Investigation of parameters of electrodes erosion in the DC and AC plasma torches

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The paper deals with the study of the parameters of electrode erosion in direct and alternating current plasma torches [1, 2].

The electrode system is the most thermally loaded element in the design of plasma torches of any type. It is necessary to ensure effective heat removal from the point of contact with the electric arc attachment point, thermal and erosion resistance of its material for durable electrode operation. This can be realized by optimizing the design of the electrode and the arc chamber of the plasma torch, selecting or creating the most suitable material for the manufacture of electrodes [3].

As far as the amount of erosion of the electrodes depends on the power of the plasma torch, speed of movement of the electric arc attachment point and other parameters, so creating of favorable conditions for the directional movement of the supporting points of the electric arc should lead to a decrease in thermal action time, improvement in the distribution of thermal load along the electrode surface and thereafter to erosion reduction [4].

The paper deals with a wide range of designs of plasma torches, working plasma-forming gases and electrode materials. Based on the obtained results, the dependence of the specific erosion on the current value and other characteristics are given in a wide range of operating parameters.

References

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