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TOPICS in APPLIED ELECTROMAGNETICS and COMMUNICATIONS

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APPLIED ELECTROMAGNETICS, WIRELESS and OPTICAL COMMUNICATIONS
(ELECTROSCIENCE '07)

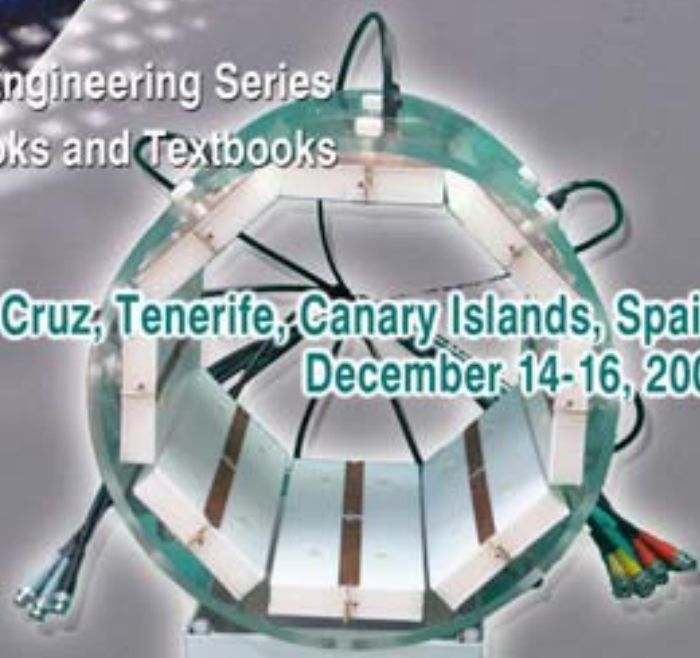


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Preface

The book you are currently holding contains the proceedings of the 5th WSEAS International Conference on APPLIED ELECTROMAGNETICS, WIRELESS and OPTICAL COMMUNICATIONS (ELECTROSCIENCE '07) which was held in Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 14-16, 2007

The first WSEAS Conference on these topics took place in Miedzyzdroje, Poland in 2002, whereas the second one took place in Rethymno, Crete, Greece 2003. Again, the WSEAS Working Group on Applied Electromagnetics and Electroscience organized the conference in Corfu, Greece, in 2005, in Venice, Italy, 2006 and this year in Puerto De la Cruz of Tenerife.

The APPLIED ELECTROMAGNETICS, WIRELESS AND OPTICAL COMMUNICATIONS (ELECTROSCIENCE '07) is the internationally recognized forum for the dissemination of the latest advances on Applied and Computational Electromagnetics, Microwaves, Antennas, Scattering, Radar, Meta-materials, Wireless, Mobile, Optical Communications etc as well as their impact and their interaction with other areas of Electrical Engineering. The ELECTROSCIENCE '07 aims to disseminate the latest research and applications in the afore mentioned fields. The friendliness and openness of the WSEAS conferences, adds to their ability to grow by constantly attracting young researchers. The meetings have always had a special appeal to young researchers and are characterized by a friendly atmosphere in which delegates at different stages of their careers can talk to each other. Scientists within the areas of applied electromagnetics, wireless and optical communications will benefit from attending the meeting. As a conclusion, the conference offers to the engineers and scientists a unique forum for establishing new collaborations within present or upcoming research projects, exchanging useful ideas, presenting recent research results, participating in discussions and establishing new academic collaborations, linking university with the industry.

We would like to address to each of you a warm invitation for the AIKED, SEPADS, ISPRA and EHAC 2008 international conferences that will be held inside the University of Cambridge where our “father” Prof. **Lotfi A. Zadeh** will be for 4th time Plenary Speaker in a WSEAS Congress presenting the Plenary Lecture: “*Toward Human-Level Machine Intelligence*”. Details:

<http://www.wseas.org/conferences/2008/cambridge/aiked/Plenary1.htm>

You can also attend several other WSEAS conferences on Applied and Computational Electromagnetics, Microwaves, Antennas, Scattering, Radar, Meta-materials, Wireless, Mobile, Optical Communications (www.wseas.org)

The Plenary Speech of ELECTROSCIENCE '07 was:

Influence of Non-Ideal Input Supply Voltages on the Electromagnetic Torque of PWM VSI Fed Induction Motor Drive

Professor Jiri Klima

Dean of Faculty of Engineering
CZU in Prague, Czech Republic

Abstract: The DC-link voltage ripple in power inverters is composed of several sources such as:

- a) The diode rectification of the AC-line voltage causes pulsation components
- b) Unbalanced and sags in the ac power supply generates 100 or 120-Hz component
- c) In some faulty conditions in the front-end rectifier the DC-link voltage may again contain pulsations

The closed-form mathematical model and analysis of the ripple components of the DC-link voltage of the three-phase voltage source inverter and its influence on an induction motor drive both in time and frequency domains are presented in this paper. The analytical expressions for the voltage and current space-vectors as a function of the DC-link voltage pulsation are derived for the space-vector PWM operation mode. From the current space vectors, the electromagnetic torque behavior is estimated again as a function of the DC-link voltage ripple. The proposed analytical method is based on the mixed p-z approach enabling presentation of the results in the closed-form. Experimental results are included in order to verify the derived expressions.

Brief Biography of the Speaker:

Jiri Klima, received his MSc and PhD degree in electrical engineering for Technical University in Prague in 1968 and 1978, respectively.

Since 1970 he has been in the Department of Electrical engineering and Automation, Technical Faculty of CZU in Prague. Since 2003 he is a dean of the Technical Faculty.

He is author of more than 200 technical papers including IEE and IEEE Journals. He served as a chairman of 4 Electrical Engineering Conferences

His main field of interest is the mathematical modelling of electric circuits with the discrete components, electrical drives and power electronics. He is associate editor of the Journal Transaction on Power Systems (WSEAS). In 2004-2008 he has been listed in Marquis "Who is who in the world".

We would like to thank all members of the organizing laboratories for their contribution to the organization of the conference.

The contents of this Book are also published in the CD-ROM Proceedings of the Conference. Both will be sent to the WSEAS collaborating indices after the conference: www.worldses.org/indexes.

In addition, papers of this book are permanently available to all the scientific community via the WSEAS E-Library.

Expanded and enhanced versions of papers published in these conference proceedings are also going to be considered for possible publication in one of the WSEAS journals that participate in the major International Scientific Indices (Elsevier, Scopus, EI, Compendex, INSPEC, CSA see: www.worldses.org/indexes) these papers must be of high-quality (break-through work) and a new round of a very strict review will follow. (No additional fee will be required for the publication of the extended version in a journal).

We cordially thank all the people of WSEAS for their efforts to maintain the high scientific level of conferences, proceedings and journals.

The Editors

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