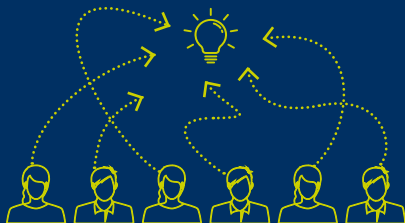


Innovation is agile

3,800

employees contributing to innovation



€292 M

innovation expenses



of the Group's Innovation expenses are devoted to reducing CO₂ emissions ^(a)



318

new patents
filed

(a) by reducing the carbon content of Air Liquide products or those of its customers.

2017 key figures

Innovation is open

In the frame of its open innovation approach, Air Liquide has developed numerous collaborations with customers, scientific partners and technology institutes, SMEs, suppliers and start-ups. Thanks to this collective intelligence, Air Liquide accelerates its innovation.

101



R&D scientific partnerships



85

R&D industrial partnerships



60%

of R&D projects are conducted in partnerships with laboratories, start-ups, industrial players and customers



100

start-ups working
with the Group

30

start-ups accelerated by ALIAD, Air Liquide venture capital arm in 3 sectors: energy transition, healthcare and digital.

Partner of Greentown Labs,
Urban Lab and of Techstars accelerator

Innovation is now

In partnership with external ecosystems and relying on collective intelligence, the Group's teams design and deploy new offerings to improve the customer and patient experience while helping to prevent global warming, improving air quality and healthcare.

e-Health solution

Air Liquide rolled out Chronic Care Connect™, a medical monitoring solution in order to support remote patients with chronic diseases. Patients are monitored at home on a daily basis with individualized support using digital.

New generation of regulators

Air Liquide rolled out EXELTOP™, a new generation of built-in regulators for industrial gas cylinders throughout the world, notably in France, Canada and the Middle East. This device has an intuitive design and provides industry professionals with stability, accuracy and security thanks to its built-in regulator and quick connection available for all gases.

New materials

The enScribe™ offer gathers etch materials required for the production of electronic memories and electronic integrated circuits. Thanks

Connected plants

The *Smart Innovative Operations Centers* are Air Liquide's remote operations centers. Big data and human intelligence are combined to adapt the workflow of each production unit in real time, optimize the energy consumption and leverage predictive maintenance to ensure reliability.

Biomethane production

Air Liquide invests and operates biomethane production units which transform biogas from agricultural or household waste into biomethane. This biomethane is injected into domestic grids and has many end use applications, such as power networks or can be upgraded to fuel for retail stations. When used as a bio-natural gas for vehicles (bio-NGV), sustainable transportation options help to reduce the carbon footprint.

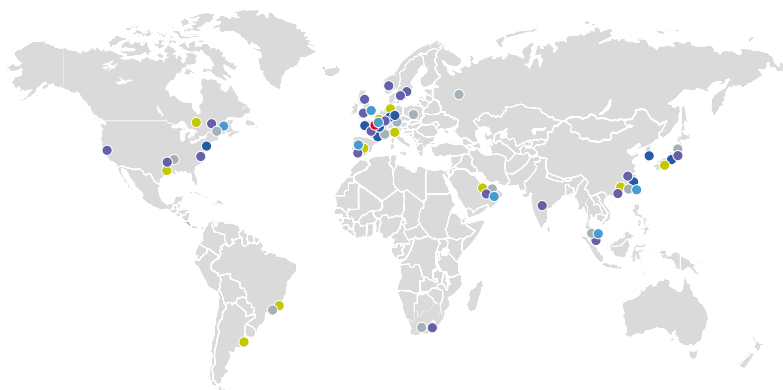
Hydrogen stations

Air Liquide's hydrogen stations allow fuel cell electric vehicles to refuel in less than

Hydrogen production without steam

Air Liquide innovates with a new generation of a hydrogen production unit that produces hydrogen while recovering the steam emitted during the process and recycling it as an energy in the production process. This technology thus reduces CO₂ emissions.

Our global innovation network



- Research & Development
- Global Markets & Technologies
- Digital transformation
- i-Lab & ALIAD
- ALTEC and Business Lines
- E&C and other entities

65,000
employees

80
countries

€20,349 M
revenue in 2017

3.5 M
customers and patients



INTERNET

www.airliquide.com



YOUTUBE

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**Air Liquide, the world leader in gases,
technologies and services for Industry and Health**