Fly Ash Beneficiation at Jacksonville Electric St. Johns River Power Park: STI's Installation #5.

James D. Bittner, Stephen A. Gasiorowski, and Frank J. Hrach,
Separation Technologies, Inc., 10 Kearney Road, Needham MA 02494
Tel: 781-455-8824, Fax 781-433-0289,

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ABSTRACT

Separation Technologies, Inc. (STI) completed commissioning its fly ash beneficiation system at Jacksonville Electric Authority's (JEA) St. Johns River Power Park (SJRPP) in the spring of 2003. JEA is the fifth utility company to host an STI system, with seven STI separators presently operating in the U. S. and Europe. Over 2 million tons of STI processed ash has been delivered to concrete producers since 1995.

STI's electrostatic beneficiation technology reduces the carbon content of coal fly ash, producing a consistent, low LOI ash for use as a substitute for cement in concrete applications. A carbon rich product is simultaneously produced, which can be introduced to the utility boiler to recover the fuel value of the carbon.

The SJRPP power generating units routinely use a fuel mix of 20% petroleum coke with bituminous coal producing a fly ash with typically 12 – 25% LOI. The STI triboelectrostatic carbon removal system is extremely effective in reducing this level of carbon to ~3% LOI, producing a high quality pozzolanic material. Based on extensive concrete testing, the Florida Department of Transportation lifted its ban on fly ashes not derived from 100% coal, a first-in-the-nation precedent of a state highway agency allowing ash from co-combustion of fuels.

SJRPP also injects ammonia into the unit ESP systems to reduce the emission of sulfur-trioxide aerosol. The residual ammonia on the ash is removed in STI's first commercial scale ammonia removal process, preserving the marketability of the ash.

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