



“Gheorghe Asachi” Technical University of Iasi, Romania



ACTIVE ELECTRODE SHAPE EFFECT ON THE CORONA DISCHARGE IN AN ELECTROSTATIC PRECIPITATOR

Nouri Hamou^{1,2*}, Aissou Massinissa¹, Aitsaid Hakim¹, Zebboudj Youcef¹

¹Laboratoire de Génie Electrique de Bejaia (LGEB), University of Bejaia, 06000, Algeria

²Electrical Engineering Departments, University of Setif, 19000, Algeria

Abstract

An experimental study of the wires-two plates is presented in this paper. The principal running of these types of electrostatic precipitators is based on the corona discharge on which depend their performances. The factors affecting corona formation on wire - to- plate gaps are investigated experimentally. There are many factors affecting such corona formation. The investigated factors were the interspace between the two wires, gap length between the wire and the plate, ambient temperature, relative humidity, polarity or frequency of the applied voltage, and electrode material. In order to study and explain such phenomena, simultaneous measurements of both the applied voltage and the corona current were introduced. Several design parameters have been taken into consideration especially the numbers of active electrodes and their diameter. Current-voltage curves are particularly analyzed. Experimental results show that discharge current is strongly affected by the active electrode diameters.

Keywords: current-voltage characteristics, current density, electrostatic precipitator, onset voltage

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* Author to whom all correspondence should be addressed: e-mail: hm_nouri@yahoo.fr; Phone: +213.7.72.53.10.73; Fax: +213-34-21-51-05