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Alternative Fuels in Cement Clinker Production Process

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Abstract: Cement industry in Albania is experiencing a rapid development, but this industry is distinguished for high consumption of resources. Cement manufacturing companies do constantly researches on reducing the production cost by optimizing the equipments, replacing raw materials and fuel. However, alternative fuels should be alternative according to the process requirements, easily obtainable in quantity, and with a lower cost. Since the combustible fuels are becoming increasingly important, this research work will try to replace coal with a material called bituminous sand. The work focuses on the detailed study of alternative fuel, laboratory tests and calculation of the process materials balance. Bituminous sand increases the input of sulphur in the process due to the high sulphur content. Sulphur has a direct impact on the process as it increases sulphur circulation. The circulation of volatile components is shown by the fact that as kiln process temperature rise, certain components such as alkalis, sulphur, and chlorine are released by thermal decomposition of the substances containing them. Together with the exhaust gases, they turn back into lower temperature zone in the pre-heater, where as the temperature falls under the condensation temperature, they are deposited as salt on the process system walls. The above mentioned components also deposit on the raw meal. In this way, a certain portion of volatile components return to the kiln hotter zone and the above mentioned process starts again from the beginning. This is known as internal circulation of volatile components.

Keywords: *substitution, alternative fuels, processes, clinker, volatile components, sulphur, circulation.*

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