

# **Development of an Easy Quality Control Test For Monitoring Particle Sizes in a Fly Ash Plant During the Separation of Various Fractions of Fly Ash**

**J.H. Potgieter<sup>1</sup>, S.S. Potgieter<sup>2</sup>, J. Kruger<sup>3</sup> and R.A. Kruger<sup>4</sup>**

1. Department of Chemical & Metallurgical Engineering, Technikon Pretoria, Private Bag X680, Pretoria, 0001, South Africa
2. Department of Chemistry & Physics, Technikon Pretoria, Private Bag X680, Pretoria, 0001, South Africa
3. William Drive 135, Silverton, Pretoria, 0127, South Africa
4. Ash Resources, P.O. Box 3017, Randburg, 2125, South Africa.

## **Abstract**

During the production of various particle size fractions of fly ash from unclassified ash, the material goes through several classifiers. After each unit operation it is necessary to measure the particle size fraction/distribution to ensure that the equipment functions correctly and effectively. This is normally done with a laser diffraction type particle size analyzer, which requires intensive training to operate correctly and a clean environment to function properly. A robust method to do measurements on the plant during production will result in significant time and cost savings.

A cylindrical container rolling down an incline onto a smooth surface has been employed to develop such a robust plant control measurement. It was found that the mass of the material in the container, its particle size, volume/mass to total container volume ratio and the nature of the smooth surface itself are all factors influencing the distance that the filled cylindrical container rolls onto the flat surface after the initial incline from which it was released. Quantitative relationships could be derived that enabled the particle size of the material inside the cylindrical container with some of the previously mentioned measurable quantities. This paper will discuss and describe some of the results obtained in this investigation.