

## Curriculum vitae

### Personal details:

Surname: Chwastek

First Name: Krzysztof

Title: PhD. D.Sc. (habilitation in electrical engineering)



### Present employer:

Institute of Power Engineering

Faculty of Electrical Engineering

Czestochowa University of Technology

Al. Armii Krajowej 17

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## EMPLOYMENT HISTORY

| Dates        |           | Name and address of the employer  | Post  |
|--------------|-----------|---|---|
| From 02.2000 | Until now | Faculty of Electrical Engineering<br>Institute of Power Engineering<br>Czestochowa University of<br>Technology<br>Ul. Armii Krajowej 17<br>42-200 Czestochowa | Associate<br>Professor of<br>CUT; full time |
| 09.1997      | 06.1999   | Techniczne Zaklady Naukowe,<br>Czestochowa  | High school<br>teacher; full time           |

## EDUCATION/QUALIFICATIONS

| Dates      |      | Name and address of the employer   | Degrees/qualifications  |
|------------|------|--|---|
| 28.11.2013 |      | Faculty of Electrical Engineering<br>Czestochowa University of<br>Technology           | Habilitation "Macroscopic<br>magnetization models<br>based on effective field<br>concept"         |
| 14.06.2007 |      | Faculty of Electrical Engineering<br>Czestochowa University of<br>Technology           | PhD „Application of the<br>effective field theory to<br>modelling of dynamic<br>hysteresis loops" |
| 1999       | 2000 | Institute of Computer Science<br>Silesian University of Technology,<br>Gliwice, Poland | Postgraduate study in<br>Computer Science   |
| 1992       | 1997 | Faculty of Electrical Engineering<br>Czestochowa University of<br>Technology           | M.Sc. in electrical<br>engineering, major:<br>automation of industrial<br>processes               |

## LANGUAGES

English – good command in speech and writing, First Certificate in English 1999

German – Zentrale Mittelstufenprüfung, Goethe Institute 2003,

Internationaler Kurs für deutsche Sprache und Kultur, Ruprecht-Karls Universität Heidelberg,  
August 2002

Russian – basic knowledge

Refereed full papers from Thomson Scientific list

- 1) Jakubas A., Gębara P., Seme S., Gnatowski A., **Chwastek K.**, Magnetic properties of SMC cores produced at low compacting temperature, *Acta Physica Polonica A* 131 (5) (2017) 1289-1293
- 2) Jastrzębski R., **Chwastek K.**, Biondić I., Miličević K., A comparison of different estimation methods for hysteresis modelling, *Acta Physica Polonica A* 131 (5) (2017) 1228-1231
- 3) Suliga M., Kruzel R., **Chwastek K.**, Jakubas A., Pawlik P., The effect of residual stresses on the coercive field strength of drawn wires, *Acta Physica Polonica A* 131 (2017) 1114-1116
- 4) Gozdur R., **Chwastek K.**, Najgebauer M., Lebioda M., Bernacki Ł., Wodzyński A., Scaling of anhysteretic curves for LaFeCoSi alloy near the transition point, *Acta Physica Polonica A* 131 (2017) 801-803
- 5) Kciuk M., **Chwastek K.**, Kluszczynski K., Szczygłowski J., A study on hysteresis behaviour of SMA linear actuators based on unipolar sigmoid and hyperbolic tangent functions, *Sens. Actuat. A* 243 (2016) 52-58
- 6) Baghel A. P. S., Sai Ram B., **Chwastek K.**, Daniel L., Kulkarni S. V., Hysteresis modelling of grain-oriented laminations in arbitrary directions taking into account dynamics of orthogonal domain walls, *J. Magn. Magn. Mater.* 418 (2016) 14-20
- 7) Borowik L., Włodarz R., **Chwastek K.**, Eco-efficient control of the cooling systems for power transformers, *J. Clean. Prod.* 139 (2016) 1551-1562
- 8) **Chwastek K.**, Baghel A. P. S., de Campos M. F., Kulkarni S. V., Szczygłowski J., A description for anisotropic magnetic properties of grain-oriented steel, *IEEE Trans. Magn.* 51 (12) (2015) 6000905, doi:10.1109/TMAG.2015.2449775
- 9) Ślusarek B., Szczygłowski J., **Chwastek K.**, Jankowski B., A correlation of magnetic properties with material density for soft magnetic composite cores, *COMPEL* 34 (3) (2015) 1-11
- 10) Jankowski B., Ślusarek B., Szczygłowski J., **Chwastek K.**, Modelling hysteresis loops in Fe-based soft magnetic composites using Takács description, *Acta Physica Polonica A* 128 (1) (2015) 116-119
- 11) Baghel A. P. S., Gupta A., **Chwastek K.**, Kulkarni S. V., Comprehensive modeling of dynamic hysteresis loops in the rolling and transverse directions for transformer laminations, *Physica B* 462 (2015) 86-92
- 12) Suliga M., Borowik L., **Chwastek K.**, Estimation of the level of residual stress in wires with a magnetic method, *Archives of Metallurgy and Materials* 60 (1) (2015) 411-415
- 13) Baghel A. P. S., **Chwastek K.**, Kulkarni S. V., Modeling of minor hysteresis loops in rolling and transverse directions of grain-oriented laminations, *IET Electric Power Applications* 9 (4) (2015) 344-348
- 14) Zirka S. E., Moroz Yu. I., Steentjes S., Hameyer K., **Chwastek K.**, Zurek S., Harrison R. G., Dynamic magnetization models for soft ferromagnets with coarse and fine domain structures, *J. Magn. Magn. Mater.* 394 (2015) 229-236
- 15) Steentjes S., **Chwastek K.**, Petrun M., Dolinar D., Hameyer K., Sensitivity analysis and modeling of symmetric minor hysteresis loops using the GRUCAD description, *IEEE Trans. Magn.* 50 (11) (2014), doi: 10.1109/TMAG.2014.2323250

- 16) **Chwastek K.**, Anisotropic properties of non-oriented steel sheets, IET Electric Power Applications 7 (2013) 575-579
- 17) Petrun M., **Chwastek K.**, Dolinar D.: Hysteresis curves of a resistance spot welding transformer, COMPEL 34/3 (2013) 1404-1416
- 18) **Chwastek K.**, Dudek G.: Wykorzystanie strategii ewolucyjnych do estymacji parametrów modelu histerezy (The application of evolution strategies for estimation of parameters of a hysteresis model (in Polish)), Przegląd Elektrotechniczny 12b/2012, 5-7 (Electrotechnical Review – indexed by Thomson Scientific 01.2008-12.2012, ISSN 0033-2097)
- 19) Najgebauer M., **Chwastek K.**, Szczygłowski J.: Włókna amorficzne – właściwości i zastosowania (Amorphous fibers – properties and applications (in Polish)), Przegląd Elektrotechniczny 12b/2012, 161-163
- 20) **Chwastek K.**, Najgebauer M., Szczygłowski J.: Performance of some novel optimization techniques, Przegląd Elektrotechniczny 12b/2012, 191-193.
- 21) Zirka S. E., Moroz Yu. I., Harrison R. G., **Chwastek K.**: On physical aspects of Jiles-Atherton models, Journal of Applied Physics 112, 043916 (2012) (7 pp.)
- 22) **Chwastek K.**: Modelling hysteresis loops in thick steel sheet with the dynamic Takács model, Physica B 407 (2012) 3632-3634
- 23) **Chwastek K.**, Szczygłowski J., Wilczyński W.: Minor loops in the Harrison model, Acta Physica Polonica A 121 (4) (2012), s. 941-944
- 24) **Chwastek K.**, Najgebauer M., Szczygłowski J., Wilczyński W.: Modelling the influence of anisotropy on magnetic properties in grain-oriented steels, Przegląd Elektrotechniczny 3/2011, 126-128.
- 25) Najgebauer M., **Chwastek K.**, Szczygłowski J.: Energy efficient distribution transformers, Przegląd Elektrotechniczny 2/2011, 111-114.
- 26) **Chwastek K.**: AC loss density component in electrical steel sheets, Philosophical Magazine Letters, vol. 90 (11) 2010, 809-817 (Taylor & Francis, ISSN 0950-0839).
- 27) **Chwastek K.**: A dynamic extension to the Takács model, Physica B 405 (17) 2010, 3800-3802 (Elsevier, ISSN 0921-4526).
- 28) **Chwastek K.**, Szczygłowski J., Wilczyński W.: Modelling magnetic properties of high silicon steel, Journal of Magnetism and Magnetic Materials, vol. 322 (7) 2010, 799-803 (Elsevier ISSN 0304-8853).
- 29) **Chwastek K.**: Description of Henkel plots by the magnetization-dependent Jiles-Atherton model, Journal of Magnetism and Magnetic Materials, vol. 322 (2) 2010, 214-217 (Elsevier ISSN 0304-8853).
- 30) **Chwastek K.**: Modelling magnetic properties of MnZn ferrites with the modified Jiles-Atherton description, Journal of Physics D: Applied Physics 43 (2010) 015005 (5 pp.) (IOP ISSN 0022-3727).
- 31) **Chwastek K.**: Modelling offset hysteresis loops with the modified Jiles-Atherton description, Journal of Physics D: Applied Physics 42 (2009) 165002 (5 pp.) (IOP ISSN 0022-3727).
- 32) Szczygłowski J., Najgebauer M., **Chwastek K.**, Energooszczędne transformatory energetyczne (Power-saving transformers – in Polish), Przegląd Elektrotechniczny 6/2009, 90-92
- 33) **Chwastek K.**, Szczygłowski J., Wilczyński W.: Modelling dynamic hysteresis loops in steel sheets, COMPEL 28 (3), 2009, 603-612.
- 34) **Chwastek K.**, Najgebauer M., Szczygłowski J., Wilczyński W., Modern core materials for efficient power distribution transformers, Przegląd Elektrotechniczny 3/2009, 133-135.

- 35) **Chwastek K.**, Szczygłowski J., Wilczyński W., Marion R., Raulet M.-A., Zitouni Y., Krähenbühl L.: Modelling minor hysteresis loops of high silicon steel using the modified Jiles-Atherton approach, *Przeegląd Elektrotechniczny* 1/2009, 68-70.
- 36) **Chwastek K.**, Szczygłowski J.: Estimation methods for the Jiles-Atherton model parameters – a review, *Przeegląd Elektrotechniczny* 12/2008, 145-148.
- 37) **Chwastek K.**, Modelling of dynamic hysteresis loops using the Jiles-Atherton approach, *Mathematical and Computer Modelling of Dynamical Systems* 15 (1) 2009, 95-105.
- 38) **Chwastek K.**, Frequency behaviour of the modified Jiles-Atherton model, *Physica B* 403 (2008), 2484-2487.
- 39) **Chwastek K.**, Szczygłowski J.: An alternative method to estimate the parameters of Jiles-Atherton model, *Journal of Magnetism and Magnetic Materials* 314 (2007) 47-51.
- 40) **Chwastek K.**, Szczygłowski J.: Identification of a hysteresis model parameters with genetic algorithms, *Mathematics and Computers in Simulation* 71 (2006) 206–211.
- 41) **Chwastek K.**, Szczygłowski J., Najgebauer M.: A direct-search algorithm for estimation of Jiles-Atherton hysteresis model parameters, *Materials Science & Engineering B*, Vol. 131, Issues 1-3, pp. 22-26, 2006.

I took active part in a scientific exchange program with a Spanish institute (Instituto de Ciencia de Materiales de Madrid, CSIC) in 2005. The subject was the application of nanocrystalline materials in the cores of electric devices.

The papers directly related to my PhD Thesis are:

- Chwastek K., Modelling of dynamic hysteresis loops using the Jiles-Atherton approach, *Mathematical and Computer Modelling of Dynamical Systems* 15 (1) (2009) 95-105.
- Chwastek K., Szczygłowski J.: An alternative method to estimate the parameters of Jiles-Atherton model, *Journal of Magnetism and Magnetic Materials* 314 (2007) 47-51.
- Chwastek K., Szczygłowski J.: Identification of a hysteresis model parameters with genetic algorithms, *Mathematics and Computers in Simulation* 71 (2006) 206–211.

Scientific interests: modeling and simulation, properties of soft magnetic materials and their novel applications, hysteresis and anisotropy, optimization techniques, power transformers, diagnostics and nondestructive testing.

*Krzysztof Chwastek*