DOI: https://doi.org/10.15407/techned2018.01.062

THE END ZONE TURBO GENERATOR ELECTROMAGNETIC FIELD FOR CHANGES THE REACTIVE LOAD

Journal	Tekhnichna elektrodynamika
Publisher	Institute of Electrodynamics National Academy of Science of Ukraine
ISSN	1607-7970 (print), 2218-1903 (online)
Issue	No 1, 2018 (January/February)
Pages	62 – 68

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Abstract

The electromagnetic field mathematical model of the turbo generator end part is developed, that allows obtaining not only qualitative but also quantitative estimates of the influential factors. The

calculation of the magnetic field is carried out not only on the surface, but also in the whole generator end-zone, as well as inside the end and main core packets. This takes into account the geometry of the rotor and stator elements, the stator core anisotropy, the discreteness of the tooth-groove structure and, due to, a realistic saturation of the stator core. The results of study the distribution of axial and radial components of field induction in the stator core end packets at different reactive load of the machine are given. The average and maximum induction values for each packet of the stator core end zone are determined. The presented method can be considered quasi-three-dimensional, since it takes into account the interrelated magnetic fields of two sections the turbo generator. It is shown that at the same active power in the transition of the over-excitation to the non-excitatory mode there is an increase the electromagnetic field and, consequently, losses and heating in the machine end zone. This is explained by the fact that although the currents of the windings are decreasing, but the angle of displacement between the vectors the linear windings currents is decreases, and as a result, the effect of increasing the field is observed. References 9, figures 8, tables 2.

Key words: turbo generator, end zone, packet, electromagnetic field, induction.

Received: 06.07.2017
Accepted: 06.12.2017
Published: 29.01.2018

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