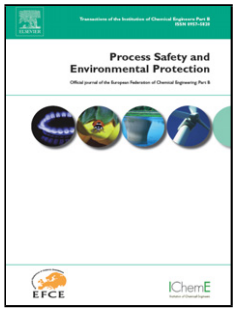

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ENHANCING THE RECOVERY OF GYPSUM IN LIMESTONE-BASED WET FLUE GAS DESULFURIZATION WITH HIGH ENERGY BALL MILLING PROCESS: A FEASIBILITY STUDY

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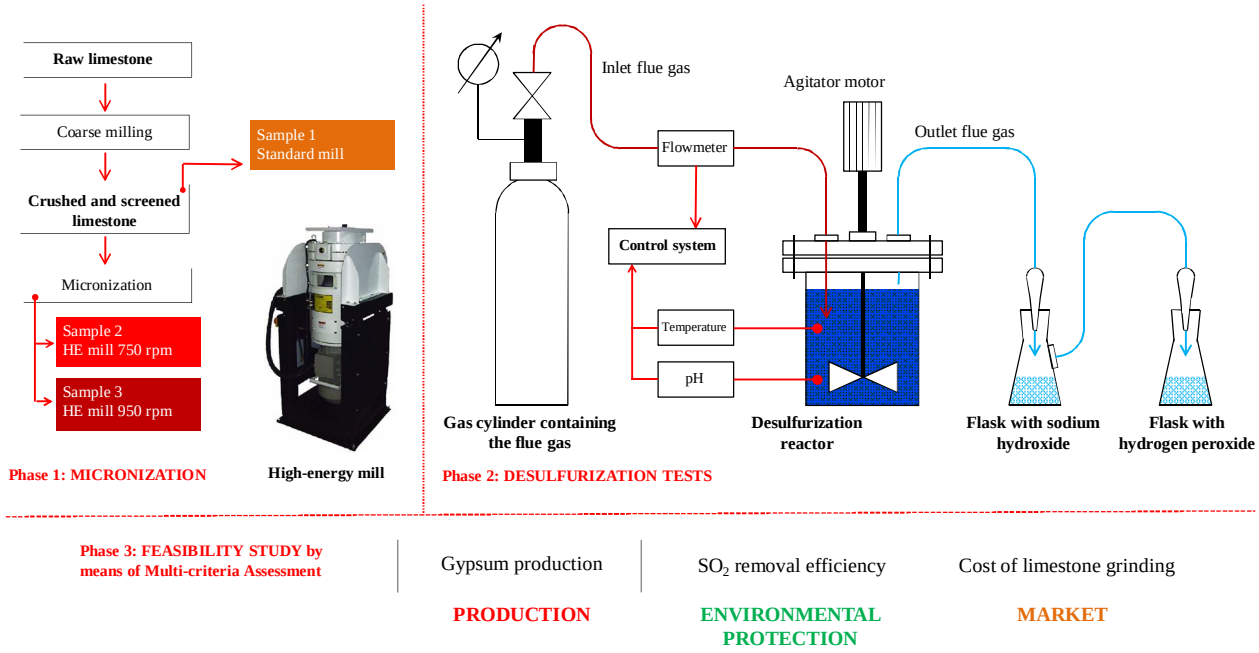
Highlights

Limestone was micronized for 10 min at 750 and 950 rpm and used at bench scale
Micronization occurred securely without machine downtime due to high temperatures
Desulfurization tests show greater performance in terms of gypsum production and SO_2 removal efficiency compared to the limestone treated with a traditional mill
Multi-criteria approach highlights the economic and environmental feasibility

Graphical Abstract



ABSTRACT

The most common system for flue gas desulfurization (FGD) is the wet scrubbing process in which, the contact between the flue gases to be treated and an alkaline sorbent such limestone is realized with the correspondent production of gypsum. In this way, the production of gypsum represent a perfect example of how is possible to obtain a new product for the market starting from the need of environmental protection (the sulphur dioxide (SO_2) removal). Today, limestone is ground in long drum mill reaching a size in the range 5-10 mm. With the intent of increasing the specific surface of