

Plasma arc torch with the antivortex generator and its application for cutting metals

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Abstract

Summary form only given, as follows. An experimental study of the influence of the antivortex generator on the gas dynamic characteristics of the plasma arc torch for cutting metals is presented. On the basis of this study an adequate mathematical model was elaborated which gives a relation between the integral pressure and the diameter of the outgoing plasma jet and the parameters of the antivortex generator and other elements of the discharge chamber of the plasma arc torch. The utilization of the antivortex generator in the plasma arc torch, having a copper electrode with the cavity, ensures the increase of the deep and the velocity of cutting by 20 - 40 % in comparison with the ordinary plasma arc torch.

Keywords: plasma, mathematical models, copper, electrodes