



2021
Annual
Report

At the
heart
of

the future

Arnaud,
employee at
Air Liquide
France Industrie

 Air Liquide

At the heart

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Air Liquide's ambition is to contribute to a more sustainable world. Our growth model is based on a principle of global performance that combines economic performance with sustainable development. For us, being at the heart of the future means creating and developing innovative solutions that are based on technology and scientific expertise to support industry and healthcare in their march towards progress. It means acting on a daily basis for our customers, our patients and, beyond that, being useful to society as a whole.

of the *future*

Energy Observer,
catamaran powered
by hydrogen and
renewable energies

Interview

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Interview with Benoît Potier

Chairman
and CEO of
Air Liquide

The year 2021 was characterized by the Covid-19 pandemic, inflation and a sharp rise in energy prices. How would you describe Air Liquide's performance?

First of all, I would like to say a few words about the beginning of 2022, which has been so painfully marked by the conflict in Ukraine. My thoughts are naturally with our 14 employees who are still based there and we are monitoring their situation closely. Their safety is a constant concern. I am also thinking of the millions of refugees, mainly women and children, forced to flee their country. Faced with this real tragedy, the Group is organizing itself to contribute humanitarian aid, notably through the Air Liquide Foundation, but also through local initiatives, notably in Poland and Romania.

As for our performance in 2021, I would say that it was a very good year, given the complex environment in which we were operating. Indeed, we stepped up to the plate on all fronts. Throughout the world, Air Liquide teams demonstrated an incredible ability to both react and adapt to many challenges, whether in response to the Covid-19 crisis, the significant acceleration in inflation or the energy transition challenge. The Group's resilience was thoroughly tested in 2021 and our success is due to our 66,400 employees who give their all to our customers and patients on a daily basis. I would like to give them my heartfelt thanks and once again express my great pride in them.

Could you tell us more regarding the Group's financial performance?

In 2021, Air Liquide delivered another year of profitable growth. The Group posted an 8.2%⁽¹⁾ increase in sales to reach 23.3 billion euros in revenue, and a 13.3%⁽²⁾ increase in recurring net profit. Growth was achieved across all activities, with Engineering & Construction and Global Markets & Technologies benefiting from projects relating to the energy transition. In the Gas & Services activity, which represents 95% of Group revenue, growth in all business lines and geographical areas was up significantly, particularly in Asia (+6%), Europe (+7%) and the Americas (+8%).

Our operating margin is increasing thanks to an inflation-adapted pricing policy, high efficiency gains reaching 430 million euros and strong business portfolio management. Amid a landscape of high energy prices, the Group was able to counter rising costs thanks to our strong business model. Finally, 2021 saw a high volume of investments that reached 3.6 billion euros. The Group's financial performance in 2021 was truly exceptional.

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“Our global presence, our inventor DNA and the soundness of our business model enable us to play a decisive role in the markets that will unlock the future.”

(1) On a comparable basis
(2) Excluding currency impact



François Jackow

François Jackow joined the Group in 1993 and has held a wide range of responsibilities throughout his international career.

In 2002, he was in charge of Innovation, before being appointed Chairman and CEO of Air Liquide Japan in 2007, then Group Vice President of the Large Industries business line in 2011. In 2014, he joined the Executive Committee and was appointed the Group's Vice President of Strategy. In 2019, he became Executive Vice President, notably supervising the Europe Industries, Europe Healthcare and Africa/Middle East/India hubs. François Jackow is French and has a scientific and managerial education, having studied in France and the United States. A graduate of the Paris-based École Normale Supérieure, he also holds a Masters degree in Chemistry from Harvard University in the United States and an MBA from the Collège des Ingénieurs.

In March 2021, Air Liquide announced ambitious sustainable development objectives. What has that changed for the Group?

These objectives represent an in-depth evolution of our business model. Our performance must not only take into account the interests of our employees, customers and shareholders, but also those of society as a whole. With these objectives, we have set out a very clear road map in terms of sustainable development. The Group is focused on global performance, which combines financial and extra-financial performance and now includes environmental, social and governance indicators.

Decarbonization is a key focus of your commitments. What are the key drivers in this field?

In practical terms, we have targeted two major areas of action to fight global warming. The first is to decarbonize industry. We are a leading player in this pursuit thanks to our wide range of technologies based on hydrogen, carbon capture and storage and biomethane. We implement these solutions for our customers, allowing them to significantly reduce their CO₂ emissions. We are also working to decarbonize our own operations through numerous initiatives, from the purchase of renewable energy - as we've done in the Netherlands and in Belgium - to the construction of more energy-efficient production plants that emit less CO₂. Our goal is to reduce our CO₂ emissions by 33% by 2035 and to become carbon neutral by 2050. Our second area of action is closely linked to the first, and is of course hydrogen, a major lever of the energy transition.

In terms of hydrogen, what are your major accomplishments?

There are so many, and we are extremely proud of them. These days, many companies are interested in hydrogen and its adoption is rapidly gaining momentum in the industrial and heavy transport sectors. We have already signed several partnerships with major global industrial brands in these domains, a sign of how our technologies have reached maturity. In the past four years, we have multiplied our annual expenditure on hydrogen technologies by a factor of 20, and the number of our employees working in this field has increased tenfold. And this is just the beginning; the outlook

is extremely promising. By 2035, we will invest 8 billion euros in the low-carbon hydrogen value chain, with the goal of tripling sales from 2 billion to 6 billion euros in the same time frame.

On a more personal note, 2022 is a milestone year for you, with the announcement of a new governance organization and the launch of a new strategic plan.

Indeed, on June 1, 2022, François Jackow will succeed me as Chief Executive Officer. I will remain Chairman of the Board of Directors, a role that I am familiar with, having already held it for around 15 years. We have planned this transition carefully with the entire Board of Directors, and I have complete faith in François, his leadership qualities, his experience and his unrivaled knowledge of the Group. I am confident that he will continue, in tandem with the Executive Committee team, the transformations that are already underway and will take them even further, notably through our new 2025 Strategic plan, ADVANCE.

Announced on March 22, 2022, this plan marks an important step for the Group as we embark on a path of global performance that combines both financial and extra-financial indicators. We are convinced that growth only makes sense if it has a positive impact on the environment and society at large. Building the future means being financially efficient, ensuring continuity and the ability to invest in the future, acting as a leader of industry decarbonization, promoting progress through technological innovation and acting for everyone.

What is your vision for the Group's future?

We are at a very singular moment in the history of the world, marked by geopolitical, economic and environmental upheavals. The last two years have profoundly transformed our societies, and we have all lived it first-hand. More recently, the war in Ukraine and the terrible humanitarian and economic consequences that stem from it have changed the geopolitical situation and shaken up the world order. Despite these challenges, I think that the world must continue to move forward, and that we must always believe in the future and build it with conviction. From the Group's point of view, our resilience and our capacity to adapt

“The Group is focused on global performance. ... Growth only makes sense if it has a positive impact on the environment and society at large.”

are true assets. For over 120 years, Air Liquide has ceaselessly cultivated its key strength: the ability to perceive and even anticipate the profound changes impacting society, and to offer the necessary expertise.

We are also at a real turning point in the Group's history. Despite the current uncertain environment, I remain confident in Air Liquide's ability to face the challenges ahead. The opportunities for Air Liquide remain numerous. Our international presence, inventor DNA, technological expertise and the diversity of our business, supported by the strength of our model, will enable the continuation of our growth trajectory. We are having a truly decisive impact on the markets that are essential for the future: hydrogen, of course, which is part of a rapidly changing energy world, but also healthcare, electronics and high technologies. Few companies have such a wide range. We are pleased to be able to act in so many markets.

ADVANCE, the 2025 strategic plan

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Delivering strong financial performance

Air Liquide is taking action today while preparing the future. The Group is rising up to an ambitious challenge: continuing its growth dynamic and improving profitability all while meeting its commitments to reduce CO₂ emissions and investing in the markets of the future.



Decarbonizing the planet

The Group is affirming its leading role in the decarbonization of industry and the dawn of a low-carbon society in which hydrogen is today playing a decisive role. It is committed to decarbonizing its own operations while helping customers to do the same. Air Liquide plans to reach carbon neutrality by 2050, with the intermediate step of beginning to reduce its CO₂ emissions around 2025.

Our objectives

+5% to +6%

AVERAGE ANNUAL
SALES GROWTH⁽¹⁾

+10%

ROCE
FROM 2023

INITIATING THE
reduction
OF CO₂ EMISSIONS
AROUND 2025

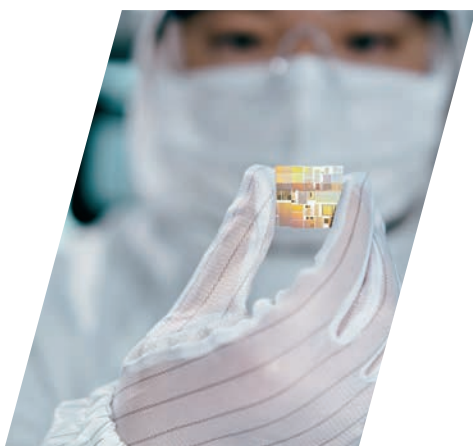
(1) Compound annual growth rate (CAGR) of sales on a comparable basis over the 2021-2025 period.

(2) Sum of annual operating margin improvements in basis points, excluding energy pass-through impact.

(3) Industrial investment decisions above 5 million euros.

ADVANCE, Air Liquide's new strategic plan for 2025, is a milestone in the company's history. **It places sustainable development at the heart of the Group's strategy, firmly setting Air Liquide on course for global performance by combining financial and extra-financial performance.**

ADVANCE is structured around four priorities and integrates the Group's Sustainable Development objectives.



Unlocking progress via technology

Thanks to its capacity for innovation and its technological expertise, the Group is contributing to the development of five markets of the future: mobility, electronics, healthcare, industrial merchant and high technologies. With ADVANCE, it intends to strengthen its positioning in these sectors.



Acting for all

As a civic-minded company, Air Liquide strives to ensure that everything it does is in the interests of its employees, its customers and its patients, its shareholders and its partners and, beyond that, of society as a whole.

By relying on

>+ 160 bps

**OPERATING MARGIN
GROWTH OVER FOUR
YEARS (2022-2025) ⁽²⁾**

€16bn

**RECORD LEVEL OF INVESTMENT
DECISIONS; HALF OF THE
INDUSTRIAL INVESTMENTS⁽³⁾
WILL BE DEDICATED TO THE
ENERGY TRANSITION**

Board of Directors

as of 12.31.2021

The Board of Directors is composed of 13 members: 11 who are appointed at the Annual General Meeting and two who represent Air Liquide employees. The Board of Directors brings together a diverse range of profiles. Five nationalities are represented from Europe, America and Asia and 55% of elected members are women. They bring a wealth of skills (financial, managerial, digital, scientific, international development, etc.) and a diversity of experience in a variety of sectors (chemicals, consumer products, healthcare, research, services, construction, automotive, etc.).

The Board of Directors determines Air Liquide's objectives and ensures their implementation in line with its corporate interest, by taking into account the social and environmental stakes of its business. Accordingly, it examines and approves the Group's major strategic priorities.

In 2021, it focused in particular on **the impacts that the Covid-19 pandemic** had on the Group and notably the measures taken to protect the **health of employees**; performance analysis; the **Group's strategy** taking into account environmental and social issues; the continued application of the **Sustainable Development policy** and the establishment of **new ESG/Climate objectives**; the development of the new 2025 **ADVANCE** strategic plan; **industrial investment** decisions; the **energy transition** and the development of **hydrogen**; and **governance** matters, including the decision to **separate the roles of Chairman of the Board of Directors and of Chief Executive Officer**. In this context, the Board that will meet after the May 2022 Annual General Meeting will be asked to renew the mandate of Benoît Potier as Chairman of the Board of Directors and to appoint François Jackow as Chief Executive Officer, **effective June 1, 2022**.

a. Benoît Potier

Chairman and Chief Executive Officer
Born in 1957 – French

b. Jean-Paul Agon

Independent Director
Lead Director
Chairman of the Appointments and Governance Committee
Member of the Remuneration Committee
Born in 1956 – French

c. Siân Herbert-Jones

Independent Director
Chairman of the Audit and Accounts Committee
Born in 1960 – British

d. Sin Leng Low

Independent Director
Member of the Audit and Accounts Committee
Born in 1952 – Singaporean

e. Annette Winkler

Independent Director
Chairman of the Environment and Society Committee
Member of the Appointments and Governance Committee
Born in 1959 – German

f. Philippe Dubrulle

Director Representing Employees
Member of the Environment and Society Committee
Born in 1972 – French

g. Geneviève Berger

Independent Director
Member of the Environment and Society Committee
Born in 1955 – French

h. Xavier Huillard

Independent Director
Chairman of the Remuneration Committee
Member of the Appointments and Governance Committee
Born in 1954 – French

i. Anette Bronder

Independent Director
Member of the Audit and Accounts Committee
Born in 1967 – German

j. Kim Ann Mink

Independent Director
Member of the Remuneration Committee
Born in 1959 – American

k. Fatima Tighlaline

Director Representing Employees
Born in 1979 – French

l. Aïman Ezzat

Independent Director
Born in 1961 – French

m. Bertrand Dumazy

Independent Director
Born in 1971 – French



Executive Committee

as of 12.31.2021

The Executive Committee coordinates the Group's various programs and activities. It reviews the operational management of the business and oversees the implementation of transformation projects and business development.

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In 2021, the Executive Committee continued to lead initiatives in response to the public health crisis. Action plans were implemented to protect the safety of employees and partners through adapted work organization, and to guarantee continuity of service in essential sectors, especially healthcare.

Regarding strategy, the Executive Committee has been particularly focused on rolling out the Sustainable Development Objectives across the Group – including through a new internal governance framework for CO₂ emissions management – as well as developing the new ADVANCE strategic plan for 2025.



Benoît Potier
Chairman and Chief Executive Officer.
Born in 1957 – French



François Jackow
Executive Vice President supervising the Europe Industries, Europe Healthcare and Africa/Middle East/India hubs. He also supervises the Healthcare world bWss line and the Innovation, Technologies, Digital/IT functions and the Customer Experience program.
Born in 1969 – French



Michael J. Graff

Executive Vice President supervising the Americas and Asia Pacific hubs, he is also in charge of the Electronics world business line. Born in 1955 – American



Fabienne Lecorvaisier

Executive Vice President in charge of Sustainable Development, Public and International Affairs, Societal Programs and the Air Liquide Foundation. She is also in charge of the General Secretariat. Born in 1962 – French



Jean-Marc de Royere

Senior Vice President in charge of Societal Programs. He is also Chairman of the Air Liquide Foundation. Born in 1965 – French



François Venet

Senior Vice President in charge of Strategy. He also supervises the Large Industries world business line and Engineering & Construction. Born in 1962 – French



Pascal Vinet

Senior Vice President in charge of the Europe Industries and Africa/Middle East/India hubs. He also supervises the Safety and Industrial Systems function. Born in 1962 – French



François Abrial

Vice President in charge of the Asia Pacific hub. Born in 1962 – French



Marcelo Fioranelli

Chief Executive Officer of Airgas. Born in 1968 – Brazilian



Matthieu Giard

Vice President supervising Hydrogen activities and the Industrial Merchant world business line, the Procurement function and Efficiency programs. Born in 1974 – French



Armelle Levieux

Vice President, Group Human Resources. Born in 1973 – French



Émilie Mouren-Renouard

Vice President in charge of Innovation, Digital & IT, and Intellectual Property, as well as the Global Markets & Technologies activity. Born in 1979 – French



Jérôme Pelletan

Chief Financial Officer. Born in 1970 – French



Diana Schillag

Vice President in charge of Healthcare activities in Europe and the Healthcare world business line. Born in 1971 – German



At the heart of the future

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01. Building a low-carbon society

02. Improving patients' quality of life

03. Contributing to a more connected world

04. Helping industries meet the challenges of tomorrow

Leveraging its innovation capabilities and technological expertise, Air Liquide contributes to tackling the challenges that our societies are facing - whether they be related to industry decarbonization, healthcare transformation, digital acceleration or revolutionizing industry. We make a difference through our desire to have a positive impact on society, through our concrete achievements and our ability to invent sustainable solutions.

for a more
sustainable
world

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01_

Building
a *low-*
carbon
society

Tackling climate change challenges requires strong and collective action. Not only is Air Liquide committed to reducing CO₂ emissions from its own operations, but we are also helping customers decarbonize at the same time. In close collaboration with industrial partners, we are increasing our involvement in a variety of large-scale clean energy solutions, such as low-carbon hydrogen production and supply, carbon capture and storage technologies and biomethane solutions. Our ambition is to act as the leader of industrial decarbonization.

-33%

REDUCTION IN AIR LIQUIDE'S
ABSOLUTE-VALUE CARBON
EMISSIONS BY 2035

€8Bn

WILL BE INVESTED IN THE
LOW-CARBON HYDROGEN SUPPLY
CHAIN BY 2035



Matthieu Giard

Member of the Air Liquide Executive Committee and Vice President supervising Hydrogen and Industrial Merchant activities

What makes hydrogen a solution for decarbonizing industry and heavy transport?

Hydrogen plays a key role in the energy transition, particularly when it comes to decarbonizing industry and heavy transport, which represent 18% and 25% of worldwide CO₂ emissions respectively¹. Air Liquide has 50 years of expertise in hydrogen, and 20 years ago we banked on the molecule being used for clean mobility. Since 2021, things have rapidly accelerated. More than 30 governments have positioned hydrogen at the heart of their energy strategy, with 100 billion euros² pledged in support of its large-scale roll-out. By 2050, it is expected to account for more than 20% of global end-use energy demand³.

As a pioneering group in the hydrogen sector, how can Air Liquide accelerate this roll-out?

The entire hydrogen ecosystem is in development! We firmly believe that when it comes to tackling environmental challenges, we are all in this together. In this ramp-up phase, we are forging strategic partnerships with industry and transport stakeholders including TotalEnergies, Siemens Energy, BASF, Airbus and Faurecia⁴, to create industrial projects and infrastructures for the production and distribution of hydrogen. To accelerate our efforts alongside our industrial and financial partners, we have created the largest global fund fully dedicated to expanding hydrogen infrastructure, funded with 1.5 billion euros. In the face of climate change, it is crucial that we combine technologies, expertise, and industrial and financial capabilities to accelerate the production and use of low-carbon hydrogen.

What do you think the development of hydrogen will look like in 10 years?

The hydrogen revolution is already underway. Today, we need to boost its roll-out by leveraging the commitments made by public and private sector players to achieve carbon neutrality by 2050. We are going to invest 8 billion euros in the low-carbon hydrogen supply chain. Our strategic investments in large-scale electrolyzers, such as those we have already made in Canada, France and Germany, will bring our overall electrolysis capacity to 3 GW by 2030 for producing renewable hydrogen. The decade of hydrogen has begun, and it is our ambition to act as a hydrogen leader.

18 “Air Liquide is a leader in hydrogen and we are committed to investing €8 billion in the low-carbon hydrogen supply chain by 2035.”

(1) International Energy Agency – 2020
(2) 2021 reports from the Hydrogen Council
(3) *Idem*.
(4) Now known as Forvia

Cristina Ballester

Vice President Large Industries
Europe, Air Liquide

Why is carbon capture and storage (CCS) considered an essential lever to reach carbon neutrality by 2050?

While society is accelerating the usage of renewable energy to address climate urgency, we also need solutions that will support the transition by enabling the capture of large volumes of CO₂ emitted by industrial actors. This avoids emissions in the short term, particularly from industries whose emissions are hard to abate, such as cement, steel and chemicals. In these sectors, CCS is an effective and viable solution for industrial processes that don't yet have alternatives.

How is Air Liquide answering this challenge?

We have been developing carbon management solutions for 15 years. Our Cryocap™ CCS solution uses cryogenics technology to capture CO₂. The process is highly efficient compared to solvent-based technologies, recovering up to 98% of CO₂. Cryocap™ is part of a full carbon capture service offer we are currently developing that will include CO₂ capture, purification, liquefaction, storage and transport to the sequestration site. In some cases, we also recycle the CO₂ for other uses (carbonation of sparkling beverages, food preservation and freezing, etc.). The maturity of our solutions portfolio and our expertise give us legitimacy in this key growth area that is crucial to reducing industrial carbon footprints. Our customers know they can rely on us for performance, reliability, safety and supply continuity.

Do you have some recent concrete examples to illustrate this?

We have several projects underway in Europe. For example, in France, in the Dunkirk industrial basin, we've joined forces with ArcelorMittal to develop an ecosystem to sequester up to 3 million metric tons of CO₂ from the steel industry. In Normandy, France, and Zeeland, the Netherlands, we're implementing large-scale CCS solutions at hydrogen production units in collaboration with TotalEnergies. With BASF in Antwerp, Belgium, we're planning to develop the world's largest cross-border CCS value chain. The Kairos@C project (see p. 58) won support from the European Innovation Fund, confirming the efficiency of our technology, which an increasing amount of industries will need to reach carbon neutrality.



“The maturity of our portfolio of carbon capture and storage solutions and our expertise give us legitimacy in contributing to the decarbonization of industry.”



01_Hydrogen production unit in Normandy, France

Developing the world's first low-carbon hydrogen network in Normandy, one of Europe's largest industrial basins.

Air Liquide is working with TotalEnergies to decarbonize hydrogen production on its petrochemical platform. The Group will take over the existing production plant and supply TotalEnergies with low-carbon hydrogen, and the two companies will also join forces to deploy a CO₂ capture and storage solution (CCS). By 2025, an electrolyzer of at least 200 MW will be connected to the existing hydrogen network, making this the world's first low-carbon hydrogen network. The Group is also collaborating with TotalEnergies, Borealis, Esso and Yara to develop CCS infrastructure.



02_World's largest oxygen production site, South Africa

Reducing CO₂ emissions by 30% to 40% by 2030.

Since June 2021, Air Liquide has been running the 17 Air Separation Units (ASUs) at the oxygen production site owned by Sasol, a South African company specializing in energy and chemicals. It is now the world's largest oxygen production site. The Group is currently operating the ASUs and is also drawing up plans to modernize the units. The goal is to optimize the units' production capacity and energy consumption while reducing CO₂ emissions arising from oxygen production by 30% to 40%.



03_Largest PEM⁽¹⁾ electrolyzer in the world, Quebec, Canada

Producing renewable hydrogen on an industrial scale.

By inaugurating the world's largest PEM⁽¹⁾ electrolyzer in 2021, Air Liquide has reaffirmed its goal of achieving carbon neutrality by 2050. This next-generation electrolyzer is 99% powered by renewable hydraulic energy and produces up to 8.2 metric tons of hydrogen per day, which is enough to power more than 2,000 cars or 230 trucks. It will cut CO₂ emissions by 27,000 metric tons per year, which is equivalent to the emissions of 10,000 cars.

(1) PEM: Proton Exchange Membrane.



04_Low-carbon Air Separation Unit (ASU), China

Building the world's largest low-carbon ASU for the steel industry.

Air Liquide will build and operate a low-carbon Air Separation Unit in Zhangjiagang City, Jiangsu Province. Designed for Jiangsu Shagang Group, the biggest private steel company in China, this state-of-the-art unit, capable of producing 3,800 metric tons of oxygen per day, will significantly reduce CO₂ emissions. By becoming the Group's largest source of liquid oxygen and nitrogen in China, the unit will supply industrial customers and hospitals in the east of the country. It will also supply krypton and xenon to meet the growing demand of the local electronics industry.

Air Liquide firmly believes that hydrogen is the key to accelerating the energy transition. The Group is partnering with major players from various sectors who offer complementary skills to harness the full potential of hydrogen, from production to future distribution methods. This generates a reduction in industrial CO₂ emissions and an increase in the development of clean transportation.

Decarbonized *industry*

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Europe is taking a major step in furthering industry and mobility decarbonization.

Air Liquide and Siemens Energy have joined forces to create a European ecosystem of hydrogen production technologies by electrolysis, thereby promoting the emergence of a sustainable hydrogen economy in Europe. One of the large projects backed by the French and German authorities is the construction of a renewable hydrogen production unit with a capacity of 30 MW in Oberhausen, Germany. This industrial-sized unit will be the first of its kind to be connected to the existing Air Liquide pipeline network.



(1) Aéroports de Paris, a global leader in airport design, construction and operation.
(2) Now known as Forvia.



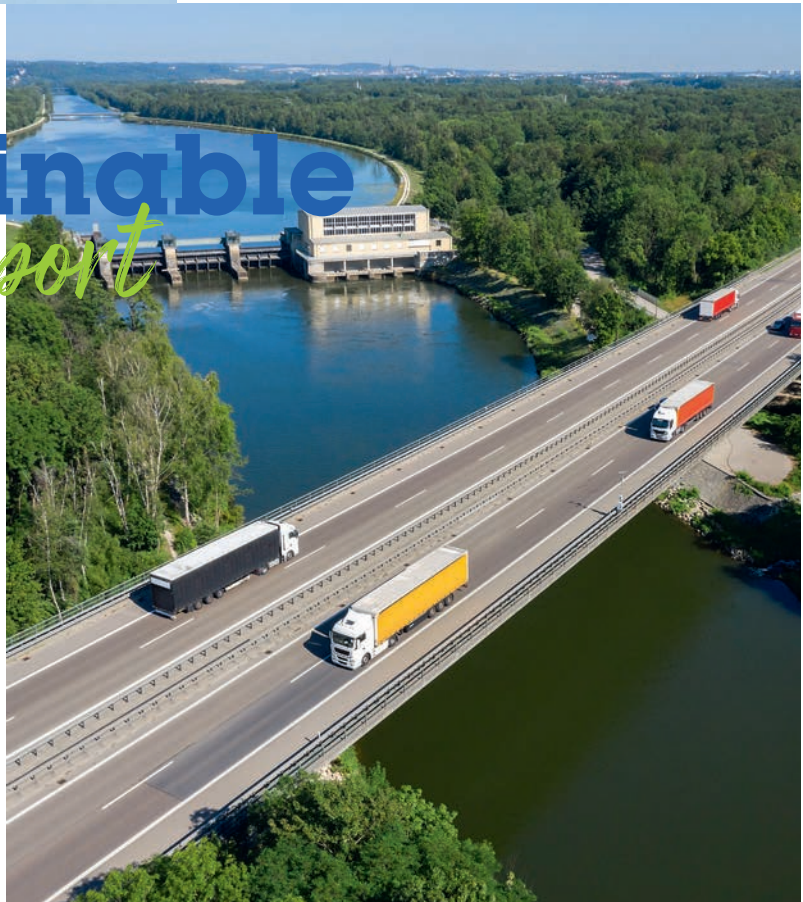
The future *of aviation*

What if the airplane of the future was powered by hydrogen? This is the ambition that Airbus has set for 2035. In preparation, Air Liquide is already collaborating with the aircraft manufacturer and Groupe ADP¹ to develop liquid hydrogen production and supply future infrastructure for Parisian airports. At Lyon-Saint Exupéry Airport, the pilot site, Air Liquide and Airbus

are working with VINCI Airports to develop the first hydrogen facilities by 2023. On the runway, buses, trucks and ground handling machines will run on hydrogen thanks to a distribution station. This station will also supply heavy trucks moving around the airport, thereby creating a local hydrogen hub.

Sustainable *transport*

Especially suitable for intense use by heavy trucks, hydrogen offers maximum range and fast refueling. With this goal in mind, Air Liquide has partnered with Faurecia⁽²⁾ to develop a liquid tank system that will double on-board hydrogen capacity compared to gaseous hydrogen. The Group is pairing its expertise with that of the vehicle systems specialist so that they can co-design and co-produce hydrogen tanks that will give trucks twice the range for the same payload.



02_

Improving
patients'
quality
of life

Because every patient experiences their illness differently, Air Liquide favors personalized care pathways. This is a virtuous approach that aims to improve both the patient's health and quality of life at the best cost for the healthcare system. Working daily with all healthcare professionals, the Group contributes to the transformation of healthcare at home, in hospitals and in other care settings by offering innovative solutions that create value for all healthcare stakeholders.

1.8M

PATIENTS AT HOME AROUND
THE WORLD IN 2021,

38%

OF WHOM ARE FOLLOWING
A PERSONALIZED CARE PATHWAY



Dolores Paredes
 Vice President of Markets,
 Strategy and Innovation at Air Liquide's
 Healthcare activity

You launched the transformation of Air Liquide's Home Healthcare business by implementing a Value-Based Healthcare approach. Could you please explain what this means?

This approach focuses on patients beyond their illness. We put them, as people, at the heart of the healthcare system, taking into account everything that makes them unique. By this I mean their relationship with their illness, their history, their lifestyle and even their family situation. We are moving from a service-based approach to an approach that focuses on the key benefits for patients to improve their quality of life in a more cost-effective way. It is a unique opportunity to organize the entire healthcare ecosystem around a common goal. Leading stakeholders are already implementing it in several countries (hospitals, clinics, healthcare systems), and the results are promising. International organizations⁽¹⁾ are taking part in this transformation and helping shape healthcare policies that promote the emergence of value-based initiatives.

In what way is this approach strategic for Air Liquide?

Around the world, healthcare systems are facing a two-fold challenge: ensuring their continuity and upholding quality of care. Value-Based Healthcare is now essential for Air Liquide, which is taking long-term action to meet this challenge. Today, Air Liquide takes care of 1.8 million patients with chronic diseases. Our combined human and digital approach allows us to offer them more personalized care pathways. Our proximity to our patients and our role as a major player in home healthcare alongside healthcare professionals allow us to contribute to the transformation of healthcare.

What challenges do you face in the coming months?

Although several European countries have begun this patient-centered transformation process, the challenge now is ensuring this initiative is adopted in all regions. We must fundamentally rethink care pathways, with the goal of making them more personalized in order to improve patients' health and quality of life. We need to prove the value we are generating with this approach, and this requires systematic measurement of the benefits to the patient. This is a complex but exciting task. It requires a coordinated approach from all healthcare professionals in order for the entire ecosystem to reap the benefits. This includes physicians, who can rely on our teams to ensure compliance with treatment, those responsible for covering the costs, who see the optimization of overall care costs, and hospitals, which can focus on critical procedures.

“The Value-Based Healthcare approach returns patients to the heart of the healthcare system, with the goal of improving their quality of life at the best cost for the healthcare system.”

(1) Including the OECD (Organization for Economic Cooperation and Development) and EIT Health (a network of actors working in the field of health innovation, supported by the European Union).

Louis-François Richard
Vice President of Medical Gases
at Air Liquide, Europe

Air Liquide has a major presence in hospitals with medical gases and related services. Accordingly, how can Value-Based Healthcare be adapted to healthcare institutions?

Value-Based Healthcare is a unique approach that encourages all stakeholders to jointly re-examine the benefits for patients and to be involved in the transformation of healthcare systems. We work in partnership with each stakeholder in the healthcare pathway (hospitals, urban medicine and emergency services) to help medical professionals concentrate on tasks with greater added value for patients, while securing the availability of the medical gases they need on a daily basis.

What does that mean specifically?

Today we are only in the early stages of using the Value-Based Healthcare approach to benefit hospitals. But we already have solutions in place that ease the work of caregivers and optimize costs for hospitals. Besides supplying medical gases, we offer services that account for all hospital needs. One example of this is Total Gas Management, which enables everything in the gas logistics process to be managed on the hospital site. Another example is our new line of cylinders for medical oxygen that facilitates the administration of medical oxygen, patient mobility and inventory management for hospital caregivers, who have been in extremely high demand during the pandemic.

Hospitals face a great many challenges. How are you responding to them?

All hospitals do indeed face sizable challenges: accommodating patients in greater and greater numbers, lowering costs without affecting quality of care and participating in regional care networks, all while remaining a hospital of choice. We are adapting to these challenges by redesigning our operational models. As an example, we want to offer a comprehensive care package per patient treated, rather than per products and services supply. Such a model lets us offer optimal quality of care to the benefit of the patient, the healthcare professionals and the healthcare system as a whole.



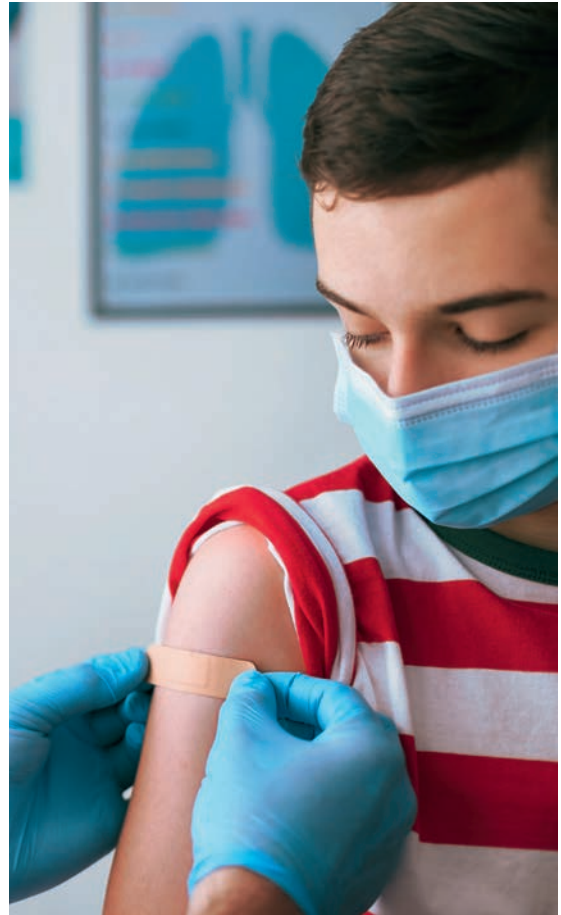
“At hospitals, we offer gases and service solutions that take into account the needs of all medical professionals, while optimizing costs.”



01_Covid-19: Producing and distributing more medical oxygen

Teams mobilized to meet the needs of hospitals.

All over the world, Air Liquide has stepped up in the face of the pandemic by supplying the medical oxygen needed to combat Covid-19. Our employees raced against the clock to offer help to caregivers by increasing production and adjusting the supply chain. In the hardest-hit areas, hospital demand for oxygen increased sixfold and even tenfold.



02_Supporting vaccine research

Contributing to global efforts to fight Covid-19 by opening access to a new adjuvant that increases the efficacy of vaccines.

Furthering vaccine research is one of our ambitions. Seppic, an Air Liquide subsidiary that manufactures specialty ingredients, stepped up in the face of the pandemic by making its Sepivac SWE™ adjuvant – which was developed in partnership with the Vaccine Formulation Institute⁽¹⁾ – available to the global scientific community. Available without a license, this adjuvant helps accelerate the development of vaccines to combat influenza and Covid-19.

(1) A not-for-profit body affiliated with the World Health Organization.



03_Acquisition of Betamed, a Polish leader in home healthcare

Building on the at-home support services we offer to patients in Europe with complicated illnesses.

The 2021 acquisition of Betamed, a Poland-based leader in home healthcare, was a turning point for Air Liquide, adding to its European presence in complex treatments. With expertise in long-term home care and mechanical ventilation, Betamed enables the Group to broaden its range of services and products across the entire care pathway for people with severe illnesses, either at home or in a specialized clinic.



04_Launch of the Making Diabetes Easier website

Enabling patients and their families to live with diabetes more comfortably, using a single information platform.

Living with diabetes requires an understanding of the condition and how to manage it on a daily basis. Harnessing 20 years of experience in treating diabetes, Air Liquide launched the website Making Diabetes Easier, which provides practical learning resources for diabetic patients (particularly those living with Type 1) to improve their daily lives. Available in Europe in six languages, this website deals with subjects as varied as diabetes management, nutrition, sports, school, sleep management and more.

Re-inventing the care pathway is a crucial factor in improving how the needs of patients are met. Playing a role along with caregivers in the transformation of the healthcare sector, Air Liquide has devised innovative, patient-centric solutions. These approaches foster personalized treatment, to both improve the follow-up care patients receive and their overall quality of life.

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Personalized *healthcare*

In partnership with healthcare professionals, Air Liquide has committed to rethinking home healthcare services by adapting them to patients' real needs and lifestyles. Since living with an illness is a different experience for each patient, the Group has set up a digital platform that connects the different stakeholders at each stage of the care pathway, enables follow-up care to be adapted and maximizes patient satisfaction thanks to innovative data-driven solutions.





Predictive *Science*

How can we leverage the potential of data to create more value in healthcare?

This can be demonstrated by two approaches developed by Air Liquide, which is investing in the field of artificial intelligence as a way to better support hospitals and patients. The Group perfected a system that can predict oxygen consumption patterns in hospitals by combining public Covid-19 data with internal data,

allowing for the adjustment of gas production and supply to hospitals. Using data acquired from tracking apnea patients with connected devices, another algorithm identifies the risk of patient non-compliance and therefore how their support can be better preventively adapted.

Vital *Molecule*

The pandemic has highlighted the crucial role of medical oxygen for treating patients in respiratory distress.

Air Liquide teams, with the help of physicians, are seeking to develop a new non-invasive, ventilation device that is easy to use and can be bulk manufactured. This device would enable to deliver very high rates of oxygen while optimizing consumption and can treat more patients than current devices. In a period of crisis, this is an effective solution when the time of medical professionals and oxygen are in high demand.



03_

Contributing
to a more
connected
world

Semiconductors lie at the heart of the digital revolution that is profoundly transforming society. In the ultra-competitive electronics sector, the innovation race encourages the design of increasingly smaller and more powerful components, all while reducing their environmental impact. As a strategic partner to major electronic customers, Air Liquide supports their geographic expansion and helps them face technological challenges, from supplying advanced materials to relocating production units.

157K

METRIC TONS OF CO₂ EMISSIONS AVOIDED IN THE ELECTRONICS INDUSTRY THANKS TO AIR LIQUIDE'S ENSCRIBE™ SOLUTIONS IN 2021

100%

OF LATEST-GENERATION SMARTPHONES CONTAIN CHIPS, MEMORY, SENSORS AND DISPLAYS MADE WITH AIR LIQUIDE'S GASES AND ADVANCED MATERIALS



Christian Dussarrat

Electronics R&D Program and
Scientific Director, Tokyo
Innovation Campus, Air Liquide

What role does Air Liquide play in the electronics industry?

As society becomes increasingly digital, the electronics industry is faced with growing demands for increased performance and production of semiconductors. Air Liquide helps the industry by providing the ultra-pure gases and innovative materials necessary for manufacturing chips. The Group's innovation capacity facilitates the development and manufacturing of the highest-quality, fastest and most powerful nanoscale devices.

What challenges are electronics players facing?

In roughly 15 years, the size of silicon transistors has already decreased from 65 to 5 nanometers. At this scale, flawless quality, product stability, safety and reliability are critical, which is why the electronics industry has specific and very stringent quality requirements for all gases and chemicals supplied to its production plants. In addition to these technological challenges, the industry is also committed to producing semiconductors with smaller environmental footprints, to contribute to low-carbon computing.

How is Air Liquide supporting customers to meet these challenges?

We are driven by our innovative mindset. Since the early 2000s, we have been working on materials called precursors, which deliver specific tailored solutions to customers in the memory and logic segments. More recently, enScribe™ range materials allow etching at a nanoscale with a minimized environmental impact. Over the years, we have ramped up our expertise and now we offer a unique portfolio of solutions and advanced materials backed by the best innovation capability in the industry.

“We offer a unique range of *solutions* and advanced materials for the electronics sector backed by the best *innovation* capability in the industry.”

Ken Liu

Strategic Account Director, Electronics activity at Air Liquide, Taiwan Island

In 2021, Air Liquide signed new contracts with a key Taiwanese electronics player. Can you tell us more?

Air Liquide's global presence and its unique product portfolio make it an attractive partner to electronics leaders around the world. We are proud to have signed new contracts with a key Taiwanese customer who is taking its geographical expansion up a notch. This customer will be opening a new manufacturing site in Arizona, U.S., with a monthly capacity of 20,000 wafers⁽¹⁾, and we will be supplying ultra high purity hydrogen, helium, and carbon dioxide to this facility. We are also in talks with them to partner on further expansion in Taiwan Island and Japan.

How does Air Liquide make the difference from its competitors in the electronics sector?

When it comes to overseas expansion, semiconductor manufacturers want to partner with suppliers they know and trust. We have been supporting this customer and most of the key electronics players for years. They are reassured by our international presence and ability to provide a single customer interface anywhere in the world. Additionally, our product portfolio is simply the most comprehensive on the market, from ultra-pure carrier gases to novel advanced materials.

There is currently strong demand for semiconductors, but an uncertain outlook in areas such as supply chains and international trade. Which challenges is Air Liquide facing as it supports customers expansion?

Sustaining the rapid growth of the industry is not easy. Our expertise and proximity with our customers around the world promote optimal responsiveness and strict quality control. Throughout the Covid-19 pandemic, we didn't have a single supply chain interruption. Our locations in key electronics hubs like Japan and China also allow us to secure the most cutting-edge solutions for our customers and to support them in their relocation and expansion plans.



“Our product portfolio is simply the most comprehensive on the market, from ultra-pure carrier gases to novel advanced materials.”

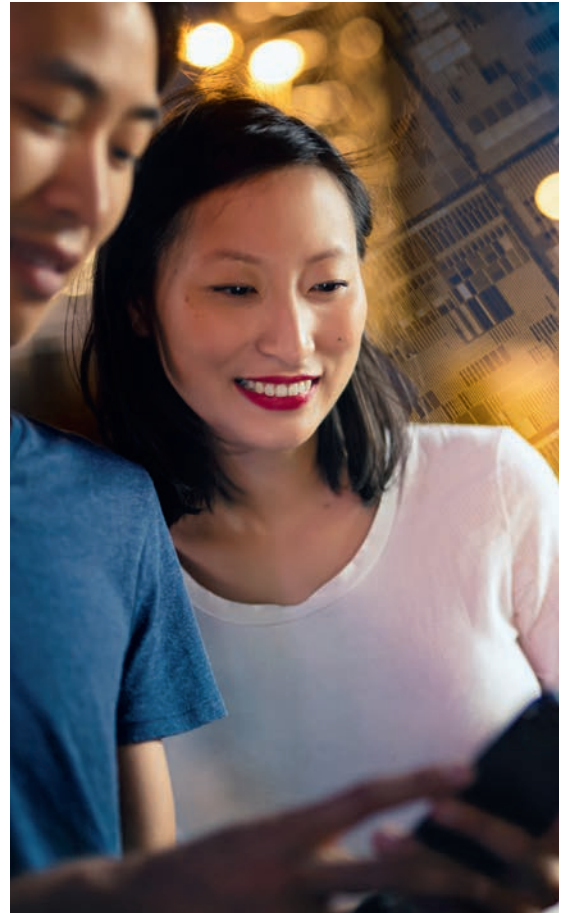
(1) Silicon wafers used for the manufacturing of integrated circuits.



01_A lasting carrier gas partnership in Virginia, U.S.

Supplying one of the world's largest semiconductor manufacturers with extensive carrier gas.

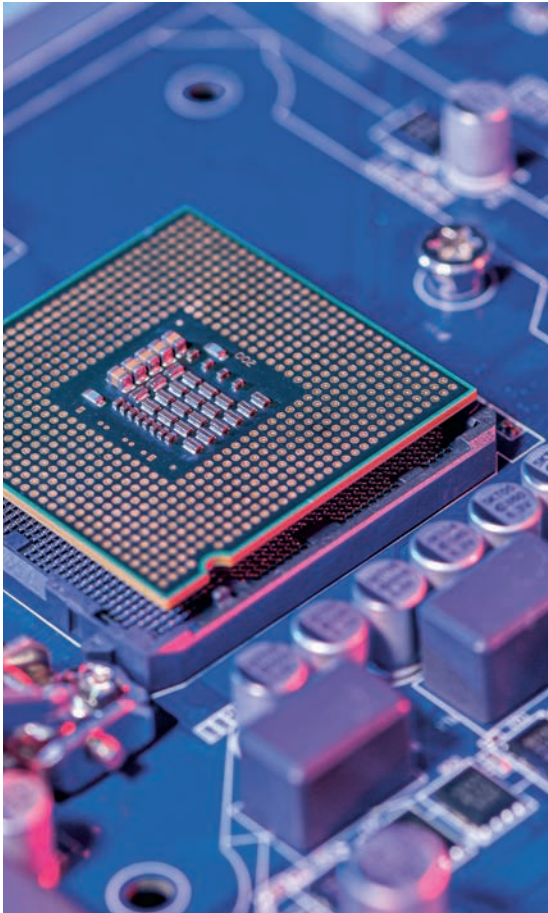
For over 30 years, Air Liquide has worked closely with a key manufacturer, a powerhouse of innovative memory solutions present in Asia and North America. Upon expanding their Manassas, Virginia site to meet growing demand for digital products, this customer agreed to a 15-year contract extension with Air Liquide, increasing the carrier gas supply requirements at its site. This partnership is now Air Liquide Electronics U.S.' single largest investment to date.



02_Ultra-high purity low-carbon hydrogen electrolyzers, Taiwan Island

Constructing low-carbon hydrogen electrolyzers at the Tainan and Hsinchu Science Parks.

To meet the growing demand for high-purity hydrogen in the electronics sector, Air Liquide is investing in production units at the Tainan and Hsinchu Science Parks, two of the most advanced semiconductor basins in the world. The first electrolyzer was successfully delivered in 2021. When completed, the production site will have a total capacity of 25 MW and will avoid 35,000 metric tons of CO₂ direct emissions annually. Those plants will allow the Group to supply low-carbon hydrogen to local semiconductor manufacturing plants.



03_ For a more sustainable semiconductor industry

Helping the electronics industry reduce its carbon emissions through more efficient semiconductors.

Air Liquide's Advanced Materials centers design cutting-edge technologies that enable the production of the smallest semiconductors yet. In turn, as devices shrink, they become better insulated and more energy efficient, which has allowed for energy savings even as global demand surges. Between 2010 and 2018 alone, data centers reduced their electricity consumption by -297 TWhr thanks in part to the continued performance improvement of semiconductors and Air Liquide's advanced materials.



04_ Localization of advanced materials production

Supporting customers as they relocate production closer to home for increased supply chain security.

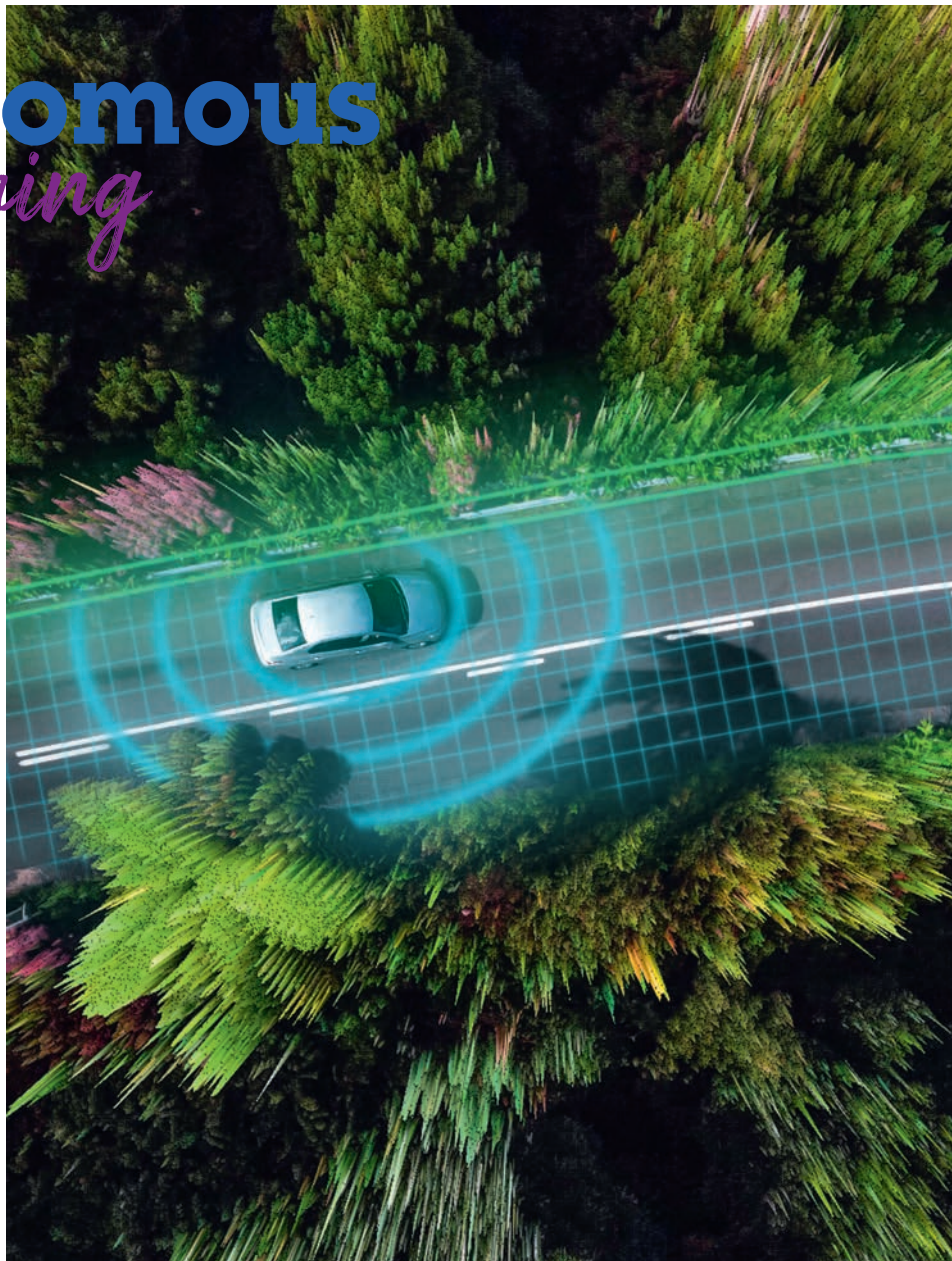
Microchip manufacturing sites are facing increased demand for advanced materials and growing risks related to complex global supply chains. This context is pushing them to localize their materials sourcing. Air Liquide invests alongside industry leaders in materials production facilities, allowing them to ensure the quality and the security of their supply. The recently commissioned facility in Singapore expands our existing network of centers, strategically located in electronics hubs in Japan, South Korea, Taiwan Island, the U.S. and Europe.

The acceleration of the digital transformation both inspires and tests the limits of the electronics industry. Air Liquide is leveraging its rich expertise, innovation capability and global presence to help industry leaders meet their challenges and make the most advanced technologies a reality in everyone's daily life.

Autonomous *driving*

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The rapid growth of driver-assistance and car connectivity functions is bringing us closer and closer to self-driving cars. This progress is supported by smarter infrastructure, more powerful on-board processing and the miniaturization of real-time sensors, all of which require larger quantities of increasingly efficient semiconductors. Air Liquide's innovative materials allow the semiconductor industry to meet this performance challenge. The Group's global presence, production capacity and quality management system support both the growth and the zero-defect production demanded by the automotive industry.





Artificial intelligence

The reach of artificial intelligence (AI) has expanded rapidly in the last decade, leaving no sector of our daily life untouched.

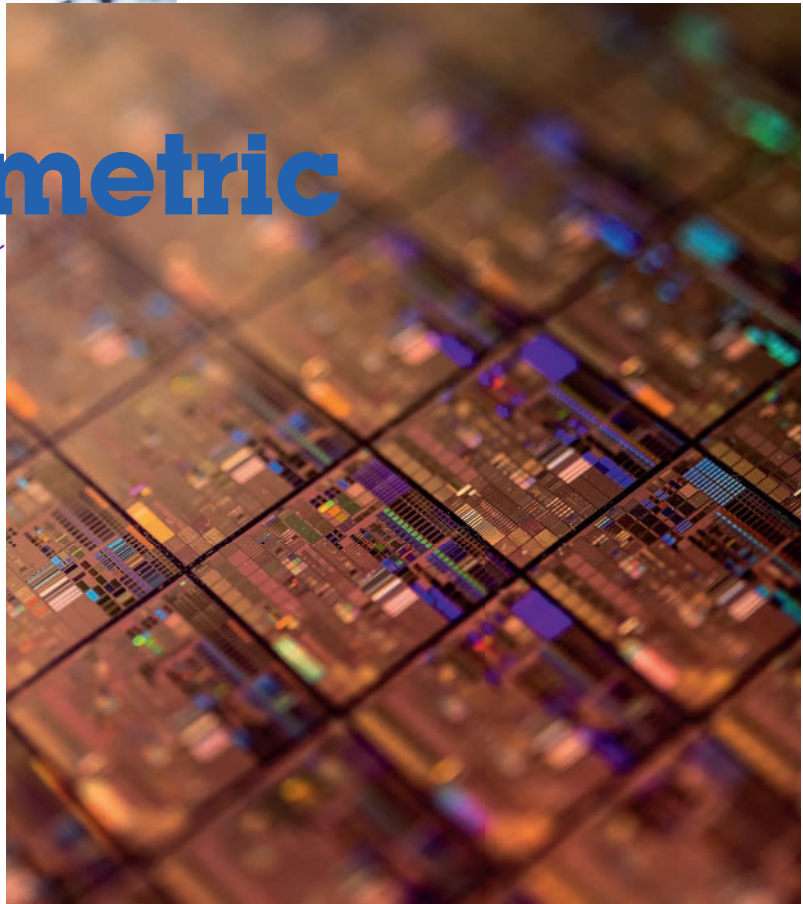
AI requires extremely powerful processors to access and treat enormous quantities of data in a record time, imitating the functionalities of a human brain but surpassing by far its capacity and processing speed. The

semiconductors behind these calculations must be extremely powerful and fast, but also energy efficient. Air Liquide leverages its innovation capabilities and proximity with the semiconductor ecosystem to invent new materials which allow the semiconductor industry to meet these challenges and advance the abilities of AI.

Nanometric solutions

The newest semiconductors must be of impeccable quality and capable of delivering peak performance and minimal environmental impact, all at the smallest possible size.

EnScribe™, an Air Liquide portfolio of advanced etch materials, was developed in partnership with semiconductor manufacturer partners to help them meet both the technological and environmental challenges of manufacturing the tiniest microchips. A significant step towards low-carbon computing.



04_

Helping
industries
meet the
challenges of
tomorrow

Present in a wide variety of markets, Air Liquide is in a privileged position to observe and detect new trends, needs and uses across industrial ecosystems. Drawing on the powerful potential of essential small molecules and data management, the Group innovates with and for its customers to offer them new gas applications that contribute to their operational efficiency and address the challenges of both new emerging markets and the energy transition.

2M

INDUSTRIAL CUSTOMERS
WORLDWIDE

€2.9Bn

OF INDUSTRIAL MERCHANT SALES
ARE RELATED TO SOLUTIONS THAT PROTECT
LIFE AND ENVIRONMENT



Laure Pouyanné
Business Data Manager,
Industrial Merchant activity,
Air Liquide

How does digital data enable Air Liquide to better meet the expectations of its customers?

Just like our customers, we have to produce sustainably, offer a quality experience and meet the latest industry expectations. Data is a powerful enabler for us in overcoming these challenges. The Integrated Bulk Operations' program, which is currently being rolled out, is a good example. By digitally connecting logistical assets (production plants, tanks installed on customers' sites or trucks), we are able to collect and analyze data to optimize the liquid gas supply chain in real time. The key here is that our logistics teams can anticipate customer requests and identify the right time for delivery by organizing more efficient and reliable delivery rounds. This gives us an agile logistics chain for better customer service while lowering our CO₂ emissions!

What role do employees play in this digital transformation?

Our employees are experts in our business processes and are in close contact with our customers. So involving them from the start is crucial when working together to build solutions that can improve our operational efficiency. This in turn provides a better customer experience. For example, the Digital and R&D teams worked with operators in France to design a solution that would increase their productivity in preparing customer orders for gas cylinders while optimizing handling operations.

What is the greatest challenge in optimizing data management?

Supporting decision-making, anticipating needs, managing performance and more. There is a wealth of data available and our teams were quick to see the value in capitalizing on it. So much so that you hear them talking about "their" data. Now the challenge is to upskill and train teams, an indispensable investment that maximizes the potential of data. In the future, using data will be part and parcel of employees' everyday work.

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“Data is a powerful tool for improving the customer and employee experience.”

(1) A program for digitizing the liquid gas supply chain

Steve Hope

Vice President Markets & Strategy, Industrial Merchant activity, Air Liquide

A new ecosystem intelligence approach is being tested in the Industrial Merchant activity. What does this involve?

Essentially, it is about challenging our orthodoxies around how we look at current and new markets. The idea is to go outside our normal bounds and look at all stakeholders, their drivers of change and their interactions. We then build a strategic analysis that better addresses an individual market, prioritizing actions and reducing the time to market for relevant solutions. To do this, we need to be part of a broad, diverse ecosystem where we are connected with key stakeholders. Supported by the i-Lab,¹⁾ we're testing the approach on some market segments such as water treatment in the pharmaceutical industry.

How strategic is this approach for your business?

To stay ahead in a fast-changing world, we must detect trends and understand how they will shape our business regarding new customers, stakeholders (customers, customers' clients, suppliers, public authorities, etc.) and business models. By being proactively involved in an ecosystem, we can deepen our knowledge and ask ourselves the right questions: What will this customer look like in five years? How will energy transition trends affect customers, and what impact will they have on their business and on the value chain? Who are the new players in the market? This approach puts us at the forefront of change so we can understand how disruption impacts our customers' needs, and we can anticipate their future expectations and come up with new solutions.

What is the value for Air Liquide and your customers?

An ecosystem-based process gives a much better read of the customer's environmental, regulatory and supply chain context across markets, helping us to prioritize actions and align resources. We start with their pain points and ecosystem changes and then build on them using a customer-centric approach. This can also lead to unlikely pairings or partnerships that accelerate our thinking and shape customer outcomes. By identifying critical water treatment challenges within the pharmaceutical industry that could be addressed by our technological expertise, we forge new connections to solve issues and create value for every player in the ecosystem.



“There is a transformation underway that demands a completely different way of understanding and engaging our customers and their key stakeholders.”

1. Air Liquide's foresight department which investigates emerging trends and topics, and develops foresight tools and methodologies.



01_A production furnace at a glass plant

Reducing energy consumption and CO₂ emissions by improving the oxy-combustion process.

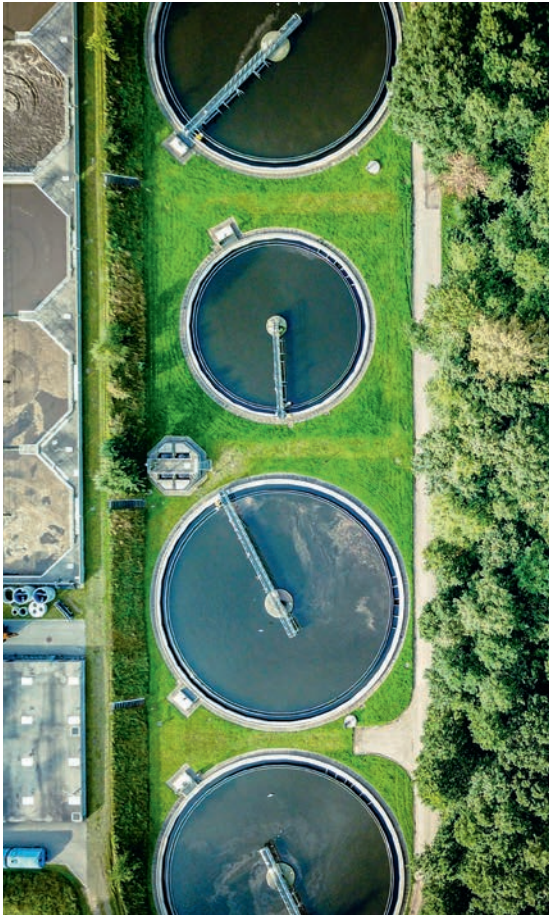
Glass manufacturers are increasingly seeking to improve energy- and cost-efficiency and furnace profitability while reducing pollutants. Air Liquide's heat-oxycombustion technology improves the glass production process by reusing heat that would otherwise be wasted. An EU-funded study at a Bulgarian glass factory demonstrated that heat-oxycombustion reduced emissions of CO₂ by 19% and of nitrogen oxides by 90%.



02_An innovative training approach for welders

Supporting welding customers to become more competitive around the world.

In the highly competitive metal fabrication market, customers seek increased productivity, improved quality and cost reductions. Air Liquide U.S. subsidiary Airgas offers a comprehensive, systematic program to help customers gain more value and continuously improve. The innovative "Unlocking the Hidden Cost of Welding™" program provides professional training, quality management methods and ongoing digital benchmarking tools, and is currently being successfully deployed in Europe and in Asia.



03_Integrated and sustainable water treatment solution

Partnering with Inopsys, a Belgian specialist in treating chemical and pharmaceutical wastewater.

Some waste waters from complex industrial processes are non-recyclable and often transported for incineration, a costly and CO₂-intensive process. Air Liquide offers its customers an integrated and sustainable solution, developed in collaboration with Inopsys, that uses hybrid technology to purify wastewater streams on site. The Group initially shared its pioneering work in advanced oxidation with Inopsys, and now supplies the company with pure oxygen and strategic expertise.



04_Indoor vertical farming

Developing a foothold on indoor vertical farming in Singapore through a new partnership with the company &ever.

Aiming to create a buffer from supply disruptions and produce 30% of its nutritional needs locally by 2030, Singapore called upon the German company &ever to develop indoor vertical farming in the country. Air Liquide will support &ever's sustainable operations to supply carbon dioxide, crucial for plant growth, which can help increase their yield and growth rate.

To meet the challenges facing society, a profound transformation of industry is underway. Air Liquide is contributing by working with its customers to build more innovative and sustainable industries. The Group develops new solutions for the future that support those involved in bringing about new industrial revolutions, whether that is electric vehicles, 3D printing or the agriculture of tomorrow.

Electrical *revolution*

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The electric vehicle revolution is gaining speed and Air Liquide is a key player, as gases are crucial in manufacturing the next generation of batteries with an extended range and a reduced carbon footprint. The Group provides its expertise to the world's leading companies in this ecosystem. Gas solutions are needed along the entire value chain, from extracting raw materials and producing electrodes to assembling cells and recycling.



Additive manufacturing

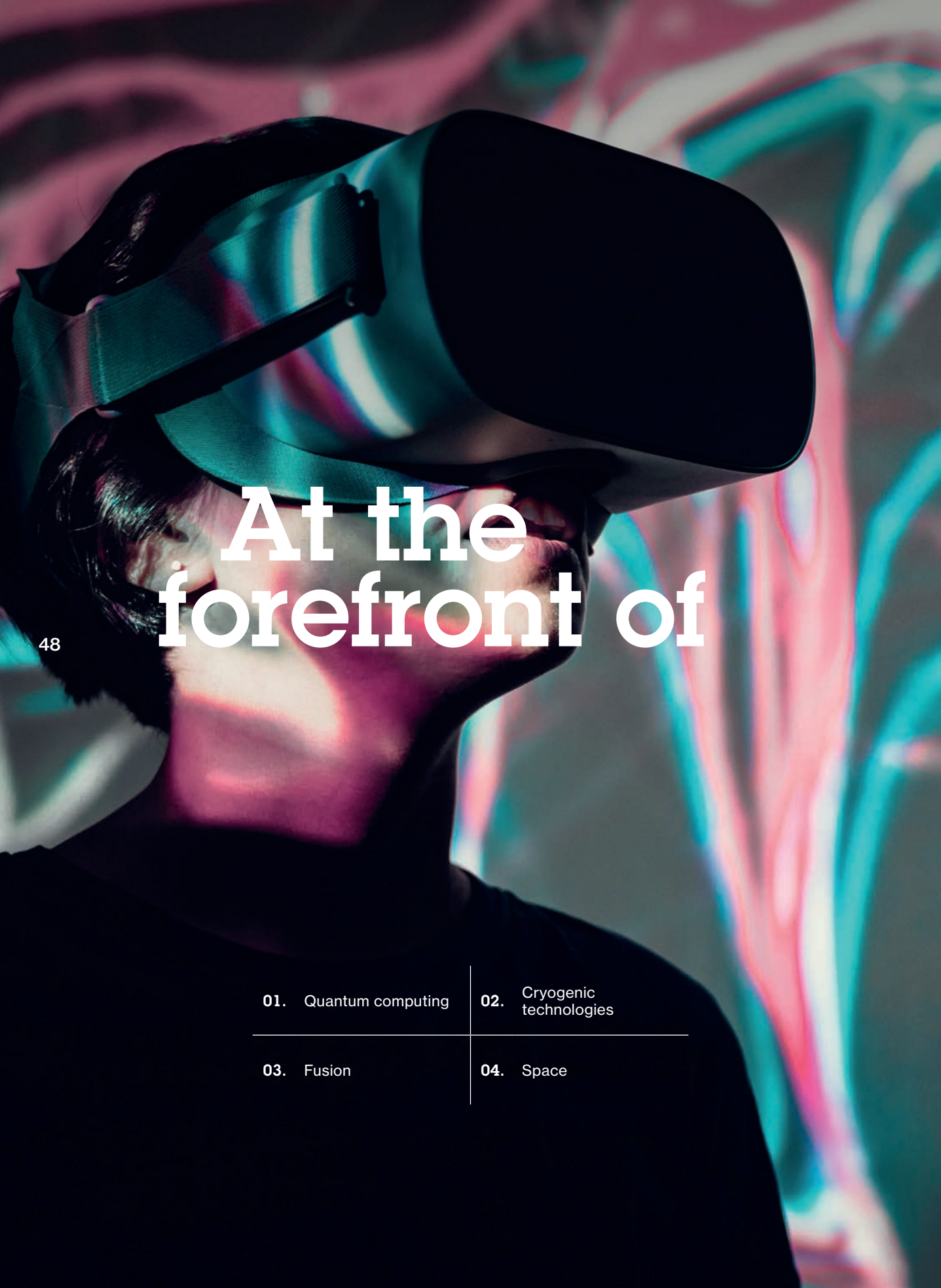
In 2021, the first 3D-printed metal bridge was inaugurated in Amsterdam. This was a technological feat to which Air Liquide made a major contribution. The Group shared the welding and additive manufacturing expertise of its R&D teams and provided shielding gases to MX3D, the tech start-up that masterminded the project. More generally, industrial gases play a key role throughout the chain of additive manufacturing processes, ensuring their safe execution, operational stability and the final quality of the metal parts.



Alternative proteins

By 2050, the Earth will have 10 billion inhabitants, and food production will need to increase by 70%. This global challenge will mean using new sources of accessible, sustainable proteins such as plant proteins, insects or proteins derived from fermentation. Air Liquide is committed to this transition through the supply of gas and

equipment solutions to those working in this field. The Group has forged R&D and industrial partnerships notably in Belgium, Canada, France and Germany, to support the development of this high-growth sector.



At the forefront of

48

01. Quantum computing

02. Cryogenic
technologies

03. Fusion

04. Space

Technological progress promising solutions to some of humanity's most pressing issues is closer than ever. From new energies to space exploration and quantum computing science, Air Liquide develops cutting-edge solutions and hands-on expertise to ensure that tomorrow's world really does arrive.

technological progress


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Quantum computing

Minimal temperatures, maximum benefits

Air Liquide, a pioneer in ultra-low temperatures, ventured even further into the cold with the 2020 acquisition of CryoConcept, a company specialized in extreme cryogenics. They have developed a dilution refrigeration solution that approaches absolute zero ($-273,14^{\circ}\text{C}$), temperatures crucial for ground-breaking scientific research into quantum computing that promises to accelerate the search for new drugs, the discovery of new materials and even cyberdefense.



Cryogenic technologies

Capturing, cooling and storing to save energy

Used initially in the space industry, Air Liquide's Turbo-Brayton technology has found a promising market in the maritime transport of liquefied natural gas (LNG). Onboard LNG tankers, it prevents boil-off, contributing to the reduction of economic loss and CO₂ emissions. This technology is also used to liquefy biomethane that can then be easily transported to its point of use, such as bio-NGV (natural gas for vehicles) stations or industrial customers. This promising fuel alternative is a sustainable source of energy, of which Air Liquide will produce 1.8 TWh annually on a global scale by the end of 2022.



Fusion

A powerful energy of the future

A powerful, safe and man-made source of energy, comparable to the sun, with zero carbon emissions - this will soon become a reality. The ITER experimental reactor, currently under construction in France, is expected to be operational by 2025. Air Liquide is supplying the world's largest centralized helium plant and the equipment that provide the cooling power essential to producing this clean and renewable energy of the future.



Space

Exploring new frontiers

With over 50 years' worth of technological contributions to international space programs such as the International Space Station or the European launcher, Air Liquide has always been a key player in the development of space technology. As the pace of progress accelerates, our expertise in oxygen, hydrogen and space cryogenics technologies guide the industry's innovation, from projects aiming to establish human colonies in space to the next generation of launch vehicles and ground systems.



At the heart of the future

- | | | | |
|---|---|--|---|
| 01. Building a better employee experience | 02. Developing solutions jointly with our customers | 03. Promoting dialogue with our shareholders | 04. Joining forces to build powerful ecosystems |
| 05. Helping start-ups grow | 06. Participating in collective initiatives | 07. Creating more value with our suppliers | |

Being competitive and innovating over the long term is only possible because of the trust of our employees, customers and patients, shareholders and all stakeholders with whom we maintain a relationship based on dialogue, responsibility and transparency. It is by forging connections and fostering inclusive exchanges that Air Liquide can build the Group's future and contribute to a more sustainable world.

acting in confidence

*with and
for all*

Building a better *employee* experience

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Debora Trevisan

is the Director of
Human Resources
for Air Liquide Brazil.

A psychologist by training, she has an MBA and began her career in HR more than 25 years ago, as an HR specialist. Since her arrival at Air Liquide in 2019, she has focused on transforming the company culture in Brazil and improving the employee experience.



At Air Liquide, we create an engaging and inclusive environment that allows each employee to flourish. In Brazil, this approach has helped develop team motivation and strengthened collaboration between teams.

What is Air Liquide's approach to strengthening the employee-employer relationship?

We place our employees at the center of everything we do, and we encourage them to grow and develop their potential through our program 'Be, Act, Engage'. This initiative is based on dialogue and collaboration. We also ensure that our employees connect with and understand the company's larger goals and objectives, which is why employee engagement is a key pillar of Air Liquide's sustainable development strategy. In this context, we have launched many initiatives.

What key initiatives are you most proud of launching?

It's impossible to choose! We have implemented new programs in several areas: safety, development, collaboration, inclusion and diversity, health and well-being, social responsibility. To do so, we have listened to employees' expectations and engaged them in their implementation. For example, we created a Diversity Committee and founded 'Give an UP to your CV' to increase the inclusion of disabled persons in the workforce. We've remodeled our offices to include more collaborative spaces and implemented a new remote-work policy. I'm also very proud of CuidAR, a well-being program that promotes mental, physical and emotional health.

Did you see changes in employee engagement?

Definitely! The benefits of these programs are tenfold and are demonstrated in a concrete fashion by our survey results. With My Voice, the Group program to measure employee engagement at Air Liquide, we have seen an increase of several points in our engagement index between 2020 and 2021. Another survey, the Great Place to Work external review compares us with the Brazilian market, and we have risen 13 points just between 2019 and 2021! These are great signs that our commitment to creating a welcoming and motivating environment for everyone within the company is working. Additionally, a representative of one of our suppliers told me that she had noticed positive evolution in our employees' relationships with her team and she asked me for our strategy so that she could use it in her own company. That's what I am most proud of!

Towards a learning organization

At Air Liquide, we believe in lifelong learning where employees continuously create, acquire and transfer knowledge. At the heart of our 'learning organization,' Air Liquide University's role is to foster innovation, openness, performance and diversity across the Group. New learning methods are incorporated in order to keep the Group in step with 21st-century trends such as climate change and the energy transition. In 2021, 74% of employees have received at least one training course.

Listening to our employee's voices

Air Liquide has launched My Voice, a program that measures employee engagement. The principles behind it are simple: listening, understanding and acting. Since its 2019 launch, feedback from employees has been collected on an annual basis to better understand their expectations and to pinpoint and take relevant actions, thus improving their experience. In 2021, 83% of employees participated in this survey.

Believing in diversity as a source of performance

With 66,400 employees in 75 countries, 150 nationalities are currently represented within the Group. Air Liquide's objective is to have diverse teams that represent the local culture in which they operate. The Group is also committed to creating equal opportunity for all and promoting a culture of inclusion, and has also set ambitious gender equality goals. In 2021, 31% of engineers and professionals were women, and four of the current 14 Executive Committee members are women.

Developing solutions jointly with *our customers*

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Jan Remeysen

is **CEO of BASF Antwerpen**, the second biggest Verbund site of BASF, the world's largest chemical company. After receiving his PhD in Chemistry, he started his career at the company 25 years ago. Since then he has worked in multiple departments at BASF Antwerpen, as well as at the company's headquarters in Ludwigshafen, Germany.



A key technology in the long-term strategy for fighting climate change, carbon capture and storage (CCS) is at the heart of this collaboration between Air Liquide and its partner BASF.

You are working with Air Liquide to implement Kairos@C, a carbon capture and storage (CCS) system in the port of Antwerp, Belgium. Can you tell us more?

We are planning to develop the world's largest cross-border CCS value chain, including all the stages of carbon capture, from drying and compressing to liquefaction and storage at sea. Air Liquide will use its Cryocap™ technology to capture and purify the CO₂, and BASF will apply its Sorbead® solution for drying the CO₂ which will be transported via pipelines on both banks of the Scheldt River to a liquefaction terminal. We are tackling hard-to-abate emissions, from chemical processes where there is currently no other way of avoiding CO₂ emissions. This will lead to an estimated 14.2 million metric tons of CO₂ emissions avoided over the first ten years of Kairos@C's operation. The infrastructure in the port of Antwerp will be available to other industrial players in the region as well.

That sounds like a major milestone on the route towards low-carbon industry.

It certainly is! Importantly, Kairos@C is the first complete value chain of its kind. Besides sequestering CO₂ at scale from the moment we go operational, we will deliver proof of concept to other regions. Alone, this work would be impossible to do, but through this partnership we are able to create a large-scale structure with which we can launch the value chain process and attract other industrial players. The fact that we were chosen among seven selected projects, out of 300 applicants, for funding by the EU Innovation Fund is a testament to our innovation power and the maturity of this project, as well as the strength of our partnership.

How are Air Liquide and BASF working together to make this happen?

Air Liquide is contributing gas capturing and liquefaction technology expertise that is central to the process, and BASF is bringing in knowledge, experience and contacts that help Air Liquide further develop the project. We collaborate on the technical and strategic levels. We regularly review and adjust our strategy, notably through technical reviews. This is nothing new for us, as our companies have been working together in Antwerp since the early 1960s. Each partner concentrates on its own strengths, which feeds the growth of complementary expertise and a mutually beneficial relationship.

Customer experience: from listening to action

With its commitment to delivering exceptional customer experience, in 2017, Air Liquide launched the Voice of the Customer platform. This digital tool is used to collect and analyze feedback from customers and patients across the world in real time, meaning any dissatisfaction can be swiftly remedied. The platform gives each Group entity the ability to measure customer and patient satisfaction in a spirit of continued improvement and transparency. More than 200,000 customer and patient reviews have already been posted on the platform, which has been rolled out in over 60 countries.

A comprehensive on-site gas management solution for hospitals

To help hospitals and health centers manage medical gases, Air Liquide has developed a fully customized solution, Total Gas Management (TGM), which handles all medical gas operations. Airgas, the U.S. subsidiary of Air Liquide, works with 400+ hospitals and healthcare locations around the country to support them in optimizing their supply, monitor parameters and handle all logistics. This allows caregivers to focus on patients and hospitals to operate at peak efficiency. This service was especially pertinent during intake peaks during the Covid-19 pandemic as order volumes, internal protocols and PPE⁽¹⁾ requirements rapidly changed.

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(1) Personal Protective Equipment

Promoting dialogue with *our shareholders*

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Simmoni de W.

Head of Finance at a start-up specializing in software, Simmoni de W. has been an Air Liquide Shareholder since 2017. A member of the SCC from 2017 to 2020, she continues to be a voice for Shareholders. She is also involved with the French NGO *Passerelles numériques*, which enables young people from underprivileged backgrounds in South Asia to build their employability through education in the digital sector.



Through the Shareholders' Communication Committee (SCC), Air Liquide promotes dialogue and gives a voice to its Shareholders.

As a former member of the Shareholders' Communication Committee (SCC), how would you describe your experience?

My time on the SCC was extremely rewarding. I was very pleasantly surprised by how attentive Air Liquide is toward its Shareholders. I felt that my voice was being heard and that I had a seat at the table. In particular, I had the chance to openly ask Benoît Potier questions, in a transparent manner, at our SCC meetings. It was a great honor. I also appreciated the depth and diversity of the committee members, in terms of age, background, expectations and more. Working with people from different walks of life and generations is an inspiring experience. Our profiles complemented each other and gave us a more creative and broader perspective.

Was there an initiative that particularly caught your attention?

During our meetings, we would address a wide range of topics, such as Air Liquide's communication tools or the use of social media to target a younger audience. But it was the share ownership events that Air Liquide participates in, such as Investir Day, that really stood out for me. It was an opportunity for participants to meet and talk to the Group's experts on Air Liquide's projects and capacity for innovation.

As one of the younger Shareholders, how did you contribute in that respect?

By striving for a greater emphasis on communicating via digital channels, with a stronger presence on social media. The goal is to reach young people who, nowadays, are more readily focused on crowdfunding and don't necessarily think about investing in a future-oriented company like Air Liquide. Indeed, the role of the SCC is to put share ownership into the hands of the people and to dispel the perception held by young people that it is institutional or overly formal. Air Liquide is doing its utmost in this regard.

The SCC: A voice for Shareholders

In 1987, Air Liquide was the first company to establish a SCC. Chaired by the Group's CEO, Benoît Potier, the committee meets three times a year and each member is appointed for a three-year term. On the agenda: meetings, discussions with internal and external experts, and active participation in Shareholder communication projects.

The General Meeting: THE highlight of Shareholder democracy

In 2022, the Annual General Meeting will once again be held in-person. However, it will also feature a new digital dimension, in particular thanks to optimized replay. Air Liquide will then hold a regional Shareholders' meeting on May 12 in Lille, France.

Dialogue with Shareholders is at the heart of the Group's philosophy

The Shareholder Services Department, which counts around 40 experts, maintains a privileged shareholder dialogue on an ongoing basis. In addition, the online Shareholder Portal was revamped in 2021. More intuitive, it offers a clearer presentation of the various elements related to stock market transactions. It also allows registered Shareholders to have a consolidated view of their portfolio and to follow its evolution, and brings together the various account documents of direct registered Shareholders. Shareholding has never been so simple!

Joining forces to build powerful *ecosystems*

62

Glenn Llewellyn

is Vice President, Zero-Emission Aircraft at Airbus. He began his career as an engineer at the company in 2004, working on the A350. He then headed up Airbus' Research and Technology portfolio dedicated to reducing the climate impact of its products. He is widely recognized as a leader on climate strategy for aviation.



In partnering with Airbus to help bring the first zero-emission hydrogen aircraft to the skies by 2035, Air Liquide is deepening a historic partnership where the Group both brings and gains expertise.

Momentum is building around hydrogen, with adoption set to rapidly expand in the coming decades. What role is it going to play in the aviation sector?

At Airbus, we believe zero-emission aviation is the future, and the widespread adoption of hydrogen is critical to securing this. As investment increases across countries and sectors, hydrogen will become a competitive and sustainable fuel source. Our ZEROe concept aircraft enable us to explore a variety of configurations and hydrogen technologies that will shape the development of our future zero-emission aircraft. Our goal is entry-into-service by 2035, and for that to become a reality, the development of the necessary hydrogen infrastructure at airports also needs to match our pace.

Why did you choose Air Liquide as a partner for the ZEROe project?

A more sustainable future for aviation cannot be achieved alone, so we have been reaching out to partners with complementary expertise. Air Liquide is a long-term partner that has a storied reputation for innovating and delivering, and they have the right hydrogen expertise and technologies needed to help Airbus deliver on our ZEROe ambition, both on the ground and on board. Air Liquide also challenges us in a constructive way, which strengthens our ability to bring a winning solution to market. At their core, Airbus and Air Liquide are strategically aligned and we are both fully committed to building a more sustainable future for aviation.

How is Air Liquide directly contributing to this initiative?

Air Liquide teams are leveraging their expertise and technologies in hydrogen storage, production and distribution to help us design the on-board aircraft technologies for adapting liquid hydrogen to aviation uses. On the ground, they are also playing a key role in the development of hydrogen hubs at airports, working with key operators like Groupe ADP and VINCI Airports to map out the future of hydrogen airport infrastructure.

Promoting hydrogen on the global stage

Convinced that hydrogen will be one of the drivers of the energy transition, leaders from the energy, transport and industrial sectors decided to join forces in 2017, under the impetus of Air Liquide and Toyota. Their objective: promoting a long-term vision of hydrogen technologies and usages, and stepping up its large-scale deployment. Today, the Hydrogen Council includes over 130 executives from large international firms that participate along the entire hydrogen value chain, as well as investment companies.

Setting sail toward new hydrogen solutions

Traveling the world to demonstrate the key role of hydrogen in the energy transition is the mission of Energy Observer, the first energy-independent laboratory ship for zero-emission navigation. Air Liquide has been involved in this adventure since 2017, helping raise awareness around energy transition challenges. Energy Observer recently took a new step forward with the design of a cargo ship powered by liquid hydrogen. This initiative is being carried out in collaboration with Air Liquide as part of a partnership reinforced in 2021. The aim is to decarbonize maritime transport, which accounts for 3% of global annual CO₂ emissions.

Helping *start-ups* grow

64

Hugo Cence

is co-founder and CEO of Intact, a start-up that develops ultrasonic and 3D quality control tests for industrial equipment.

After studying material and structural mechanics, he worked in the Middle East and then in Marseille, France, in the R&D laboratory of an engineering company. In 2015, Hugo joined Ekoscan,⁽¹⁾ along with a friend from his graduating class with whom he founded Intact in 2021, in cooperation with ALIAD, the venture capital investor of Air Liquide.



Alongside industrial and academic partners, Air Liquide is also working with start-ups to accelerate its innovation strategy. The goal: to develop the Group's future technologies and enrich its portfolio of sustainable solutions.

Intact develops industrial quality control tests. What does this involve in concrete terms?

Using unique technology, we have designed a robot that allows us to model the interior of a structure in 3D, based on ultrasonic tests, without affecting the integrity of the equipment. Our solution enables quality control of all types of metallic or composite structures (pipes, aircraft hulls, etc.). It is currently used on Air Liquide sites, but also by companies such as ArcelorMittal, EDF and ExxonMobil, which see several advantages in the technology: avoiding industrial risks and improving the safety of operators, particularly for maintenance operations at height. We can also provide predictive maintenance using algorithms that estimate the remaining life of equipment.

ALIAD, Air Liquide's venture capital investor, has invested in Intact. What motivated this partnership?

To start, there was the meeting between Ekoscan and Air Liquide's R&D teams in 2015. Together, we developed a customized monitoring solution for the inspection of hydrogen purification units and a robot to deploy this technology in an automated manner at Air Liquide's industrial sites. Then we decided to create the start-up Intact together. This allowed us to structure a collaboration that had already existed for several years. ALIAD participates in Intact's governance and is helping us to grow faster, for example by taking a minority stake in the Canadian company, Arcanite⁽²⁾, to make it an exclusive partner and an operational base for development in North America.

What does Air Liquide bring you, beyond the financial investment?

We regularly exchange with their materials engineering experts to better understand the equipment we control. We also learn a lot about equipment integrity from the engineers who design gas production units, especially those related to hydrogen. Commercially, the fact that we have been able to test our technologies in different contexts for Air Liquide enables us to propose very convincing business cases to our other customers.

ALIAD: the investor of start-ups of the future

Air Liquide Venture Capital (ALIAD) is the venture capital investor of the Air Liquide Group. Since its creation in 2013, it has made more than 35 investments in technology start-ups operating in three key sectors: energy transition, healthcare and digital.

Accelair, the Group's deep tech start-up accelerator

Accelair provides start-ups with a tailor-made hosting service and personalized support from Air Liquide experts. In 2021, three new start-ups joined Accelair: Umiami, which uses a unique process to reproduce 100% vegetable meat; Sirius Space Services, which is developing a reusable launcher for nano, micro and mini-satellites; and Carboneo, which offers an innovative process for reducing CO₂ emissions. Located at the heart of the Paris Innovation Campus, Accelair houses a total of eight start-ups.

Open ecosystem innovation

To foster the innovation ecosystems in which the Group has played a major role for many years, Air Liquide relies on its five Innovation Campuses (Paris, Frankfurt, Delaware, Shanghai and Tokyo), where researchers, customers, academics and entrepreneurs come together to imagine together the solutions of tomorrow, and on its Campus Technologies (Grenoble), which manufactures innovative solutions for its customers. The Group currently has more than 400 academic, industrial and start-up partnerships.

(1) Manufacturer of advanced equipment for the industry.
(2) Company specialized in non-destructive testing for the industry.

Participating in collaborative *initiatives*

66

Bertrand Piccard

is a Swiss explorer, psychiatrist and pioneer in clean technologies. In 1999, he completed a non-stop balloon trip around the globe, and in 2016 he conducted the same feat in a solar-powered aircraft, the Solar Impulse 2. Chairman of the Solar Impulse Foundation, Bertrand Piccard's explorations have always been inspired by his commitment to protect the planet.



Based on shared vision and expertise, Air Liquide builds enduring relationships with visionary pioneers in sustainable solutions like the Solar Impulse Foundation to spark change in society.

The Solar Impulse Foundation and Air Liquide have been collaborators for 25 years. Tell us about your first meeting. Can you tell us more about this partnership?

My first contact with Air Liquide was in 1997 when they provided the helium for my balloon and oxygen for the crew during my third attempt to travel around the world. They were already an incredibly performing company that was creating innovative solutions meeting environmental challenges, even at that time. Then in 2016, Air Liquide provided the life support system for Solar Impulse pilots. It was important to find a company that could deliver oxygen all around the world and Air Liquide was the perfect partner for that. When I launched the 1000+ Solutions⁽¹⁾ Challenge, they became one of the main partners of my Foundation.

How does Air Liquide's expertise help you in your mission to preserve the environment?

Air Liquide is a key player in the Foundation's Expert Community, an independent group of science, engineering and business professionals. Their experts undertake rigorous and objective assessments of technologies seeking our Efficient Solution Label, which is given to leading processes and products that combine economic and environmental performance. As for now, 30 Air Liquide experts have assessed more than 300 technologies over the course of our partnership.

How do you explain the success of this long partnership?

The main reason is the convergence of our vision and the quest for excellence. We share the common goal of offering low-carbon and efficient processes, products and services that are economically viable, and we both have fantastic teams and dedicated professionals working hard to make this vision reality. Our partnership is natural. We have recently renewed it for four more years and our shared ambition is to continue to accelerate the adoption of cleantech solutions in the energy sector and beyond.

An investment fund dedicated to clean technologies

In partnership with Rothschild & Co. and the Solar Impulse Foundation, Air Liquide has created a €250 million investment fund dedicated to the development of high-potential small- and medium-sized companies working on environmentally friendly solutions. This fund invests notably in the sectors of clean energy, clean mobility, agriculture, the circular economy, water management and smart cities.

Promoting oxygen access

Air Liquide has joined forces with Unjani Clinics to provide widespread access to an integrated, permanent oxygen therapy solution in 92 primary healthcare clinics in South Africa. Under the partnership, medical oxygen will be supplied to the entire Unjani Clinics network and medical staff will be trained to use the equipment. In 2021, 24 sessions were held to train over 100 nurses in the use of this equipment.

Acting within communities

Working closely with partners, the Air Liquide Foundation funds both scientific and community projects that have a positive impact on society. One flagship initiative develops innovative professional integration programs for technical and industrial careers, helping individuals to develop the skills that are in demand in fields where Air Liquide can bring expertise. Mostly powered by partnerships with NGOs, this initiative empowers young adults without diplomas, jobs or training, especially those from disadvantaged areas, to take control of their own professional destiny.

(1) Bertrand Piccard set a challenge in 2017 to select 1,000 efficient and profitable solutions that protect the environment.

Creating more value with our *suppliers*



68

Andrés Martínez

joined Transmol in 2020 as Logistics Director, having worked in logistics since 2002. Fittingly for someone whose job is to keep things moving, Andrés Martínez has seen the world: a trained naval architect, he completed an MBA in Houston, returning to his native Spain to start his career in 1992.

To reduce the Group's carbon footprint from transporting its gases, Air Liquide is partnering with carriers like Transmol to convert their truck fleets to run on alternative fuel sources.

Air Liquide wanted to shift the heavy vehicles used to transport its gases to clean fuel sources. Transmol played a key role in this in Spain, can you tell us more about it?

We've been driving Air Liquide pressurized gas in the industrial market for 10 years. In 2017, we decided to replace diesel trucks at the end of their service life with trucks running on natural gas for vehicles (NGV). Since then, the proportion of NGV trucks in our fleet that serves Air Liquide has risen consistently. 50 out of 55 units have now made the transition to NGV.

What were the challenges of changing to NGV, and how did Transmol and Air Liquide work together to surmount them?

Air Liquide contacted experts and invested in gathering valuable information before the switch to NGV. They ensured the change would be profitable for us and for them before committing, and they were able to prove it to us with efficiency and safety data. The research carried out allowed us to make the switch with confidence. We were already familiar with the gas itself, as we specialize in transporting large volumes of NGV, and we shared our relevant experiences with Air Liquide as well. We worked together to determine the best roll-out of NGV in our fleet.

How has Transmol benefited from this switch?

We will soon start to see a positive economic impact from switching to a green fuel like NGV. Operating costs are tipping in our favor as taxes on diesel are rising. We also have improved our own environmental performance, which will benefit us in operational terms as cities in Spain start to impose restrictions on CO₂ emissions. Moreover, having trucks running on NGV allows us to avoid harmful particles such as NOx and SO₂. This partnership allowed us to create more value for our own company.

A lower environmental impact for gases transportation

A minor amount of air gases and hydrogen produced by Air Liquide are transported by road - the rest travel either by pipeline or are provided through units directly installed at the customers' sites. Thanks to the success of delivery optimization programs, efficiency continues to improve as part of the Group's goal of reducing its carbon footprint linked to gases transportation. The Group aims to convert 20% of its global truck fleet and 50% of its European fleet to alternative fuels by 2025.

A sustainable procurement policy

Air Liquide endeavors to build sustainable and stable relationships with its suppliers, as part of a culture of mutual trust. The goal is to achieve long-term partnerships and high standards of safety, reliability, competitiveness and innovation, while accommodating ethical practices and sustainable development. These principles are officially recognized via a Supplier's Code of Conduct and a CSR⁽¹⁾ commitment clause in contracts.

Safety, a fundamental value

Safety is an integral part of Air Liquide's operational excellence and culture. The Group is committed to efficiently reducing the exposure of its employees, customers, subcontractors, suppliers and local communities to professional and industrial risks, in all circumstances. Air Liquide is working closely with suppliers to improve their road safety records. For instance, onboard technologies such as cameras that can detect driver fatigue are installed in trucks to detect driver fatigue and distraction, help change driving habits when necessary and provide visibility of the vehicle's surroundings.

(1) Corporate social responsibility

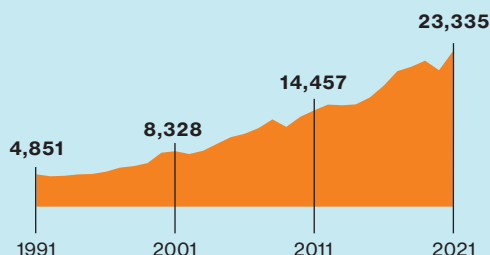
Performance 2021

70

In 2021, Air Liquide achieved excellent performance, in spite of a complex economic environment. From dealing with the Covid-19 pandemic and the sharp rise in inflation to the challenges of the energy transition, the Group's teams have stepped up in all areas, demonstrating resilience and great adaptability.

A regular long-term performance

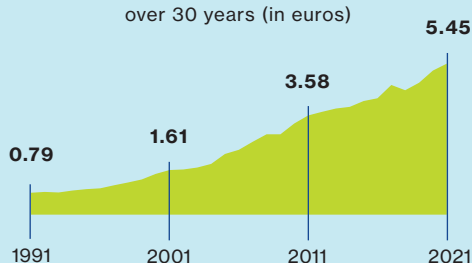
EVOLUTION OF GROUP REVENUE
over 30 years (in millions of euros)



+5.4%

average annual growth⁽¹⁾

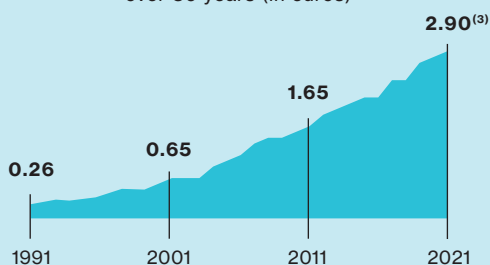
EVOLUTION OF ADJUSTED NET EARNINGS⁽²⁾ PER SHARE
over 30 years (in euros)



+6.7%

average annual growth⁽¹⁾

EVOLUTION OF ADJUSTED DIVIDEND⁽²⁾ PER SHARE
over 30 years (in euros)



+8.3%

average annual growth⁽¹⁾

2021 key financial figures

REVENUE

€23,335M

+ 8.2%⁽⁴⁾

RECURRING NET PROFIT (Group share)

€2,572M

+ 13.3%⁽⁵⁾

OPERATIONAL MARGIN

17.8%

+ 70 bps⁽⁶⁾

EFFICIENCY GAINS

€430M

GEARING

47.5%

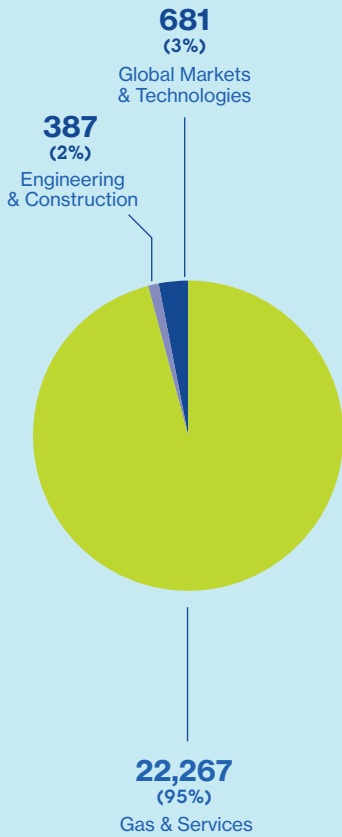
INVESTMENT DECISIONS

€3.6bn

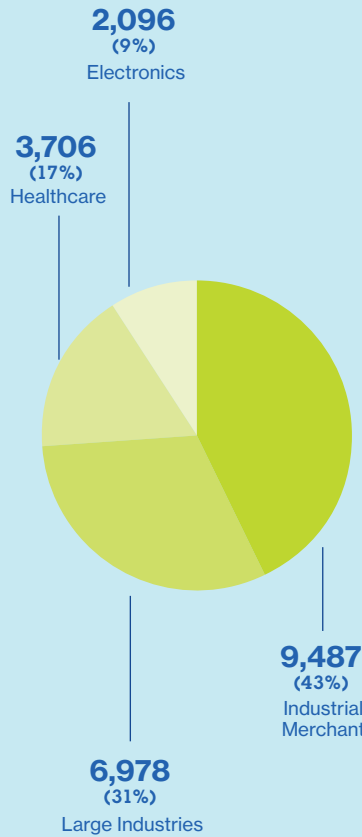
71

(1) Calculated according to prevailing rules over 30 years.
 (2) Adjusted for the 2-for-1 share split in 2007, for free shares attributions and for the capital increase completed in October 2016.
 (3) 2021 dividend subject to the approval of shareholders at the General Meeting on May 4, 2022.
 (4) On a comparable basis (excluding currency and energy effects).
 (5) Excluding exceptional and significant operations not impacting operating income recurring.
 (6) Excluding energy impact.

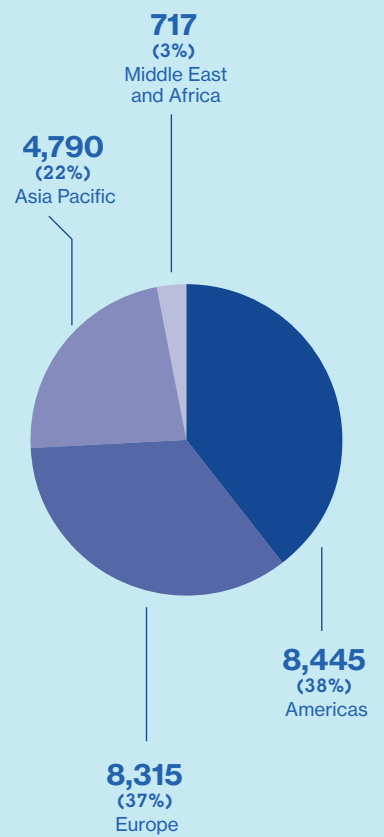
DISTRIBUTION OF 2021 GROUP REVENUE
(in millions of euros)



2021 GAS & SERVICES REVENUE BY ACTIVITY
(in millions of euros)



DISTRIBUTION OF 2021 GAS & SERVICES REVENUE BY GEOGRAPHY
(in millions of euros)



INNOVATION
(2021 figures)

€304M
of innovation expenses including
€100M dedicated to the energy transition

354
new patents filed

>400
industrial and scientific
partnerships and collaborations
with start-ups

GROUP SHAREHOLDERS
(as of December 31, 2021)



€2.90
dividend per share
proposed at the AGM
of May 4, 2022

505,000
individual shareholders
including 117,000 direct
registered shareholders,
165,000 intermediary
registered shareholders
and 223,00 bearer
shareholders

Environmental, social and governance (ESG) indicators

In March 2021, Air Liquide announced the reinforcement of all its sustainable development objectives, which are based on three pillars.

Act

FOR A LOW-CARBON SOCIETY

In line with the Paris Agreement, the Group's goal is to achieve **carbon neutrality by 2050**, with two major intermediate steps:

by 2025: begin to reduce CO₂ emissions in absolute value;

by 2035:

-33% ⁽¹⁾

decrease in CO₂ emissions from scopes 1 and 2, compared to 2020.

Additionally, Air Liquide maintains its objective of reducing the Group's carbon intensity by 30% by 2025⁽²⁾ compared to 2015.

FOR HEALTH

by improving the quality of life of patients with chronic diseases in advanced economies, and by facilitating access to medical oxygen in low- and middle-income countries.

1.8M

patients were cared for at home by Air Liquide in 2021, including

38%

who are following a personalized care pathway, which amounts to 671,000 patients.

1M

people in low- and middle-income countries had access to medical oxygen.

IN CONFIDENCE

by engaging with employees and building best-in-class governance practices.

31%

of engineers and professionals in 2021 were women. Air Liquide is aiming for 35% of engineers and professionals to be women by 2025.

34%

of employees benefited from the common basis of care coverage in 2021, with a target of 100% coverage by 2025.

1.1

Accident frequency rate.⁽³⁾ Slight increase compared with 2020 (0.9), which was the lowest rate in 20 years, in line with the strong business recovery in 2021.

73

(1) In tons of CO₂-equivalent, restated to include from 2020 and each following year the full-year emissions of assets acquired and integrated after 2020, scopes 1 and 2. Scope 2 emissions calculated from the specific supplies (market-based); the Group hence adopted the methodology recommended by the GHG Protocol.

(2) In kg CO₂-equivalent/euro of operating income recurring before depreciation and amortization at 2015 exchange rate and excluding IFRS 16, with scopes 1 and 2 of reported greenhouse gas emissions, applying the "market-based" method for the scope 2.

(3) With work stoppages per million hours worked.



Air Liquide

**A world leader
in industrial
gases and
related
services**

**A unique
model**

Our profile

~ 64,500
committed employees
in 78 countries

**Extensive scientific
and technical
expertise** in industrial
gases (oxygen, nitrogen,
hydrogen, etc.)

>3.8M
customers and patients

4,500
employees
contributing
to innovation

5
Innovation Campuses

1
Campus Technologies

13,500
patents

**2 industrial gases
production modes**
Centralized production
On-site production at
customer sites

**3 industrial gases
distribution networks**
>9,700 km of pipelines
for large quantities
~20 million cylinders
for small quantities
~9,900 trucks for
medium quantities

Our business model

Long-term
vision and
sustainable
growth strategy

+

A wide range
of customers
and applications

+

Major ability
to innovate

+

Long-term
customer contracts,
indexed to energy
prices

+

Management
and optimization
of production
and distribution
chain

+

Active
involvement
in new
markets

+

Global
presence
and local
activity

Our activities



Supporting almost all economic sectors

LARGE INDUSTRIES

Industrial gases in large quantities in the framework of long-term partnerships

30%⁽¹⁾

Chemicals

Refining

Metals

INDUSTRIAL MERCHANT

Industrial gases in small and medium quantities, application technologies, small equipment and related services serving a wide range of customers

40%⁽¹⁾

Materials & energy

Automotive & fabrication

Food & pharmaceuticals

Technology & research

Entrepreneurs & distributors

ELECTRONICS

Ultra-pure gases in large quantities and development of new molecules

9%⁽¹⁾

Semiconductors

Flat panels

Photovoltaic

HEALTHCARE

Medical gases, products and services to support patients and customers in the hospital and at home

16%⁽¹⁾

Hospitals

Home healthcare

Specialty ingredients

GLOBAL MARKETS & TECHNOLOGIES

Molecules, equipment and services to support the energy transition and deep tech⁽²⁾ markets

3%⁽¹⁾

Energy transition

Deep tech⁽²⁾

ENGINEERING & CONSTRUCTION

Plants and equipment for industrial gas production

2%⁽¹⁾

Customers choosing to insource their industrial gas needs

(1) Percentage of 2021 Group revenue.

(2) Disruptive technologies based on scientific breakthroughs that can fundamentally change design and production methods.

Consolidated income statement (summarized)

AS OF DECEMBER 31, 2021

<i>(in millions of euros)</i>	2020	2021
Revenue	20,485	23,335
Operating costs	-14,557	-17,002
Operating profit before depreciation	5,928	6,333
Depreciation and amortization	-2,138	-2,173
Operating income recurring	3,790	4,160
Other non-recurring operating income & expenses	-140	-150
Operating income	3,650	4,010
Net financial costs and other net financial expenses	-440	-408
Income taxes	-678	-915
Share of profit of associates	-4	5
PROFIT FOR THE PERIOD	2,528	2,692
- Minority interests	93	120
- Net profit (Group share)	2,435	2,572
Basic earnings per share (in €)	5.16	5.45

Consolidated balance sheet (summarized)

AS OF DECEMBER 31, 2021

Assets (in millions of euros)	12/31/2020	12/31/2021
Goodwill	13,087	13,992
Fixed assets	21,401	23,984
Other non-current assets ⁽¹⁾	1,123	1,216
Total non-current assets	35,611	39,192
Inventories and work in-progress	1,406	1,585
Trade receivables and other current assets	3,033	3,611
Cash and cash equivalents ⁽¹⁾	1,836	2,311
Total current assets	6,275	7,507
Assets held for sale	91	84
TOTAL ASSETS	41,977	46,783

Equity and liabilities (in millions of euros)	12/31/2020	12/31/2021
Shareholders' equity	18,543	21,462
Minority interests	462	537
Total equity	19,005	21,999
Provisions and deferred tax liabilities	4,290	4,419
Non-current borrowings	10,220	10,506
Non-current lease liabilities	969	1,033
Other non-current liabilities ⁽¹⁾	218	382
Total equity and non-current liabilities	34,702	38,339
Provisions	316	309
Trade payables and other current liabilities	4,462	5,614
Current lease liabilities	218	228
Current borrowings ⁽¹⁾	2,240	2,256
Total current liabilities	7,236	8,407
Liabilities held for sale	39	37
TOTAL EQUITY AND LIABILITIES	41,977	46,783

77

⁽¹⁾ Including fair value of derivatives.

Consolidated cash flow statement (summarized)

AS OF DECEMBER 31, 2021

<i>(in millions of euros)</i>	2020	2021
Funds provided by operations	4,932	5,292
Changes in working capital	364	377
Other cash items	-90	-98
Net cash from operating activities	5,206	5,571
Purchases of property, plant and equipment, and intangible assets	-2,630	-2,917
Purchases of financial assets and the impact of changes in scope	-129	-660
Proceeds from sale of subsidiaries, property, plant and equipment, and intangible and financial assets	804	225
Net cash in investing activities	-1,955	-3,352
Distribution	-1,387	1,418
Increase in capital stock	44	175
Purchase of treasury shares	-50	-40
Transactions with minority shareholders	-16	-37
Change in borrowings and lease liabilities (including net interests)	-1,019	-497
Impact of exchange rate changes and net debt of newly consolidated companies and others	-1	17
Change in net cash and cash equivalents	822	420
NET CASH AND CASH EQUIVALENTS AT THE END OF THE PERIOD	1,719	2,139



AIRLIQUIDE.COM

See our annual publications on our website:
Annual Report, Sustainability Report,
Universal Registration Document,
Shareholder's Guide, Interactions.



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Air Liquide Corp channel



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