

Modelling and Simulating the Effect of the Different Geometric Parameters on Voltage-Current Characteristics for Wire-Plate Electrostatic Precipitator with Different Collector Configurations

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Abstract

Particle removal using electrostatic precipitators (ESPs) is a commonly used method for particulate control systems in industrial environments to regulate fly ash produced by combustion processes. Primarily due to their high collection efficiency and low pressure drop. This paper attempts to model and simulate the effects of different geometrical parameters and three different collector plate designs of a single-stage wire-plate ESP on its voltage-current characteristics. As a result of the study, it is concluded that the optimum design which yields the highest current discharge at any specific operating voltage is the one with the smallest discharge wire radius, maximum wire-to-wire spacing, and minimum wire-to-plate distance.

2020 21st International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems (EuroSimE) 2020, July