

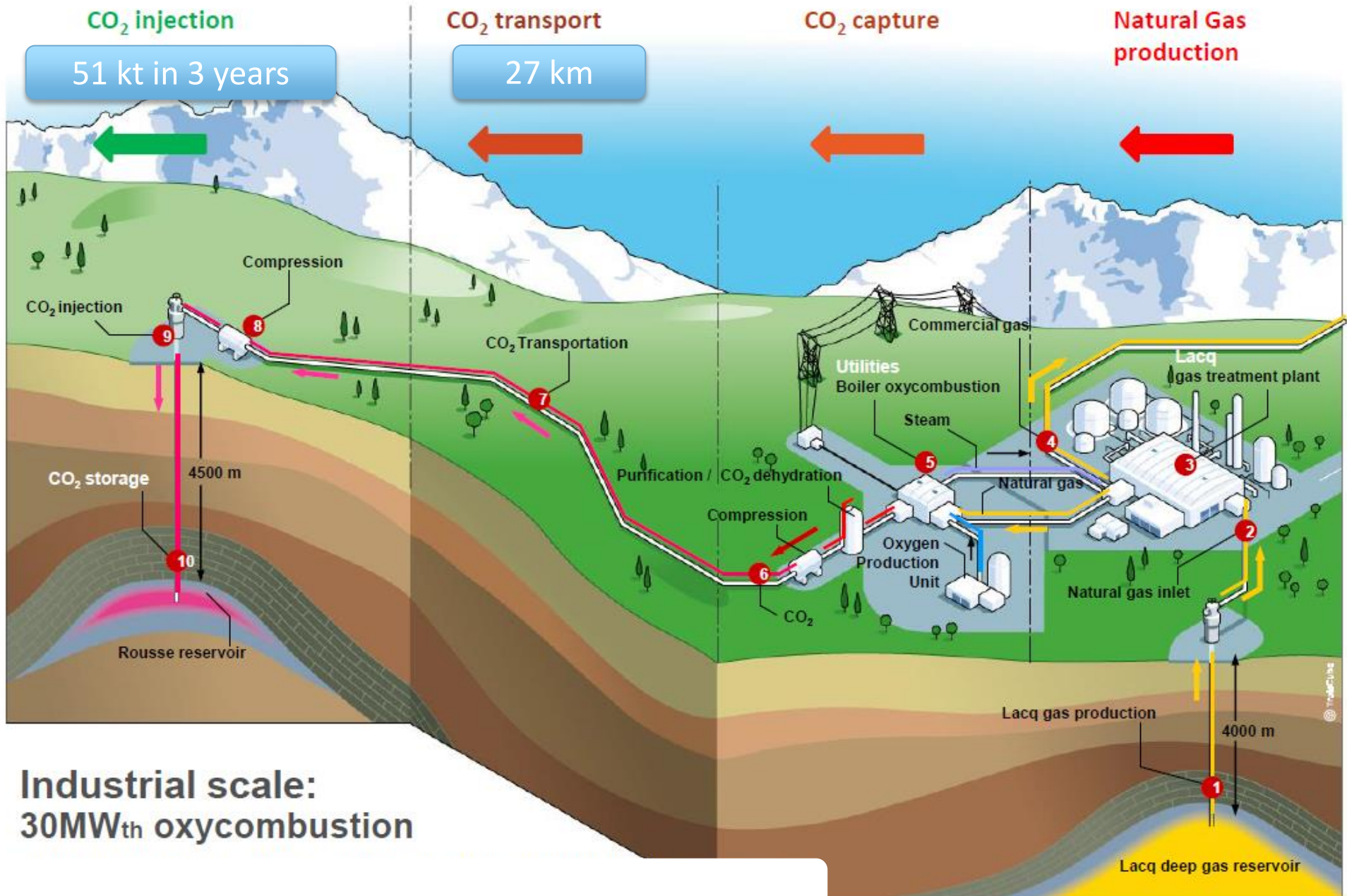
LACQ PROJECT : MAIN RESULTS OF AN INTEGRATED CCS CHAIN BASED ON OXYCOMBUSTION

Dominique Copin Coordinator CCS



A COMPLETE INDUSTRIAL CHAIN

CAPEX ~60 M€



PILOT TECHNICAL DESCRIPTION

Air separation unit



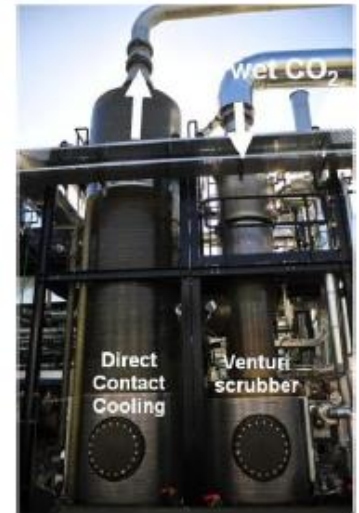
Cryogenic unit
(Air Liquide)
 O_2 : 240 t/d

Oxy-combustion Boiler



Existing 1957 boiler revamped
by Alstom to oxy-combustion boiler.
Oxyburners developed by Air Liquide
(30 MWth, 40 t/h steam @ 60b, 450°C)

Direct Contact Cooler



Cooling of flue gases
From to 200°C to 30°C

Wet CO₂ compressor



From 1barg to 27 barg

Dehydration Unit

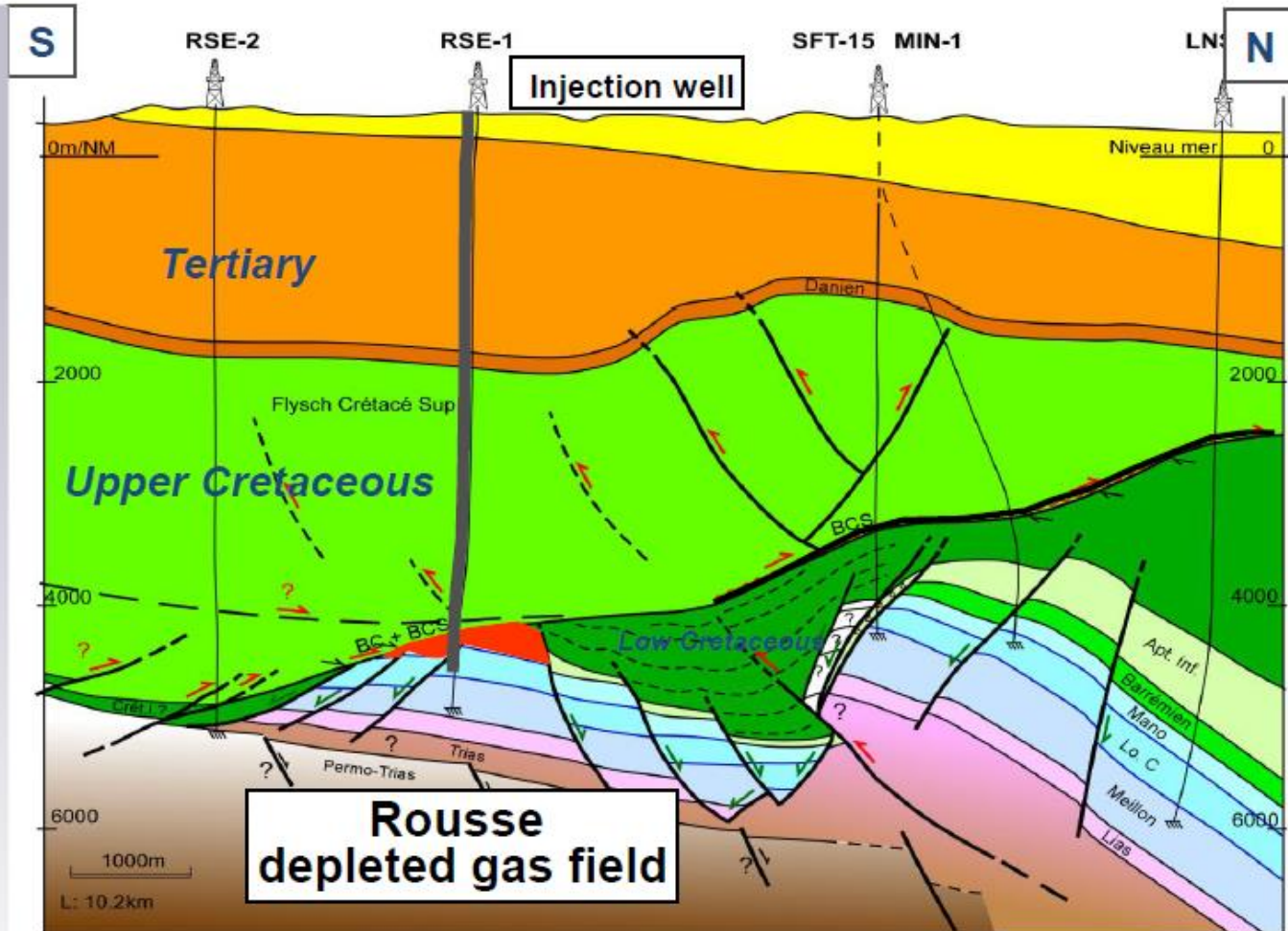


Outlet < 20ppm water

**Transport and
Storage**

RESERVOIR STORAGE

- Jurassic fractured dolomitic reservoir
- Depth # 4500m/MSL
- Temp. # 150°C
- Initial P: 485 bars
- P before inj: # 40 bars
- Final pressure: # 90 bars
- Initial CO₂ = 4,6%
- Initial H₂S < 1%
- Av. Porosity: 3%
- Av. Perm. = 5mD
- Av. Water saturation: 30%-40%
- Only one well: RSE-1, producing from 1972 to 2008, 0.9 GSM3 .



CONCLUSIONS

- ❑ **Objective 1** : The technical feasibility and reliability of an integrated onshore Carbon Capture and Storage scheme for steam production at a reduced scale has been proved.
- ❑ **Objective 2** : Operational experience and data to up-scale the oxy-combustion technology from pilot (30MWth) to industrial scale (200MWth) are acquired. For CO₂ from combustion in O&G sector, current cost evaluations for capture units of industrial size are still high.
- ❑ **Objective 3** : Reservoir and well performance are in line with the models. The demonstration of the site integrity and absence of environmental impact is done.
- ❑ **Objective 4** : The monitoring program deployed at Rousse is very large and innovative. New tools have been successfully tested. The “optimal” long term post-injection monitoring plan economically and technically viable is being defined based on risk analysis update. It will have to be validated by French Administration.
- ❑ **Positive public perception** : “Transparency” in communication with local communities is one of the key factor to reach the public acceptance. It remains a permanent “concern” to be taken into account during the whole life of a CCS experimentation