Abstract:

Triboelectrostatic Fly Ash Beneficiation: An Update on Separation Technologies' International Operations

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ABSTRACT

Separation Technologies, LLC continues to install electrostatic fly ash beneficiation systems to supply high quality fly ash to the concrete industry. By April 2005, ST will have commissioned 13 carbon separation systems at nine utility company power plants in the U.S., Canada, and Europe and one ammonia removal system. Over 3 million tons of ProAsh® brand processed ash have shipped since 1995.

Separation Technologies' technology reduces the carbon content of fly ash, producing a consistent, low LOI ash for use as a substitute for cement in concrete Simultaneously a carbon rich product is produced that can be returned to the utility for recovery of the fuel value. Two of the recently commissioned plants are recycling the unburned carbon to the utility boiler.

Additionally, two Separation Technologies plants are successfully beneficiating and marketing fly ash derived from a fuel mix of petroleum coke with bituminous coal with an initial LOI content of 15% to 30%. The triboelectrostatic carbon removal system is extremely effective in reducing the level of carbon to ~3% LOI, producing a high quality pozzolanic material. Based on extensive concrete testing, Florida Department of Transportation and the Canadian Standards Association, modified material specifications to permit fly ash from co-combustion of petroleum coke and coal for use in concrete.

Power plants are increasing utilization of ammonia injection to mitigate NOx and SO_3 emissions. However, residual ammonia deposit on fly ash in typical cold-side ash collection systems, requiring removal of the ammonia to prevent its release during concrete production and placement. Separation Technologies' ammonia removal process preserves the marketability of the ash.

Technical details of the processes will be discussed, along with STI's ten-year operating history on commercial fly ash beneficiation systems.

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