

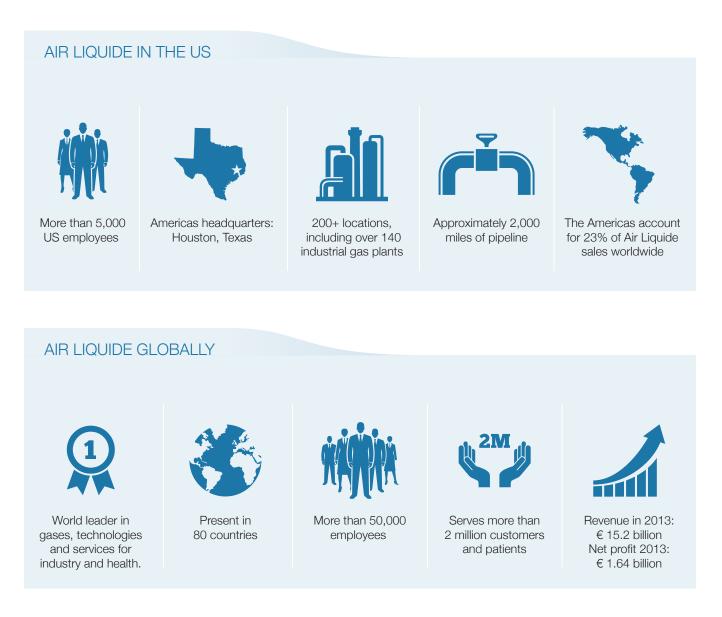
# Air Liquide in the U.S.

News Media Hotline - 877-256-8601

## AIR LIQUIDE IN BRIEF



The world leader in gases, technologies and services for industry and health.



OUR AMBITION is to be the leader in our industry, delivering long-term performance and acting responsibly.

OUR MISSION is to create value over the long term. We anticipate the challenges of our markets, we trust our people, we invest locally and globally, and we deliver high-quality solutions.

# CAPABILITIES

Air Liquide is a leading global supplier of gases, technologies and services for industry and healthcare. The company relies on the competitiveness in its operations and the diversity of its people to deliver high-quality, sustainable solutions.

- Industrial gas production Oxygen, nitrogen, hydrogen and rare gases
- On-site industrial gas production
- Specialty gases & advanced precursor materials
- Robust distribution network
- Equipment & delivery systems

- Gas & chemical management
- Analytical & laboratory services
- Cogeneration steam & electricity
- Research & development Delaware Research & Technology Center
- Engineering & construction management



# A FEW APPLICATIONS OF OUR PRODUCTS

#### **Renewable Energy:**

- Hydrogen fuel cell vehicles
- Waste-to-biogas energy

#### Automotive & Manufacturing:

- Manufacturing processes for metals, plastics and glass require nitrogen, oxygen, hydrogen and other gases
- Gases are used in heat treatment, welding and cutting applications
- Pneumatics, lighting, windscreens and windows

#### Space & Aeronautics:

• Oxygen and hydrogen are used as propellants for rocket launches

#### Glass-making:

- Uses oxygen, nitrogen, hydrogen and argon
- Argon is used in the double glazing process

#### Food & Pharmaceuticals:

- Nitrogen and oxygen are used in preservation and packaging applications
- Nitrogen and carbon dioxide are used in chilling, freezing and mixing applications
- Oxygen, ozone and carbon dioxide are used in water treatment processes

#### **Refining and Natural Gas:**

- Nitrogen is used for blanketing, drying, purging, inerting, etc.
- Hydrogen is used in refineries to remove sulfur from fuels and to "crack" heavy hydrocarbons
- Oxygen is required to transform natural gas or coal in fuels or methanol

#### **Chemical Industry:**

- Consumes huge quantities of air gases, hydrogen and carbon monoxide
- Hydrogen is used in the chemical synthesis process and to produce plastics, polyester and nylon
- Carbon Monoxide is used to make polyurethanes (foam) and polycarbonates (CD, DVD)

#### Metals:

- Oxygen is used in the steel industry to improve productivity and energy performance and to reduce emissions
- Nitrogen enables the transport of pulverized coal for feeding blast furnaces.
- Argon is used to manufacture stainless steel

#### Healthcare

• Medical gases (oxygen, nitrous oxide) are medicines that relieve pain, anaesthetize, assist breathing and preserve cells

#### Technology & Research

- Gases are used to manufacture optical fibers, photovoltaic cells and luminescent diodes.
- The flat screen, semiconductor and photovoltaic industries rely on ultra-pure gases and fluids.

Visit Air Liquide's Gas Encyclopedia to learn about applications for 64 gas molecules, as well as their physical and chemical properties, safety information and more.



#### Web: http://encyclopedia.airliquide.com Download the mobile app from:

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## U.S. BUSINESSES

The diversity of Air Liquide's teams, businesses, markets and geographic presence provides a solid and sustainable base for growth in the US. Air Liquide touches many industries, enabling its customers to make products that are essential to everyday life.



#### Large Industries

Air Liquide Large Industries U.S. LP serves customers in refining and natural gas, chemicals, metals, and energy markets with large volumes of industrial gases and energy-saving solutions geared to improve process efficiency and reduce environmental footprint.



#### **Industrial Merchant**

Air Liquide Industrial U.S. LP supplies industrial gases in bulk quantities, clean energy solutions and related products & services to customers in a range of industries: food & beverage, automotive, metallurgy, pharmaceuticals, chemicals, laboratory & analysis, materials handling, healthcare and others.



#### **Specialty Gases**

Air Liquide America Specialty Gases LLC supplies rare gases, specialty gas mixtures, ultra high purity gases and chemicals, and related equipment and services. Products are supplied in varying quantities and containers depending on customer needs. For information visit: www.alspecialtygases.com



#### **Electronics**

Air Liquide Electronics U.S. LP serves major electronics device manufacturers, supplying ultra-pure and specialty gases, new molecules, gas and chemical management services, and analytical and laboratory services. The company is fueling progress in the semiconductor, flat panel display and solar photovoltaic markets.



#### Healthcare

Air Liquide Healthcare America Corp. supplies hospitals and healthcare institutions with medical and therapeutic gases, specialty chemicals, and related devices, distribution equipment, and services that contribute to improving quality of life. For information visit www.us.airliquidehealthcare.com



#### **Engineering & Construction**

Air Liquide Global E&C Solutions is a technology partner of choice for the design, engineering and construction of leading-edge production units and related infrastructure worldwide. Houston, Texas is home to one of Air Liquide's five engineering centers worldwide. For information visit www.engineering-solutions.airliquide.com



#### Advanced Technologies

Air Liquide Advanced Technologies U.S. LP is a network of entrepreneurial, innovative, and agile companies that offer gas engineering solutions and highly specialized technologies for many markets: aeronautics, space, marine, scientific research, hydrogen energy and waste-to-biogas energy, pharmaceuticals and optoelectronics. For information visit www.airliquideadvancedtechnologies.com



## INDUSTRIAL GAS PRODUCTION AND DISTRIBUTION

Air Liquide's robust production and distribution networks are engineered to serve the needs of customers of all shapes and sizes.

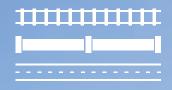


#### Industrial Gas Production (oxygen, nitrogen, hydrogen and rare and specialty gases and chemicals)

- 140+ production facilities
- Air Separation Unit (ASU) oxygen, nitrogen and hydrogen
- Steam Methane Reformer (SMR) hydrogen & svngas
- CO2 capture and liquefaction
- On-site productior

AIR LIQUIDE

- Air Liquide builds and operates gas production units at more than 300 customer sites



#### **Robust Distribution Network**

- Bulk & cylinder distribution 60+ depots, 500+ trucks and rail cars, 700+ professional drivers
- Extensive pipeline systems in Texas and Louisiana – 2000+ miles of pipeline supply mainly oxygen, nitrogen and hydrogen

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## INNOVATION

Innovation is at the heart of the Group's strategy. Air Liquide constantly reinvent its business, anticipating the challenges of our markets and opening up new markets to create new growth opportunities and to better meet the needs of customers and patien. Air Liquide innovates for the benefit of society, exploring new technologies to meet the needs of customers and patients.



## AIR LIQUIDE IN THE US

- Established the Delaware Research & Technology Center in Newark in 2007
- More than 100 researchers representing over 20 nationalities are based at the DRTC.
- Major fields of research: bioresources, electronics, membranes, hydrogen energy, oxycombustion, process control and logistics, modeling.

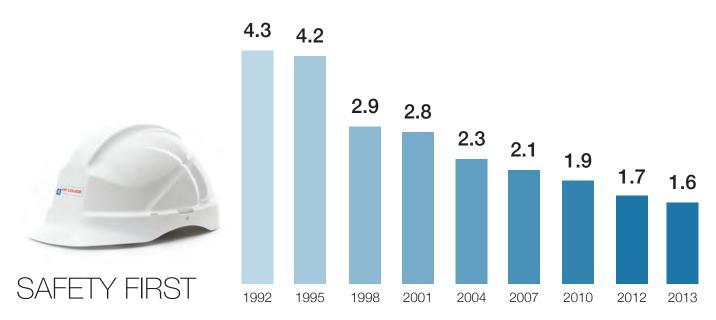


## GLOBAL R&D ORGANIZATION

- 10 main R&D centers (Europe, USA and Asia)
- More than 1,100 researchers of 35 nationalities
- Innovation budget: €265m in 2013
- 60% of R&D projects conducted as part of public- private partnerships
- Portfolio of 3,288 inventions protected by 10,418 patents; 321 new patent applications filed in 2013
- Over 60% of R&D budget is dedicated to work on preserving life and the environment

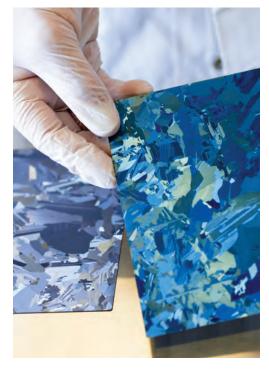


# A RESPONSIBLE COMPANY



Safety is a core value at Air Liquide. With an accident frequency<sup>(a)</sup> rate that has been reduced by nearly three percent since 1992, Air Liquide continues to emphasize employee training on risks fundamental to its business.

(a) Number of accidents per million hours worked.



## SUSTAINABLE DEVELOPMENT

Air Liquide is creating new high value-added applications and services, fostering innovation to reduce pollution, lower energy consumption, maximize the value of our natural resources, develop alternative energy sources and improve quality of life — to the benefit of customers, patients and society.

Air Liquide's commitment to sustainable development relies on three fields of action

- Reducing the environmental impact of Air Liquide operations and industry as a whole
- Maintaining a strong commitment to employees and to the communities in which we operate
- Innovating to solve the world's challenges



# COMMUNITY PARTNERSHIPS

## AIR LIQUIDE IN THE U.S.

At Air Liquide, we view community investment not as a choice, but as a responsibility we take seriously. Air Liquide and its employees are committed to supporting the communities in which we live and work both financially and through volunteering time and expertise. In the U.S., Air Liquide's community engagement program supports philanthropic initiatives dedicated to improving STEM education, child welfare and health, as well as relief efforts for natural disasters. Air Liquide is also committed to support-ing causes that are important to its employees through its matching gifts program, doubling financial gifts made to philanthropic organizations by its U.S. employees.

Air Liquide doesn't stop at financial contributions. Volunteering is part of life for many Air Liquide employees, as they constantly seek out opportunities to get out into the community to make a positive impact.

### AIR LIQUIDE FOUNDATION

Founded in 2008, the Air Liquide Foundation supports philanthropic initiatives in the 80 countries in which Air Liquide operates. The Foundation is dedicated to projects that preserve life and the environment, as well micro-initiatives that support local development and economic progress. For more information visit www.fondationairliquide.com.





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