

GERG Board MEETING

October, 28th 2011



Power-to-gas: gas as a storage for renewable electricity

↳ Synthetic Natural Gas Production by hydrogen reduction of CO₂

Marc FLORETTE

Context: 5 reasons to be interested in the production of Synthetic Natural Gas (SNG)

→ Greater opportunities on electricity markets

- ❖ Result of the transformation of the energy mix, including production, with the massive introduction of non-programmable intermittent sources

→ Increasing availability of a carbon source at a negative price

- ❖ Industrialists will **have** to reduce CO₂ emissions → CCS vs. « cheaper alternative »
- ❖ CO₂ available: NO ⇒ H₂ injected into natural gas network ; YES ⇒ SNG

→ Gas infrastructures (transport, storage and distribution) immediately available without major investments

- ❖ SNG = totally compatible with gas network, including fleet of power plants installed
- ❖ H₂ = compatible within the limits of around 6% ; beyond : adaptation

→ A circular economy of CO₂

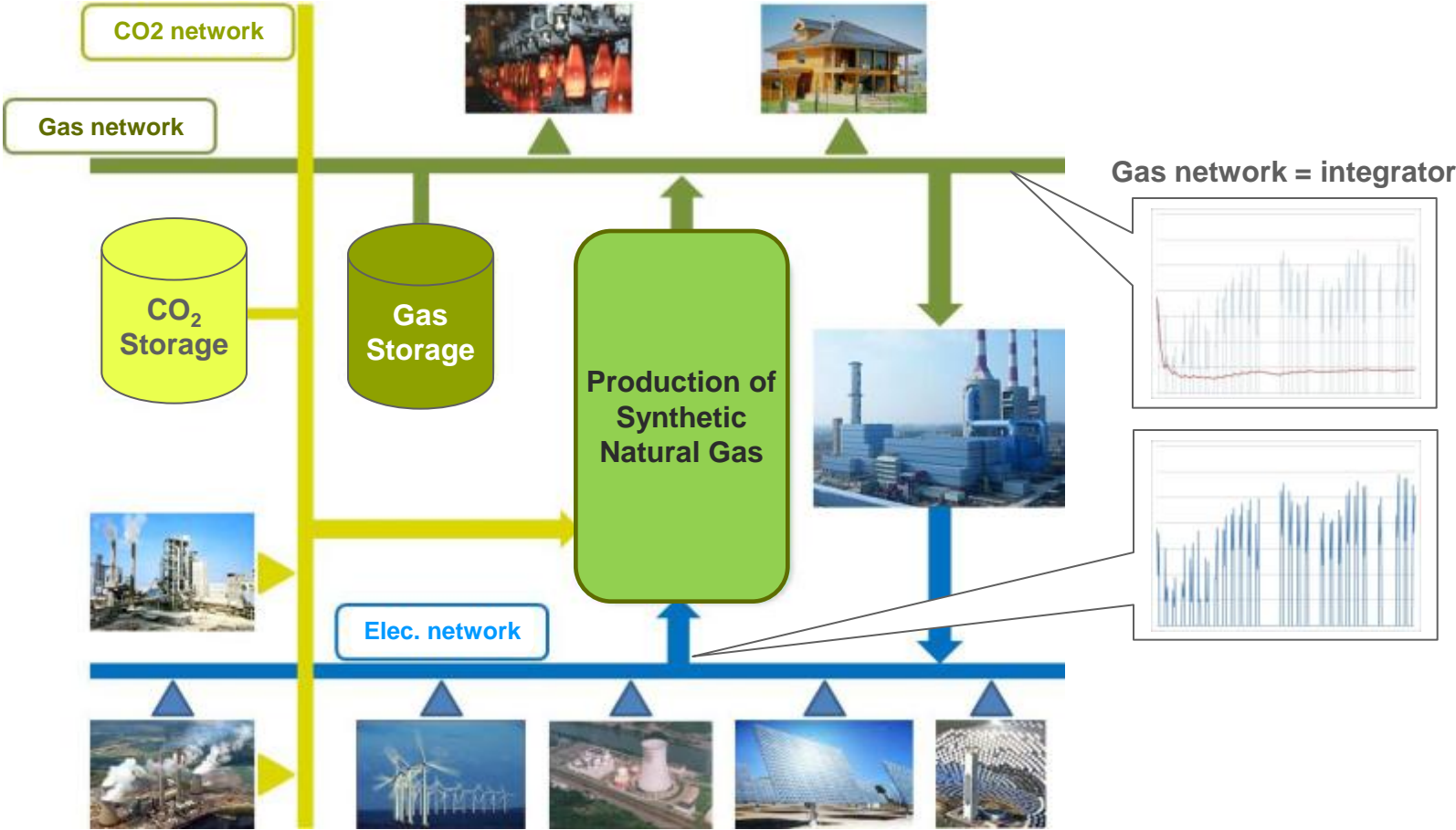
- ❖ Reduced transport of CO₂
- ❖ No storage of large volumes over long periods

→ A growing number of actors involved


- ❖ Several communications on the subject at IGRC2011 (Seoul) and elsewhere : DONG energy, Tokyo gas, SIEMENS, Areva, GTI, ...
- ❖ Many projects are presently studied and may be launched in the next future (

An activity at the heart of energy systems :

- ↪ STORE & TRANSPORT ENERGY
- ↪ Recycle CO2 as a CARBON STOCK



What are the key elements of gas to power ?

- **Necessity to create a market : needs of challenging the concept**
- **Specific economic conditions :**
 - availability of electricity at low price (“excess renewable electricity”) 
 - Negative price of CO2
- **Technical breakthrough needed :**
 - Flexibility & reliability of the electrolyser
 - Cost & ageing of the electrolyser
 - H2 concentration limit admissible in the gas system
 - ...

*may be first encountered
in Denmark and Germany*

What could be the role of GERG ?

- Thorough understanding of the gas to power system
- Challenging of concepts
- Research collaborative targeted projects on specific processes
- Lobbying activities in preparation of the new FP8 “Horizon 2020” : towards an European project ?
- *Other proposals ?*



- *State of the art*
- *Gap analysis*



Preparation of a GERG position paper



Thank you for your attention !