

Investigation of the surface effect in the windings of a powerful toroidal transformer for the resistance flash butt welding of pipes.

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The article deals with the skin-effect in the windings of powerful toroidal transformers for flash welding of pipes. The results of experimental and theoretical analysis of the skin effect in windings are presented. The equivalent circuit of a multi-winding transformer and two-dimensional models of two-winding transformers are used for theoretical analysis. It is shown that in the windings of the investigated transformers there is an excessive consumption of copper. Methods are proposed for reducing the skin-effect in windings and eliminating excessive consumption of copper in them.

Key words: flash welding, multi-winding transformer, equivalent circuit, skin effect, losses, short circuit.