



## Australia: new technological steps in oxy-combustion

press release

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### **Oxy-combustion**

uses **oxygen** instead of air notably **for the combustion of coal**, which results in a flue gas of **relatively pure CO<sub>2</sub> ready for capture, storage or direct use**. Air Liquide's teams apply their know-how and expertise in oxy-combustion in a number of applications such as fossil fuel energy production, metals, glass and cement manufacturing.

Oxy-combustion research is undertaken within one of the company's key **innovation fields**, namely "for a sustainable environment".

**Oxy-combustion** is a promising solution for reducing CO<sub>2</sub> emissions from heavy industries including coal-fired power plants, blast furnaces and cement plants. Using oxygen instead of air for the **combustion of coal or other fuels** results in exhaust gases of relatively pure CO<sub>2</sub> that can be captured, stored or directly used (e.g. for enhanced oil recovery).

In this context, **the Group has just signed in Queensland, Australia**, a contract to provide an **Air Separation Unit (ASU)** with an oxygen production capacity of 660 tonnes per day and a **CO<sub>2</sub> Cryogenic Purification Unit**. This contract is part of a **technological partnership with the Australian joint-venture Callide Oxyfuel Services**, an electricity producer.

This project involves **the refurbishment of the power station** of 100 MWth nominal capacity, so as **to test the technologies of the CO<sub>2</sub> capture and storage process**. Design and construction of the **CO<sub>2</sub> Cryogenic Purification Unit** will be carried out from 2009-2010 and commissioning will take place in early 2011. Under the terms of this technological partnership, Air Liquide will carry out a series of tests on the Purification Unit pilot, under real operating conditions. This unit is **the ultimate validation step of this technology before its large scale commercialization** and thus has **no equivalent worldwide**.

The Air Liquide Group has developed a **high level of expertise in the field of oxy-combustion** to meet energy and environmental challenges. The Callide technological partnership is the continuation of **several large-scale research projects** and is part of Air Liquide **global roadmap toward the industrialization of oxy-combustion**.

**François Darchis**, Senior Vice-President Air Liquide Group, in charge of R&D, Advanced Technologies and Engineering & Construction, commented: "***This technological partnership and this industrial pilot in Australia demonstrate our commitment to make cleaner energy a reality. In the near future, oxy-combustion will become a key technology globally for reducing CO<sub>2</sub> emissions from the combustion of coal and other heavy fuels. Air Liquide is proud to bring its technologies to help to reduce the global carbon footprint of industry, and thus contributing to the environment, one of the Group's growth drivers.***"

## Key Air Liquide partnerships in oxy-combustion

- **Partnership with TOTAL in the Lacq Project** in France. The project involves the revamping of an existing 30 MWth boiler and will allow Air Liquide to test some key technologies involved in CO<sub>2</sub> purification. This plant will start in March 2009.

- **Operation with Babcock&Wilcox Power Generation Group** (B&W PGG) since October 2007 **of the 30 MWth oxy-boiler** at the B&W PGG *Clean Environment Development Facility* in Alliance, Ohio, USA.

*With more than **40,000 employees** in **75 countries**, Air Liquide is the **world leader** in industrial and medical gases and related services. The Group offers **innovative solutions** based on constantly enhanced **technologies** and produces **air gases (oxygen, nitrogen, argon, rare gases...)** and **many other gases including hydrogen**. The Group contributes to the manufacturing of **many everyday products**: bubbles in sparkling beverages, protective atmosphere for packed foods, oxygen for hospitals and homecare patients, ultra-pure gases for the semiconductor industry, hydrogen to desulfurize fuels...*

*Air Liquide is committed to **sustainable development** and helps to **protect life**. Founded in 1902, Air Liquide has successfully developed a long-term relationship with its shareholders built on **trust** and **transparency** and guided by the principles of **corporate governance**. Since the publication of its first consolidated financial statements in 1971, Air Liquide has posted **strong and steady earnings growth**. Sales in 2007 totaled **11,801 million euros**, with sales outside France accounting for almost 80%. Air Liquide is listed on the Paris stock exchange and is a component of the CAC 40 and Eurostoxx 50 indices (ISIN code FR 0000120073).*