

INNOVATE

2012 ANNUAL REPORT



WORLD LEADER IN GASES FOR INDUSTRY, HEALTH AND THE ENVIRONMENT



**02_ Interview with Benoît Potier,
Chairman & CEO**

06_ Governance



INNOVATION ON THE MOVE

12_ Key figures

14_ Our businesses in the news

20_ Measuring our performance

22_ Responsibility: tracking our commitments



INSPIRED INNOVATION

26_ Value creators

28_ Winning new markets

30_ Strengthening our competitiveness

32_ Unleashing imaginations

34_ Safety: absolute priority

36_ Staying in touch with shareholders

38_ Foundation: commitment to the future



INNOVATING FOR YOU

42_ Air Liquide's Innovation

44_ For sustainable transport

48_ For better living with sleep apnea

52_ For smarter energy consumption

56_ For better quality urban living

60_ For a more mobile world

FINANCIAL INFORMATION

64_ For sustainable performance

INNOVATE FOR SOCIETY



AGILITY

ANTICIPATION



OPENNESS



KNOWLEDGE

SERVING SOCIETY THROUGH INNOVATION

BENOÎT POTIER,
CHAIRMAN AND CEO,
AIR LIQUIDE GROUP

WHY IS THIS ANNUAL REPORT ENTITLED “INNOVATE?”

Innovation is at the heart of Air Liquide's strategy and has been part of the Group's DNA since its founding. The structural changes occurring in our markets are challenging us to strengthen our competitiveness and to increase the role of innovation in our strategy. Competitiveness and innovation drive customer satisfaction and differentiation. In an environment undergoing profound transformation, this enables us to sustain Air Liquide's stability and strength and seize growth opportunities. Innovating also is about responding to our world's most significant challenges, including the environment, energy, health and urbanization. It really means constantly working for the benefit of society.

HOW WOULD YOU DESCRIBE AIR LIQUIDE'S APPROACH TO INNOVATION?

Our innovation takes place in three areas. The first is in our core business which is our field of expertise. This is about constantly doing better by going off the beaten track, astonishing our customers and adding recognized value. For example, we are improving our technologies to reduce the energy required to produce one cubic meter of oxygen. The second is in adjacent businesses, which is the field requiring audacity to go beyond traditional frontiers of the business to invent a totally new concept. Our introduction of cleaner and quieter means of refrigerated

transport for fresh products is an illustration. Finally, innovating for the transformational businesses involves intuition. It means creating, taking risks and entering new markets. This is happening today with hydrogen energy, where we are developing filling stations for the hydrogen-fueled electric cars of tomorrow. For our teams, what could be more interesting and motivating than breaking new ground and exploring uncharted territories?

INNOVATION IS ALSO A STATE OF MIND. HOW IS IT CULTIVATED INTERNALLY?

Innovation requires a pioneering spirit, agile, competitive and open to the outside world. It's why we feel it is so important to give our employees the space and autonomy they need to undertake projects that move our business forward. With our ALOHA™ offer, our Electronics teams have invented a series of new molecules that enable our semiconductor customers to design the tablets and smartphones of tomorrow. The researchers and experts who came up with this idea worked in project mode, similar to a start-up, while benefiting from access to the Group's resources. We make it possible for entrepreneurs to thrive at Air Liquide by emphasizing that innovation is the business of everyone, not just experts and specialists. It means having a vision of where our businesses are going and anticipating the major challenges and emerging needs of our society.





HAS AIR LIQUIDE CHANGED HOW IT INNOVATES?

Yes, of course. As we move away from what is known, business models change and technologies become more sophisticated. Innovation today occurs increasingly through a system of “open innovation,” which allows us to combine different sciences and develop truly original technologies and offers. Our products are central to many industrial processes and used throughout the value chain, enabling us to understand customer and patient needs well upstream and respond with new solutions. Innovation is also a part of the global competitive battlefield. Succeeding in today’s world requires very quickly testing the market, fast-tracking decision-making and mobilizing resources to where they are needed. Our New Businesses, Innovation and Technologies committee helps ensure that we are more selective and efficient with our technological and strategic choices.

WHAT IS YOUR ASSESSMENT OF AIR LIQUIDE’S 2012 RESULTS?

The Group achieved a solid performance in 2012 in a global environment more contrasted than expected. Revenue increased by +6%. Our Gas & Services business, which accounts for more than 90% of the Group’s total business, was up +6.5%. The +4.9% growth in net income enabled us to again raise our dividend. The year saw a good overall level of business activity, investments and expansion in fast growing markets, targeted acquisitions and good management of our balance sheet. This performance demonstrates the Group’s ability to generate steady, long-term growth.

AND IN TERMS OF INNOVATION?

The Group maintained innovation spending at a level close to 2% of revenue and continued to deploy its technologies. Three examples: hydrogen energy is gaining ground with the development and



installation of new hydrogen filling stations in Europe and participation in various projects in Japan; in waste management, our technologies are helping to transform household waste into biogas for production of clean energy; finally, our expertise in extreme cryogenics enabled us to win contracts for major scientific research projects such as ITER.

WHAT IS YOUR OUTLOOK FOR 2013?

First of all, I am confident for the medium term as a result of the investments we have made in the fastest growing markets. In addition, the increase in Engineering & Construction orders and the strength of our 12 months portfolio of investment opportunities attests to our customers' confidence over the medium term. Finally, more than 50 new production units will be commissioned over the next two years. However, we expect a mixed short-term growth environment. Barring a degradation of the environment, we are confident in our ability to deliver another year of net profit growth in 2013.

WHAT IMPACT HAS THE CRISIS HAD ON TRENDS IN YOUR MARKETS?

The diversity of our geographic presence and our businesses allows us to capture growth where it occurs. Midway through the ALMA 2015 program, we are updating our strategy in 2013, taking into account three underlying trends shaping our markets: the geopolitical and strategic shift in industrial production and the need for natural resources; demography and urbanization, which are changing citizen expectations and behaviors; and the appetite for innovation. These trends are sources of growth for the Group.

THIS YEAR, AIR LIQUIDE IS CELEBRATING 100 YEARS OF BEING LISTED ON THE PARIS STOCK EXCHANGE. WHAT A JOURNEY!

It's true that the small company introduced on the Paris stock market in 1913 has become a global leader, capable of constantly reinventing its business to anticipate the challenges of its markets and consistently delivering profitable long-term growth. The loyalty of Air Liquide shareholders, who today buy and sell shares using mobile apps and tablets, represents the cornerstone of a long-term investment policy. Air Liquide has always believed in this model, which offers the stability needed by businesses and the economy in a world undergoing profound changes.

AIR LIQUIDE RELIES ON TECHNOLOGICAL EXPERTISE. IS IT EASY TO RECRUIT ENGINEERS?

Our global presence, market-focused organization and culture of innovation appeal to engineering talent. The nature of our business puts us at the center of important societal subjects such as energy, health, reducing pollution, the digital world and space conquest and we offer our employees diversified and international career opportunities. With the shortage of engineers in Europe, the U.S. and other advanced countries, we need to rekindle young people's interest in technological professions and being part of the world of industry and innovation that contribute so much to economic development.

BOARD OF DIRECTORS



AT 31 DECEMBER 2012

A - **KAREN KATEN** Member of the Appointments and Governance Committee; B - **BENOÎT POTIER** Chairman and CEO; C - **THIERRY DESMAREST** Chairman of the Appointments and Governance Committee - Member of the Remuneration Committee; D - **BÉATRICE MAJNONI D'INTIGNANO** Member of the Audit and Accounts Committee; E - **THIERRY PEUGEOT** Member of the Audit and Accounts Committee; F - **GÉRARD DE LA MARTINIÈRE** Chairman of the Audit and Accounts Committee; G - **JEAN-PAUL AGON** Member of the Remuneration Committee; H - **ALAIN JOLY** Member of the Appointments and Governance Committee, member of the Remuneration Committee; I - **SIÂN HERBERT-JONES** Director; J - **PAUL SKINNER** Member of the Audit and Accounts Committee; K - **CORNELIS VAN LEDE** Chairman of the Remuneration Committee - Member of the Appointments and Governance Committee; L - **PIERRE DUFOUR** Senior Executive Vice-President.



“To recognize and reward our inventors and innovators, Air Liquide is strengthening the link this year between their contributions and the company’s long-term performance.”

The composition of the Board of Directors reflects its diversity; of its 12 members, each appointed to a four-year term, five nationalities are represented (French, British, Dutch, American, Canadian) and three are women.

STRATEGY FOCUS

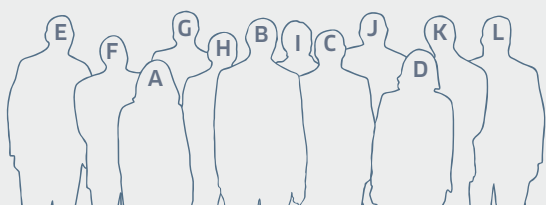
In 2012, the Board of Directors devoted a full day to a strategy review, focusing particularly on industrial development, growth drivers and acquisition strategy. The Board also considered the geostrategic consequences and implications for the Group of the evolving energy situation in the United States. The status of major industrial projects with investment over €100 million were subject to special review. These projects are managed by a dedicated team to ensure smooth implementation and efficient mobilization of multi-disciplinary experts.

CORPORATE SOCIAL RESPONSIBILITY (CSR): CONSTANT ATTENTION

The Board focused in particular on three aspects of the Group’s CSR process:

- continued implementation of Air Liquide’s shareholder policy within a rapidly-changing regulatory context;
- results and outlook for the Air Liquide Foundation, renewed for a period of five years;
- environmental risk management, as presented to the Audit Committee in July 2012. Considering the nature of the Group’s activities, this risk continues to be mainly local, with relatively low impact.

In 2012, the Board of Directors met seven times, with an attendance rate of 94%.



EXECUTIVE MANAGEMENT & EXECUTIVE COMMITTEE

THEY SAY...

"Innovation reflects our mindset, constant curiosity and willingness to challenge ourselves. It is a core component of our competitiveness and long term growth."

Benoît Potier
Chairman and CEO
Born in 1957 - French



"It is through innovation that we sustain our business, finding new applications for elementary molecules. We have been successfully leveraging our innovation culture for 110 years!"

Pierre Dufour
Senior Executive Vice-President^(a)
Born in 1955 - Canadian



"Competing for new markets, expanding technologically and geographically; it is innovation, and our ability to apply it operationally that is driving our success and progress."

Jean-Pierre Duprieu
Executive Vice-President^(b)
Born in 1952 - French

"Asia combines the drive of middle classes and a readiness to adopt new ideas, regardless of origin; its creativity boosts our business."

Jean-Marc de Royere
Senior Vice-President,
Asia-Pacific
Born in 1965 - French



"We offer employees the autonomy and the space to give full expression to their creativity in performing their professional responsibilities."

François Abrial
Vice-President, Human Resources
Born in 1962 - French

EXECUTIVE COMMITTEE AS AT JANUARY 31, 2013

(a) Also supervising the Large Industries World Business Line.
(b) Also supervising the Healthcare World Business Line and the Welding Activities.

“Innovation is what drives our commitment to customers, communities, employees and shareholders to deliver the best there is to offer and to do so with the utmost attention to safety and reliability.”

Michael J. Graff

Senior Vice-President, Americas, also supervising the Electronics WBL and Safety and Industrial Systems
Born in 1955 – American



“Offering our customers the innovative solutions that allow them to improve productivity while reducing their environmental footprint.”

Augustin de Roubin

Vice-President, South America
Born in 1953 – French



“Innovation requires audacity and tenacity. But even more, it means embracing the inconceivable and the unexpected – this is what we must demand of our imagination!”

François Darchis

Senior Vice-President Research & Development - New business - Innovation & Technologies, Intellectual Property, Engineering and Construction, Industrial Merchant WBL
Born in 1956 - French



“Continuing to strengthen our strategic positions in mature economies while exploring emerging markets in order to accelerate our growth.”

Guy Salzgeber

Vice-President, Western Europe
Born in 1958 – French



“The development of innovative financing tools supports worldwide growth of the Group’s activities and contributes to our performance.”

Fabienne Lecorvaisier

Group Vice-President, Finance and Operations Control, also supervising the Diving Activities
Born in 1962 – French



“Innovation means finding new ways of doing business, whether developing a technical process like gasification or creating a new business model for bulk hydrogen.”

Mok Kwong Weng

Vice-President, North-East Asia & South-East Asia
Born in 1953 – Singaporean



“Uncompromising commitment combined with an inventive spirit enable us to fulfill our mission: protecting vulnerable lives.”

Pascal Vinet

Vice-President, Healthcare Global Operations
Born in 1962 – French

01

INNOVATION **ON THE MOVE**



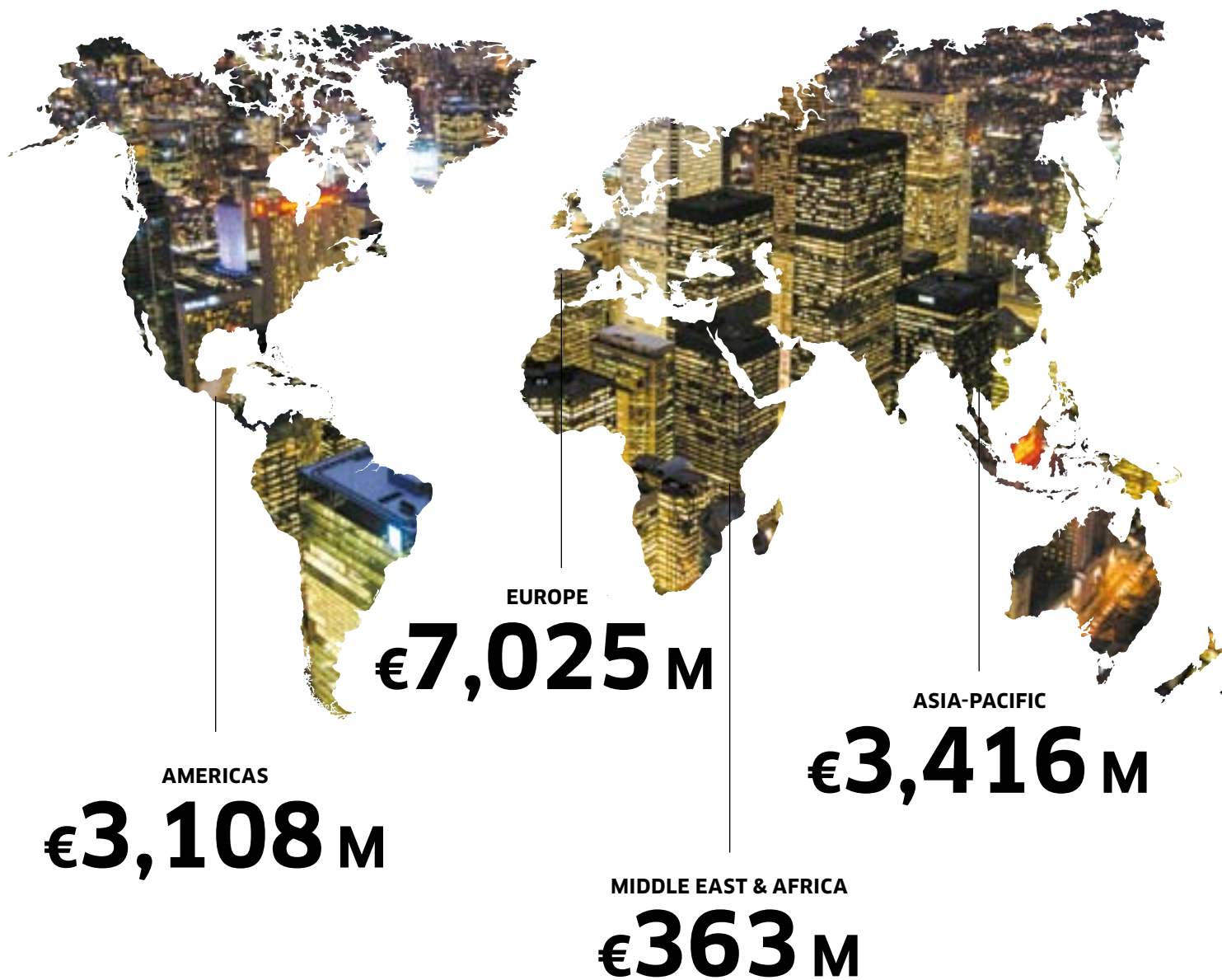


Oxygen, nitrogen, hydrogen, rare gases – Air Liquide constantly invents new uses for the molecules that form its core business to better anticipate the technological challenges of tomorrow. Air Liquide is creating new high value-added applications and services, fostering innovation to reduce pollution, 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.

KEY FIGURES

With nearly 50,000 employees in 80 countries, Air Liquide pursues long-term growth and expansion to new territories, fueled by the diversity of its teams, businesses and geographic positioning.

80 COUNTRIES



GAS & SERVICES REVENUE 2012



50,000

employees



1,000

researchers of 35 nationalities



€15,326 M

revenue in 2012



€1,609 M

net profit in 2012



€257 M

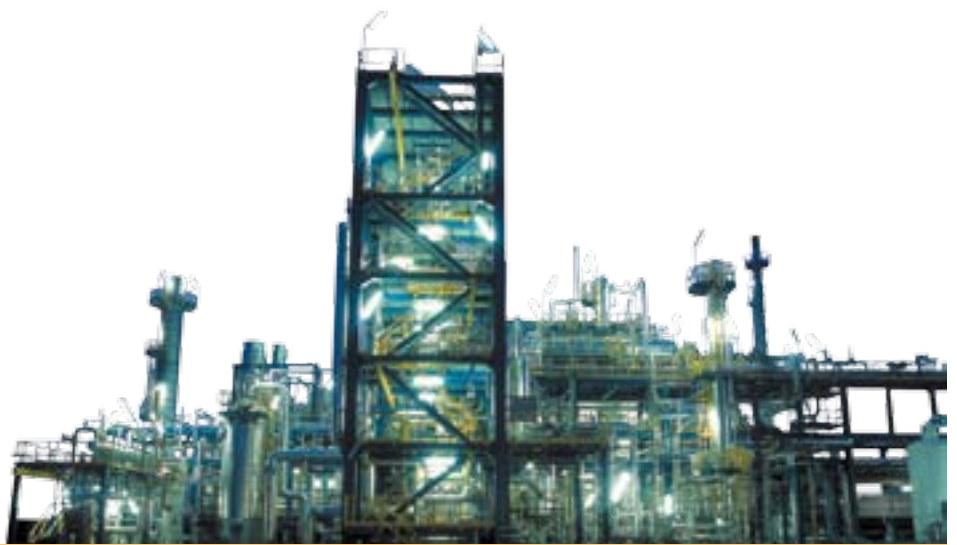
invested in innovation in 2012



316

patents filed in 2012

OUR BUSINESSES IN THE NEWS



LARGE INDUSTRIES

Air Liquide offers solutions that meet the critical gas and energy needs of industrial customers, mainly in the steel, chemicals, refining and energy sectors. Through its vast global network of pipelines and production units – including more than 300 Air Separation Units (ASU), 200 hydrogen plants (including 43 large-scale units) and 17 cogeneration plants – Air Liquide supplies customers with large quantities of oxygen, nitrogen, argon, hydrogen, carbon monoxide and steam. The objective: highly efficient customer processes and more eco-friendly production units.

With the December 2012 signing of a contract with Metinvest, Ukraine's leading manufacturer of steel, Air Liquide acquired an ASU located onsite at the Yenakievo steel plant and began supplying oxygen, nitrogen and argon in February 2013, as well as working to upgrade equipment and reduce energy consumption. Present at Yenakievo since 2011, Air Liquide is already building an ASU scheduled for start up in 2014.



Air Liquide's new offer for offshore oil and gas customers delivers a comprehensive solution available in all major operating regions. Its line of products and equipment are designed to respond to specific sector requirements including gas for platform construction, operation and maintenance, compliance with quality and safety standards, adapted packaging, facilitated logistics and comprehensive commercial services.

INDUSTRIAL MERCHANT

The Industrial Merchant business line provides customers with solutions adapted to their manufacturing processes, including industrial and specialty gases and expertise in applications as well as related equipment and services. Its 20,000 employees operate in 54 market segments, using inventiveness to optimize performance for more than one million customers, ranging from multinational corporations to self-employed craftspeople. Through its ongoing practical innovations, customer proximity and broad geographic range, Air Liquide supports industrial customers in their long-term development.

OUR BUSINESSES IN THE NEWS

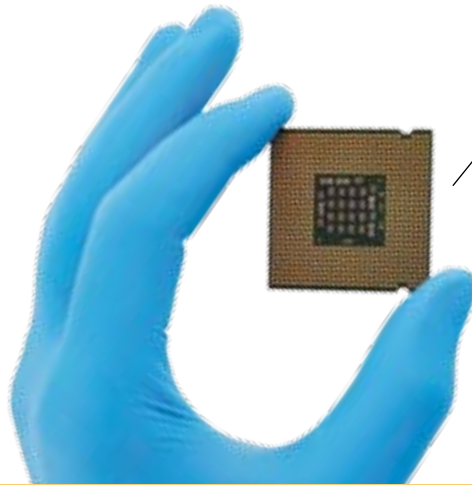


With its 2012 acquisition of two major companies – Gasmedi in Spain and LVL Médical in France – Air Liquide reinforced its position as Europe’s leading home healthcare specialist and demonstrated its ability to select projects creating both short and long term value.

HEALTHCARE

Protecting vulnerable lives is the mission of Air Liquide’s Healthcare activity, which provides support for patients throughout the duration of their treatment, from hospital to home. A dedicated team of more than 10,000 employees worldwide supplies more than 7,500 hospitals and clinics with medical gases (including oxygen, nitrous oxide and nitric oxide) and serves more than one million patients at home.

Air Liquide is number one in Europe and number three worldwide in home healthcare. It provides home healthcare services, according to the medical prescription, to patients suffering from chronic diseases such as COPD (Chronic Obstructive Pulmonary Disease), sleep apnea and diabetes. Air Liquide is also present in the areas of hygiene and specialty ingredients.



Responding to growing customer demand, Air Liquide introduced a next-generation onsite fluorine cleaning gas solution for flat panel display manufacturing through its Fidelio™ global Joint-Venture with Solvay. The new environmentally friendly alternative eliminates large screen manufacturing by-products, offering a cost effective, productivity-enhancing, reliable approach.

ELECTRONICS

With its global infrastructure and strategic presence in key Asian markets, Air Liquide is the leading supplier of gas and related services for the world's major electronics device manufacturers. Its integrated offering includes ultra-pure carrier gases, specialty gases and advanced precursors used in semiconductors, flat panel displays and solar photovoltaic cells, as well as turnkey installation of molecule distribution equipment, onsite quality control and fluid management services.

Through continuous innovation on new molecules, Air Liquide has strengthened its position to respond to growing consumer demand for smaller laptops and increasingly powerful tablets, smartphones and flat screens.

OUR BUSINESSES IN THE NEWS



ENGINEERING & CONSTRUCTION

The Engineering & Construction business unit designs, develops and builds cutting-edge production units, including for industrial gases, clean energy conversion, and gas purification. Its clean and sustainable energy solutions enable internal and external customers to optimize use of the planet's natural resources. Its 15 engineering centers, three manufacturing workshops and global business network combine worldwide expertise and agility to deliver customized responses to local customer challenges. With over 1,600 patents, the business unit is constantly expanding its portfolio of proprietary technologies bundled under the Lurgi, Cryogenics and Zimmer brands, reinforcing the Group's competitive edge in new markets.

Strategically located to provide flexible, efficient and sustainable solutions to new and existing energy development customers in Alberta, Canada, the newest engineering center, opened in 2012 in Calgary, reinforces Air Liquide's growing North American presence.



WELDING

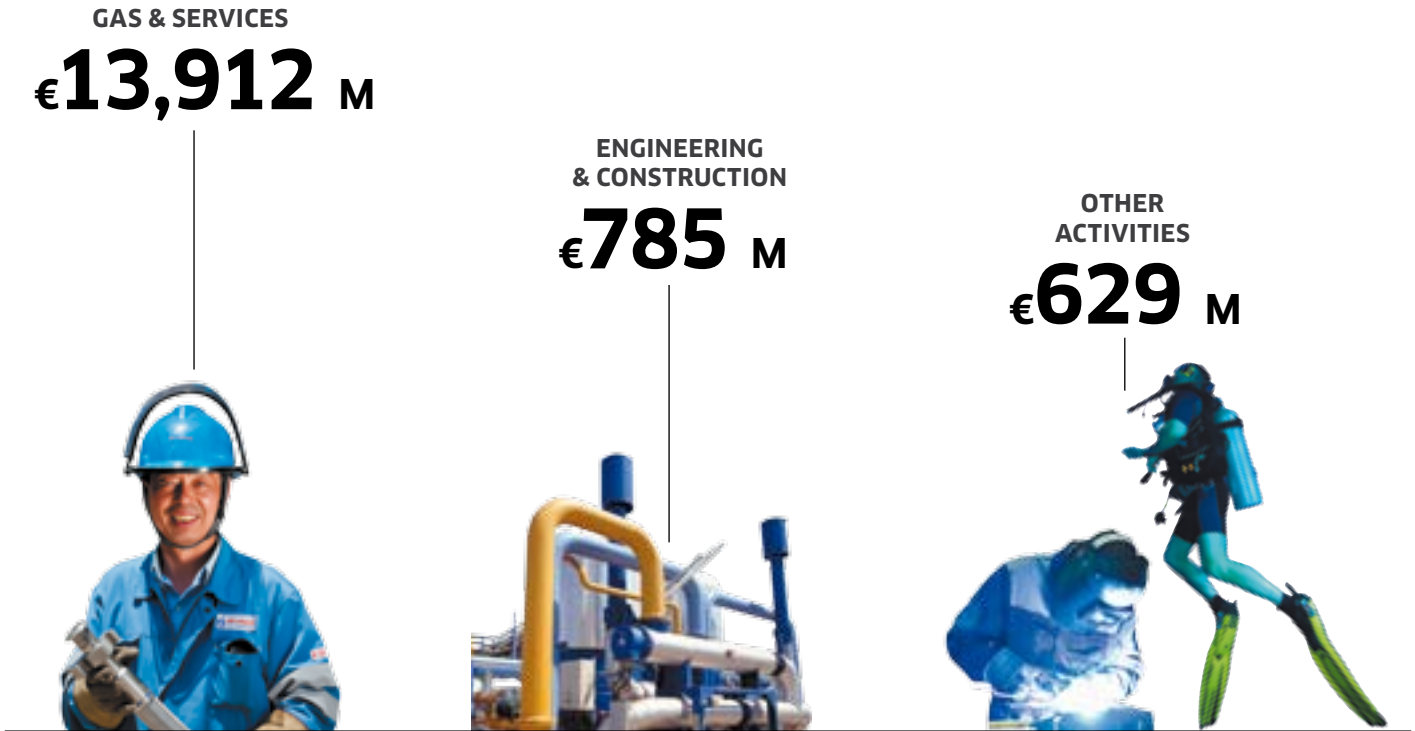
A leader in the development of welding and cutting technologies, Air Liquide Welding offers a full range of equipment (electrical welding stations, etc.), support products (electrodes, etc.) and services for industrial, semi-professional and retail customers. Backed by its R&D team and CTAS (Technical Center for Welding Applications), Air Liquide Welding innovates constantly to improve the performance, productivity, safety and comfort of weld machine operators.



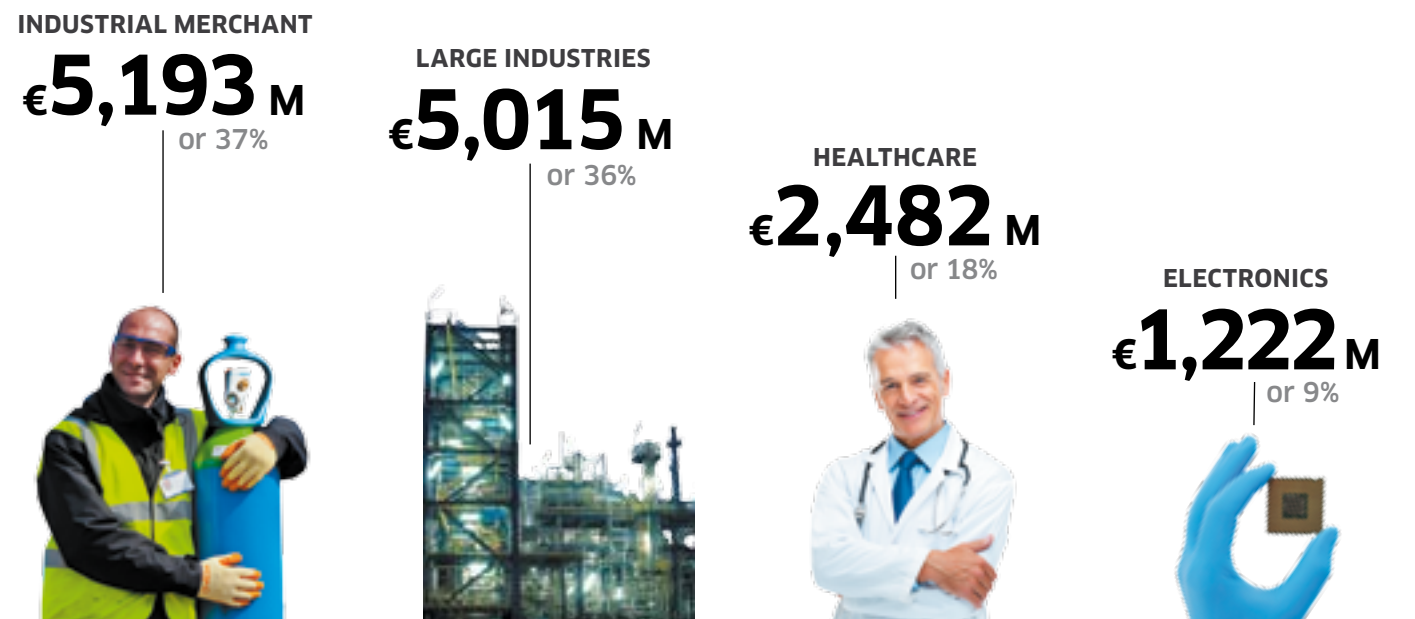
DIVING

Aqua Lung, the world's leading provider of diving equipment, provides devices that maximize the safety of customers in extreme situations. In 1946, Air Liquide and Jacques Cousteau worked together to invent the first scuba pressure valve, leading to the creation of Spirotechnique, which later became Aqua Lung International. Over the past decade, Aqua Lung has been expanding its range of products and expertise to serve recreational and fitness swimming, scuba diving and paddling.

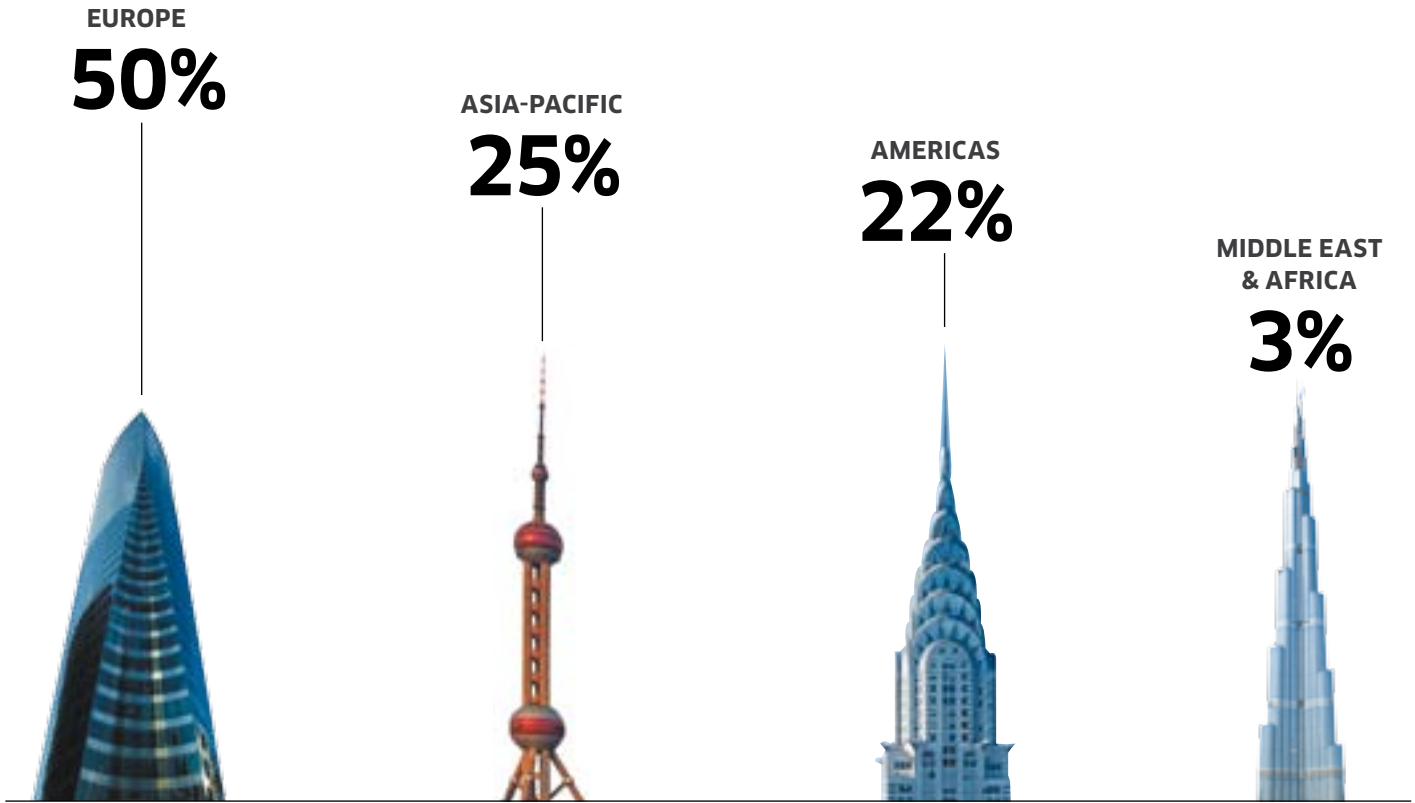
MEASURING OUR PERFORMANCE



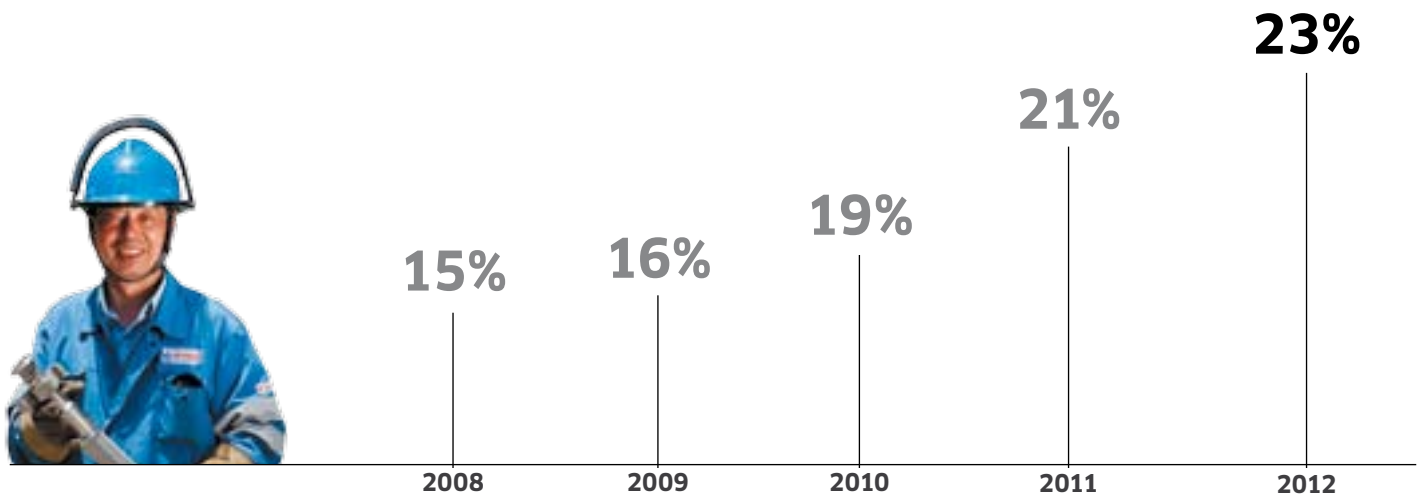
2012 REVENUE BY ACTIVITY (IN MILLION EUROS)



2012 GAS & SERVICES REVENUE BY WORLD BUSINESS LINE (IN MILLION EUROS)

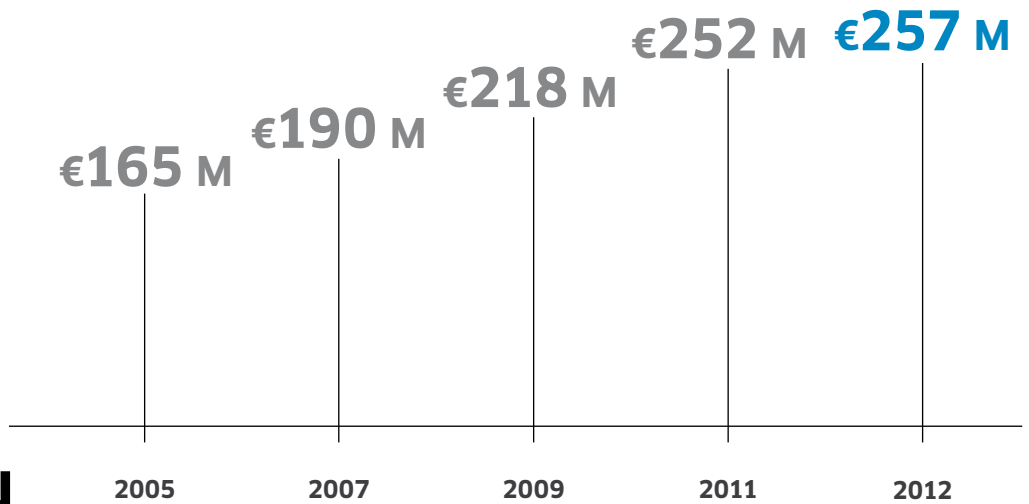


2012 GAS & SERVICES REVENUE SHARE BY GEOGRAPHY



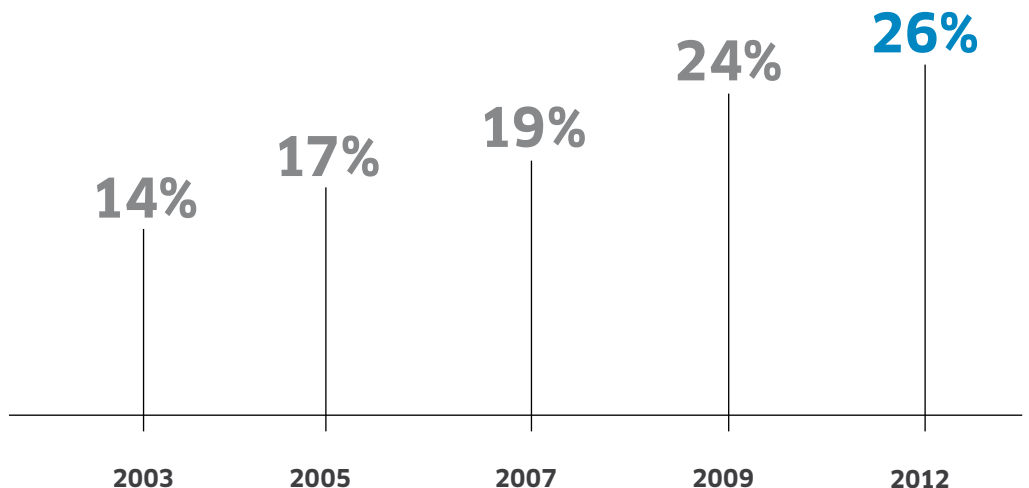
2012 GAS & SERVICES REVENUE SHARE FROM EMERGING ECONOMIES

RESPONSIBILITY: TRACKING OUR COMMITMENTS



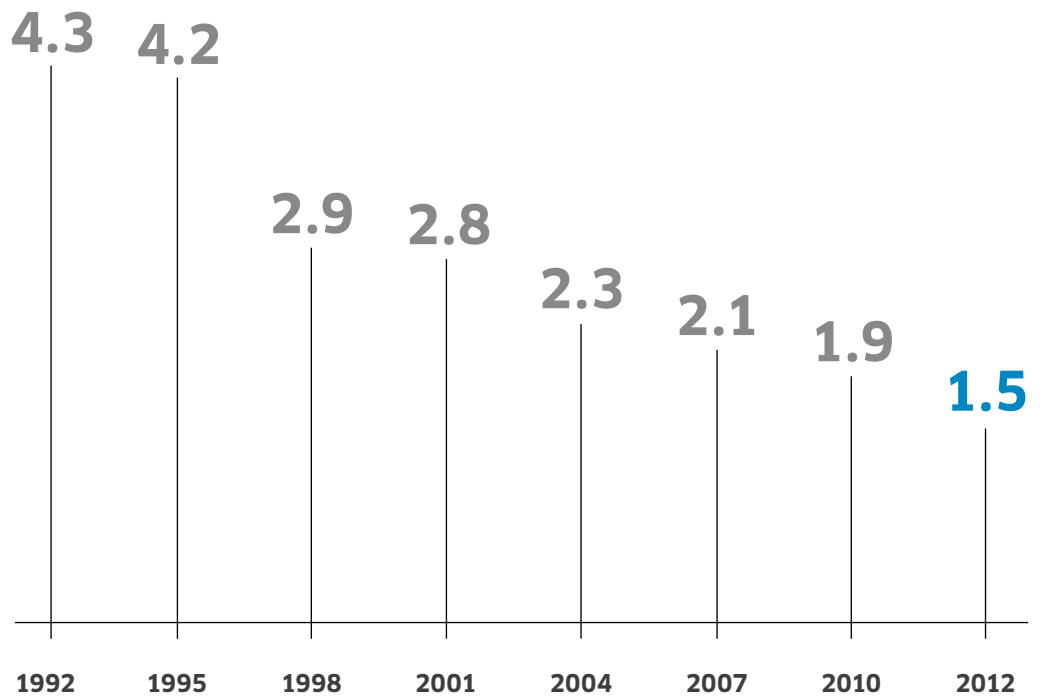
INNOVATION

Air Liquide's 2012 innovation budget of €257 m reflects its commitment to create sustainable and effective solutions for society. The budget invested was maintained even at the peak of the economic crisis in 2009.



GENDER BALANCE

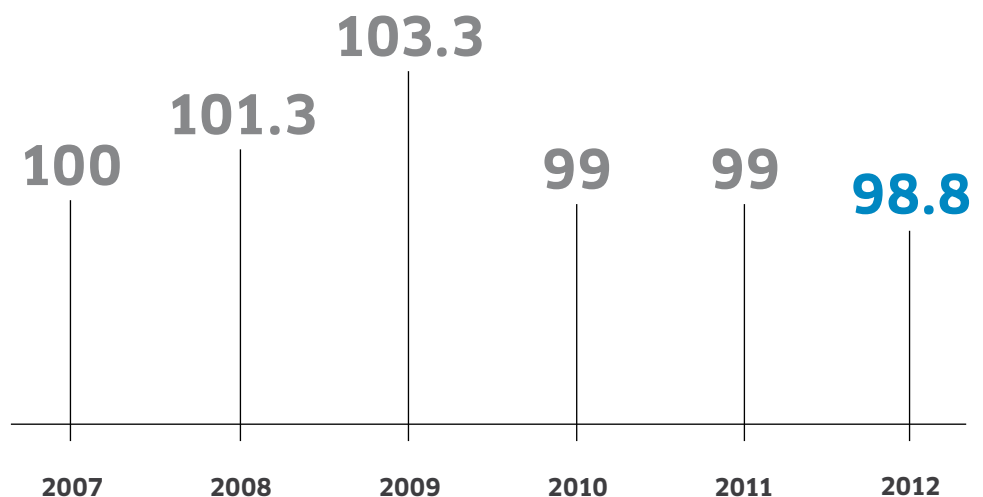
Women's representation in Air Liquide's management continues to grow. The percentage of women among engineers and managers jumped from 14% to 26% in 10 years. The success reflects an ambitious policy based on several tangible actions, such as ensuring that at least one female candidate is part of the applicant pool for all management positions, reviews by Human Resources dedicated to identifying high potential females and a practice at several French entities of conducting pre- and post-natal interviews.



SAFETY

With an accident frequency^(a) rate that has been reduced by nearly three over 20 years, Air Liquide continues to emphasize employee training on risks fundamental to its business. Its latest communication campaign, "Let's talk about it", is directed to all employees and part of safety meetings organized by each local entity's management team. These meetings provide opportunities for exchange, to confirm each individual's understanding and to present action and monitoring plans.

(a) Number of accidents per million hours worked.



ENERGY EFFICIENCY

Air Separation Unit (ASU) energy efficiency^(b) increased 1% between 2007 and 2012, a major achievement in a mature business that consumes some 3,000 MW (the equivalent of 2 EPR^(c)) in instantaneous power. To reach its 2015 target of 2%, Air Liquide's continuing work on Air Separation Units includes integrated design, increased size, improved reliability and facility upgrades.

(b) Change in energy consumption, by cubic meter (m³) of air gases produced (base 100 in 2007); (c) European Pressurized Reactor.

02

INSPIRED
INNOVATION





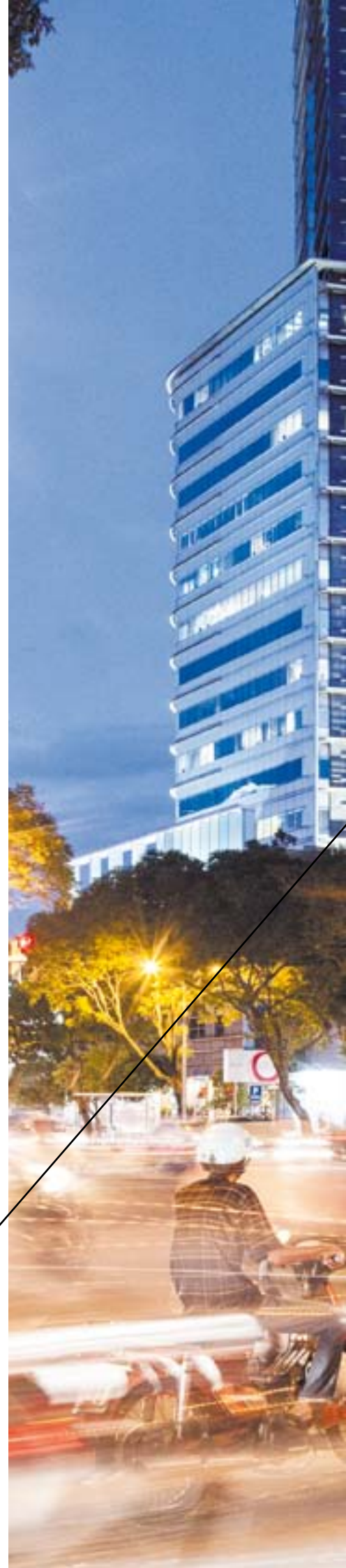
In striving to be the leader of its industry through performance and responsibility over the long term, Air Liquide relies on key strengths, including: employee talent and commitment to safety and operational excellence; state-of-the-art industrial facilities; product and service quality and reliability; its ability to anticipate customer needs; long-term relationships forged with suppliers; the energy efficiency of its production units; and its ongoing investments in innovation.

VALUE CREATORS

In the context of the global economic slowdown, Air Liquide's solid 2012 performance reflects the strengths of its extensive geographic positioning, initiatives in new markets and targeted acquisitions. The year's 2.9 billion euros in investment decisions was the highest level since 2007. The increase in Engineering & Construction orders, the high level of investment opportunities one year out and the planned rollout of 50 production units over the next two years confirm customer confidence in the Group for the medium term. Business in developing economies has increased 50% since 2008 and represents 23% of 2012 Gas & Services revenue. Air Liquide continues to strengthen its competitiveness and innovation to ensure growth over the long term based upon a sustained investment program and upon efficiency gains – for which the 2011-2015 objective has been raised 30%.

€2.9 billion

industrial and financial
investments decided in 2012



geographic expansion

In 2012, Air Liquide entered into a number of contracts around the globe and reinforced its existing positions through targeted acquisitions. It acquired two regional companies in the Russian industrial gas market: Logika, in the Moscow region, and Lentechgas, in Saint Petersburg. In Turkey, the Group upgraded three previously acquired air gas production units. Following an initial investment in 2011, Air Liquide also continued to develop in Mexico, signing two contracts with steel manufacturers in the northern city of Pesqueria. In South Africa, a contract to supply oxygen and nitrogen was signed with Evraz Highveld Steel and Vanadium.

1 million
patients

healthcare pursuing growth

The Healthcare business line is growing strongly, increasing from 16% of Gas & Services revenue in 2011 to 18% as of the end of 2012. The Group reinforced its European leadership with several acquisitions in the home healthcare segment, including LVL Médical in France and Gasmedi in Spain. The two companies' combined expertise and Air Liquide's proven innovation capacity will improve service levels for patients suffering from chronic diseases. Healthcare teams provide home healthcare services to one million patients worldwide.

hydrogen energy gaining speed

With several automakers announcing plans to bring hydrogen-powered electric cars to market by 2015-2017, Air Liquide is helping create the infrastructure needed for hydrogen distribution. In Düsseldorf, Germany, the Group opened its first hydrogen filling station for passenger cars. Over the next three years, Air Liquide will design, build and deploy 10 new stations. Hydrogen filling stations also have been installed by Air Liquide in Oslo, Norway, Brugg, Switzerland, and Rotterdam, in the Netherlands, and Air Liquide is supporting recent government-sponsored initiatives in the United Kingdom, the Netherlands and Germany to extend Europe's hydrogen filling station network.

WINNING NEW MARKETS



EUROPE

In Europe, the Group's largest market, growth was mixed between advanced and developing economies, with Gas & Services 2012 revenue increasing 25% in the latter. The newly created Eastern Europe zone is intended to increase customer proximity, especially in Russia and Poland. Hydrogen demand in the chemical and refining industries remained robust throughout Europe while the increase in Healthcare revenue, which represents 28% of Gas & Services zone revenue, reflects the market's high potential growth.

2012 Eastern Europe
Gas & Services revenue:

+25%



AMERICAS

Falling energy prices in the U.S. helped spur new project development in refining, chemicals and steel, contributing to Air Liquide's solid sales growth, especially of hydrogen. Industrial distributor acquisitions and Canada's strong home healthcare market drove North America revenue growth. In South America, there was dynamic growth in the industrial sector as well as in Healthcare, particularly in Brazil, Argentina and Chile.

2012 Large Industries activity
in the Americas:

+7.8%



ASIA-PACIFIC

Continued strong Gas & Services sales in China (+15%) reflects across-the-board customer demand, which firmed up at the end of the year. The Engineering & Construction business, which has a manufacturing center in Hangzhou, also won several energy contracts. Air Liquide won recognition in Paris and Beijing among French companies operating in China for its remarkable record of growth in the country from 2001 to 2011. Electronics, with two-thirds of its business concentrated in Asia, showed signs of recovery toward year end, including several contract wins with next generation flat screen manufacturers in Singapore, Japan, Taiwan and China.

4,000
employees in China in 2012



MIDDLE EAST & AFRICA

While business in 2011 had been impacted by the region's political turmoil, double-digit growth was achieved in 2012. Key drivers included the ramp-up of new production units in the Middle East as well as a recovery in demand from industrial customers. The enormous construction site for the hydrogen production unit in Yanbu, Saudi Arabia, the Group's biggest investment, is progressing according to schedule thanks to the efforts of mobilized teams. The Healthcare business continues to achieve solid growth, particularly in South Africa and Tunisia. The region offers increasing development opportunities as a result of energy-related projects and a demand for new technologies.

More than
€300 million
in 2012 Gas & Services revenue

STRENGTHENING OUR COMPETITIVENESS

Through its ALMA program, Air Liquide has reiterated its ambition to be the leader of its industry through performance and responsibility over the long term. In implementing its action and achieving its results, the Group takes account of stakeholder interests.

Initiatives to increase customer satisfaction, improve supplier cooperation, achieve efficiencies and diversify financing sources are increasing Air Liquide's competitive strength.

15,000

satisfaction surveys conducted
with Group customers



customer care

While satisfying customers is part of Air Liquide's genetic make-up, continuous improvement in this area has become a competitive necessity. The "Action survey" launched as part of the ALMA customer initiative program involves a three-step process – "Listen" (identify the level of customer satisfaction and loyalty through interviews), "Build" (mobilize the organization and draw up improvement plans) and "Act" (roll out pre-defined plans and measure their results). The objective: retain customers and win over new ones. The approach has been adopted by numerous Air Liquide subsidiaries throughout all continents and business lines. Product quality, strict compliance with safety regulations and the high professional standards and expertise of our teams are the principal means of satisfying customers and improving competitiveness. The next step: roll out action plans for less satisfied customers. With more than 15,000 customer interviews conducted since its launch, the program is providing Air Liquide teams with all of the information needed to develop even more innovative offers, improve service quality and reinforce customer loyalty.

efficiency reflex


For Air Liquide, efficiency is a key driver of innovation and customer satisfaction. Among the sources of value creation, suppliers occupy a key role. As part of its process to reduce Total Cost of Ownership (TCO) of a product or service, the Group is going after global cost reduction, starting with design and through all the product life cycle, from design to end of life. The success of the TCO approach, which was introduced in 2012, hinges on close collaboration between the procurement and industrial functions and Air Liquide's suppliers. The process includes improving identification, knowledge, qualification and assessment of Air Liquide's most critical and strategic suppliers. Changing the mindset will mean a more substantial contribution from procurement and suppliers to Group performance – and its ability to create value.

diversified sources of financing

To carry out its long-term growth strategy, Air Liquide has decided to diversify its sources of financing. In 2011, it was the first French company to issue a bond denominated in Chinese Renminbi, for a total face value of 195 million euros, in order to finance its development in China. After its successful U.S. private placement in 2012 for a total of 560 million euros, Air Liquide once again chose to innovate in the bond market, raising 500 million euros in SRI (Socially Responsible Investment) financing to fund the acquisitions of Gasmedi and LVL Médical, two major companies in the home healthcare market. The issue was given SRI status by the extra-financial rating agency Vigeo, which conducted an analysis of Air Liquide's home healthcare business line based on social, environmental and governance criteria.

€284 M
Efficiencies in 2012

UNLEASHING IMAGINATIONS



“The most important action in focusing a diverse and multicultural team on achieving a common objective is creating an environment of trust and support.”

Pierre-Michel Lehmann, site manager Air Liquide Yanbu hydrogen production project, Saudi Arabia – recognized as an “Air Liquide Innovator” for successful people-focused management of €400 million construction project involving more than 1,100 workers representing 10 nationalities.

recognizing talent

The innovative Technical Career Ladder (TCL), a career path recognizing Group technical experts, marked a milestone at the end of 2012 with the integration of its 2,000th member, a number equivalent to 10% of Air Liquide's engineers and managers. The Group's Inventor Recognition Program also is continuing to collect and assess inventors' ideas and measure the performance of their patents. Each year, the Program honors 100 employees with membership, which includes a bonus and stock options. Also in 2012, the Group honored 20 employees for their innovative technological and non-technological ideas, a recognition that includes participation in the stock options program.

nearly
50,000
employees

generational mix

How does Air Liquide encourage effective working relationships between its increasingly numerous senior employees and members of Generation Y, whose careers are just taking off? The answer is "reverse mentoring," which promotes collective creativity and innovation through the sharing of complementary experiences.

Senior employees transmit their knowledge to their younger colleagues who reciprocate by coaching their elders on new technologies and collaborative working methods. With more than 1,500 student interns taken on board and trained in 2012, reverse mentoring opportunities at Air Liquide are indeed plentiful. IT tools that increase organizational agility by enabling rapid transmission of information and data facilitate the approach.

2.0 training and development

Air Liquide is constantly improving and updating employee training and development tools. In addition to Air Liquide University course offerings – which provided training in 2012 to more than 80% of employees, including 10,000 via e-learning modules – the Group created Kite, an internal social network. Through a simple log-on, Kite users enter into contact with people from every generation interested in the same subject. Today, 2,000 Air Liquide employees from around the world use the network to exchange knowledge, increasing organizational agility through the rapid, sometimes instantaneous treatment of subjects of interest.

SAFETY: ABSOLUTE PRIORITY



“The in-house campaign ‘Let’s talk about it’ underlines that everybody can – and should – talk about safety as a core value. It’s highly visible and fully engages employees, helping reinforce a sense of pride and personal responsibility.”

Yvoine McCort, Managing Director,
Air Liquide Healthcare Australia

walking the talk

Ingraining its safety culture in the everyday actions of all employees is a major ongoing focus area in Air Liquide's commitment to ensuring a safe workplace and safe and reliable products and operations.

An innovative safety campaign launched in 2012 and running through the end of 2013 engages employees directly as active participants in discussing risk attitudes and behaviors at team meetings. The campaign is built around 11 themes pertaining to the fundamental risks related to Air Liquide's business activities, such as safe handling of high pressure or cryogenic systems. Available in 39 languages, campaign elements include a toolkit to help managers adapt discussion themes to local contexts, videos featuring Executive Committee members and operational experts as well as posters – all designed to keep safety awareness top of mind and emphasize the fundamentals of safe operations and behaviors.

÷ 3

Lost-time accident frequency rate divided by nearly 3 in 20 years

shared practices

The backbone of Air Liquide's safety commitment is its Industrial Management System (IMS), a system of worldwide practices and procedures initiated in 2005 and subject to ongoing monitoring and continuous reinforcement. The rigorous safety performance standards are applied to all existing sites and planned projects as well as newly acquired sites, to help assure safe, reliable and environmentally responsible operations.

Safety & Industrial Systems Vice-President Philippe Viennot says that the company's strict imposition of its safety values is a critical enabler for safe and efficient growth throughout the world and a source of competitive advantage in building trust with customers. *"IMS has profoundly changed the way we manage industrial risks and is a key driver toward our objective of zero accidents."*

STAYING IN TOUCH WITH SHAREHOLDERS



Bénéfice net par action
ajusté sur 30 ans

La croissance d'Air Liquide est rentable : le bénéfice net par action offre une progression annuelle moyenne de 8,4 % depuis 2000, une performance qui repose sur des fondamentaux solides.



“One of the defining features of our Group’s shareholding model is the balance between individual and institutional shareholders. The bond of trust we have built with the investment community is based on our long term financial performance, our policy of full disclosure of information and implementation of incentives such as the loyalty bonus and free share allocation.”

Laurent Dublanchet,
Air Liquide Shareholder Services Director
Virginia Jeanson,
Air Liquide Investor Relations Director

direct dialogue

Air Liquide maintains open, ongoing dialogue with shareholders. In 1987, it became the first company to form a Shareholders' Communication Committee (SCC).

Its 12 members, all individual shareholders, serve three-year terms, with a third of the terms expiring each year. Meetings of the full committee, in which Group Chairman and CEO Benoît Potier participates, are held three times a year. In addition, SCC working groups meet throughout the year on topics of interest to individual shareholders such as taxes, communications and shareholder tools for managing their securities accounts.

educational outreach

Air Liquide meets regularly with shareholders and potential investors to provide them with information about the company's business. Exchanges with institutional investors in the world's principal financial marketplaces

offer opportunities for management to share insights on topics that go beyond strictly financial performance, including the Group's development strategy, business activities and corporate social responsibility commitments. Information sessions designed for individual shareholders curious to know more about the Group were held in 2012 in Brussels, Antwerp, Düsseldorf, Copenhagen and Helsinki.

Air Liquide also launched a pilot program with several of France's major schools and universities to familiarize students with stock market culture, supplementing their academic training with practical information.

click and learn

The role and history of the stock market – and the performance of Air Liquide's share – is the focus of the learning module, "The stock market today", one of several company-developed interactive tools. In partnership with the École de la Bourse, the Group also has set up a series of web conferences on shareholding in its Shareholders' Lounge, with the possibility of bringing together several hundred participants for a virtual seminar. Air Liquide has also developed an app for iPhones, Android smartphones and tablets that enables shareholders to calculate dividends, taxes, capital gains and free shares allocated within seconds.

+11.4%

Total Shareholder Return
per year, over 20-year
period, end 2012


283

institutional investor
meetings in 8 financial
centers

37%

of capital held by individual
shareholders

FOUNDATION: COMMITMENT TO THE FUTURE

A photograph of three young children, two boys and one girl, riding red bicycles. They are outdoors in front of a building with a window. The child on the left is a boy in a yellow shirt and brown pants. The child in the middle is a girl in a pink tank top with a cartoon character. The child on the right is a boy in a red and yellow shirt and red shorts. They are all smiling and looking towards the camera.

“Riau province, home of the Tesso Nilo National Park, has the highest rate of deforestation in Sumatra. Over the past 25 years, 4.2 million hectares of tropical forest have disappeared. In 2004, emissions related to this deforestation represented 80% of Indonesia’s energy sector emissions.”

Jean-Baptiste Roelens,
Tropical forest and climate program
manager, WWF France



stopping deforestation in Indonesia

The world's third largest CO₂ producer, Indonesia, suffers from massive deforestation, which accounts for 35% of its emissions. In Tesso Nilo National Park on the island of Sumatra, a third of the forests were lost between 1990 and 2007, converted into plantations for paper pulp or palm oil production. Reducing deforestation in the park would reduce CO₂ emissions to the atmosphere and improve preservation of its extraordinary biodiversity.

The Air Liquide Foundation is providing scientific support for a WWF-sponsored project to establish an initial pilot site for the new REDD+ program (Reducing Emissions from Deforestation and Forest Degradation) in a national park. The Foundation is helping to develop an analytical methodology for calculating the carbon trapped in trees, in support of the objective to accurately measure Tesso Nilo forest carbon levels and, thus, the amount of carbon emissions avoided. The data obtained through REDD+ would assign an economic value for the forest, demonstrating to public policymakers and local communities that it is more profitable to conserve than to destroy it.

Therefore, the country would be remunerated through a system of financial assistance for actions to combat deforestation and the deterioration of forests, to promote conservation and to increase forest carbon stocks. Initiatives also include implementing sustainable forest management and development of alternative revenue sources for local communities, such as eco-tourism and beekeeping, helping to preserve the environment for the children of Sumatra.



5 years

renewal of the Air Liquide Foundation's mandate



126

projects supported since 2008, in 33 countries, on 5 continents

03

INNOVATING
FOR YOU





Innovation at Air Liquide is built on three major pillars. First, a network of 1,000 researchers in eight R&D centers located in Europe, Asia and the U.S. Second, Air Liquide Advanced Business & Technologies' 900-member "strike force" of experts, on three continents. Third, 4,000 Engineering & Construction employees who develop and test new production processes in seven technical centers. All resources dedicated to exploring uncharted territory of business models, technologies and services, and helping drive innovation, from concept to market.

AIR LIQUIDE'S INNOVATION



THE CORE BUSINESS
CONSTANTLY DOING BETTER,
BY GOING OFF THE BEATEN
TRACK, ASTONISHING OUR
CUSTOMERS AND ADDING
RECOGNIZED VALUE.



**ADJACENT
BUSINESSES**
IDENTIFY THE TRADITIONAL
FRONTIERS OF THE BUSINESS
AND AGREEING TO MOVE
BEYOND THEM, BY INVENTING
A TOTALLY NEW CONCEPT.



EXPERTISE
PRACTICE OUR ART

AUDACITY
ANTICIPATE TRENDS

TRUE OR FALSE >

Innovation is
only about technology
FALSE

Air Liquide's technologies lie at the heart of our business. They help maintain our competitiveness, increase the appeal of our offerings and open new markets and uses. But innovation is also a state of mind, an ability to think out of the box and imagine new solutions throughout our businesses.



TRANSFORMATIONAL BUSINESSES

**CREATE, ASSESS RISKS AND TAKE CHANCES,
ACCEPT AND MEASURE CHANGE,
REMAIN OPEN TO THE WORLD AROUND US.**



INTUITION

CHANGE ONE'S PERSPECTIVE

Innovation is
an internal process

FALSE

Air Liquide practices “open innovation” by partnering with customers, other companies, research centers and universities. It enables us to better understand what customers and patients want: what are their needs? For what purpose? What is required to respond? By asking – and answering – these questions, Air Liquide innovates for society.

Innovation is
a long-term commitment

TRUE

Air Liquide is constantly using the same molecules to reinvent its business and ensure its long term growth. The number of patents filed each year testifies to our capacity for invention. To be effective and sustainable, innovation requires time, constant renewal of skills and stable financial resources.



“ I’m ready for a car that’s good for the environment but it must give me enough autonomy to get me where I need to go.”

Tanja Overbeck,
Düsseldorf (Germany)

60%

European Union target for reduction
in transport emissions by 2050

ENVIRONMENTAL STAKE

SUSTAINABLE TRANSPORT

Expanding the use of alternative fuels is a critical element of European Union policies aimed at increasing energy security and reducing greenhouse gas emissions. Among the challenges is the classic “chicken and egg” problem: how to build-up the necessary recharging/refueling infrastructure for a particular fuel required for the development of a market for vehicles using that fuel – and vice versa.

HYDROGEN: ABUNDANT AND CLEAN

One such alternative fuel is hydrogen, one of the world’s most abundant element. The EU considers hydrogen an important potential contributor to meeting its “20-20-20” targets: reduce EU greenhouse gas emissions by 20% (from 1990 levels), increase to 20% the share of EU energy consumption produced from renewable resources and improve EU energy efficiency by 20%... all by 2020. Hydrogen also meets EU goals for de-carbonized city transport, CO₂-free urban logistics, zero pollutant emissions and low noise.

Among hydrogen’s many advantages is the possibility to produce it from any primary energy source. The greater choice of feedstock helps stabilize vehicle fuel costs, “de-risking” investment in the production of hydrogen vehicles and distribution infrastructure. At the same time, hydrogen production through electrolysis and other renewable sources will contribute significantly to reducing transport’s environmental footprint.

At the point of use in the vehicle, hydrogen – when used in fuel cells – delivers everything needed in terms of a clean, energy efficient, zero-emission and low noise fuel. Furthermore, refueling is straightforward and takes as much time as with today’s fuels.

ACCELERATING DEVELOPMENT

To advance development of alternative fuels as an energy source for transport, the EU’s “Clean Power for Transport⁽¹⁾” package provides a framework to guide investments and technological development. The proposal seeks to create EU-wide conditions to boost customer acceptance, setting targets to build the necessary fuel stations, including hydrogen refueling points across the EU.

Moreover, a Public-Private Partnership research and innovation initiative on hydrogen and fuel cells (in which Air Liquide is playing a leadership role) is working to accelerate commercial deployment of fuel cells and hydrogen for both stationary and transport applications. The partnership has developed a long-term strategic view of the investment required to bring hydrogen fuel cell technology to the point of commercial readiness and identified key bottlenecks to progress.

Developing innovative, alternative fuels is an obvious way to make Europe’s economy more resource efficient, reduce oil dependency, improve air quality and create new jobs – producing a transport industry ready to respond to the demands of the 21st century.



“Hydrogen meets EU goals for security of energy supply, de-carbonized city transport, CO₂-free urban logistics, zero pollutant emissions and low noise.”

**Matthias Ruete,
Director-General
for Mobility and Transport,
European Commission**

(1) “Clean Power for Transport”,
<http://ec.europa.eu/transport>

THE AIR LIQUIDE HYDROGEN FIL

AIR LIQUIDE
HYDROGEN
PRODUCTION
SOURCES



AIR LIQUIDE

RAPID
FILLING

5 min



With Blue Hydrogen, Air Liquide is moving towards a gradual decarbonization of its hydrogen production dedicated to energy applications. By 2020, Air Liquide is committed to producing at least 50% of the hydrogen necessary for these applications through carbon-free processes, by combining:

- renewable energy sources, water electrolysis and biogas reforming,
- carbon capture technologies during the hydrogen production process based on natural gas.

Filling with confidence based on Air Liquide's proven technology

VEHICLES
EMIT ONLY
WATER

0 CO₂ EMISSION

LING STATION



Leading edge high-pressure (up to 700 bar) refill technology delivers more fuel... and autonomy

AIR LIQUIDE

RANGE OF 1 FULL TANK = 5 KILOS OF H₂

500 km

FUEL CELL ELECTRIC VEHICLE

= 0 POLLUTION

 **60** AIR LIQUIDE HYDROGEN STATIONS IN THE WORLD

HIGH-POTENTIAL MARKET FOR AIR LIQUIDE

1% of the world's automobiles converted to hydrogen = **15 BILLION** euros of estimated market value

CHAMBRE DE SOMMEIL

“ Sleep apnea has serious consequences for patient health, accident risk and quality of life. The key to treatment and improved risk prevention is understanding how to effectively combine telemedicine with personalized care.”

Professor Damien Léger,
head of the Sleep and Vigilance
Center, Hôpital de l'Hôtel-Dieu,
Paris (France)



8%

5 to
estimated portion of the world's
population that may suffer from sleep apnea

HEALTH STAKE

SLEEP APNEA, THE SILENT EPIDEMIC

In 50 years, the amount of time we sleep each day has decreased by one hour⁽¹⁾, time reallocated to activities like working, commuting or being absorbed in our multimedia worlds. There is a need to improve public awareness of sleep disorders, particularly regarding Sleep Apnea Syndrome (SAS), a little known but common condition, afflicting an estimated 5 to 8% of the world's adult population. The illness is characterized by loud snoring and frequent, prolonged pauses in breathing during sleep, lasting at least 10 seconds, which briefly awaken the patient, for three to fifteen seconds. The patient, though unaware of being awakened, suffers the effects of fragmented sleep patterns. Sleep Apnea Syndrome occurs when the frequency of the apneas exceeds five per hour of sleep.

AN ILLNESS WITH SERIOUS CONSEQUENCES

The absence of restorative sleep makes SAS patients susceptible to dozing off during the day and feeling extreme fatigue, resulting in irritability or headaches. SAS increases the risks of cardio-vascular disease and accidents at work or while driving and has been correlated with epidemiological factors such as demographic aging in emerging economies and the worldwide obesity epidemic.

IMPORTANCE OF DIAGNOSIS AND EFFICIENT TREATMENT

Its link to cardio-vascular and metabolic disorders (including diabetes and obesity) makes SAS diagnosis and treatment critical to lowering patient mortality. SAS treatment is administered in patient homes during the night via Continuous Positive Airway Pressure (CPAP) ventilation. In delivering a steady flow of pressurized air into the nose through a mask, the device keeps airways open, preventing apnea episodes.

ENSURING TREATMENT ADHERENCE

While CPAP implementation remains cumbersome, the technique has been simplified in recent years to facilitate patient use. Technological innovation has made CPAP ventilators smaller and quieter and led to the availability of a wide selection of more comfortable masks. Nonetheless, the long-term treatments' constraints cause almost half of patients to halt CPAP use within six months, making the role of medical staff and home healthcare provider in ensuring continued treatment vital.

EDUCATION AND PREVENTION

The long-term relationship of trust established between home healthcare provider and patient is important to ensuring SAS treatment is set up according to the medical prescription to maximize effectiveness. In monitoring the treatment, the home healthcare provider plays an important role in helping integrate the physician-defined therapy as part of the patient's life.

(1) Source: *Institut national du sommeil* (France)



“Sleep apnea is crippling for those of us who suffer from it. The Continuous Positive Airway Pressure treatment can make life better for us, provided that the machine is integrated into our daily lives. We also have to fight the sense of isolation and hopelessness that comes with this silent epidemic. It's so important to be able to share with other patients, stay informed and get the reassurance and advice we need to improve our quality of life.”

**Jean-Claude Roussel,
Honorary Chairman of FFAAIR
(Fédération française des
associations et amicales
de malades, insuffisants
ou handicapés respiratoires)**

AIR LIQUIDE MAKES LIFE BETTER

“Meaningful exchanges with our sleep apnea patients requires taking the time to listen so we can assess their level of comprehension and acceptance of the treatment. Gradually, we build up a relationship of trust. In recognizing their efforts and the results obtained, we help them feel supported during the crucial starting phase, as well as when they have difficulty adhering to their treatment.”

Paule Déramé,
Air Liquide nurse

1ST HOME CONTACT: A BIT OF TECHNIQUE, A LOT OF EXPLAINING

Once prescribed, the CPAP⁽²⁾ and a mask customized for the patient are provided by the Air Liquide home healthcare provider.

At the physician's request, Air Liquide can help determine the appropriate CPAP⁽²⁾ settings.

Through their proximity and access to information sources, Air Liquide technicians ensure appropriate treatment is received by the patient.

WELL-BEING ALSO REQUIRES THE RIGHT EQUIPMENT

Air Liquide guarantees the quality of CPAP⁽²⁾ ventilators installed in patient homes through its medical equipment assessment laboratory.

Maintenance, cleaning, disinfection and proper care procedures assure equipment safety.

FOR PATIENTS WITH SLEEP APNEA

8 of
10 people
with SAS⁽¹⁾ are unaware
of their illness

4 to 5 times
higher
risk of car accidents
for people with SAS⁽¹⁾

9 of 10
patients
with a support program
continue to follow their
treatment after the first
month. Absent support,
1 of 2 patients halts CPAP⁽²⁾
treatment after one month.

(1) Sleep Apnea Syndrome
(2) Continuous Positive Airway
Pressure device

SUPPORT FOR INITIAL TREATMENT STEPS

Air Liquide offers a program of additional support for the first month of treatment. In certain countries, a nurse calls regularly to check on the patient's perceptions and well-being.

AN ATTENTIVE BUT DISCREET PRESENCE

To reinforce patient long term compliance, and thus the efficacy of CPAP⁽²⁾ treatment, Air Liquide developed "Nowapi" a remote monitoring system that enables patient support to be adapted in real time. The first broad rollout of Nowapi took place in France.



“ We need a partner who can contribute to our energy efficiency and environmental challenges.”

Francisco Galante,
Director of refinery (Brazil)

over **80%**
of 2012 global consumption demand
met by fossil energies

ENERGY STAKE

PLANETARY CHANGE

It's a fact: more than 80% of the world's total energy demand today is met through fossil fuels. For now, no alternative is available that can meet this level of need. Responding to the demand for energy, reducing polluting emissions, remaining competitive..., industry faces an ongoing challenge.

NEW WORLD ENERGY MAP

Full-scale changes to the global energy map are occurring, including as a result of recent new means of accessing fossil resources. Rising production of oil and shale gas in the United States is reducing the impact of imports on the U.S. economy, lowering energy prices and creating economic and geopolitical repercussions. Compared with North America, for example, natural gas prices are currently five times more expensive in Asia and three times more expensive in Europe. Another consequence is the possible slowing of renewable energies development, which could become relatively less competitive.

THE ROAD TO EFFICIENCY

While humans have been unable to stop using fossil energy, they can consume it more intelligently and in lower quantities. Energy efficiency offers one of the most significant means of reducing greenhouse gas emissions. Gains obtained through energy efficiency account for 50% of the energy transition, with the remaining 50% coming from low carbon energies. According to the International Energy Agency, manufacturing accounts for one-third of the world's energy consumption and 36% of CO₂ emissions. Although manufacturing has become much more energy efficient since the first oil crisis in 1974, it is estimated that an additional 20% in energy savings could be achieved.

PRODUCING FUEL EFFICIENTLY

Today, oil is becoming increasingly heavy because of the greater depths at which it is being drilled and its higher sulfur content. Through the use of hydrogen in the refining process, sulfur is removed from fuel to comply with increasingly stringent environmental standards, requirements adopted in most countries to reduce sulfur oxide emissions. These oxides cause respiratory difficulties, urban smog and the acid rain that leads to deforestation and acidification of water. Entrusted to an experienced global expert with state-of-the-art technologies, a cubic meter of hydrogen can now be produced while consuming the lowest possible amount of energy. This energy efficiency is shared with oil and gas industry customers who gain access to a sulfur-free fuel produced with maximum efficiency. A process helping industry respond to the energy efficiency challenge.



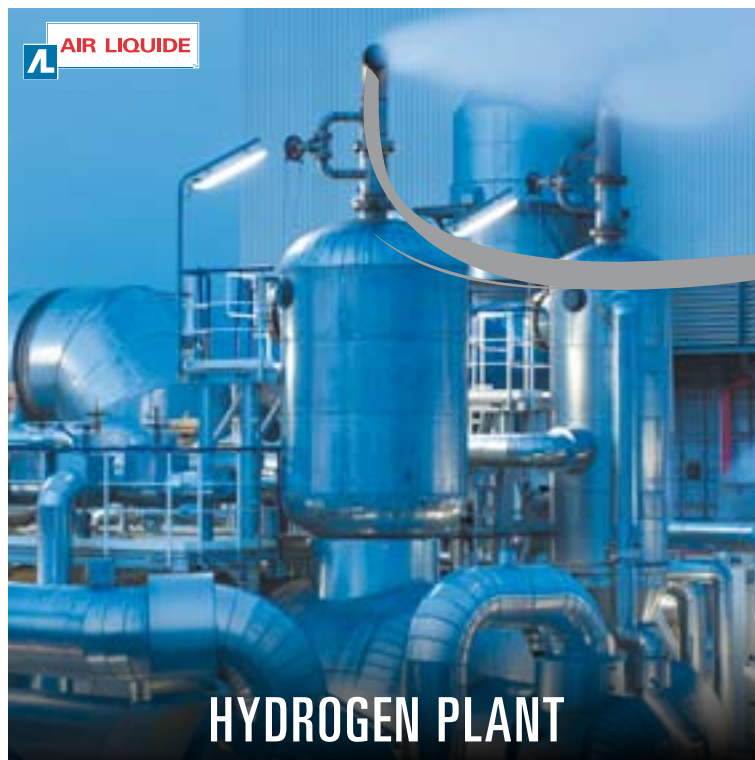
“The energy supply mix is being completely reconfigured as abundant unconventional oil and gas reserves become economically and environmentally accessible. At the same time, changing attitudes of new generations are altering consumption patterns while the oil-powered automobile’s dominance is being challenged in a number of developed countries.”

**Amy Myers Jaffe,
Executive Director,
Energy and Sustainability,
University of California,
Davis**

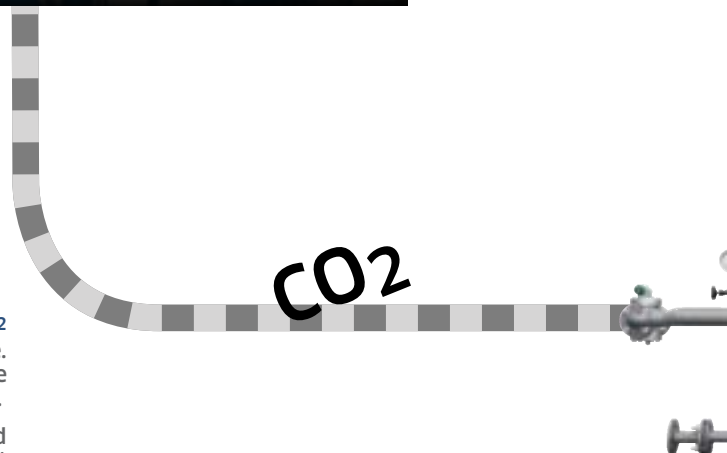
AIR LIQUIDE OPTIMIZES USE OF FO

HYDROGEN PRODUCTION UNIT

- The most frequently used technology for hydrogen production involves reforming natural gas using a Steam Methane Reformer (SMR).
- With more than 200 hydrogen production sites, Air Liquide's high-performance technologies meet the most stringent safety and energy efficiency standards, backed by unrivaled expertise in hydrogen production facility design and operation.
- Continuous improvement of production unit energy efficiency is one of Air Liquide's major objectives.



HYDROGEN



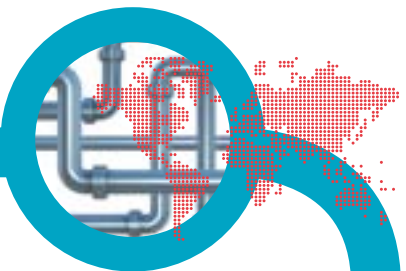
CAPTURE, CONCENTRATION AND LIQUEFACTION OF CO₂

- Hydrogen production through natural gas reforming produces CO₂ onsite. Air Liquide has developed innovative capture technologies that concentrate and then liquefy the CO₂ released from the hydrogen production plants.
- Among these technologies, the CryoCap™ H2 cryogenic capture (cold capture) technology is being introduced at an Air Liquide hydrogen plant in France. With this innovation, the Group is lowering its carbon capture costs by 40% compared with traditional technologies.
- This capture technology will enable Air Liquide to produce tomorrow's hydrogen at very low carbon levels.

SSIL ENERGIES

THE WORLD'S LARGEST HYDROGEN NETWORK

With its 12 hydrogen transport networks totaling nearly 2,000 km of pipeline, Air Liquide responds to customer needs and achieves energy savings of approximately 5% as a result of scale effects.



PIPELINE NETWORK

CUSTOMER BENEFIT

- Air Liquide-supplied hydrogen can be used to produce sulfur-free fuels.
- Oil and gas customers win on several levels: a more efficient industrial process, production of cleaner fuels and, thus, a reduction in greenhouse gas emissions.
- In delivering the critical resource hydrogen to the refinery process, Air Liquide transfers efficiency to its customer as well.



REFINERY



EXTRACT VALUE FROM CO₂ THROUGH NEW USES



Food industry (soft drinks, freezing, etc.)



Industrial applications (pharmaceuticals, plastics, chemicals, etc.)



“ In cities, we face an array of urgent challenges to ensure intelligent, affordable and sustainable growth that protects health and the environment and provides opportunities for our people.”

Parks Tau, Mayor of Johannesburg
(South Africa)

70%

of the world population will live
in cities in 2050

URBANIZATION STAKE

CITY-ZEN

The exploding growth of cities worldwide presents us with a multitude of complex, urgent and associated challenges. Among others, car-dependent urban explosion risks choking us in congestion, lost time and environmental and noise pollution. Cities are responsible for 67% of energy consumption and 70% of the greenhouse gas emissions changing our climate.

By 2050, seven of ten humans will live in cities. Urbanization may be the single greatest challenge facing today's world, particularly in developing countries where 90% of today's urban growth is occurring. It is also a once in a lifetime opportunity to plan, develop, build and manage cities that are simultaneously more ecologically and economically sustainable.

PARADIGM SHIFT

Absorbing the powerful wave of urbanization requires global and integrated approaches – in other words, a paradigm shift. Between 2000 and 2030, expansion of cities in developing countries will double the amount of existing built-up urban area on the planet.

Innovations and new applications are needed to respond to the rapid bombardment of challenges across all sectors in order to advance urban societies constructed largely around 19th-century inventions, such as cars, mass production and centralized power generation and distribution systems.

Converting waste to energy as part of a “circular economy,” integrating mass transit for smarter, interconnected mobility, changing land use regulation to create compact, walkable cities and preserving water catchment areas as “green infrastructure” are among the innovative opportunities.

INDUSTRY PARTNERING

Industry has a crucial role in this advancement. In addition to introducing new products and services developed through its own R&D, the private sector has the capacity to efficiently convert ideas into economically viable, large-scale solutions that can transform cities and societies.

The most valuable industry contributors are capable of partnering with customers and other stakeholders to develop holistic and long-term systematic responses that optimize limited resources to provide citizens with opportunities and improve quality of life, while preserving precious ecological assets. Fulfilling this vital role of bringing the solutions that can create tomorrow's sustainable cities, integrated and inclusive communities that are places of hope for all, that indeed is a noble calling.



“The most valuable industry contributors are capable of partnering with customers and other stakeholders to develop holistic and long-term systematic responses.”

Hiroaki Suzuki, Lead Urban Specialist and Team Leader for Eco2^(a) Cities Initiative, World Bank

(a) Ecological Cities as Economic Cities
www.worldbank.org/eco2

AIR LIQUIDE IMPROVES THE QUALI

FROM WASTE TO ENERGY

Waste is becoming the new green. Communities worldwide seeking new energy sources are discovering a cost-effective solution immediately at hand in the form of municipal solid and liquid wastes. Exhaust gas recovered from landfills or anaerobic digesters and sludge produced from local community wastewater treatment plants can be converted to biomethane, a renewable natural gas. The result: abundant and cheaper energy. **Air Liquide's innovative technologies enable conversion of household wastes into biogas.** Capable of being injected into natural gas networks or transformed into liquid biomethane, it can be used as fuel for vehicles, including as renewable hydrogen.

- Less water and waste disposal
- Reduction of trucks' environmental footprint
- Benefits: transporters, residents... and the planet

RUN SILENT, RUN CLEAN

Booming consumption in metropolitan areas also means increased transportation and deliveries in cities. To help transporters reduce pollution and noise from their delivery trucks, Air Liquide offers a cleaner, quieter solution for "cold" deliveries: the refrigeration diesel motor in trucks is replaced with liquid nitrogen-powered cryogenic cooling equipment.

- Zero direct greenhouse gas emissions
- Noise reduced to the level of a conversation
- Best-in-class cold chain care performance
- Benefits: transporters, residents... and the planet

H_2

BIOMETHANE

CH_4



TY OF URBAN LIFE

QUIET IN THERE!

As city populations swell, more people and more traffic must mean more noise, right? Not necessarily. Air Liquide developed a unique solution, injecting rare gases such as krypton instead of traditional air in double-glazed windows, producing energy savings and quieter interiors.

- Noise reduced by 50% from traditional double glazed windows
- Thermal insulation optimized
- Benefits: window manufacturers, residents... and the planet

FOR THE URBAN GAS NETWORK AND VEHICLE FUEL

LET THERE BE LIGHT

The market for public lighting is about to experience a boom. Rapidly evolving into a mainstream lighting technology is the Light-Emitting Diode (LED). In supplying all of the gases and purification equipment to bulb and LED manufacturers, including nitrogen, hydrogen and ultra-pure ammonia, Air Liquide is helping to lower energy consumption.

- Longer life light source
- Lower power consumption
- Lower maintenance requirement
- Benefits: public officials, residents... and the planet

“ I rely on the speed and power of my digital tools to help me do just about everything, keeping me connected wherever I am... at home, at work and on the move.”

Jenny Chung,
financial analyst,
Hong Kong (China)



+25%

projected growth rate in global
smartphone shipments, 2011-2015

HIGH TECH STAKE

A MORE MOBILE WORLD

A mobility-driven convergence of digital and telecommunications technologies is opening horizons for social interaction around the world, while offering new possibilities to facilitate daily life.

WELCOME TO THE DIGITAL AGE

An unprecedented revolution in digital information is putting increased computing power and information in the hands of individual consumers, aided by the extraordinary progress in both electronics and mobile communications. At the heart of the revolution are increasingly light and versatile portable devices delivering improved connectivity, interfaces and data processing power. Today's smartphones, tablets and ultra-books offer platforms for listening to music, reading books, playing online games, chatting with friends by video and providing instant access to the internet and interactive social exchange. Tablet unit sales already surpass notebooks and annual smartphone sales will soon exceed 1 billion units - 50% of the world's annual mobile phone shipments.

INNOVATION DRIVERS

More mobile consumers are demanding longer usage time, greater speed and performance from their digital companions, driving constant innovation in processors, electronics components, displays and batteries. An improved user experience implies faster, more power-efficient processors and electronics components, crisper screen definition and higher battery capacity while reducing device weight and thickness.

TINY PERFORMANCE ENABLERS

Meeting these challenges requires equipping high-performance electronic components with more powerful, versatile and power-efficient chips that form the active core and are themselves composed of billions of transistors. Optimizing the electrical properties of the tiny nano-scale transistors, or "digital switches," requires improvements in the conducting properties of the chip's constituent materials. Through its ALOHA™ division, Air Liquide invents and supplies "advanced precursor" molecules with specific chemical, thermal, physical and high-purity properties for semiconductor customers. These innovative molecules, are provided as liquids in ultra-high purity canisters and dispensed to the manufacturing equipment, where the molecules are vaporized and deposited precisely, at the nano-scale level, forming successive, uniform layers of chip constituent materials.



"Air Liquide's ALOHA™ division is a leading participant in the innovation race to enable the increase in computing power and connectivity for consumers through cutting-edge advances in high performance electronics materials."

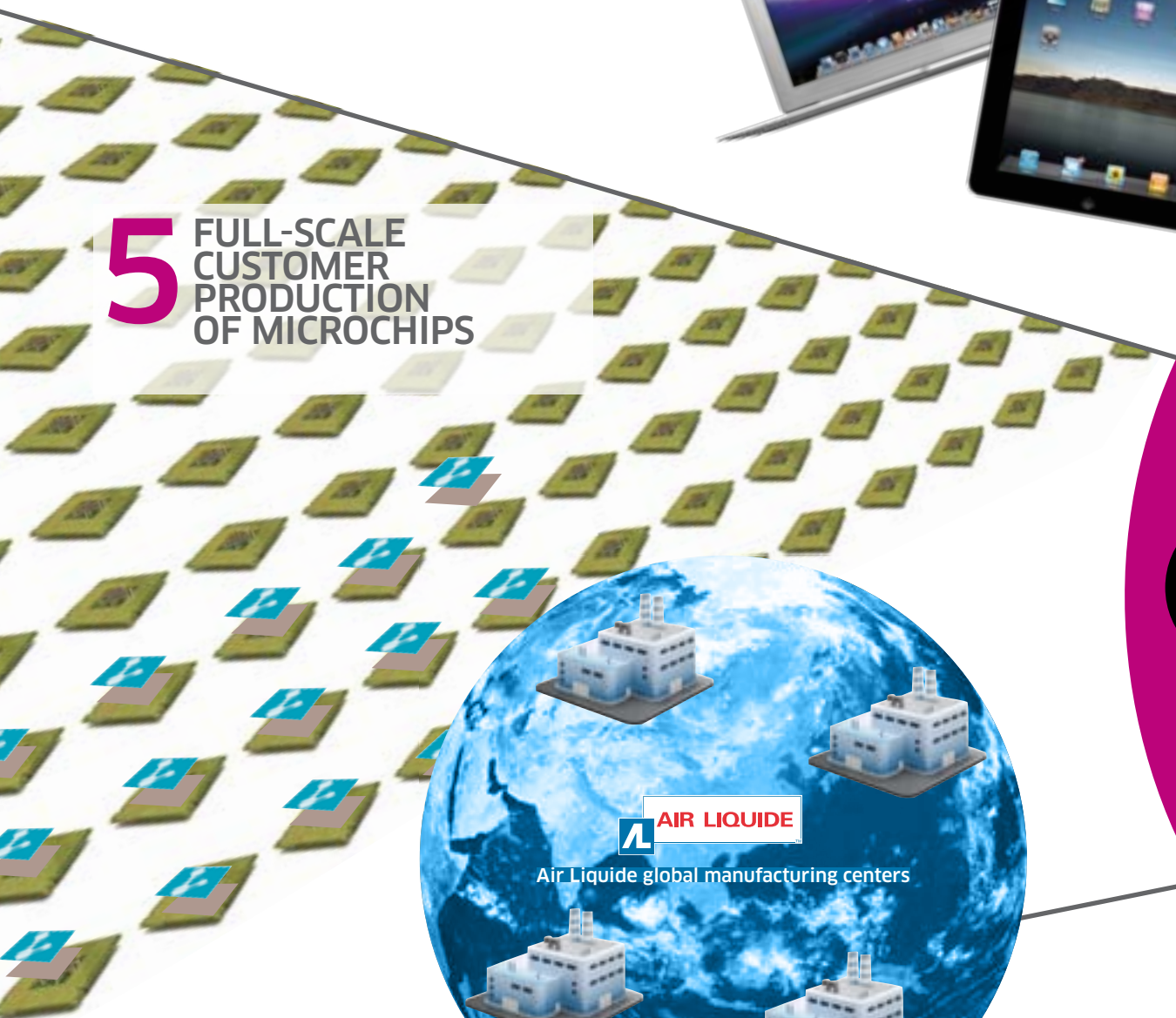
**Ashutosh Misra,
Director, ALOHA™
Electronics Performance
Materials, Air Liquide**

FAST TRACKING AIR LIQUIDE ALOHA™'S

6 NEW GENERATION DEVICES INTRODUCED ON THE MARKET



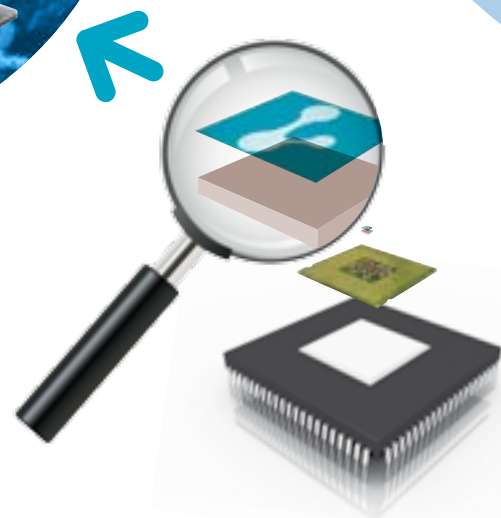
5 FULL-SCALE CUSTOMER PRODUCTION OF MICROCHIPS



3
MONTHS

4 SCALE-UP PRODUCTION FROM GRAMS TO TONS

- Selected molecule industrialized in one of ALOHA™'s manufacturing centers: scale-up production, ultra-purification, metrology, quality control, packaging, etc.
- ALOHA™ team ensures proper global regulatory compliance for novel molecules introduction on the market



TAILORED MOLECULES

1 THE RACE IS ON!

- New material for next generation microchip requirements defined by customer
- Request issued to Air Liquide, other contenders, and process tool makers

SMALLER
FASTER
CHEAPER



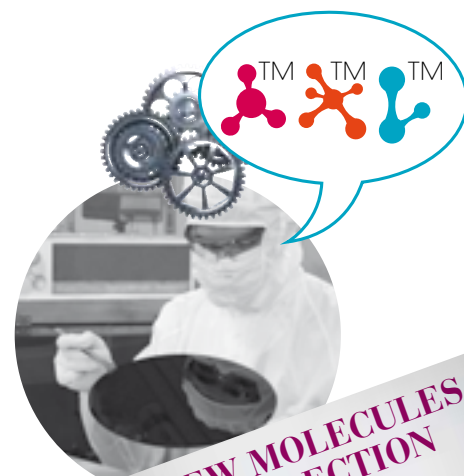
multi-media
more powerful
greater storage capacity
lighter
lower energy consumption

0

-24
MONTHS

2 AT THE CUTTING-EDGE OF INVENTION

- Air Liquide creates multiple innovative molecule options, screens them at lab scale to come up with the most promising ones
- Patent filing to protect new materials and their usage in the manufacturing processes



NEW MOLECULES
COLLECTION
AIR LIQUIDE

-18
MONTHS

3

THREE-WAY PARTNERSHIP FOR INDUSTRIALIZATION

- Close collaboration with semiconductor manufacturers and process tool makers to validate the "one and only" perfectly tailored molecule
- Processes and selected molecules are fine-tuned and evaluated at semiconductor manufacturers R&D for industrialization



> REPEATEDLY PUSHING THE LIMITS OF PHYSICS >

> REPEATEDLY PUSHING THE LIMITS OF PHYSICS >

-6
MONTHS

-12
MONTHS



04

FINANCIAL
INFORMATION
**FOR
SUSTAINABLE
PERFORMANCE**





CONSOLIDATED INCOME STATEMENTS (SUMMARIZED) For the year ended December 31

In millions of euros	2011	2012
Revenue	14,457	15,326
Purchases	-5,762	-6,099
Personnel expenses	-2,481	-2,667
Other income and expenses	-2,650	-2,768
Operating income recurring before depreciation and amortization	3,564	3,792
Depreciation and amortization expense	-1,155	-1,232
Operating income recurring	2,409	2,560
Other non-recurring operating income and expenses	28	-27
Operating income	2,437	2,533
Net finance costs	-236	-248
Other financial income and expenses	-63	-64
Income taxes	-576	-566
Share of profit of associates	33	20
Profit for the period	1,595	1,675
- Minority interests	60	66
- Net profit (Group Share)	1,535	1,609
Basic earnings per share (in euros)	4.93	5.17
Diluted earnings per share (in euros)	4.91	5.15

CONSOLIDATED BALANCE SHEET (SUMMARIZED) For the year ended December 31

In millions of euros	December 31, 2011	December 31, 2012
ASSETS		
Goodwill	4,559	5,133
Intangible assets and property, plant and equipment	12,735	13,511
Other non-current assets	963	1,077
TOTAL NON-CURRENT ASSETS	18,257	19,721
Inventories and work-in-progress	784	776
Trade receivables and other current assets	3,276	3,320
Cash and cash equivalents	1,806	1,187
TOTAL CURRENT ASSETS	5,866	5,283
TOTAL ASSETS	24,123	25,004

In millions of euros	December 31, 2011	December 31, 2012
LIABILITIES		
Shareholders' equity	9,759	10,212
Minority interests	237	233
TOTAL EQUITY	9,996	10,445
Provisions and deferred taxes	3,102	3,351
Non-current borrowings	5,663	5,789
Other non-current liabilities	316	281
TOTAL NON-CURRENT LIABILITIES	9,081	9,421
Provisions	191	243
Trade payables and other current liabilities	3,398	3,398
Current borrowings	1,457	1,497
TOTAL CURRENT LIABILITIES	5,046	5,138
TOTAL EQUITY AND LIABILITIES	24,123	25,004

CONSOLIDATED CASH FLOW STATEMENT (SUMMARIZED)

For the year ended December 31

In millions of euros	2011	2012
Operating activities		
Cash flow from operating activities before changes in working capital	2,728	2,913
Changes in working capital	-193	-67
Other	-109	-137
Net cash flows from operating activities	2,426	2,709
Investing activities		
Purchase of property, plant and equipment and intangible assets	-1,755	-2,008
Acquisition of subsidiaries and financial assets	-100	-879
Proceeds from sale of property, plant and equipment and intangible assets and financial assets	182	50
Net cash flows used in investing activities	-1,673	-2,837
Financing activities		
Dividends paid		
• L'Air Liquide S.A.	-679	-723
• Minority interests	-42	-58
Proceeds from issues of share capital	52	37
Purchase of treasury shares	-94	-104
Transactions with minority shareholders	-3	-11
Net cash flows from (used in) financing activities	-766	-859
Effect of exchange rate changes, opening net indebtedness of newly acquired companies and other	-196	132
Change in net indebtedness	-209	-855
NET INDEBTEDNESS AT THE BEGINNING OF THE PERIOD	-5,039	-5,248
NET INDEBTEDNESS AT THE END OF THE PERIOD	-5,248	-6,103

PUBLISHED BY THE COMMUNICATIONS DEPARTMENT OF AIR LIQUIDE GROUP, APRIL 2013
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CONSULTING, DESIGN, CREATION AND PRODUCTION TERRE DE SIENNE *Paris* | www.terredesienne.com

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L'AIR LIQUIDE S.A. COMPANY ESTABLISHED FOR THE STUDY AND APPLICATION OF PROCESSES DEVELOPED BY GEORGES CLAUDE WITH ISSUED CAPITAL OF €1,717,874,856.50



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Innovate app for tablets



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The text "WWW" in a large, bold, blue, sans-serif font.

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