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THE INFLUENCE OF DESULPHURIZATION IN THE PROCESS FOR THE ABSORPTION OF CARBON DIOXIDE USING MEA

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Abstract

The aim of this paper is to determine the influence in the efficiency of the desulphurization process on the MEA absorption capacity. The experiment was conducted on a circulating fluidized bed combustion (CFBC) which uses indigenous coal from Jiu Valley. We determined the absorption capacity of MEA considering three cases of concentrations in the solution: 20%, 30% and 40%. We noticed that the higher the concentration of MEA is in the solution, the greater is the influence in the efficiency of the desulfurization process on the absorption capacity of MEA. Therefore, the increase in the efficiency of the desulfurization process from 68 to 98% leads to the increase of the amount of CO_2 rich loading solvent by 0.172 g CO_2/gMEA for a concentration of 20% and by 0.25 g CO_2/gMEA for a concentration of 40%. Considering an optimal desulfurization (1 % NaOH), the efficiency of the CO_2 capture process was of 85% irrespective of the MEA concentration in the solvent. However, the energy consumption is obtained for the optimal concentration of 40% (3 GJ / tonne of CO_2).

Key words: CO_2 capture, MEA degradation, post-combustion capture, SO_2 removal

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