

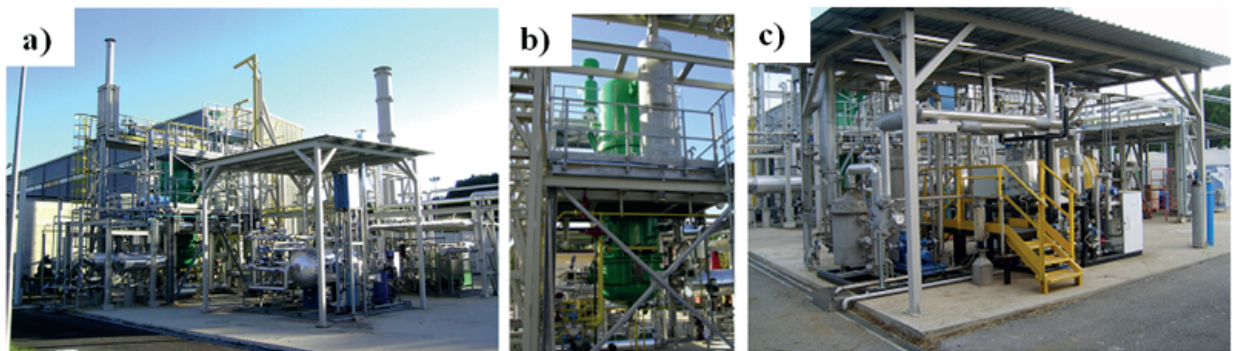
CO₂ UPTAKE BY MEANS OF ENVIRONMENTAL BENIGN MATERIALS AND RENEWABLE PROCESS

Innovations and Benefits - The proposed technology is a disruptive process implementing the separation of CO₂ by using non toxic naturally occurring material composed of calcium oxide which is regenerated at high temperature via renewable energy (concentrated solar energy). Conversely to the ammine process, the spent CO₂ acceptor can be reused in other industrial processes (e.g. cement and steel making process) reducing the footprint of energy intensive industry and power production.

An European Science Foundation Research Infrastructure (ESFRI) named ZECOMIX (Zero Emission of Carbon with MIX technologies) is located at the ENEA research centre of Casaccia for the demonstration of integrated CO₂ capture and reused of Ca based solid waste.

Use - Key impacts are in the energy intensive industries (e.g. cement, iron and steel making process); Reuse of solid waste produced in cement and steel industries in circular economy approach.

Applications and ongoing Activities - Open access pilot research infrastructure: ZECOMIX (Zero Emission of Carbon with MIX technologies); test rig test-rig VALCHIRIA for the reuse of Ca based solid wastes produced during the decarbonisation of fuel or flue gases. The Calcium looping process for the decarbonisation of power and energy intensive industry has been widely investigated in the 9.2 M€ EU funded project ASCENT (Advanced Solids Cycles with Efficient Novel Technologies) coordinated by ENEA in the 7th Framework Programme.



(a) Pilot research infrastructure ZECOMIX; (b) Calcium looping unit for the decarbonisation of power and energy intensive industry; (c) test rig for the reuse of Ca based solid waste yielded in the industrial process (e.g. cement, iron and steel making process)

