ABOUT INFLUENCE OF THE CONFIGURATION OF ELECTRODES
AND TOPOLOGY OF THE EXTERNAL MAGNETIC FIELD
ON DYNAMICS NEAR ANOD CORDS OF THE ARC

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It is spent settlement-theoretical and an experimental research of dynamics of anode spots [1-4] in stationary electroarc discharges in the long air arc of atmospheric pressure. The vertical category between graphite electrodes - the rod cathode and the anode with hemispherical and flat contact surfaces was studied. The case of the narrow rod anode is considered also. Digit currents were within 10 - 1000 A, interelectrode distances made 5 - 110 mm. The high-speed panoramic video shooting of the category and the anode surface, synchronised with pyrometric measurements of temperature of an anode surface and complex digital registration of a current and pressure on a digit interval was spent. On the category the external magnetic field created токовыми by contours, fed from independent sources of a current was imposed. The axial, azimuthal and combined magnetic fields were considered. Calculations have been spent on the basis of the simplified models near electrodes cords in the form of the delays moved by a total magnetic field, created by currents of an arch, magnetic system and the anode.

As a result of the spent researches are received settlement and experimental data about trajectories of anode stains and their speeds, distribution of a current and temperatures in the anode, depending on the form of its surface, force of a current and topology and size of an external magnetic field.

References

1. J. Kobain, G. Ekker, J. Forrel, et al., *Vacuum Arcs* (Mir, Moscow, 1982) [in Russian].
2. V.I. Rakhovskii, Physical Foundations of Commutation of Electric Current in Vacuum (Nauka, Moscow, 1970) [in Russian].
3. G.A. Dyuzhev, G.A. Lyubimov, and S.M. Shkol’nik, IEEE Transactions on Plasma Sciences **PS-11** (1), 36 (1983).
4. V.O. German, A.P. Glinov, A.P. Golovin, and P.V. Kozlov, Prikl. Fiz., No. 5, 33 (2015).