Reuse of fly and bottom ash for clinker production

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The activity of primary industries generates a lot of waste that are highly polluting. The way it is solved the problem of disposal of these wastes to the environment has been conditioned so far for purely economic reasons, these usually go through their landfill disposal near the site of extraction or treatment.

It is estimated that in Europe more than 850 million tons of industrial waste are produced, with an annual growth of 3%. Among the measures to be taken is the incorporation of waste into new products to lead to materials with a broader life cycle (Elkhadiri, et al., 2003). Due to the exponential growth of waste in recent years, the policy of the European Union on environmental issues promotes the prevention or minimization and recycling of waste in relation to the use of clean technologies and waste management (Lea y Desch, 1960). The main actions are aimed towards to formulate special cement clinkers for low energy consumption and low CO_2 emissions (Ludwig and Pohlmann, 1986; Lawrence, 1986).

Although the use of industrial waste as raw material for the manufacture of OPC's leads investigated for several decades (Chartterjee, 1996; Riganti et al., 1986), nowadays there have been studies of recovery of different waste or industrial by-products to produce greener and environmentally sustainable alternative cements, including fly and bottom ash from cogeneration power plants, steel slag, galvanic sludges, mining wastes, etc.

In this communication, we used different percentages of fly and bottom ash from biomass cogeneration to produce cement clinker. In the present communication, the incorporation of this waste in raw clays has been studied. The raw materials have been characterized by XRD, XRF, SEM-EDX, surface area and pore-size distribution, particle size analysis by Laser Scattering and Thermal analysis (DTA-TG).

The results were interesting to assess the properties of these clinkers, to improve the technological properties of the cements products and, hence, to establish the potential applications.

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