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THREE DIMENSIONAL MATHEMATICAL MODEL OF ELECTROMAGNETIC PROCESSES IN THE END ZONE OF THE TURBOGENERATOR ROTOR

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Abstract

In the operation of powerful turbogenerators (TG) there are cases of damage of the end wedges and related areas of the rotor teeth. Increased of damages of these elements caused by physical processes that occur in the rotors of TG in the asynchronous and asymmetric modes. At the ends of the rotor induced currents consistently cross over from teeth to end wedges through their contact surfaces. On these surfaces, there is a large current density and local heating. The study of these phenomena can be doing only on the basis of the field mathematical models. The purpose of this paper is to develop a three-dimensional mathematical model of the electromagnetic processes in the end zones of the rotor TG in asymmetrical modes and carrying relevant studies . The results of modeling are: the distribution

of eddy currents and losses in the contact zones of the end wedges and teeth, technical solutions for their decreasing. References 7, figures 8.

Key words: turbogenerator, end rotor zone, end rotor wedges, three-dimensional mathematical model of the field.

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