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SIMULATION OF THE ELECTRIC FIELD IN THE ELECTRODE SYSTEM TO CREATE OF A PULSED BARRIER DISCHARGE IN ATMOSPHERIC AIR IN THE PRESENCE OF WATER IN A DROPLET-FILM STATE

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Authors

V.O. Bereka[1]*, I.V. Bozhko[1], V.A. Brzhezitsky[2]***, Ya. Haran[2]****, Ye. A. Trotzenko[2]*****

[1]-Institute of Electrodynamics National Academy of Science of Ukraine,
Pr. Peremohy, 56, Kyiv, 03057, Ukraine,
e-mail: ws77@ukr.net

[2]-National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute",
Pr. Peremohy, 37, Kyiv, 03056, Ukraine,

* ORCID ID : https://orcid.org/0000-0003-0888-2864
** ORCID ID : https://orcid.org/0000-0002-7955-246X
*** ORCID ID : https://orcid.org/0000-0002-9768-7544
**** ORCID ID : https://orcid.org/0000-0003-3242-9218
***** ORCID ID : https://orcid.org/0000-0001-9379-0061

Abstract

By simulation, it was stated the distribution of the electric field strength and potential in electrode sstem for creation a pulsed barrier discharge in atmospheric air in the presence of water in it in a droplet-film state. The calculations were performed under the conditions that the duration of the pulse front is 40 ns, the width of the gas gap is 3.2 mm, the thickness of the water films on its walls is 0.15 mm and the diameter of the droplets is 0.5 - 1.5 mm. It is shown that the presence of water droplets dramatically changes the distribution of the field in the gap: from uniform it becomes sharply inhomogeneous. The maximum field strength is observed at points on the surface of the drop, which are located nearest to the walls of the gap. This field strength is 2.5 times higher than that characteristic of a uniform field in the absence of a drop. The effect of neighboring drops on the distribution of the electric field is also considered. It

becomes significant (> 10%) when the distance between adjacent drops becomes less than *1.5 mm.* References 8, figures 6.

Key words: pulsed barrier discharge, electric field strength, drop, water film, air.

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