

Varukha E.N.

Computational Model of Electrode Burning-off during the Pulsed Arc Welding

Abstract: Based on the detailed study of the physical processes taking place during arc welding, a mathematical model of welding wire melting during the argon-shielded or mixed argon-carbon-dioxide shielded pulsed arc welding with the reverse polarity current has been developed. The model allows computational determination of the area of controlled transfer of the electrode drops upon piling up on the arc the short-term current pulses with a given repetition frequency and at a given value and duration of the current pause between the pulses. The model is applicable for electrode wires of various chemical composition (made of carbon and corrosion-resistant steels, as well as non-ferrous metals), different diameters and feed rates. The model can be used by welding equipment developers and welding production specialists to calculate the parameters of the pulsed arc welding of various materials.