

Oxy-combustion and the CCS pilot at Lacq

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Summary. The main objective of this pilot project is to demonstrate the different technologies, monitoring methods, and instruments developed to evaluate the reliability and sustainability of long-term CO₂ storage technology, having at the same time a cost effective solution for carbon capture compared to existing processes. Air Liquide, as a Total partner in this project, has developed an innovative oxy burner technology which presents novel and differentiating features. This burner has been already demonstrated in a 1 MW pilot scale plant at Air Liquide combustion facilities, and scale up for a 30MW boiler revamped according to the expected performance for oxycombustion. This project is one of the few in the world which considers all the necessary components to demonstrate the complete oxyfuel chain, starting with oxygen production to CO₂ storage. After collected from the boiler flue gases, CO₂ will be purified, compressed and conveyed via pipeline to the depleted Rousse field, 27 kilometres from Lacq, where it will be injected through an existing well into a rock formation 4.500 metres under ground. For this particular activity, Total has carried out all the preliminary activities to accomplish the objectives regarding storage performance and integrity. These activities are: site and complex characterization, injection and reservoir modelling, and performance and risk assessment study. Also, a monitoring plan for the injection and post injection phases is already defined. The overall results of the project will provide essential data on heat transfer, combustion efficiency, emissions, dynamic behaviour, interaction between the different systems, plant design, performance, cost, and economics. This information will provide the input for designing larger scale long term storage projects. Although this project has already accomplished the objectives for the preliminary technical phases, regulatory aspects regarding the definition of a legal framework specialized for CCS projects had impacted on the project schedule. Therefore, future regulatory frameworks need to integrate legal status for CO₂ produced by combustion plants and, especially, long term storage.