Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE DES AFFAIRES ÉTRANGÈRES ET EUROPEENNES

Actualité en France

No 4 - March 2010

Carbon capture and storage is firing on all cylinders

Total Group © Etienne Follet

Europe's first industrial pilot plant for capturing, transporting and storing CO2, the main greenhouse gas, was opened in Lacq, in the French Pyrenees, by the Total Group on 11 January 2010. This innovative technology is designed to help combat global warming.

Capturing and trapping the equivalent of the carbon dioxide (CO2) emissions of 40,000 cars in 24 months, or 120,000 tonnes of carbon dioxide over the next two years... That's the challenge facing the industrial pilot plant in Lacq, in south-west France, opened by Total on 11 January in the presence of Valérie Létard, Secretary of State at the French Ministry of Ecology, Energy, Sustainable Development and the Sea. The Secretary of State, who is responsible for Green Technologies and Climate Negotiations, described the project as "revolutionary". Indeed, the Lacq pilot plant is the first in Europe to cover the entire process, from CO2 capture at the facility where the emissions originate through to underground storage. Its aim is also to contribute to reducing greenhouse gas emissions into the atmosphere from major industrial facilities (steelworks, cement plants, paper mills, refineries, etc.) powered by fossil fuels. Small-scale tests at the plant over the next five years should provide the necessary data to plan an efficient switch to industrial-scale processing.

4,500 metres underground

An oxycombustion system developed by Air Liquide has been selected to recover the CO2. The air in an industrial boiler at the Lacq plant is replaced by pure oxygen, which leads to a reduction in fumes and in CO2 concentration. The gas is compressed, collected and sent along a 27 km gas pipeline to the geological storage centre in Rousse and then injected into a reservoir for natural gas at the end of its life, 4,500 metres underground. "This geological formation has held toxic, flammable gas for 35 million years. It is phenomenally well sealed," says Guy Zahan, Regional Communications Director for the Total Group. An environmental audit (fauna, flora, water sources, soil, microseismicity, etc.) was carried out at the request of the French administrative authorities. "We created a monitoring network with a 10 km radius to ensure there were no changes to any of these aspects," he explains. As far as microseismicity is concerned, probes were sunk to the bottom of wells or to a depth of 200 m around the injection site. "They are extremely sensitive, so much so that they

even picked up the earthquake in Haiti," the manager points out. Risk assessments were also carried out. "If the injection head on the well were to be completely destroyed, and none of the safety valves operated, you would still need to stand less than 10 metres away for half an hour with no wind to suffer any ill effects," continues Guy Zahan.

Global challenges

There are high expectations of carbon capture and storage (CCS), particularly in environmental terms. The Intergovernmental Panel on Climate Change and the International Energy Agency estimate that by 2050, CCS could contribute to removing 20% of global greenhouse gas emissions. "Without CCS," recalled Valérie Létard, "the cost of halving our GHG emissions by 2050 would be around 70% higher, which would undoubtedly act as a disincentive or slow down various initiatives." But expectations are economic ones too. As the Secretary of State acknowledges, this is also "a market that represents considerable potential for our country: what's at stake are jobs, business, added value and growth." Thanks primarily to demand from the major emerging nations, the potential market is estimated to be worth some 600 billion euros by 2030. In France, however, CCS is one of a wider range of solutions. As a result, whilst taking the view that it represents "an important response to the challenges of combating climate change" and "a technology we cannot reasonably decide to ignore," Valérie Létard emphasises the fact that the "absolute priority" remains "identifying ways of improving energy efficiency and developing renewable energy sources."

Florence Raynal