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**„International Conference of Experimental and  
Numerical Investigations and New Technologies“**

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**MINISTRY OF EDUCATION, SCIENCE AND TECHNICAL DEVELOPMENT  
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# **Programme and The Book of Abstracts**

**02-05 July 2019**

**Zlatibor, Serbia**

**„International Conference of Experimental and Numerical  
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# **CNN TECH 2019**

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# CORRELATION ANALYSIS BETWEEN PHYSICO-CHEMICAL AND AERATION CHARACTERISTICS OF FLY ASH

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## Abstract

High volumes of coal fly ash are generated in thermal power plants all over the world. Fly ash characteristics primarily depend on coal type, combustion conditions and efficiency of particulate removal in thermal power plants. Therefore, all relevant fly ash characteristics must be investigated in order to design reliable pneumatic and hydraulic conveying systems for its removal from thermal power plants, transport to silos and disposal to landfills. A research study was conducted on more than 60 fly ash samples from a lignite fired thermal power plant. This research aim was to determine physical, chemical and aeration characteristics of fly ash samples in order to analyse their mutual correlation. Parameters that were correlated are mean diameter, bulk density, physical density, oxide compounds ( $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{CaO}$  and  $\text{MgO}$ ), and minimal fluidizing velocity. Simple linear regression of experimental results showed that there was no strong correlation ( $R$ ) between average diameter and bulk or physical density. Fly ash oxide composition showed significant correlation to mean diameter, but multiple linear regression should be done. Significant correlation ratio between minimal fluidization velocity and mean diameter, bulk and physical density could not be obtained.

## Keywords

Fly ash, thermal power plant, lignite, characteristics, correlation analysis

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