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EFFECT OF THE FEATURES OF THE LEVEL CONTROL OF THE STABILIZED VOLTAGE ON THE POWER OF THE TRANSFORMING ELEMENT OF THE AC VOLTAGE CONVERTER

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Abstract

Many of possible modes of operation of the AC voltage stabilizer with a transformer-and-switches executive structure containing a transforming element (TE) with a sectioned winding (tap chanching transformer) have been analyzed. The possibility and expediency of loading of the operating modes have been substantiated by increasing the design current density in the winding sections to increase the efficiency of using the installed power of the selected transforming element. The dependence of this indicator on the version of control of

the stabilized voltage level is determined. A multi-physics modeling of thermal conditions of TE was carried out. Herewith, an increase in the maximum output power of the device is achieved at the level of 12,5-27% without changing the selected core size while ensuring its nominal thermal regime. References 10, figures 4, tables 3.

Key words: transformer-and-switches executive structure, tap chanching transformer, стабилизатор напряжения, converting field, stabilizer, multiphysics modeling, utilization efficiency of transformer.

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