpit Experiences

6,000+ / **14,000+** employees

Lighting

- Headlamps
- Rear Lamps
- Interior Lighting
- Car Body Lighting

22,000+ employees

Lifecycle Solutions

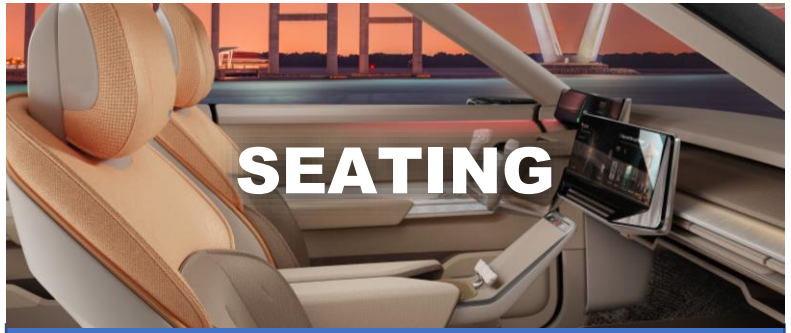
- Independent Aftermarket**
- Workshop Solutions
- Special Original Equipment

5,000+ employees

*** Including Clarion Electronics Commercial Solutions*
All figures at December 31, 2023

Activities Faurecia | Activities HELLA | **Activities Faurecia & HELLA**

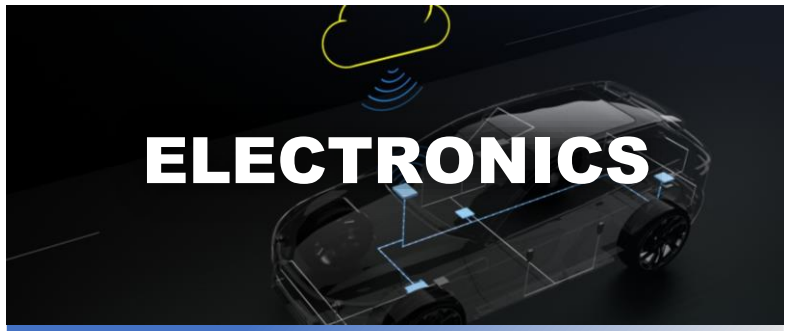
A LEADER IN EACH BUSINESS ACTIVITY



- **#1 worldwide** in seat structure systems
- **#3 worldwide** in complete seats

- **#1 worldwide**
- **Materi'Act:** €2bn sales by 2030

- ULE: **#1 worldwide**
- Hydrogen: ambition to become **#1 worldwide**
- **Stellantis** now a Symbio shareholder



- **Among the market leaders** in attractive market segments (e.g. radars, voltage converters, sensors…)
- **3,000** software engineers

- **#1** in **electronics** and **software-based** high-end LED solutions

- A leader **in the European aftermarket**
- Special Original Equipment: **in the top #3 in Europe**

**All figures at December 31, 2022*

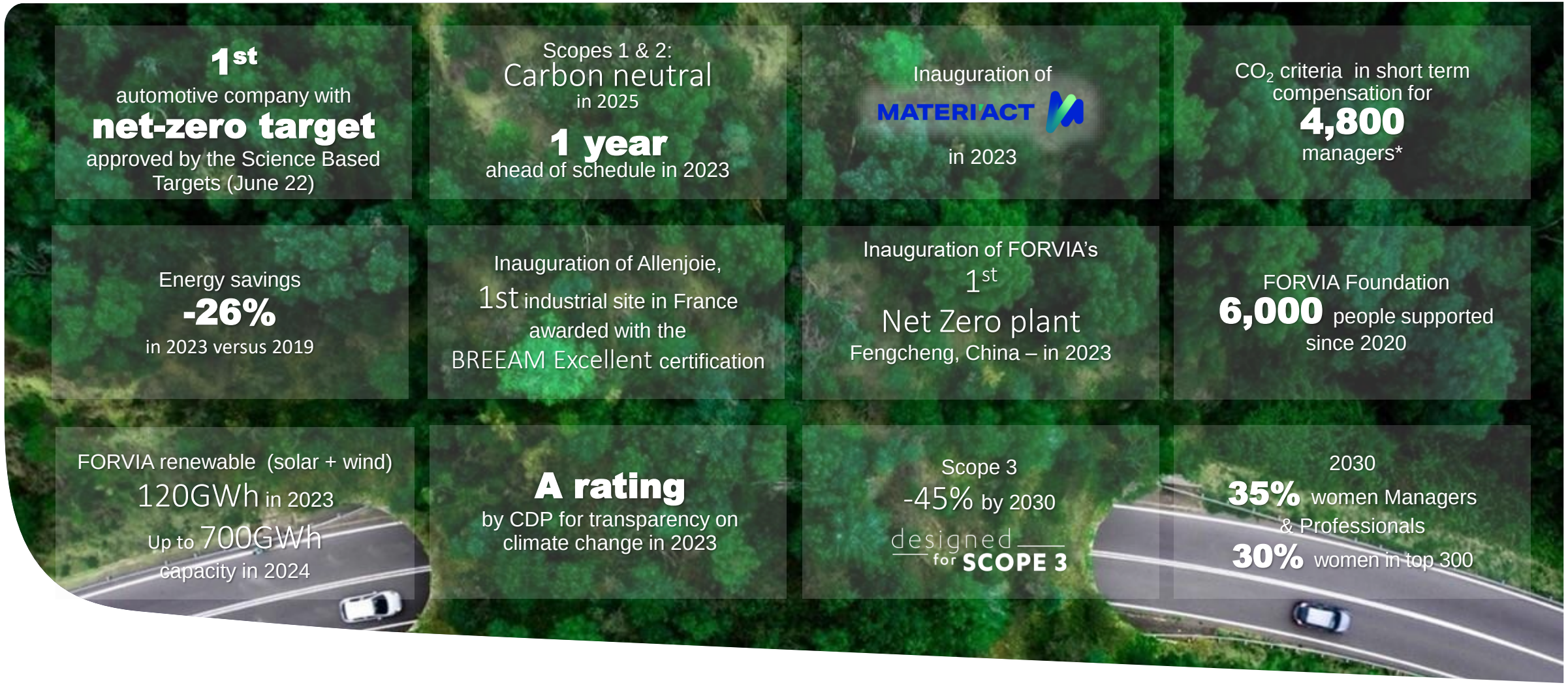
Faurecia activities HELLA Activities **Faurecia & HELLA Activities**

02

FOR GREEN FUTURE

SUSTAINABILITY: WE RAISE OUR AMBITIONS

SUSTAINABILITY: WE SPEED UP OUR ACTIONS



Excluding HELLA perimeter

Allenjoie, model plant for hydrogen storage mass production

A plant designed with sustainability in its DNA and built to consume less energy

- **First CO_2 neutral mass-production plant for H_2 solutions manufacturing**

Scope 1

- *Biomass boiler*
- *Heat recovery*
- *Insulation*

Scope 2

- *Smart process energy optimization*
- *Solar panels auto consumption, 300MWh*
- *Offsite Power Purchase Agreement*

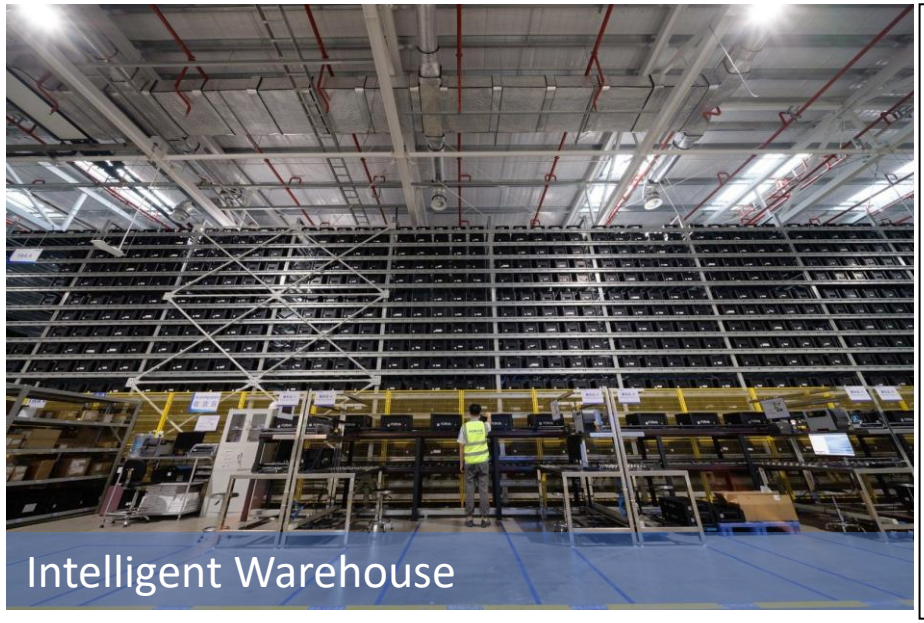
- **Highest Grade Sustainable industrial platform**
  - Latest digital manufacturing technologies, including energy monitoring
  - Local suppliers, material used & ecological studies (160 trees on the plot, ecological corridors, …)
  - From Construction process (Cleanness, waste recycling, quiet construction site) to operation (waste and water management, rainwater collection…)
  - **Low environmental impact building (BREEAM certification)**

KEY FIGURES

- Allenjoie Plant 22,000 sqm
- BREEAM Excellent certification

Property of Faurecia - duplication and/or modification prohibited

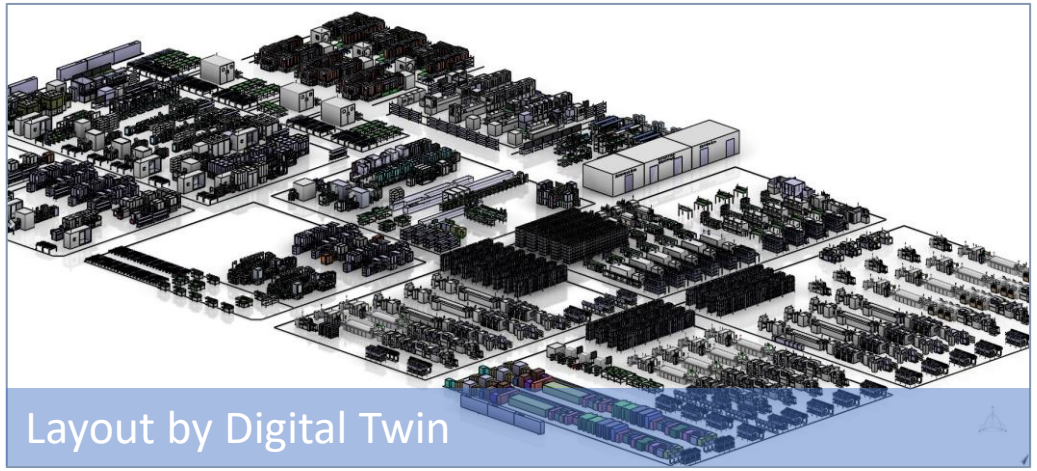
Global Benchmark Mega Plant Features


Intelligent Warehouse

Key Information:

- New Plant construction ready Mar.2023
- LEED Golden certification & carbon neutral
- FM certification & EMS system
- Line relocation until Nov.2023
- Automatic material flow (Autorack & AGV)
- Clean room, ISO 6,8 cleanness requirement
- Automatic generic assembly line
- Adopt iTAC MES system


Solar Panel


Layout by Digital Twin


AGV

FORVIA
Inspiring mobility

SPEEDING UP IN HYDROGEN ACTIVITIES

In 2023:

Inauguration of Allenjoie hydrogen plant (France)

100,000 tanks by year by 2030

1st mass production plant of hydrogen storage tanks for mobility applications in Europe

Several awards for H2 storage systems, including 2 contracts in

North America

Inauguration of SYMBIO's gigafactory Symphon'hy (France)

50,000 fuel cells systems by year by 2026

Europe's largest integrated site producing fuel cells

Stellantis entry in

Symbio

as equal shareholder with FORVIA and Michelin

SCALING UP IN LOW-CARBON MATERIALS WITH MATERI'ACT

AI-powered grades development and first auto businesses awarded in 2023

FEEDSTOCKS & PRODUCTS

3 product lines

Strategic collaborations:
APM joint venture, Veolia, Ananas Anam

Joint venture with PCR
in North America for recycled-based compounds production

MASTERING THE VALUE CHAIN
FROM FORMULATION TO PRODUCTION

World-class R&D center inaugurated in Lyon, France

- In-house lab & pilot workshop
- Hosting start-ups

400+ material formulations tested with Artificial Intelligence

CUSTOMERS

12 automotive programs already awarded

€2bn sales by 2030

FORVIA

Inspiring mobility