

**THE KEY ROLE OF CARBON CAPTURE TECHNOLOGIES IN CLEAN ENERGY TRANSITION  
AND A SUCCESSFUL CCUS CASE HISTORY – SAINT FELICIEN PLANT (QC, CANADA) USING ENZYMATIC  
CARBON CAPTURE ABSORBENT PROCESS**

Mario F FORGNONE – *Saipem SpA*

The most critical challenge today is to satisfy the conflict between the world's growing demand for energy and the need to rapidly decarbonizing energy production.

During 2021 more than 32 billion tons of CO<sub>2</sub> were released into the atmosphere and around 70% of these coming from the power generation and industrial sectors. On a current policy basis, emissions are expected to grow to 43 billion tons by 2050.

In this evolving scenario, the importance and scale-up of Carbon Capture Utilization and Storage (CCUS) to reduce hard-to-mitigate emissions and convert CO<sub>2</sub> in valuable products represents an "sine qua non" condition to unlock a global energy transition.

Focusing on Capture, it will be explored the characteristics of an enzymatic carbon capture absorbent process with carbonate solvents and analyzes its performance in a running operation.

Replacing toxic activators with a naturally occurring biocatalyst like the carbonic anhydrase enzyme produces satisfactory performance removing shortcomings of other carbonate technologies

Saipem would like to present a case history of its proprietary CO<sub>2</sub> Carbon Capture Facilities in Saint-Félicien, Québec (Canada) as a virtuous example of circular CO<sub>2</sub> re-use.

The case study highlights the advantage of the Potassium Carbonate Absorption catalyzed by Enzymes solution among the post combustion carbon capture technologies and applications.