Technology Development for Carbon-Ash Beneficiation by Pneumatic Triboelectric Processing

J.M. Stencel, T.X. Li, T. Gurupira, C. Jones, J.K.Neathery and R. Altman[1]
Center for Applied Energy Research, University of Kentucky, 2540 Research Park Drive, Lexington, KY 40511; [1]EPRI, Franklin Building, Suite 513, 5726 Marlin Road Chattanooga, TN 37411

KEY WORDS: ash beneficiation, dry processing, triboelectrostatics

ABSTRACT

Efficient processing of coal combustion fly ash to beneficiate carbon and ash has important economic and environmental consequences for industry. It also creates opportunities for developing new products from fly ash, a material that traditionally has been considered a byproduct rather than a resource. To further promote such processing, this presentation will describe our efforts to develop an advanced triboelectric beneficiation technology that employs pneumatic ash transport.

Process and engineering research at the Center for Applied Energy Research have provided the impetus for designing, building and operating an integrated, pneumatic transport, triboelectric beneficiation system. This unit has been used to process six fly ashes from four utilities at feedrates up to 250 kg/hr. Its performance for carbon-ash separation will be compared to the performance that is predicted from our small-scale, analytical separator. An estimate of the costs for constructing, operating and maintaining a 10 ton/hr system will be presented. Plans for demonstrating the technology at a host site are also to be discussed.