

**Exploiting of high content sour gas
from O&G wells**

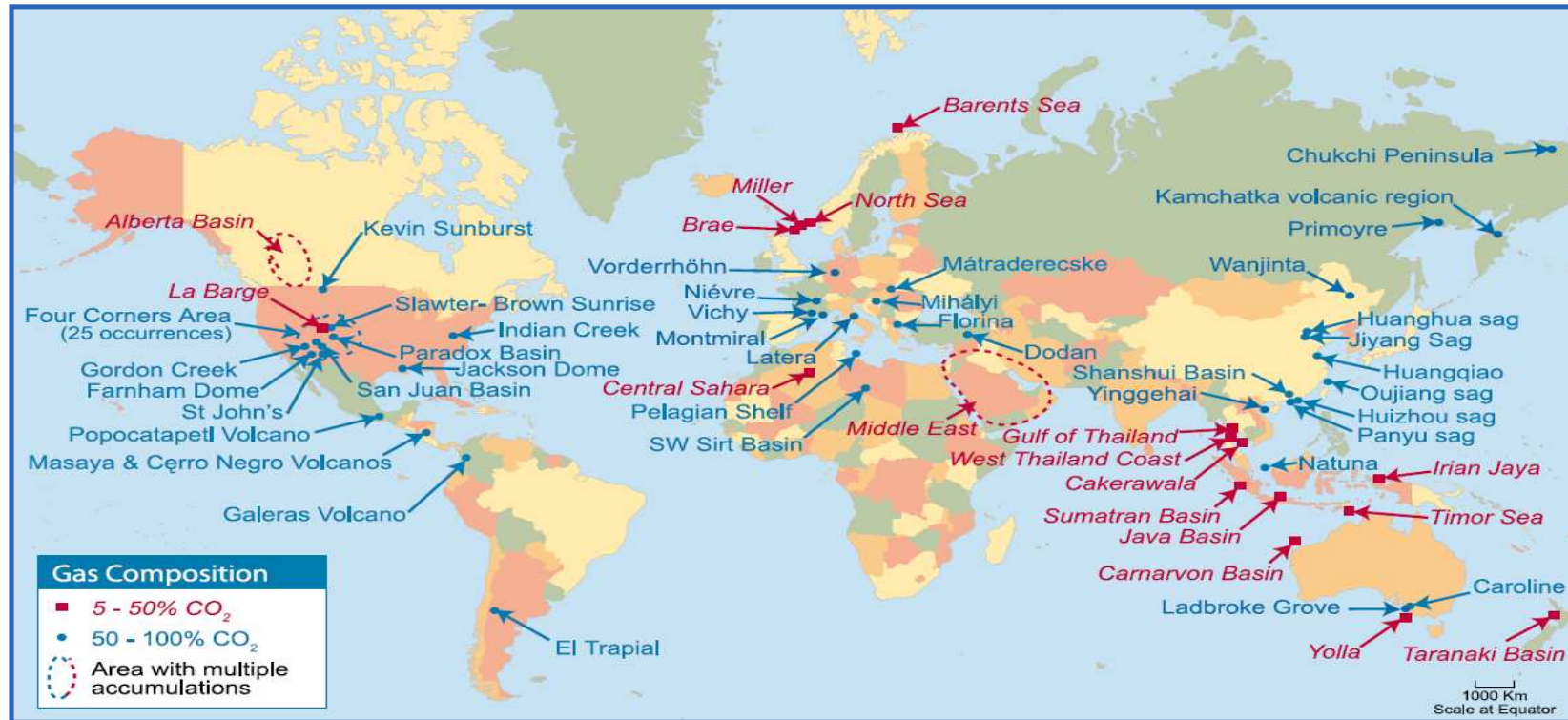
"ACID GAS"

An Innovative Technology





- **Acid Gas is any gas that contains significant amounts of carbon dioxide (CO₂) and / or hydrogen sulfide (H₂S) .**



IPCC (Intergovernmental Panel on Climate Change), 2005. "Carbon Dioxide Capture and Storage",

- **40% of proven natural gas reserves contains significant amounts of CO₂ and/or H₂S. These components have to be removed from natural gas before commercialization.**



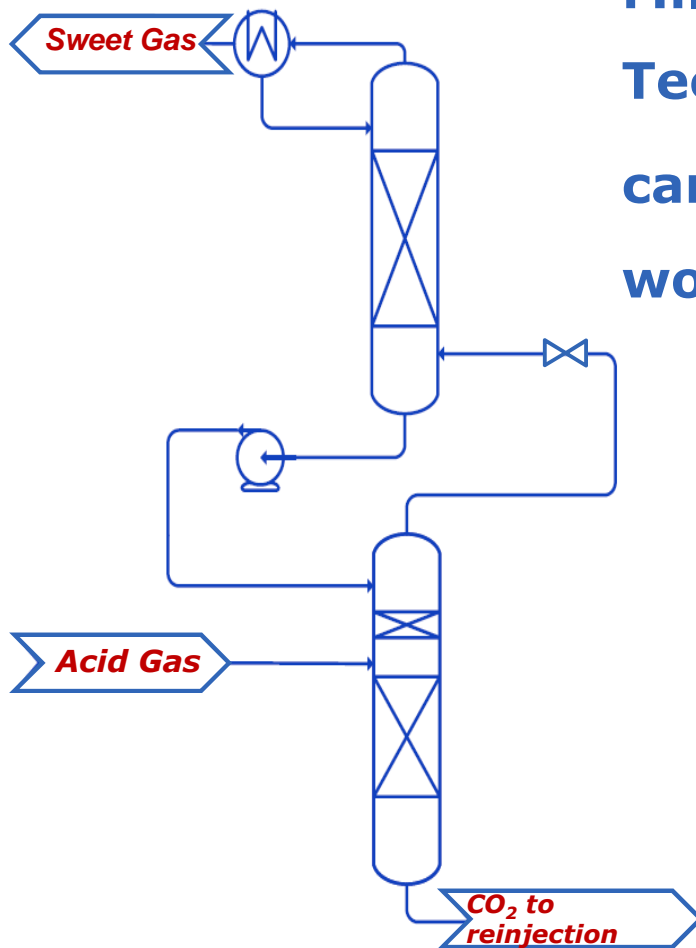
A known method for the treatment of very sour gas is cryogenic distillation.

The advantage with respect to traditional technologies (amine washing in particular) in the treatment of very sour gas lays in its lower sensitivity to the increase of acid gases content, thus resulting in lower operating expenses.

The **drawback** of these technologies is either the **complexity** of the **plant**, and hence its **operability**, or the impossibility of reaching with a standard single column the complete removal of acid components without incurring in **CO₂ solidification**, hence requiring further treating.

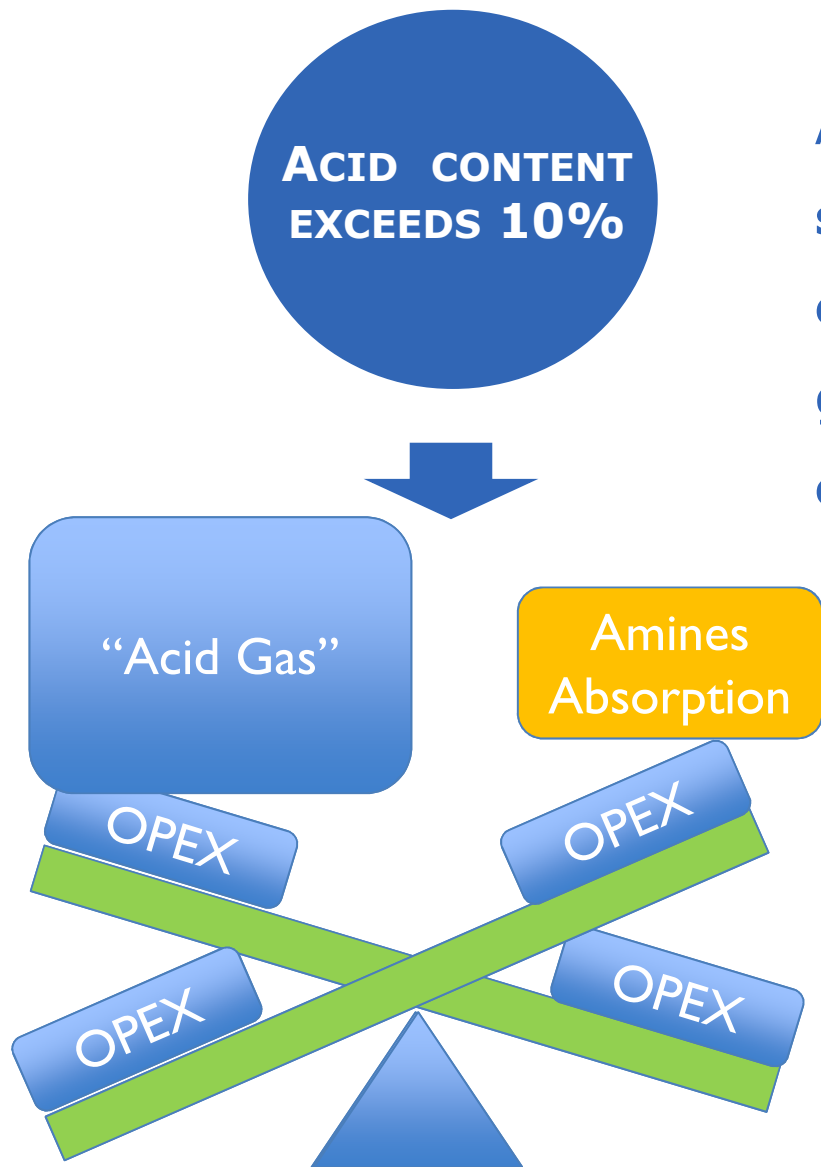


Maire Tecnimont Group and **Politecnico di Milano** jointly developed an **Innovative Technology** based on cryogenic distillation carried out by means of **two columns** working at different pressures.



This simple plant configuration allows a complete removal of the acid components, thus obtaining a clean gas, while avoiding the risk of solid CO₂ formation at any sour component content.

***Patent WO2014054945 A2, April 2014**



Although **applicable to any sour gas stream**, the **new technology** is **economically competitive** vs. traditional gas purification processes when the **content of Acid in the raw gas exceeds 10%mol.**





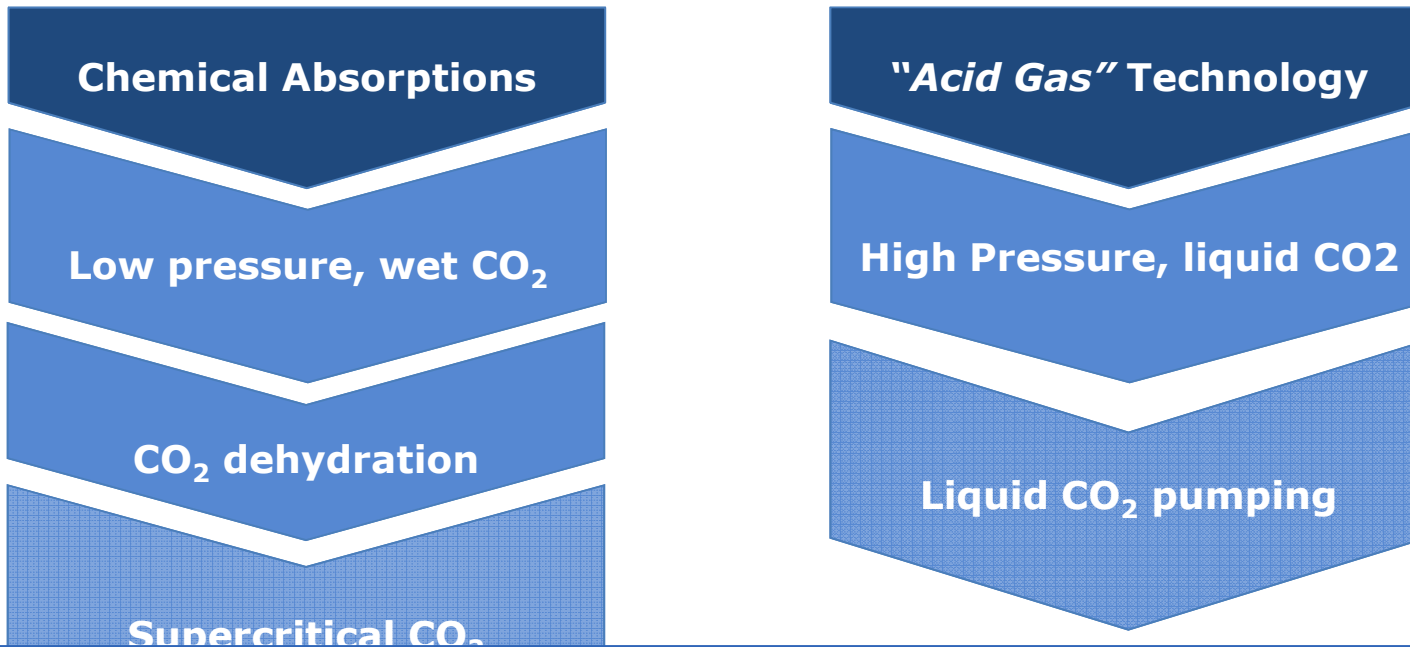
Integration with LNG production

The gas produced by the new process is already available at low temperatures (i.e. -85 to -90 C) and relative high pressures: this means that **a significant portion of the refrigeration steps can be avoided.**





Integration with Enhanced Oil Recovery and re-injection schemes



THE CO₂ CONTENT MAKING 'ACID GAS' TECHNOLOGY MORE COMPETITIVE THAN CHEMICAL ABSORPTIONS COULD BE SIGNIFICANTLY LOWER WHEN INTEGRATED WITH EOR AND RE-INJECTION SCHEMES





- Pellegrini, L.A., Langé, S., Mikus, O., Picutti, B., Vergani, P., Franzoni, G., Lo Savio, M., Brignoli, F. - **A New Cryogenic Technology for Natural Gas Sweetening.**
SOGAT 2015 Conference Proceedings, March 22-26, Abu Dhabi, UAE, 2015.
- Pellegrini, L. A., Langé, S.; De Guido, G.; Moioli, S.; Mikus, O.; Picutti, B.; Vergani, P.; Franzoni, G.; Lo Savio, M.; Brignoli, F. - **An Innovative Technology for Natural Gas Sweetening by means of Cryogenic Distillation.**
GPA Europe Annual Conference, Proceedings of the GPA Europe Annual Conference, Florence, Italy, Sept. 16 - 18, 2015.
- Langé, S.; Pellegrini, L. A.; Vergani, P.; Lo Savio, M. - **Energy and Economic Analysis of a New Low-Temperature Distillation Process for the Upgrading of High-CO₂ Content Natural Gas Streams.**
Ind. Eng. Chem. Res. 2015, 54 (40), 9770.



Milan

Group's Headquarters

Via Gaetano De Castillia, 6A

20124 Milan

Ph. +39 02 6313.1

Fax +39 02 6313.9052

Rome

Registered Office

Via Castello della Magliana, 75

00148 Rome

Ph.+39 06602161

Fax +39 0665793002

Sittard

Mercator 3

6135 KW Sittard

(The Netherlands)

Ph. +31 46 4237000

Fax +31 46 4237001

info@mairetecnimont.it – www.mairetecnimont.com



**Maire
Tecnimont**