

 Air LiquideA close-up photograph of a dog's face, likely a pit bull mix, looking out from the driver's side of a car. The image is heavily stylized with vibrant, multi-colored light reflections (red, green, blue, purple) that create a futuristic and artistic atmosphere. The dog's eyes are dark and focused, and its fur is a mix of white and dark patches.

INNOVATE
FOR TOMORROW

INNOVATE FOR THE PLANET...

The Group contributes to a more sustainable world by helping its industrial customers reduce their carbon emissions and by developing new technologies to support the environment.

€317m

Innovation expenses (2019)

€100m

of Innovation expenses to lower CO₂ of Air Liquide and its customers

30%

This is the Group's target for reducing the carbon intensity⁽¹⁾ of its activities by 2025, as compared to 2015.

1. Kg of CO₂ equivalent per euro earnings before depreciation, excluding the impact of IFRS 16, at 2015 exchange rates.

INNOVATE WITH US



... WITH ECOSYSTEMS

The Group's innovation strategy is part of an open ecosystem which is a prerequisite to efficiently innovate with its customers and all stakeholders.

More than
200

industrial and academic partnerships

100

start-ups work with the Group

30

start-ups accelerated by ALIAD, Air Liquide's venture capital arm

Partner of Greentown Labs, Techstars Paris and Urban Lab incubator

Accelair, our accelerator at Air Liquide Innovation Campus Paris, hosts deeptech startups

4,300

employees contribute to innovation and experience new ways of working



Biomethane developer, data scientist, software engineer, UX designer, researcher, solution engineer: they all contribute to make innovation real at Air Liquide.

INNOVATE FOR OUR CUSTOMERS AND PATIENTS

A BREAKTHROUGH PACKAGED GAS OFFER



The Group has developed Qlixbi in close collaboration with more than 700 European welding customers. Qlixbi is a new generation of gas cylinder with a suite of digital solutions. It improves the welders' daily work thanks to an ergonomic design, information on the gas consumption and a digital app which supports better collaboration within welding shops.

CAPTURING INDUSTRIALS CO₂ EMISSIONS



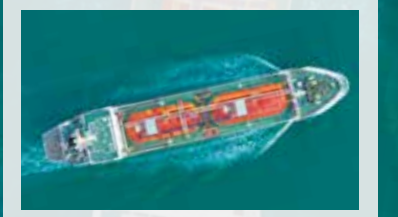
In North Europe, the Group contributes to different carbon capture and storage (CCS) initiatives which handle large volumes of CO₂ emissions from the Antwerp and Rotterdam industrial basins. The CO₂ emitted will be captured and shipped safely either by ship (liquid) or pipeline (gaseous) to offshore natural sinks.

LOW-CARBON HYDROGEN FOR INDUSTRY AND MOBILITY



To ensure supply of low-carbon hydrogen for both industry and mobility usage in North America, the Group is building the largest electrolyzer in the world in Canada with a 20 megawatts (MW) capacity for the production of carbon-free hydrogen. This new production unit will significantly reduce carbon intensity, compared to the traditional hydrogen production process. Nearly 27,000 tons of CO₂ emissions per year, the equivalent of 10,000 sedan cars, will then be prevented.

A TECHNOLOGICAL SOLUTION TO REDUCE GHG IN THE MARITIME SECTOR



The shipped Liquefied Natural Gas (LNG) tends to evaporate and emit CO₂. The technological solution developed by the Group allows the natural gas boil-off to be reliquefied in LNG vessels in order to significantly reduce greenhouse gases emissions during transport, making maritime transport more efficient and reducing its impact on the environment.

E-HEALTH FOR CHRONIC PATIENTS



To contribute to improving treatment compliance and quality of life of patients with chronic diseases especially cardiac, Air Liquide Healthcare, a pioneer in remote medical surveillance, scaled up its Chronic Care Connect™ solution in France. Thanks to a connected device, patients are monitored at home on a daily basis, with caregivers and an individualized support using digital.

MICROCHIPS WITH A SMALLER IMPACT ON THE ENVIRONMENT



The complex memory manufacturing process involves up to 800 different steps and requires around 300 gases and advanced materials. EnScribe™, a family of advanced etching material, facilitates the manufacturing, while greatly reducing the environmental impact. When a major semiconductor customer adopts one of these molecules as a replacement to the baseline product, it has the potential to reduce the entire sector's GHG emissions by up to 1%.

WHEN BIOMETHANE SERVES THE CIRCULAR ECONOMY



Inhabitants in the Oslo region, in Norway, enjoy the "Magic Factory" a circular economy initiative, with the support of Air Liquide. A digester processes the household and agricultural waste of the region. This waste ferments and emits biogas, which is captured and purified thanks to Air Liquide technologies. Some of this biogas becomes a fuel for vehicles (-90% carbon footprint and -85% particles emissions compared to diesel). The rest, the digestate as well as the CO₂ removed from the biogas, is used as fertilizer to help fruits and vegetables to grow.

REMOTE OPERATION CENTERS



The Group drives, in six industrial basins, remote operations centers to harness its production units' datas. By combining big data and human intelligence, these remote operations centers adapt the workflow of each production unit to the changing needs of customers. For example, the center in Dubai drives plants whether they are 300 km away in Oman or 11,000 km away in South Africa. Each center leverages predictive maintenance to ensure reliability and to optimize energy consumption, thus reducing the connected plant's carbon footprint.

OUR GLOBAL INNOVATION ECOSYSTEM



THE GROUP KEY FIGURES

67,000 employees
80 countries
3.7 million customers and patients
€21.9bn revenue
11,000 patents



 by Air Liquide



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www.airliquide.com



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Air Liquide, a world leader of gases, technologies and services for Industry and Health