November 2021

The rendez-vous for Air Liquide Shareholders

ACHIEVEMENTS
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Interview

At a time when the world is undergoing profound transformations—from changes triggered by the public health crisis and the energy transition, to developments in healthcare and the technology race—Air Liquide is more committed than ever to inventing a sustainable future. We talked to Benoît Potier about how the Group can commit to preparing for that future today.

This year, Air Liquide announced ambitious sustainable development goals. What does this mean for the Group’s strategy?
Financial and extra-financial performance are now inextricably linked—of that, I have no doubt. We can be proud of our strong financial results, as they are necessary for funding our commitments to society in the long term. I firmly believe that taking action for a sustainable future involves achieving success today, and we count a number of strengths in this regard. Our unique and resilient business model is the very foundation of our performance. Our growth outlook is promising. Our position at the heart of future markets is a strong asset moving into this next chapter. Our solutions dedicated to the energy transition, climate protection, healthcare and technology not only present growth opportunities, but also have a positive impact on society. At its core, Air Liquide is a group laser-focused on progress. The Group’s history, bursting with innovation and development, is a testament to this. To build a sustainable future, we’re drawing on our ability to continually go above and beyond.

How does the Group’s innovation relate to its financial and extra-financial performance ambitions?
Innovation plays a key role in these intertwined ambitions. It underpins our competitiveness and allows us to respond to societal challenges, particularly regarding sustainable development. Our solutions in the fields of hydrogen, decarbonization and deep tech are evidence of this. In an increasingly fast-paced world, we must become increasingly more agile and cut the time it takes to bring our innovations to market. This ambition is what fuels our network of Innovation Campuses, nestled at the heart of the largest economies in Asia, the United States and Europe. Researchers, customers, academics and start-ups are working hand in hand to design the solutions of tomorrow.

Although the pandemic is progressively loosening its grip, it still poses a big threat in some regions of the world. Do you envisage being able to meet Shareholders in person again any time soon?
It’s already the case! I’m delighted to have been able to meet our Shareholders in person at Investir Day 2021, after nearly two years of communicating remotely due to the pandemic. I was particularly saddened by this need for a distanced approach, as I’m very proud of the close relationship the Group has with its Shareholders. So I’m especially happy to have had the opportunity of seeing them at this event, because it symbolizes the educational goals we set regarding individual share ownership. Of course, I hope we’ll be able to continue these in-person meetings in 2022, with the aim of welcoming our Shareholders back for the pinnacle event of shareholder democracy—the Annual General Meeting.

Thank you for your loyalty and happy reading!
THE AEROSPACE SECTOR
PREPARING FOR THE ARRIVAL OF HYDROGEN

Air Liquide and Airbus\(^{(1)}\) recently signed two major partnerships, one with Groupe ADP\(^{(2)}\) and the other with VINCI Airports\(^{(3)}\). The goal is to prepare for the arrival of the first hydrogen-powered aircraft by 2035. Air Liquide already has a presence on aircrafts and in airports, most notably through the installation of hydrogen charging stations. Now the Group is going one step further by contributing to the emergence of an innovative, strategic French sector working toward sustainable and decarbonized aviation. These two partnerships, along with the development of high-pressure storage solutions for charging hydrogen fuel cells on aircraft, will contribute to this achievement.

\(^{(1)}\) European aircraft manufacturer. \(^{(2)}\) Aéroports de Paris, a global leader in airport design, construction and operation. \(^{(3)}\) VINCI Airports develops, finances, builds and manages 45 airports in Europe, Asia and the Americas.

- **10,000** regional aircraft could be using hydrogen fuel by 2050\(^{(1)}\)
- **€8 billion** will be invested by Air Liquide in the low-carbon hydrogen value chain by 2035

\(^{(1)}\) In Brief: Hydrogen for Aviation, Air Liquide.
Our achievements over the past six months

Development

CHINA, A DYNAMIC MARKET FOR THE GROUP

After celebrating a presence of 30 years in China, Air Liquide is continuing its growth in key sectors of the economy. Three new projects are underway, allowing the Group to leverage its expertise and sense of innovation for the benefit of its customers and partners.

▶ HYDROGEN MOBILITY: Air Liquide technology was chosen for the world’s largest hydrogen station in Beijing. With a capacity of nearly 5 tons per day, it can supply 600 hydrogen vehicles every day, a feat made possible by the eight dispenser units installed by the Group.

▶ ELECTRONICS: Air Liquide will invest 70 million euros in a state-of-the-art plant in Wuhan that will produce ultra-high-purity gas to supply a leading manufacturer of flash memory chips.

▶ LOW-CARBON INDUSTRY: In July 2021, the Group announced that it will construct and operate an ultra-modern low-carbon ASU (Air Separation Unit) in Zhangjiagang City, Jiangsu Province. The new ASU will produce 3,800 tons of oxygen per day for one of the world’s leading steel companies, Jiangsu Shagang Group. It will also produce krypton and xenon to meet the growing demand of the local electronics industry.

Funding

A GLOBAL FUND DEDICATED TO LOW-CARBON HYDROGEN

Air Liquide, TotalEnergies and VINCI are joining forces with other international industry stakeholders to create the world’s largest fund dedicated to the development of clean hydrogen infrastructure solutions. Firmly convinced that this molecule will play a key role in the energy transition, the three partners have committed to contributing €100 million each. The new fund will invest in large-scale strategic projects throughout the entire renewable and low-carbon hydrogen value chain in Europe, the Americas and Asia. Aim: to accelerate the growth of the hydrogen ecosystem.

COMMITMENTS OF €800 M ALREADY SECURED TOWARD A GOAL OF €1.5 BILLION
Energy transition

SETTING SAIL TOWARD NEW HYDROGEN SOLUTIONS

Air Liquide will be Energy Observer’s main partner for the next four years. The two teams have been working together since the autonomous hydrogen-powered and zero-emission laboratory vessel was launched in 2017. By strengthening this partnership, Air Liquide enables the Energy Observer teams to pursue their mission of educating and raising awareness of the challenges of the energy transition—and provides a skills-based sponsorship scheme. Employees from the Group will collaborate on hydrogen research and development projects alongside the Energy Observer teams.

MATTHIEU GIARD,
MEMBER OF THE AIR LIQUIDE GROUP EXECUTIVE COMMITTEE AND VICE PRESIDENT SUPERVISING HYDROGEN AND INDUSTRIAL MERCHANT ACTIVITIES

Through our collaboration with Energy Observer and by testing hydrogen technologies in extreme environments, we will be able to accelerate the development of hydrogen solutions and their large-scale applications, particularly in the maritime sector.

Industry decarbonization

PRODUCING LOW-CARBON HYDROGEN WITH TOTALENERGIES

Under a long-term contract, Air Liquide will take over and operate the hydrogen production unit of the TotalEnergies platform in Normandy, France. With a capacity of 255 tons per day, it will be connected to the Air Liquide network, thus enabling the development of the world’s first low-carbon hydrogen network. The two partners also plan to implement a CO₂ capture and storage solution. The CO₂ emissions generated by the unit’s hydrogen production should be reduced by approximately 650,000 tons per year by 2030.
Collective intelligence for deep tech solutions

Climate change, chronic diseases, cybersecurity – sometimes, the magnitude of the challenges facing society can feel dizzying. Yet the technology for responding to these trends is not beyond our reach – quite to the contrary.

Air Liquide is one of the companies developing deep tech solutions to tackle them, through a cooperative approach to innovation that will be the key to its success.
As industries around the world have grown ever more interconnected due to globalization, innovation silos will simply no longer cut it. The technological advancements of the future are defined by one theme: collaboration. “Experience teaches us that innovation is always first and foremost a matter of people, connections and analogies,” says Chairman and CEO Benoît Potier. “Gone are the days when a firm could retain control over its entire R&D efforts... From now on, innovation will take place in an open ecosystem.”

With a network of Campuses in Europe, North America and Asia, Air Liquide has created a flourishing ecosystem of collective intelligence focused on developing and manufacturing disruptive business solutions. “We will see exciting new technologies from our ecosystem in real-world use in the near future,” says Luc Gaffet, Fusion and Big Market Science Director, Global Markets & Technologies.

Cryogenics: ultra-low temperatures, sky-high potential

One example of a company on the verge of bringing new technology to market is Cryoconcept, in which Air Liquide took an 80% stake in 2020. Over the past two decades, the company has developed a dilution refrigeration solution for getting close to absolute zero (2), a necessity for advancing quantum computing capabilities and scientific research.

“By 2030, I expect quantum computers to be carrying out calculations currently beyond our grasp. This will lead to exceptionally powerful algorithms which can work at split-second speed – fast enough for an autonomous car to drive safely,” says Luc Gaffet. Guillaume Desaché, Cryoconcept’s new Managing Director, agrees, citing steering traffic on the ground, the automated development of new medicines and cybersecurity as near-future applications.

“To go beyond research use and into industrial or safety-critical applications, our products need higher reliability and better availability, as well as an overall improvement to their current cooling power,” he says. “With over sixty years experience in both extreme cryogenics and production at scale, Air Liquide is the ideal partner.” “It’s a win-win collaboration,” replies Luc Gaffet, “because Cryoconcept helps us to enlarge our offer to include extremely low temperatures. Also, their technology uses helium 3 and helium 4 (3), two very rare molecules, which we supply to our customers.”

Helium recovery systems for imaging scanners

Collective intelligence also ensures success in Air Liquide’s collaboration with United Imaging, a Chinese supplier of advanced medical products. “Air Liquide not only guarantees a reliable gas supply, but

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Footnotes:
1. Disruptive technologies based on scientific breakthroughs that can fundamentally change design and production methods.
2. That is -273.14°C, or 0.01°K.
3. Pure helium 3 is the liquid with the lowest boiling point. Helium 4 is the one commonly referred to as helium.
it also uses its own pioneering technology to help us recover and reuse helium in our imaging systems,” says L V Yunlei, Vice President of Shanghai United Imaging Healthcare Co., Ltd., and President of Supply Chain Management.

The Group worked in close coordination with United Imaging’s teams to design a turnkey helium solution that greatly increases the recovery rate of helium and further guarantees the stable supply of liquid helium. “This helium is used by United Imaging in MRI(4) and PETMR(5) scanners to keep internal temperatures low and ensure the proper functioning of the machines. “Air Liquide provides innovative solutions based on continuously updated technology, enabling us to provide customized services to our customers,” says L V Yunlei.

Developing a low-cost energy storage solution

Another mutually-beneficial relationship with an ecosystem partner can be found at the Air Liquide Paris Innovation Campus. As a participant in Air Liquide’s Accelair deep tech accelerator, energy storage start-up Airthium benefits from office and lab space with on-hand expertise. “We are currently prototyping our seasonal battery to try and scale it up to the kilowatt stage,” says founder, CEO and CTO Andreï Klochko, “and having people we can ask for advice on building machinery to run at high temperatures and under pressure is invaluable.”

Deployed at scale, Airthium’s ammonia-based energy storage solution promises to provide a low-cost way of storing excess solar and wind energy over months or even years. It will make renewable energy production and storage a sustainable replacement of coal and gas power plants. “As well as the potential for participating in the energy transition market further down the line, in the nearer term, we will be able to offer Air Liquide a solution for guaranteeing renewable energy supplies for its own operations,” Klochko adds.

Air Liquide’s intention to be behind many of the pioneering technologies of the future requires the Group to collaborate with the right partners. By leveraging collective intelligence across industries and partners, the company has already succeeded in creating a global ecosystem of truly open innovation. The key to future success? Expanding this network to support the development of as many deep tech technologies as possible, leading to the opening of new markets and the dawning of new technological frontiers.

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(4) Magnetic resonance imaging.
(5) Positron emission tomography – magnetic resonance imaging.
Our Campus network extends across the globe and embodies the Group’s open innovation approach. The Campuses are defined by their local and national environment and complement one another. They bring together all our innovation partners, attract new talent, and foster skill sharing and collective intelligence to accelerate the development of solutions for our customers.
HOW THE FOUNDATION MANAGED 18 MONTHS OF THE COVID-19 CRISIS?

The Air Liquide Foundation has played its full role in the Group’s measures against Covid-19, when fundamental research and the acute need for industry skills came to the fore. The Chairman of the Foundation and a Shareholder representative for the Foundation talk about their actions.

French society was severely affected by the pandemic. How did this affect the Air Liquide Foundation?

Scientific research and professional integration, two subjects that the Foundation works on, really came to the fore with the Covid-19 crisis. In-depth fundamental research proved essential in overcoming the most difficult challenges, as the work on messenger RNA vaccines has shown. The crisis has also highlighted the need to attract young people to technical professions to “reindustrialize” certain regions. Foundations such as ours are essential supplements to public actions in “crisis recovery” as they encompass risk-taking, flexibility, quick decision-making, proximity and experience in the field.

In practical terms, where does the Foundation stand in the fight against Covid-19?

Since the start of the pandemic in March–April 2020, the Foundation has released funds to help better understand the virus and its long-term effects. We have supported eleven French and European teams from virology institutes and hospital research laboratories. These projects were carefully selected based on their research objectives and each team’s potential. The initial results are very promising and will feed scientific progress well beyond Covid-19. Alongside this, we have also made a special effort to support integration in industrial fields, signing long-term partnerships with four organizations in France. Finally, emergency humanitarian aid was launched to fund hygiene products, food and medicine. Aid was directed to around 30 projects in Africa, India and South-East Asia, as well as in France and throughout Europe.

What role can Shareholders play in the Foundation’s actions?

In a survey carried out in October 2020, the Shareholders showed their huge support for the Foundation’s focus areas. Their support for the Foundation is very important. We will regularly update them on our progress, so that the Air Liquide Foundation really is “their” foundation.
Annabelle Barnett, Shareholder Relations Manager at Air Liquide, explains how you can benefit from some of the lowest broker fees on the market.

When you hold shares that are registered directly with Air Liquide, place your stock market orders via your personal online Account(1) and thus benefit from one of the lowest brokerage rates on the market, at 0.1% before tax! This rate applies both to purchases paid in full by SEPA automatic debit(2) or by bank card(3), as well as for sales. There is no minimum transaction amount for this rate, so it applies from the very first share purchased or sold!

(1) Subject to having signed an account agreement.
(2) Only if the account is domiciled in the SEPA zone.
(3) For purchases of less than 3,000 euros.

Bernard Vaysse, Shareholder and member of the Air Liquide Foundation’s Communities Committee

Can you introduce yourself? I’m 71 and I live near Rennes. I’m retired and am involved in various volunteering activities, in particular as a director at two organizations in the disability and mental health field. Fifteen years ago, I decided to become an Air Liquide Shareholder for three reasons: the soundness of the business, its choice to balance economic performance and sustainable development, and the central position of economic and corporate social responsibility in its strategies. I have also been a member of the Shareholders’ Communication Committee for two years.

What is your role in the Shareholders’ Communication Committee? My role is to strengthen the links between the Group and its individual Shareholders and to improve how its messages are conveyed — in particular its commitments to long-term sustainable development and the treatment of chronic diseases such as diabetes or respiratory insufficiency. In this regard, I contribute by drawing on experience from my volunteering and my professional life, particularly in the disability and mental health field.

As a Group Shareholder, what are your responsibilities at the Foundation? I recently joined the Air Liquide Foundation’s Communities Committee. As a member of this committee, I help select development projects locally, in Europe and throughout the world. I represent the Shareholders when these projects that, first and foremost, support professional integration, are being chosen. These causes need to be connected to industry and the business world, which is what the Foundation brings them with the Air Liquide Group ecosystem.

Find out more about the Air Liquide Foundation’s projects at: fondationairliquide.com/en

Stock Performance

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<th>PERFORMANCE AS OF SEPTEMBER 30, 2021</th>
<th>AIR LIQUIDE</th>
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Martine C., Shareholder winner of the 2020 “Génération Hydrogène” competition

At the heart of the clean transport revolution, hydrogen will play a key role in tomorrow’s energy mix. Martine, an Air Liquide Shareholder, was able to discover its applications by boarding the first hydrogen-powered yacht, The New Era by Hynova.

A video of Martine’s experience will feature shortly in your Stock & Share magazine

“I am happy to be able to support a group capable of committing to hydrogen with a real long-term vision.”

Martine C.
Air Liquide Shareholder for 23 years