Healthcare challenges for Air Liquide

Today, Air Liquide serves more than 7,500 hospitals and clinics around the world and 1.2 million patients at home thanks to more than 12,000 dedicated employees.

- **Main public health issues:**
  Considering demographic ageing, an increase in chronic diseases and the emergence of new risks of pandemics, access to medical care for all and the control of healthcare costs are more than ever the major issues for healthcare stakeholders and, in particular, healthcare authorities and payers.

- **In the community:**
  - Offer patients a better quality of life at home
  - Improve adherence to treatment for better medical outcome (treatment efficacy)
  - Limit hospitalization time or prevent the need for re-hospitalization to reduce healthcare costs

As a player in the home healthcare market, Air Liquide contributes, together with medical teams, to improving the disease management of patients with chronic diseases.

- **At hospital:**
  - Offer patients a shorter and perfectly safe stay
  - Reduce the duration of surgical hospitalizations, the duration of recovery in intensive care and the occurrence of nosocomial diseases
  - Take pain control into account (particularly after operations, during emergencies and during examinations)

Air Liquide helps hospitals ensure the protection and safety of their patients by providing medical gas, medical respiratory equipment and hygiene products (particularly during long procedures and emergencies, in the operating room and in the intensive care unit).
Air Liquide’s Healthcare Business

2014 Healthcare revenue: €2,570 million
(18% of the Group Gas & Services revenue)

- 52% in home healthcare
- 30% in medical gases & associated services, and medical equipment
- 18% in hygiene and specialty ingredients
In 2014, home healthcare grew strongly all over the world, notably due to:

- the steady development of sleep apnea treatment and mechanical ventilation,
- the permanent widening of our service range to include new treatments, such as those for diabetes, Parkinson’s disease, etc.
- new geographies.

1.2 million patients in more than 30 countries

Improving adherence to treatment and patient quality of life

Through innovative personalized support products, Air Liquide is committed to improving patient care of those with chronic illnesses for a better quality of life and better cost management.
Air Liquide home healthcare activities

Air Liquide offers various home healthcare services:

- **Respiratory assistance**: oxygen therapy for severe forms of **chronic obstructive pulmonary disease** (will become the world’s third leading cause of death by 2030), ventilation for certain chronic respiratory insufficiencies and continuous positive airway pressure systems for the **sleep apnea syndrome** (which affects up to 5% of the global population over 40).

- **Intravenous care at home** for the management of diabetes, Parkinson’s disease, immunodeficiency, as well as pulmonary arterial hypertension.

- **Nutritional assistance services**

Our multi-disciplinary teams, including pharmacists, nurses and nutritionists, provide medical systems for home healthcare. They train patients and their families in the proper use of equipment in accordance with safety and hygiene standards. They also guarantee the good follow-up on medical prescriptions and treatment adherence.

Air Liquide is present in over thirty countries via the **VitalAire** brand, as well as the brands **Orkyn’**, **Dinno Santé**, **ADEP Assistance** and **LVL Médical** in France, **Medicasa** in Italy, **Gasmedi** in Spain, **Licher** in Germany, **Celki** in China, **Carbagas** in Switzerland, **NordicInfu Care** in the Nordic countries, **Healthy Sleep Solutions** in Australia and **Help!** and **Ventamed** in Poland.
Air Liquide’s hospital activities

30% of Air Liquide’s healthcare business in 2014

*Medical gases*

For diagnosis, care, pain relief, anesthesia, surgery, respiratory aid

- Pharmaceutical production and distribution
- On-site service

**The main medical gases are:**

For preservation alive, in the case of a need for oxygenation

- Medical oxygen - $O_2$

**In anesthesia /analgesia**

- Nitrous oxide - $N_2O$
- Oxygen / Nitrogen Dioxyde premix - $O_2/N_2O$ (Kalinox™)
- Xenon – Xe (LENOXe™)

**In resuscitation**

- Nitric oxide - NO (Kinox™ and VasoKINOX™)
Air Liquide’s hospital activities

■ Gas production and distribution

Production and transportation are subject to the control of national health authorities, to guarantee safety at every step leading to patient delivery: Air Liquide medical gas production sites are classified as pharmaceutical establishments, approved by the national health authorities in the countries where they are located. Medical gases are subject to pharmaceutical traceability and delivered in gaseous or liquid form under specific transport conditions, by personnel trained to handle these products.

Medical gases are medication and they require a market authorization, issued by national healthcare authorities following the examination of a certain number of criteria, including the results of pharmaceutical, clinical and toxicological studies.

■ R&D involving gases

Research teams work on three items: a gas (active component), special packaging and a dispensing system to administer the medication. Possible uses include treatment for respiratory difficulties, anesthesia, analgesia and neuro-protection. Air Liquide actively works on developing these products, which, if clinical trials are successful, significantly contribute to the growth of medical gases.
Air Liquide’s hospital activities

- **Medical respiratory equipment developed by Air Liquide Medical Systems**

For respiratory assistance of patients in the emergency, intensive care and recovery rooms, during transport and at home.

In order to control the quality of healthcare services from hospital to home and to offer patients the most up-to-date technologies, Air Liquide relies on **Air Liquide Medical Systems**, an international company expert in medical equipment.

The Group’s subsidiaries in France, Italy and India develop and produce equipment for respiratory assistance in emergency rooms, recovery rooms and patients’ homes, in addition to aerosol therapy devices. The subsidiaries also offer systems for administering medical gases.

Air Liquide Medical Systems’ products are sold in **over 90 countries** including France, Italy, India, China, Brazil, Russia and Malaysia, via Air Liquide’s subsidiaries as well as a network of specialized distributors.
Air Liquide’s hospital activities

- Medical hygiene

Air Liquide is the European leader in hospital disinfection, with its disinfectants and antiseptics, particularly for operating rooms and endoscopies. Activities of high growth and strong added value that expand Air Liquide’s offer to healthcare professionals.

Hospital infection issues (nosocomial diseases) and epidemic threats (SARS: Severe Acute Respiratory Syndrome) are addressed by the Group’s skills in these areas.

Air Liquide is supported by its specialized brand schülke +

A unique antiseptic
Specialty ingredients dedicated to the healthcare market

SEPPIC became a wholly owned subsidiary of the Air Liquide Group in 1986. Today, SEPPIC’s 600 committed people serve more than 5,000 customers within 80 countries thanks to a comprehensive network of subsidiaries and distributors.

For over 70 years, SEPPIC has been designing and supplying specialty products – excipients and active ingredients – for the personal care, pharmaceutical and vaccine markets.

SEPPIC is a leader for a variety of product lines, combining a unique blend of scientific expertise in the field of chemistry, biology, and formulation (polymers, surfactant and emulsion technologies), immunology, marine biotechnology and transformation of natural products.

Polymers, emulsifiers, excipients, actives for personal care  Vaccine adjuvants  Functional coating and natural actives for the pharmaceutical industry
Air Liquide’s Healthcare activities: key dates  1/2

- **pre-1980** Business centered on *medical gases in the hospital*.

- **1980s** Development of *home healthcare*, creation of the “VitalAire” brand.
  Development of a complementary offer: *medical equipment*.

- **1995** Air Liquide creates a Healthcare division around dedicated subsidiaries.

- **1995 - 1999** Acquisitions in the “home healthcare sector” in Australia, Canada, France (Orkyn’), etc.

- **1996** Development of the *medical hygiene offer* (Schülke & Mayr and Anios).

- **2004** Reinforcement of *R&D in the field of medical gases*. Creation of a dedicated research group.
  *Acquisition* of Messer in the United States, United Kingdom and Germany.

- **2005 - 2006** *Acquisitions* in the home healthcare sector in Germany and the United Kingdom. *Acquisitions* in medical hygiene in Europe.

- **May 2007** Acquisitions of *Linde Gas UK*, enabling Air Liquide to penetrate the British hospital and homecare sectors.

- **June - July 2007** Acquisitions of five companies, enabling Air Liquide to become the home healthcare market leader in Germany.
  Establishment in China, with the *acquisition of Celki International* (respiratory products and services), present in Hong Kong and Southern China.

- **Oct 2007** *Acquisition of Allied Healthcare* (respiratory home healthcare services) in England and Northern Ireland.
Air Liquide’s Healthcare activities: key dates 2/2

- **2008**
  Acquisitions in India (medical equipment) and Poland (hygiene).

- **2009**
  **Acquisitions** in the Netherlands (home healthcare) and in **Tunisia, and a sleep diagnosis lab in Berlin**.
  Opening of Air Liquide’s first center for apnea patients in Lebanon and the first Home healthcare service in China.
  Launch of the **VitalPPC** (CPAP) program to improve sleep apnea patient adherence to treatment.
  **Acquisition of Pacific Science** (cryobiology equipment) in the U.S.

- **2010**
  New pain management, outside the hospital, by the medicinal gas **Kalinox™** in France.
  Home healthcare acquisition in France (**DinnoSanté**, specialized in medico-technical services for diabetes).

- **2011**
  Home healthcare acquisitions in France (**Adep Assistance**, a specialist in home healthcare respiratory services) and in Germany (**Licher**, a specialist in home infusion therapy).

- **2012**
  Home Healthcare acquisitions: **Gasmedi** (Spain) and **LVL Medical** (France), specialists in home healthcare.
  Creation of Healthcare divisions in new countries (Singapore, India, Nordic European countries).

- **2013**
  Home Healthcare acquisitions: **Healthy Sleep Solutions** (Australia), **NordicInfu Care** (Nordic countries), **Help! and Ventamed** (Poland).
  Specialty ingredient acquisition: **BiotechMarine** (SEPPIC affiliate).
  Creation of Healthcare divisions in new countries (Russia and Taiwan).

  Refocusing of the Hygiene activities on fully-owned subsidiary Schülke & Mayr: the Group disposes of its stake in **Anios**.

- **2014**
  A new bottle of medical oxygen, **TAKEO™**, facilitates the work of hospital staff
  Home Healthcare acquisitions in France: **ARAIR Assistance** and **SEPRODOM**.
The Air Liquide Group at a glance

- World leader in gases, technologies, and services for Industry and Health
- Present in **80 countries**
- More than **50,000 employees** (2014)
- **9 Research & Development locations**
- Revenue in 2014: **€15,358 million**
- Net profit 2014: **€1,665 million**
Innovation at Air Liquide

- Innovation budget: **€278 million** (2014)
- 6,200 employees contribute to innovation
- 9 main centers (Europe, Asia and USA)
- 60% of the R&D projects led as public-private partnerships
- Over 60% of the Group’s R&D budget devoted to projects related to life, the environment and sustainable development
- Nearly 300 patents filed each year
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