

PROJECT FACTS

UNIVERSITY OF KENTUCKY CENTER FOR APPLIED ENERGY RESEARCH

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SPONSORS

U.S. Dept. of Energy
National Energy
Technology Laboratory

PROJECT VALUE

US DOE: \$4,450,163
LG&E: \$3,569,905
UK CAER: \$896,671

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ENVIRONMENTAL & COAL TECHNOLOGIES

Advanced Multi-Product Coal Utilization By-Product Processing Plant

The installation of an advanced coal ash beneficiation processing plant is proposed by Cemex USA, Inc. and LG&E Energy, Corp as part of USDOE's Clean Coal Power Initiative. The processing plant will be located at the 2,200 MW Ghent Power Plant in Ghent, Kentucky and will produce:

- 156,000 tons per year of pozzolan which substantially exceeds ASTM C-618 criteria for loss on ignition (LOI), fineness and strength index.
- 16,000 tons per year of ASTM C-330 and C-331 compliant high grade, lightweight aggregate.
- 16,000 tons per year graded fill sand.
- 1,500 tons per year of high quality polymeric filler.
- 8,000 tons per year of recycled carbon fuel.

The proposed plant represents the next step in coal utilization by-product (CUB) beneficiation, addressing the entire CUB stream and a wide array of quality issues. The process generates a pozzolan that can be used at higher portland cement substitution levels in concrete (i.e. 30 % versus the current 20 %), while producing better strength and performance than what is available from unprocessed ash.

A self-contained mobile demonstration plant has been constructed, transported to the Ghent site and operated to determine the final circuit configuration, as well as to produce several tons of the various products for market evaluation. The demonstration plant has a feed capacity of 2.5 tons per hour and is fed with ash excavated from the closed ponds at the Ghent Station. Unit process capabilities in the plant include feed slurry preparation, two stages of hydraulic classification, coarse dewatering, froth flotation, thickening and filtration. Additionally, the plant is capable of providing the necessary water and electrical requirements to operate in this remote site.



Moving plant to site



Excavating ash for processing



Plant assembled for testing