MATHEMATICALMODELLING OF SPRAYED PARTICLE MOTION DYNAMICS IN PLASMA GAS THERMAL FLOW

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The task of mathematical modelling of sprayed particle motion dynamics in plasma gas thermal flow is solved. The analysis shows that sprayed particle motion dynamics is greatly influenced by a kind of phenomenological law for drag coefficient, taking into account plasma jet momentum losses when particles are accelerated, as well as their diameter. It has been established that in case of great variance of sprayed particles' diameter they strike the surface of the part at different velocities and with considerable particle separation in the spraying spot. The investigations carried out made it possible to formulate requirements for permissible particle diameter dispersion on the basis of mathematical modelling results and to reduce particle separation in the spraying spot by choosing the proper way of supplying powder to the anode channel.