Pathways to Alternative Power and Decarbonization Technologies in Cement Manufacturing

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Energy costs are typically the single largest variable production cost at cement plants reaching up to 50% of overall operating costs. The cement manufacturing process, which involves crushing, grinding and calcination processes, consume large amounts of electrical and thermal power. Electrical and thermal power are often sourced from fuels like coal, coke and alternate fuels (for example, tires or heavy carbon biofuels). While these fuels are often sourced at attractive prices, they can result in higher carbon emissions.

To remain competitive in a global market and in response to stakeholder pressure to reduce carbon emissions, plants are changing the way they source energy and are implementing solutions that are providing incremental reductions to their greenhouse gas emissions, energy consumption, and, consequently, operating costs.

This paper presents case studies that evaluate the economics and feasibility of novel technologies that reduce carbon emissions and operating costs. The use of renewable power, energy storage, peak shaving/shifting, decarbonization and virtual purchase power agreements (PPAs) are some of the solutions that will be presented. In addition, successful case studies from other heavy industries such as mining, and pulp and paper manufacturing will be shared.