**Experience Gathered from the Use of ANSYS for Analysis of HF Coreless Transformer**

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Summary

Practical experiences gained using of ANSYS/EMAG software for analysis of high frequencies coreless transformer are presented in this paper. The new construction energy efficient, low cost coreless transformer designed for induction heating system is the example of the analysis. The analysis allows such characterisation of the….

# **Keywords**

coreless transformer, ANSYS/EMAG, high frequency

# Main Title A

Nowadays, the miniaturisation of inductors and transformers used in power electronics converters is the main difficulty for constructors. Increased switching frequencies can, generally, lead to decrease transformer´s size and to increase its efficiency. However as frequencies are pushed up, into the MHz region, many new problems arise. The losses in magnetic materials and in windings increase. ....

## First Sub-Title A

The need for thorough analysis that reaches beyond the ones based on simplified analytical mode [1] [2] and models of circuit type motivates the work.

Such analysis can only be carried out by means of the relevant field/fields and methods. In this case electromagnetic field is analyzed ....

### Second Sub-Title A

The presentation of ANSYS/EMAG and its performance in application to the analysis of non-standard problem - high frequency coreless transformer is the aim of the paper.

The analyzed transformer is designed to high frequency

## Sub-Title B

The coreless transformer is designed for inducting heating system (Fig. 1). The transformer matches the load to the source of high frequency current (inverter). The load in inducting heating system is composed of the excitation coil together with heated charge. The transformer is supplied from power electronic inverter. ...



Figure title: figure description

The induction heating system is shown in Fig. 1 and, is composed of:

voltage regulator AC/DC

electronic fuse

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Table1: Descrption Table1

# Conclusions

The software program ANSYS appeared to be very efficient tool for the analysis of such electromagnetic device as coreless transformer. Although only the analysis of electromagnetic field was used the obtained results are sufficient for the engineering purposes.

# References

[1] Andrew F., Martin F.: "Issues related to 1 - 10 MHz Transformer Design", IEEE, No. 1, January 1989, pp. 113-123

[2] Binns K. J., Lawrenson P.J., Trowbridge C.W.: "The analytical and Numerical Solution of Electric and Magnetic Fields", John Wiley & Sons, 1992