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ELECTROTECHNICAL COMPLEX FOR ELECTRODYNAMIC PROCESSING OF WELDED JOINTS

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Abstract

The composition of a two-channel switching power supply for electrodynamic processing of welded joints is determined, which consists in simultaneous action on a limited area of the

electric current seam and compressive force of the electrode of such values that the electroplastic effect becomes possible. A linear electromechanical induction transducer is used to create the force pressure. The duration of the compressive phase of the power pulse is chosen to be longer than the duration of the current pulse, which reduces the probability of rupture of the electrical circuit and the release of thermal energy. By controlled delay of the beginning of the current pulse, synchronization of both factors of the electroplastic effect is achieved. The parallel inclusion of semiconductor devices that switch the discharge circuit alternately is proposed, which in the conditions of operation of electrical equipment with a pulse frequency of up to 10 Hz reduces the heat load. Experimental studies have shown a twofold increase in the number of cycles before the destruction of the samples with symmetrical bending. Comparison of two-channel and single-channel electrodynamic processing revealed a twofold reduction in power consumption in a two-channel device. References 8, figures 3, table 1.

Key words: electrodynamic processing, power topology of pulse generator, thermal load of semiconductor devices, synchronization of influencing factors.

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