# Pole Magnets Segmentation Effect on Permanent Magnet Synchronous Generators 

Bogdan Virlan, Adrian Munteanu, Leonard Livadaru, Alecsandru Simion, Ionut Nacu, Electrical Engineering, Energetics and Applied Informatics Faculty, Iasi, Romania


#### Abstract

This paper presents the analysis of using segmented permanent magnet instead of single pole units on a synchronous generator. The main reason of using such solutions is the fact that smaller, simple shapes permanent magnets with standardized dimensions can easily be found on the market at low costs. Keywords- permanent magnet, cogging torque, synchronous generator


## REFERENCES

[1] Qingling He, Xiaohua Bao, "Reducing cogging torque in permanentmagnet synchronous motors by auxiliary teeth method," Industrial Electronics and Applications (ICIEA), 2016 IEEE 11th Conference on, pp. 1488-1495, 5-7 June 2016.
[2] Dae-Won Chung* and Yong-Min You, "Cogging Torque Reduction in Permanent-Magnet Brushless Generators for Small Wind Turbines", Journal of Magnetics 20(2), pp.176-185 (2015).
[3] Ajay Kumar, Sanjay Marwaha, Anupma Marwaha, "Comparison of methods of minimization of cogging torque in wind generators using FE analysis", J. Indian Inst. Sci., July-Aug. 2006, 86, pp.355-362
[4] N. Levin, S. Orlova, V. Pugachov, B. Ose-Zala, E. Jakobsons, "Methods to Reduce the Cogging Torque in Permanent Magnet Synchronous Machines", ELEKTRONIKA IR ELEKTROTECHNIKA, ISSN 1392-1215, VOL. 19, NO. 1, 2013, pp. 23-26.
[5] Oleg Kudrjavtsev, Aleksander Kilk, "Cogging Torque Reduction Methods", Publication of Doctoral School of Energy and Geotechnology, Pärnu 2013,
[6] J. F. Gieras, "Analytical approach of cogging torque calculation of PM brushless motors," IEEE Transactions on Industry Applications, vol. 40, no. 5, pp. 1310-1315, 2004.
[7] Andreea (ADAM) ZBANT, Leonard LIVADARU PhD, Alecsandru SIMION PhD, Eng. George Adam, "INFLUENCE OF PERMANENT MAGNETS DESIGN OVER THE PERFORMANCE OF AXIAL FLUX SYNCHRONOUS MOTORS", Buletinul AGIR nr. 4/2012 octombriedecembrie, pp. 107-112

