

## Abstract Details

**Title:** Experimental investigation of the physical and rheological behaviour of fly ash and bottom ash slurries at higher solid concentrations

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**Abstract:** In India, thermal energy accounts for more than 70% of electricity production and millions of tons of coal are burned in these thermal power plants. Thus, large quantities of coal ash (fly ash and heavy ash) are produced and the current level of production is about 120 million tons per year. Out of this, approximately 20% is bottom ash and the rest 80% is fly ash. The ash produced in India usually has higher specific gravity as Indian coal has much higher content of non-combustible matter. Also, majority of the thermal power plant in India dispose both the materials namely fly ash and bottom ash to ash ponds using the same pipeline. This has motivated the author to carry out a systematic study on the flow of Indian coal ash (FA and BA) slurries at higher concentrations. The knowledge of slurry rheology is very vital for the design of slurry pipeline particularly for the dense phase conveying system. Since the pilot plant loop tests at these concentrations are tedious, time consuming and complex in nature, the slurry pipeline designers have been adopting the empirical approach for slurry pipeline design based on the rheological model of the slurry. In the current research it is observed that at higher concentration of solid the shear stress and apparent viscosity of the coal ash slurries are highly influenced.

**Keywords:** fly ash, bottom ash, slurry, rheological behaviour, shear rate, shear stress.