

IEEE - PEMC 2016 in Varna - BULGARIA

VARNA, BULGARIA | from 25 to 30 of September 2016



17th International Conference on Power Electronics and Motion Control

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Welcome

CALL FOR PAPERS

Invitation to Participate in an Intellectually Stimulating Conference & experience the Bulgarian Culture

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Paper submission reminder

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Sponsor and Exhibitor Opportunities

 [Sponsorship Information](#) (15kb)

Submission Schedule:

~~1-December-2015~~

~~1-February-2016~~

~~18-February-2016~~

Main theme:

Modern Power Electronics and Motion Control aiming at Intelligent Solutions

Background & Aim

The Power Electronics and Motion Control (PEMC) conference circulates in Europe as a direct continuation of the same field conferences held since 1970 mostly in Budapest, organized by the Hungarian Electro-technical Association with headquarter in Budapest. This makes this Conference the oldest one in this area in Europe. Now PEMC Council, involving representatives from many of the European countries, controls the organization of the PEMC conferences. In August 2015 the Industrial Electronics Society of the IEEE conferred to the PEMC conference the prestigious name of most important IEEE conference, naming it from now on, the IEEE-PEMC conference.

The main goal of IEEE-PEMC is to promote and co-ordinate the exchange and the publication of technical, scientific and economic information in the field of Power Electronics and Motion Control. One of the main objectives is the cooperation and integration between the long-time divided Western and Eastern European countries, also expressed in the conference logo. The conference attracts now a large number (roughly 500+) of participants from overseas as well. An exhibition is organised in parallel with every PEMC Conference, offering space for the industry to present their latest products in the field of Power Electronics and Motion Control. In addition to the regular oral sessions, key notes, round tables, tutorials, workshops, seminars, exhibitions, the dialogue sessions (enlarged "poster" presentations) present to the speakers a better cooperation among the participants.

The aim of this 17th IEEE-PEMC conference is to stimulate the findings of intelligent solutions (intelligent power electronics, intelligent control), in order to achieve the Intelligent Motion, Intelligent Mechatronics, Intelligent Sensors and Actuators, Intelligent Robots, Intelligent (more than smart) Micro

10 March 2016

**Submission of Special Session
Proposals**

~~15 January 2016~~

~~15 February 2016~~

~~22 March 2016~~

31 March 2016

**Deadline for submission of full
paper**

~~15 April 2016~~

~~15 May 2016~~

1 June 2016

**Notification of acceptance with
electronic publication
instruction**

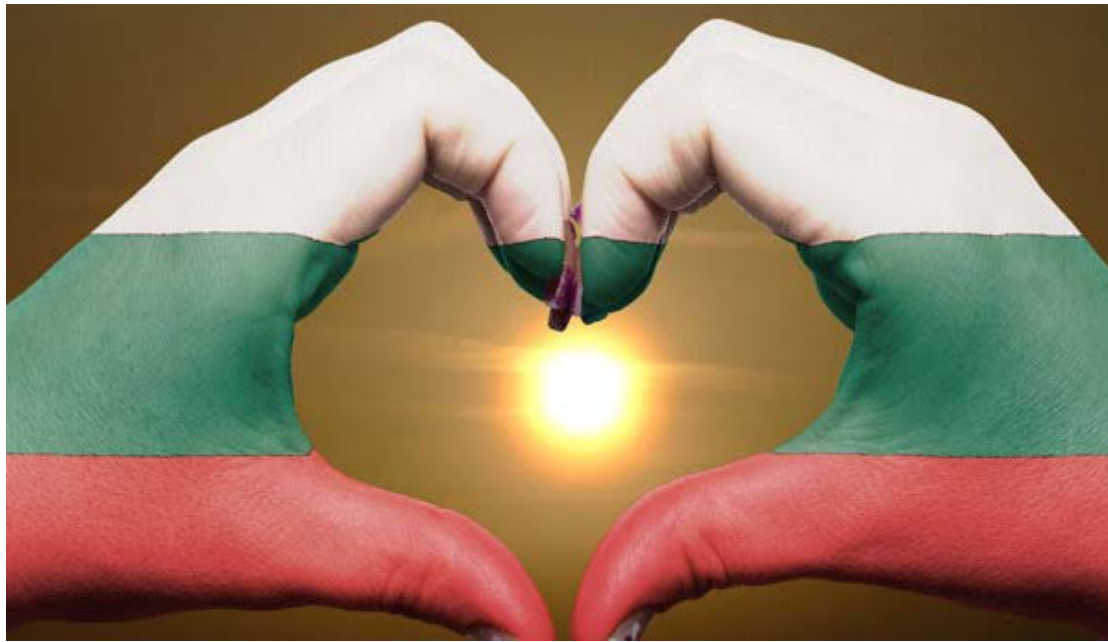
~~1 June 2016~~

~~1 July 2016~~

15 July 2016

Deadline for final manuscript

Grids, Intelligent Power System, Intelligent Energy Generation, Processing, Distributing and Consuming, steadily walking to a better world.



The PEMC Council:

This is the international, elected scientific authority, which serves as an advisory board and makes the PEMC activities to correspond to the approved standards and rules. The PEMC secretariat in Budapest has large amount of useful knowledge, keeping the tradition in PEMC conferences, controlling their scientific content and quality.

Conference Topics

The topics of this conference will include, but are not limited to:

- ✔ Power Electronic Converter Topologies, Design and Control
- ✔ Power Electronics in Transportation (Road, Aerospace, Marine and Railway Vehicles, Electric and Hybrid Vehicles)
- ✔ Power Electronics in Smart Grid Technologies, Applications and Policies
- ✔ Power Electronics in Electrical Energy Generation, Transmission and Distribution
- ✔ Power Electronics in Renewable Energy Systems
- ✔ Electrical Machines and Actuators
- ✔ Motion Control, Adjustable Speed Drives and Robotics
- ✔ Mechatronics
- ✔ Power Supplies
- ✔ Sensors, Measurement and Observation Techniques
- ✔ Active Filtering and Unity Power Factor Correction
- ✔ Semiconductor Devices Modeling, Packaging and Integration
- ✔ Education
- ✔ Other Related Topics

Special Sessions and Tutorials

Special sessions are organized on highly specialized topics that were not included in the previous editions of the conference. The organizers of those sessions must observe the scope of the conference and follow the rules established by the conference committees. If a person or persons is (are) decided to organize a special session, he (they) must contact the Committee Chair responsible of the special sessions. The tutorials are subject to decision taken by the Committees and the Tutorials Chair.

Paper Submission

The working language of the conference is English. Prospective authors are requested to submit full papers (6 pages max) following the guidelines available on the conference website. Accepted and presented papers will be submitted for international publication through IEEE Xplore. Each accepted paper must be presented at the conference by one of the authors. Papers not presented will not be included in IEEE Xplore.

About the Conference

The IEEE-PEMC 2016 conference in Varna, Bulgaria honors the memory of Professor Istvan Nagy, who left us unexpectedly after giving all his life to the creation and successful implementations of the PEMC Conference. The world lost an extraordinary, both strong and kind person, an enthusiast in power electronics, electric drives and motion control. We shall remember his deeds as a tireless organizer, true friend, colleague and advisor and we shall follow his example. Considering that this conference is dedicated to the memory of the Late Prof Istvan Nagy, the PEMC Council announces, that from now on, the IEEE-PEMC award for valuable scientific and organizational achievements, is renamed to “Professor Istvan Nagy Award”.



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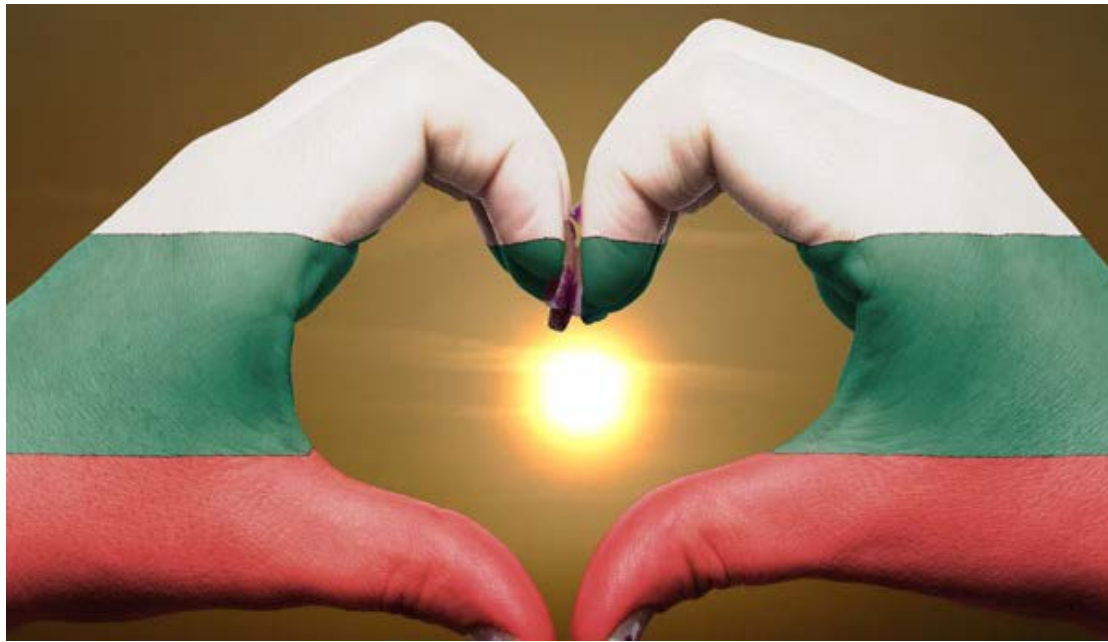
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Venue Information

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Why Bulgaria?

- Be out of the mainstream and chose rapidly emerging, but still not overcrowded destination;
- Get more for what you spend;
- Increased air-flight schedules and easy access;
- Amazing infrastructure to support incentives and meetings for medium and small events;
- Variety and big choice of activities;
- Food and wine -to meet everyone's expectations;
- All 4 seasons` destination with best selling travel opportunities in every season;
- A destination that started investing in tourism;
- Safety -political and economic stability;

Why Varna?

- Second largest airport in Bulgaria with international flight to more than 95 destinations around the world
- Fastest development city on the Black Sea Coastline
- Perfect location along the sea, mountain and forests
- Wide choice of hotels within walking distance to the city center
- High quality food
- Quality social life
- Bustling nightlife

The Venue

Festival and Congress Centre Varna

Festival and Congress Centre is located in Varna, the marine capital of Bulgaria. The location of the venue is central and very convenient - at the entrance of the Sea Garden and only 50 m away of the beach.



The venue disposes of 11 multifunctional halls with a capacity of 50 to 1000 seats, restaurant, cafes and two summer terraces, situated at the total of 4000 sq. m. The largest hall is Hall 1 . The capacity is 2 250 sq. m. and vary from 871 to 1011 seats, depending on the needs of the event and the dimensions of the stage. The capacity excluding the balcony is for 750 delegates. The set up is Amphitheatre. The second biggest is Hall Europe. It is a chamber amphitheatre, seating 240 people. The capacity of the restaurant inside is 150 places and the summer garden has another 150 seats.

The Palace of Culture and Sports Varna

The Palace of Culture and Sports is a multifunctional complex for congress, cultural and sporting events. The venue has 6 multi-purpose halls, recreation center, fitness center, press center, a modern shopping center. The biggest Hall is the Congress Hall.



Complex Mladost is composed of 5 separate rooms. It has soundproofed and electronic-controlled curtains. Adjacent to it is the Palace Press suitable for holding press conferences, analysis and parsing of sports meetings and training. It is equipped with video "Barkovizhan, projector, mobile screen, Hi-Fi system, high speed Internet access.



Pyramid Terrace of Melia Grand Hermitage

- Fascinated view toward the sea
- Total area is 1802 Sq. meters
- Dimensions: 53 x 34 meter



Belini Ballroom International Hotel Casino and Tower Suites

Situated on the second level, featuring floor-to-ceiling windows and an intimate outdoor terrace, the ballroom Bellini is a remarkable venue. With stylish and modern design, natural colors and spacious layout, the Bellini ballroom offers a capacity for up to 320 people, while the large dance floor and state-of-art surround system will complete your entertainment, Divisible in to sections, the ballroom allows to be modified to suit any preferences.



Bus transportation from/to the hotel is included in the price of the Gala Dinner!



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Program Information

Program Information

[Conference Guide](#) (.pdf 500KB)

Program At a Glance

Tutorials

25 September Varna Naval Academy	
08:00-09:00	Registration
08:30-10:30	Tutorials 1 (3 rooms) Tu-1, Tu-2, Tu-3
10:30-11:00	Coffee break
11:00-13:00	Tutorials 1 (continuation) Tu-1, Tu-2, Tu-3
14:00-16:00	Tutorials 2 (3 rooms) Tu-4, Tu-5, Tu-6
16:00-16:30	Coffee break
16:30-18:30	Tutorials 2 (continuation) Tu-4, Tu-5, Tu-6

PEMC Council Meetings

25 September Varna Naval Academy		27 September Festival and Congress Center	
		13:00-14:30	Meeting 2 BM City Restaurant
16:00-19:00	Meeting 1 Varna Naval Academy		

Tu-1: Johann Kolar, Switzerland Tu-2: Kaloyan Mihaylov, Bulgaria Tu-3: Slobodan Mircevski, Macedonia
Tu-4: Tomislav Dragicevic, Denmark Tu-5: Alex Ruderman, Kazakhstan Tu-6: Luis Palma Brito, Portugal

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~~15-May-2016~~

1 June 2016

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~~1-July-2016~~

15 July 2016

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	26 September Festival and Congress Center	27 September Festival and Congress Center				28 September Festival and Congress Center							
8:00-19:00	Registration	Registration				Registration							
8:30-9:00	Opening ceremony	Plenary Session 3: KA4+KA5+KA6				Parallel sessions 4 (4 rooms)							
09:00-10:30	Plenary Session 1: In memoriam István Nagy					SS02 4	SS03 6	TT05-1 6	TT07-2 6				
10:30-11:00	Coffee break	Coffee break				Coffee break							
11:00-13:00	Plenary Session 2: KA1+KA2+KA3	Parallel sessions 2 (4 rooms)				Parallel sessions 5 (4 rooms)							
		TT01-2 6	TT03-2 6	TT04-2 6	TT02-1 6	SS06 5	SS09 6	TT05-2 6	TT07-3 6				
13:00-14:30	Lunch	Lunch				Lunch							
14:30-16:30	Parallel sessions 1 (4 rooms)	Parallel sessions 3 (5 rooms)											
	TT01-1 6	TT03-1 6	TT04-1 6	SS04 6	TT01-3 6					TT03-3 6	SS01 6	TT07-1 6	
16:30-19:00 Including coffee between 16:30-17:00	Dialogue sessions 1 (DS1)	Dialogue session 2 (DS2)											
	TT01 15	TT03 18	TT10 2		TT02 7					TT04 13	TT05 10	SS01 1	TT07 15
20:00-21:00	Welcome Cocktail	Gala Dinner											
21:00-22:00													

KA1 - Kouhei Ohnishi, Japan

KA2 - İlhami Colak, Turkey

KA3 - Peter Palenski, Austria

KA4 - Zdeněk Peroutka

KA5 - David Del Regno

KA6 - Pavol Bauer

[Conference program](#) (.pdf 35Kb)

[Session distribution](#) (.pdf 550Kb)

[Session chairs](#) (.pdf 125KB)



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Speakers

Keynote Speakers

Kouhei Ohnishi, Japan

Ilhami Colak, Turkey

Peter Palenski, Austria

Zdeněk Peroutka

David Del Regno

Pavol Bauer

[View Bio & Abstract](#)

 [.pdf \(128Kb\)](#)

 [.pdf \(310Kb\)](#)

 [.pdf \(22Kb\)](#)

 [.pdf \(250Kb\)](#)

 [.pdf \(229Kb\)](#)

 [.pdf \(152Kb\)](#)

Tutorials Speakers

Johann Kolar, Switzerland

Tomislav Dragicevic, Denmark

Luis Brito Palma, Portugal

Kaloyan Mihailov, Bulgaria

Alex Ruderman, Kazakhstan

Slobodan Mircevski, Macedonia

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Paper Submission

Dear authors, the IES services have experienced some technical difficulties caused by an incident which we believe is solved. Although every effort has been made to ensure all technical issues have been normalized, we would greatly appreciate that you let us know asap of any unexpected behaviour you may notice in the system. The conference organizers promise to respond to possible complaints and compensate the authors for this inconvenience!

Paper submission reminder

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Paper Submission Deadline has been extended to **31 March 2016**.

[SUBMIT PAPER](#)

Paper Submission Site for IEEE PEMC 2016 can be found at <http://vps.ieee-ies.org/submit/pemc16/>

Submission Requirements

Author's Kit

Paper Submission System

Language

English is the working language of IEEE-PEMC Conference.

The paper must be written in English UK or English US.

First step:

Paper Proposal submission

A full paper proposal describing work not previously published or presented have to be electronically submitted in PDF file through the conference website no later than the deadline. The paper must be written in English UK or English US. Normally, the paper proposal should be 6 pages long (maximum 10 pages can be also admitted at an additional payment), two-column, single-space, on A4 format with supporting figures, tables and references, headed by title of paper and choice of topic category.

Please do not indicate authors' names.

The submitted paper proposal will be reviewed via a peer review process in order to ensure the highest technical quality of the conference. The paper proposal should clearly define the salient concepts and novel features of the work. Be sure to mention past or previous works to distinguish your originality from them (papers will be checked against plagiarism using a specialized software).

Templates without authors' name (blind):

[DOC Template \(~1723 KB\)](#),

[PDF Template \(~42 KB\)](#),

[LaTeX Template \(~1051KB\)](#)

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Paper Proposal Submission

Second step, after paper acceptance: Final Paper submission

All full papers and signed copyright must be uploaded by the deadline. All authors must also register and pay the fee by that deadline. If you have not received your email with your paper's status, please login on your account and check under "Paper Submission" to view the results and reviews for your paper.

For the final paper, the reviewer's comments (eventually) received in the notification e-mail have to be taken into account. The correctness of the English language has to be carefully checked.

Please do not forget to add authors' data (names, affiliation, mail address, email).

IEEE is very strict about the requirements for converting application files or PostScript files to full-text PDF for inclusion in IEEE Xplore®. Please follow the detailed instructions in "IEEE PDF File Preparation Guide for IEEE Xplore®", which describes the essential steps in distilling PDFs that meet IEEE requirements.

The most important issue is to make sure that all fonts used in the paper are EMBEDDED, especially for papers from Asia and Europe. The "IEEE PDF File Preparation Guide for IEEE Xplore®" details the process to ensure that all fonts used are embedded and subsetted. Failure to embed and subset fonts is the biggest obstacle to PDF compliance with IEEE Xplore®. Papers failing to meet IEEE Xplore® PDF requirements may be rejected.

Formatting rules

Papers are limited to ten (10) A4 sized sheets, and must conform to IEEE double column format.

Submissions exceeding 10 pages will be rejected.

Do NOT insert any headers, footers, or page numbers.

Templates for papers are available in DOC, PDF and LaTeX formats.

Templates with authors' name:

[DOC Template \(~104KB\)](#),

[PDF Template \(~119KB\)](#),

[LaTeX Template \(~1051KB\)](#)

Note about Attachments

Due to unavoidable differences in computer programs, authors may detect very slight differences between these three templates. Papers following any of these three templates and adhering to IEEE PDF requirements will be acceptable.

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IEEE PDF eXpress™ will be available for pdf production and it is considered the IEEE preferred instrument.

Being IEEE PDF eXpress™ available in a shorter interval of time, it is advisable (or just necessary) to use the mentioned earlier alternative program doPDF, www.dopdf.com).

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Create IEEE PDF eXpress account

Upload source file(s) for Conversion; and/or PDF(s) for Checking

Use IEEE PDF eXpress to attain IEEE Xplore-compatible PDF(s). The site contains extensive instructions, resources, helpful hints, and access to technical support.

Submit final, IEEE Xplore-compatible PDF(s) [per the conference's instructions] by the indicated deadline.

IEEE PDF eXpress: <http://www.pdf-express.org/>

Conference ID (IEEE-PEMC2016): 38016XP

Remarks: ID is case sensitive

Access the IEEE PDF eXpress site:

1. First-time users:

Click "New Users - Click Here".

Enter 38016XP for the Conference ID, your email address, and choose a new password. Continue to enter information as prompted.

You will receive online and email confirmation of successful account setup.

2. Previous users, but using it the first time for a new conference:

Enter 38016XP for the Conference ID, your email address, and enter the password you used for your old account.

When you click "Login", you'll receive an error saying you need to set up an account.

Simply click "Continue".

By entering your previously used email address and password combination, you will enable your old account for access to this new conference.

Check that the contact information is still valid, and click "Submit".

You will receive online and email confirmation of successful account setup.

3. Returning users:

Enter 38016XP for the Conference ID, email address and password.



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Registration Fees

Before July 22nd, 2016

NON MEMBER	620 EUR
MEMBER IEEE	520 EUR
MEMBER IEEE + IES or IAS	450 EUR
NON-MEMBER IEEE FROM DEVELOPING COUNTRIES	350 EUR
MEMBER IEEE FROM DEVELOPING COUNTRIES	300 EUR
MEMBER IEEE + IES or IAS FROM DEVELOPING COUNTRIES	280 EUR
LIFE MEMBER IEEE and PEMC Council (no right to present)	400 EUR
STUDENT NON MEMBER IEEE (no right to present)	375 EUR
STUDENT MEMBER IEEE (no right to present)	320 EUR
STUDENT MEMBER IEEE + IES or IAS - (no right to present)	300 EUR
STUDENT NON-MEMBER DISCOUNT COUNTRY - (no right to present)	250 EUR
ADDITIONAL PAPER (over the two permitted for one normal registration)	200 EUR
ADDITIONAL PAGES - (per page)	50 EUR
COMPANION (no right to present)	150 EUR
GALA BANQUET (if only participating in that event)	50 EUR
tutorial	40 EUR
tutorial student	20 EUR
Special FEE (subject of special rule)	280 EUR

After July 22nd, including at the conference desk

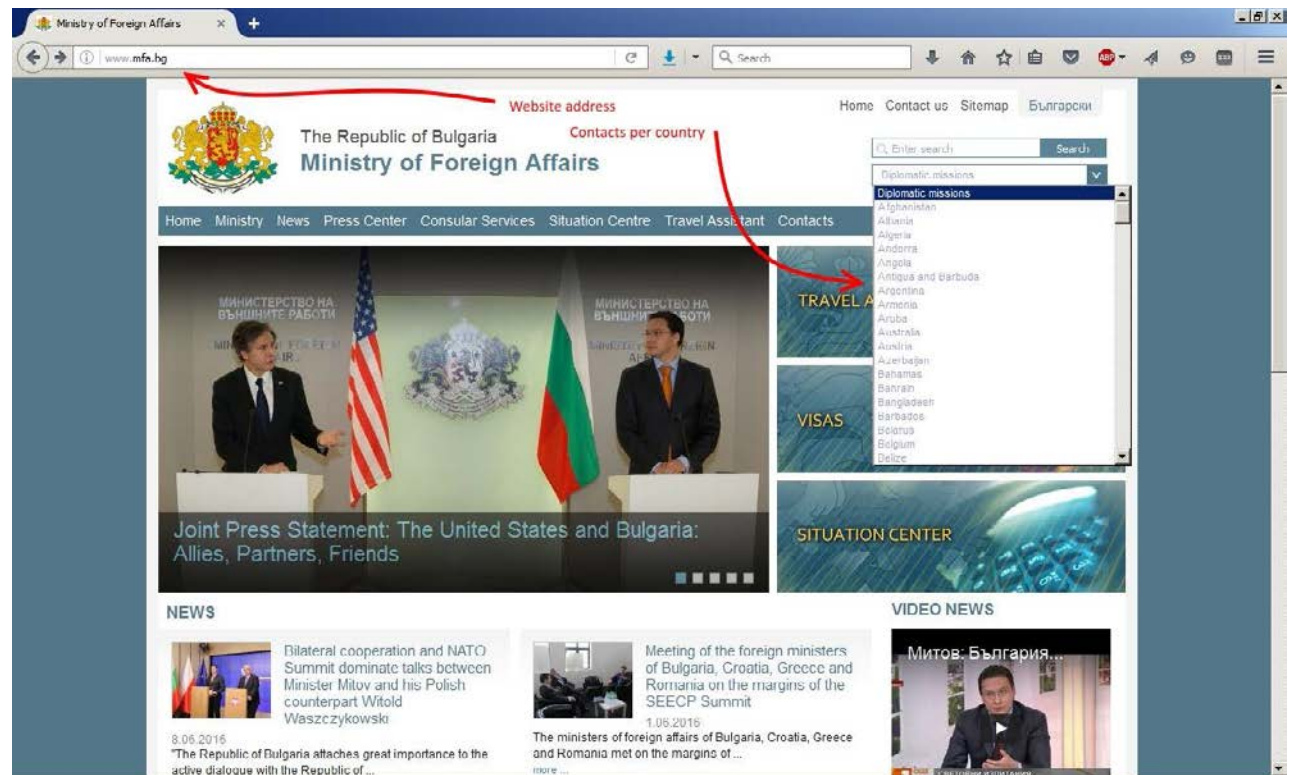
NON MEMBER	720 EUR
MEMBER IEEE	620 EUR
MEMBER IEEE + IES or IAS	550 EUR
NON-MEMBER IEEE FROM DEVELOPING COUNTRIES	450 EUR
MEMBER IEEE FROM DEVELOPING COUNTRIES	400 EUR
MEMBER IEEE + IES or IAS FROM DEVELOPING COUNTRIES	380 EUR
LIFE MEMBER IEEE and PEMC Council (no right to present)	500 EUR
STUDENT NON MEMBER IEEE (no right to present)	475 EUR
STUDENT MEMBER IEEE (no right to present)	420 EUR
STUDENT MEMBER IEEE + IES or IAS - (no right to present)	400 EUR
STUDENT NON-MEMBER DISCOUNT COUNTRY - (no right to present)	350 EUR
ADDITIONAL PAPER (over the two permitted for one normal registration)	250 EUR
ADDITIONAL PAGES - (per page)	50 EUR
COMPANION (no right to present) -	150 EUR
GALA BANQUET (if only participating in that event)	50 EUR
tutorial	50 EUR
tutorial student	40 EUR

https://www.ieee.org/membership_services/membership/join/emember_countries.html

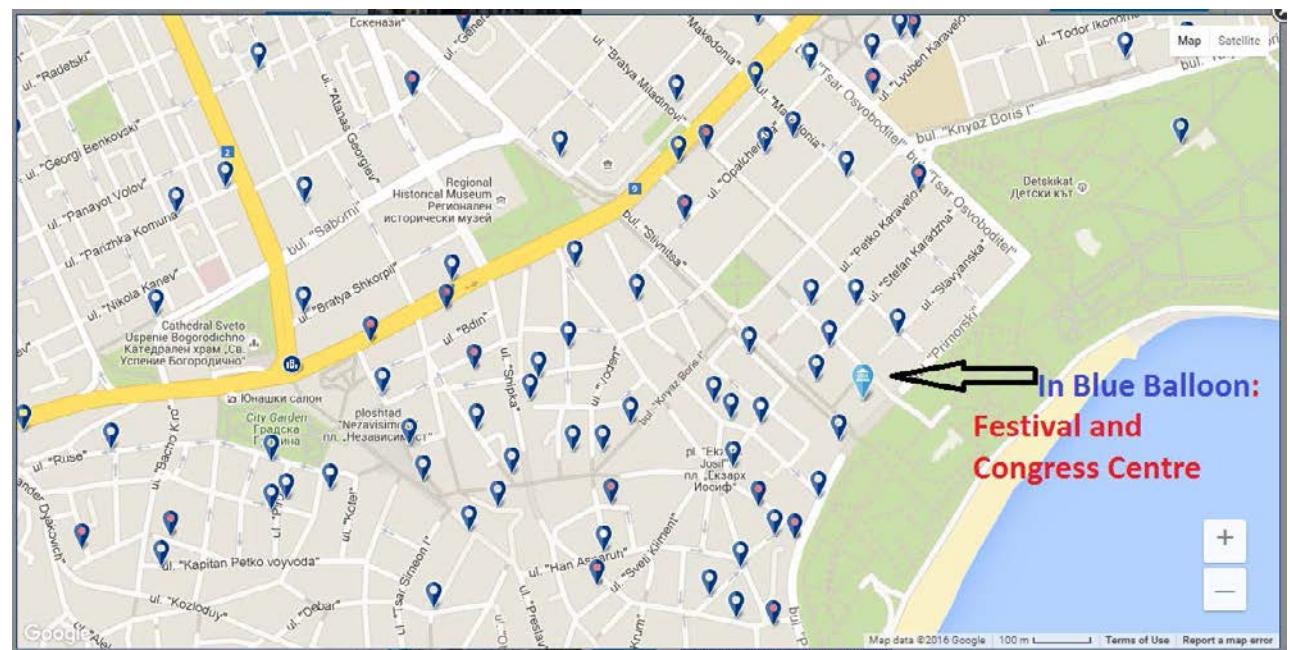
Visa Information

Bulgarian Visa (general information): <http://www.mfa.bg/en/pages/109/index.html>

Visa application forms: <http://www.mfa.bg/en/pages/133/index.html>



Hotel Location Map



IEEE - PEMC 2016 in Varna - BULGARIA

VARNA, BULGARIA | from 25 to 30 of September 2016



17th International Conference on Power Electronics and Motion Control

[HOME](#)[GENERAL](#)[PROGRAM](#)[SPEAKERS](#)[PAPER SUBMISSION](#)[REGISTRATION](#)[PHOTOS](#)[CONTACT](#)

Event Photos

CALL FOR PAPERS

Invitation to Participate in an
Intellectually Stimulating
Conference & experience the
Bulgarian Culture

Download Call for Papers

 [Call for Papers](#) (560kb)

Paper submission reminder

 [Submission Reminder](#)
(15kb)

Sponsor and Exhibitor
Opportunities

 [Sponsorship Information](#)
(15kb)

Submission Schedule:

~~1-December-2015~~

~~1-February-2016~~

~~18-February-2016~~

10 March 2016

Submission of Special Session
Proposals

~~15-January-2016~~

~~15-February-2016~~

~~22-March-2016~~

31 March 2016

Deadline for submission of full
paper

~~15-April-2016~~

~~15-May-2016~~

1 June 2016

Notification of acceptance with
electronic publication
instruction

~~1-June-2016~~

~~1-July-2016~~

15 July 2016

Deadline for final manuscript





IEEE - PEMC 2016 in Varna - BULGARIA

VARNA, BULGARIA | from 25 to 30 of September 2016

17th International Conference on Power Electronics and Motion Control

[HOME](#)[GENERAL](#)[PROGRAM](#)[SPEAKERS](#)[PAPER SUBMISSION](#)[REGISTRATION](#)[PHOTOS](#)[CONTACT](#)

Contact Information

You can contact the conference committee via email contact@ieee-pemc2016.org

CALL FOR PAPERS

Invitation to Participate in an Intellectually Stimulating Conference & experience the Bulgarian Culture

Download Call for Papers



[Call for Papers](#) (560kb)

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Honorary chairs:

Georgi Mihov, Bulgaria
Kamal Al-Haddad, Canada
Leopoldo Franquelo, Spain
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General Co-Chairs:

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Maria Arsova, Bulgaria

Tutorials:

Frede Blaabjerg, Denmark

Finances:

Yousef Ibrahim, Australia and
Anastasia Krusteva, Bulgaria

Industry forum:

Alex Van Den Bossche,
Belgium and Georgy Todorov,
Bulgaria

Round table discussion:

Marian Kazmierkowski, Poland

Exhibition:

Mariusz Malinowski, Poland
and Rozalina Dimova, Bulgaria

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assisted by a Co-Chair: Isaak
Y. Braslavskiy, Russia, with a
large International Publicity
Committee

Technical tour:

Boyan Mednikarov, Bulgaria

Special sessions:

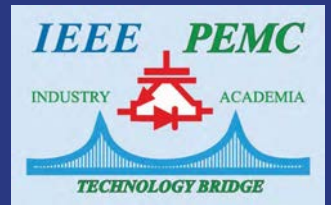
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The Power Electronics and Motion Control (IEEE-PEMC) VARNA, BULGARIA | from 25 to 30 of September 2016

Modern Power Electronics and Motion Control aiming at Intelligent Solutions

BACKGROUND AND AIM:

The Power Electronics and Motion Control (PEMC) conference circulates in Europe as a direct continuation of the same field conferences held since 1970 mostly in Budapest, organized by the Hungarian Electro-technical Association with headquarters in Budapest. This makes this Conference the oldest one in this area in Europe. Now PEMC Council, involving representatives from many of the European countries, controls the organization of the PEMC conferences. In August 2015 the Industrial Electronics Society of the IEEE conferred to the PEMC conference the prestigious name of most important IEEE conference, naming it from now on, the IEEE-PEMC conference.

The main goal of IEEE-PEMC is to promote and co-ordinate the exchange and the publication of technical, scientific and economic information in the field of Power Electronics and Motion Control. One of the main objectives is the cooperation and integration between the long-time divided Western and Eastern European countries, also expressed in the conference logo. The conference attracts now a large number (roughly 500+) of participants from overseas as well. An exhibition is organized in parallel with every PEMC Conference, offering space for the industry to present their latest products in the field of Power Electronics and Motion Control. In addition to the regular oral sessions, key notes, round tables, tutorials, workshops, seminars, exhibitions, the dialogue sessions (enlarged "poster" presentations) present to the speakers a better cooperation among the participants.

CALL FOR PAPERS

The aim of this 17th IEEE-PEMC conference is to stimulate the findings of intelligent solutions (intelligent power electronics, intelligent control), in order to achieve the Intelligent Motion, Intelligent Mechanisms, Intelligent Sensors and Actuators, Intelligent Robots, Intelligent (more than smart) Micro Grids, Intelligent Power System, Intelligent Energy Generation, Processing, Distributing and Consuming, steadily walking to a better world.

The PEMC Council:

- This is the international, elected scientific authority, which serves as an advisory board and makes the PEMC activities to correspond to the approved standards and rules. The PEMC secretariat in Budapest has large amount of useful knowledge, keeping the tradition in PEMC conferences, controlling their scientific content and quality.

The IEEE-PEMC 2016 conference in Varna, Bulgaria honors the memory of Professor Istvan Nagy, who left us unexpectedly after giving all his life to the creation and successful implementations of the PEMC Conference. The world lost an extraordinary, both strong and kind person, an enthusiast in power electronics, electric drives and motion control. We shall remember his deeds as a tireless organizer, true friend, colleague and advisor and we shall follow his example. Considering that this conference is dedicated to the memory of the Late Prof Istvan Nagy, the PEMC Council announces, that from now on, the IEEE-PEMC award for valuable scientific and organizational achievements, is renamed to "Professor Istvan Nagy Award".



IEEE-PEMC 2016 BULGARIA



Main Tracks and Special Sessions:

PTT01. Power Electronic Converter Topologies, Design and Control, Power Supplies
TT02. Power Electronics in Transportation (Road, Aerospace, Marine and Railway Vehicles, Electric and Hybrid Vehicles)
TT03. Power Electronics in Electrical Energy Systems (Generation, Transmission and Distribution, Smart Grid Technologies, Renewable Energy Systems)
TT04. Electrical Machines and Actuators
TT05. Motion Control, Adjustable Speed Drives
TT06. Robotics and Mechatronics
TT07. Sensors, Measurement and Observation Techniques
TT08. Active Filtering and Unity Power Factor Correction
TT09. Semiconductor Devices Modelling, Packaging and Integration
TT10. Education

SS02. Demand Response in Smart Grid
SS03. Intelligent Fault Monitoring and Fault-Tolerant Control in Power Electronics and Electric Drives
SS04. Power electronics and control technology application to railway power supply systems
SS05. Application of nature-inspired approaches to motion control
SS06. Multilevel Converters for Drives, Renewable Energy and Grid Power Quality Applications
SS07. Efficient and Reliable Hybrid and Electric Propulsion Systems
SS08. Electrical Energy Systems with High Temperature Superconducting Technology (HTS)
SS09. Hybrid Solar Energy Conversion Aimed at Various Geographic Zones

Special Sessions and Tutorials

Special sessions are organized on highly specialized topics that were not included in the previous editions of the conference. The organizers of those sessions must observe the scope of the conference and follow the rules established by the conference committees. If a person or persons is (are) decided to organize a special session, he (they) must contact the Committee Chair responsible of the special sessions. The tutorials are subject to decision taken by the Committees and the Tutorials Chair.

Paper Submission

The working language of the conference is English. Prospective authors are requested to submit full papers (6 pages max) following the guidelines available on the conference website. Accepted and presented papers will be submitted for international publication through IEEE Xplore. Each accepted paper must be presented at the conference by one of the authors. Papers not presented will not be included in IEEE Xplore.

Submission Schedule:

- Submission of Special Session Proposals: 10 March 2016
- Deadline for submission of full paper: 31 March 2016
- Notification of acceptance with publication instruction: 15 May 2016
- Full paper in final form: 1 July 2016

FOR FURTHER INFORMATION VISIT
WWW.IEEE-PEMC2016.ORG



Dear colleague,

We invite you to submit a paper in the area of your research, academic or professional interest and related to any of the topics included in the 17th International Conference on Power Electronics and Motion Control IEEE-PEMC 2016 to be held on September 25-27, 2016 in a location on the Black sea coast of Bulgaria (<http://www.ieee-pemc2016.org>)

The deadlines are the following:

Contributed full papers:	March, 2016
Notification of acceptance:	May 15, 2016
Final submissions due:	July 1, 2016
Early registration closes:	June 15, 2016

Submission:

Selection will be based upon full length 6 or 8 A4 pages paper in IEEE double column format. Only contribution papers are accepted. Practical (experience based) contributions from industry are mostly welcome. Please make sure that your paper is the best it can be, when you load it up. Upload your **blind (anonymous) submission** at <http://vps.ieee-ies.org/submit/pemc16/> and complete the form containing the data of the paper and of the authors.

You will be invited to make corrections in accordance with reviewers' recommendations.

Accepted Papers:

All submitted papers will be reviewed by members of the International Steering Committee and the corresponding author will be notified of acceptance or rejection. Accepted papers must be presented at the conference (an author could present maximum two (2) papers) and will be published in the conference Proceedings.

Authors of accepted papers who registered in the conference can have access to the evaluations and possible feedback provided by the reviewers who recommended the acceptance of their papers, so they can accordingly improve the final version of their papers. Non-registered authors will not have access to the reviews of their respective submissions.

If you have not received an email with your paper's status, please login on your account and check under "Paper submission" to view the results and reviews for your paper.

Publishing after conference

All presented papers will be included in the IEEE Xplore database and will be ISI Thomson indexed.

All presented papers may be considered, by author's initiative, for final review and publication in IEEE Transactions on IE, and IA, provided their content falls into the scope of these Journals.

In conclusion, we would like to invite you to submit a paper, organize a special session, or become a committee member/reviewer.

Please pass on this information to a colleague of yours, to your student and collaborator, who might be interested in this conference.

We attached a flyer. Please print it and make it well visible by distributing it as a poster, e.g. on the wall in your institution, enterprise or university.

Best regards,

Stan Valtchev, PhD, Senior Member, IEEE, General Co-Chair
Ivan Yatchev, PhD, Senior Member, IEEE, General Co-Chair
Mihai Cernat, PhD, Senior Member, IEEE, Program Chair



The Power Electronics and Motion Control (IEEE-PEMC)

VARNA, BULGARIA | from 25 to 30 of September 2016

Sponsor and Exhibitor Opportunities



IEEE-PEMC 2016 BULGARIA





IEEE-PEMC2016, 25-30 September 2016

Sponsor Opportunities & Benefits

Gold: EUR 10,000 (Full exclusivity - available)

- First selection of premium booth 20 square meter (*The value of 20 square meter booth is 2400 EUR if you decide to attend only as exhibitor plus three lunch ones, six coffee breaks and gala dinner for the representatives of the Gold sponsor responsible for the booth*)
- Five full conference registrations (*The value of five registration fees is 2250 EUR, plus three lunch ones, six coffee breaks and gala dinner*)
- Opportunity for an exclusive general session technical presentation to all the delegates
- Company logo and link on www.ieee-pemc2016.org
- Prominent signage displaying Gold status throughout the conference
- Company logo on delegate bag
- Full page color ad and company logo in program booklet (*The value of full page color ad in programme booklet is 1000 EUR*)
- One piece of company literature in delegate bag (*The value of this option as separate service is 500 EUR*)
- Company logo on USB drives containing conference proceedings in delegate bags
- Reserved prominent table at the banquet (*for all representative of the Gold Sponsor registered for the conference*)
- Mentioned as the Gold Patron at the Opening

Silver: EUR 5,000

- Premium booth 15 square meter (*The value of 15 square meter booth is 1935 EUR if you decide to attend only as exhibitor plus three lunch ones, six coffee breaks and gala dinner for the representatives of the Gold sponsor responsible for the booth*)
- Three full conference registrations (*The value of five registration fees is 1350 EUR, plus three lunch ones, six coffee breaks and gala dinner*)
- Company logo and link on www.ieee-pemc2016.org
- Prominent signage displaying Silver status throughout the conference
- Company logo on delegate bag
- Half page color ad and company logo in program booklet (*The value of half page color ad in programme booklet is 500 EUR*)
- One piece of company literature in delegate bag (*The value of this option as separate service is 500 EUR*)
- Reserved prominent table at the banquet (*for all representative of the Silver Sponsor registered for the conference*)

Bronze: EUR 3,000

- Premium booth 6 square meter (*The value of 6 square meter booth is 810 EUR if you decide to attend only as exhibitor plus three lunch ones, six coffee breaks and gala dinner for the representatives of the Gold sponsor responsible for the booth*)
- One full conference registration (*The value of five registration fees is 450 EUR, plus three lunch ones, six coffee breaks and gala dinner*)
- Company logo and link on www.ieee-pemc2016.org
- Prominent signage displaying Bronze status throughout the conference
- Half page color ad and company logo in program Booklet (*The value of half page color ad in programme booklet is 500 EUR*)

For more information and availability, contact Gloria Popova at gpopova@eventdesignbg.com



IEEE-PEMC2016, 25-30 September 2016

Event Supporter Opportunities

All Event Supporters must have an Exhibit Space in the Expo Hall

Lanyards/badge holder: EUR 1,000

Patrons have the option of having their logos printed on the delegate lanyards. This option provides great brand exposure as this item will be used throughout the conference and has great visibility by all attendees.

Gala Dinner: EUR 5,000

The Gala Dinner is networking event that are well attended and provide a great opportunity for a high profile presence. The Patron's name and logo will be prominently displayed in the exhibit hall where the Gala Dinner takes place, in print materials and on all food and beverage stations. Welcome speech from the Patron is an option.

Luncheon: EUR 2,000 (each)

There are three luncheons in every working day of the conference. Food and beverage functions are a great opportunity for networking and are well attended. The Patron will have signage recognition and their company logo on the monitors and banners throughout the luncheon area. This opportunity will provide Patrons with a very visible, high profile presence with all participants.

Coffee breaks: EUR 1,200 (per day)

Food and beverage functions are a great opportunity for networking and are well attended. This opportunity will provide Patrons with a very visible, high profile presence with all participants. The Patron's name and logo will be prominently displayed in the exhibit hall, in print materials and on all food and beverage stations.

Full page, color ad in program booklet: EUR 1000; Half page, color ad in program booklet: EUR 500

Patrons will need to provide the print ready version of their ad to include in the program booklet, which is provided to all IEEE-PEMC2016 attendees.

One piece literature in delegate bag: EUR 500

Patrons can provide up to a four page brochure for the delegate bag. All attendees receive a bag upon arrival.

Exhibit Space Pricing:

Per 6 sq. meters

EUR 270 x 3 days=810 EUR

Per 15 sq. meters

EUR 645 x 3 days=1935 EUR

Per 20 sq. meters

EUR 800 x 3 days=2430 EUR

Invoice & Event Communication Contact:

Company: _____

Parent Company/Division: _____

Billing Address: _____

Billing Address 2: _____

City: Zip: Country: _____

Contact: _____

Title: _____

Phone: Fax: _____

Email: Website: _____

**This is the person who will receive your invoice, service manual, and other show-related correspondence.*

Please indicate your preferred method of payment.

☐ Wire Transfer EUR (add an additional EUR 10 for bank fees)

☐ Please charge my credit card VISA/MasterCard/

**2% processing fee included in the total amount charged*

☐ Exhibitor authorizes EVENT DESIGN Ltd. to charge this credit card for

the balance due on August 1, 2016 _____

Initial & Date

Credit Card # CCV Code Expiration date _____

Name of cardholder (please print) _____

Credit Card Authorization Signature: _____

Credit card billing address: ☐ Same as above (If different, fill in below.)

Address: _____

City: Zip: Country: _____

Payment Terms:

- Fifty percent (50%) of the total participation cost must accompany completed contract. Final payment will be due August 1, 2016.
- Beginning August 1, 2016 full payment.
- Exhibit space must be paid in full and Event Management must receive a completed contract before the exhibitor is permitted to install their display.
- EVENT DESIGN Ltd. may, at their discretion, release the exhibit space(s) if payments(s) are not made per the stated schedule.

Cancellation Policy:

- An exhibitor who cancels their exhibit space reservation must pay a cancellation fee, as seen below.
- Cancellations and exhibit space downsizes are subject to a cancellation fee of 100% of the exhibit space being cancelled or downsized.
- Cancellations will result in the forfeit of all exhibitor badges.

Exhibit Space Price Incl.:

- Rental of space
- General illumination
- 1 table/2 chairs for 6 sq. m.; 2 free exhibit-only registration badges (3 luncheon and 6 coffee breaks incl.)
- 2 tables/3 chairs for 15 sq. m.; 3 free exhibit-only registration badges (3 luncheon and 6 coffee breaks incl.)
- 3 table/4 chairs for 6 sq. m.; 4 free exhibit-only registration badges (3 luncheon and 6 coffee breaks incl.)
- General Clean-up
- Watchman Service
- Free WiFi

SPONSORSHIP PRICING:

☐ **Gold: EUR 10,000 (Full exclusivity - available)**

- First selection of premium booth 20 square meter
- Five full conference registrations
- Opportunity for an exclusive general session technical presentation to all the delegates
- Full page color ad and company logo in program booklet

For more information, please take a look at sponsors opportunities page

☐ **Silver: EUR 5,000**

- Premium booth 15 square meter
- Three full conference registrations
- Full page color ad and company logo in program booklet

For more information, please take a look at sponsors opportunities page

☐ **Bronze: EUR 3,000**

- Premium booth 6 square meter
- One full conference registration
- Company logo and link on www.ieee-pemc2016.org
- Prominent signage displaying Bronze status throughout the conference
- Half page black & white ad and company logo in program

For more information, please take a look at sponsors opportunities page

Exhibit Space or Sponsorship Total:

EUR _____

50% Deposit: EUR _____

Final balance due August 1, 2016: EUR _____

Beginning August 1, 2016, full payment must

accompany completed contract: EUR _____



Conference Guide

IEEE - PEMC 2016

2016 IEEE International Power Electronics
and Motion Control Conference (PEMC)

Festival and Congress Centre Varna
Varna, Bulgaria
25 - 30 September, 2016

Sponsored by
The Institute of Electrical and Electronics Engineers (IEEE)
IEEE Industrial Electronics Society (IES)
IEEE Industry Applications Society (IAS)

Co-sponsored by
Technical University of Sofia, Bulgaria
New University of Lisbon, Portugal

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Welcome to IEEE - PEMC 2016

Dear conference participants,

It is a great honour and pleasure to welcome you to the 17th IEEE-PEMC2016 conference, held in the beautiful city of Varna.

The Power Electronics and Motion Control (PEMC) conference was founded in the second half of the past century, more precisely 46 years ago, with a slightly different name and a more local orientation. That conference had a great and powerful driver, Professor Istvan Nagy, who gradually shaped and established it into a well-known and internationally recognized scientific event. Also, this internationalization was symbolically expressed by the East-West bridge of the previous logo. After the fall of the East-West physical and psychological barriers, the PEMC conference edition of the 1990 made its first big step into the wider international collaboration, attracting colleagues from a wide spectrum of countries.

Unfortunately for all of us, soon after our last meeting in Antalya, in 2014, we lost Professor Nagy, the man who gave everything to this conference. It is sad that we lost such a great man, but at the same time we were lucky to be able to collaborate with him and to be powered by his positive way of thinking. Even in his last days, he answered phone calls from his hospital bed... He will always teach us on his own example that the good which men do lives after they are gone from our lives. We see that from the seeds he planted, from the life he dedicated to the PEMC, strength for learning, research and development has sprung in all fields of energy and electronics. Therefore, we would like to dedicate this edition of our conference to the memory of Professor Istvan Nagy!

The recent times appear to be challenging for the economies. Our universities neglect the importance of the conference meetings, supporting exclusively the journal publications. The price of attending a conference has become prohibitive so we need to carefully select where to apply the university and research centre funds. In this difficult situation we are even prouder, since at this 17th edition, we have 268 submitted papers, while 195 papers are to be presented. We have now more participants, coming from a greater number of countries (more than 45), in comparison to PEMC 1990 (32 countries), almost equal to the immediately preceding PEMC 2014 (51 countries), held in better, financially more comfortable times.

Another important milestone achieved in this year's edition is that PEMC officially became a conference of the progressive and truly international Industrial Electronics Society (IES) of IEEE. The name IEEE-PEMC is officially reserved for our conference since July 2015. In response to the changes taking place in the conference and in the world at large, we will maintain our PEMC Council as an important advisory board but in the same time we will strictly follow the financial and administrative rules of the IEEE and IES.

The 17th PEMC International Conference is the first edition to open under the name IEEE-PEMC conference and we would like to congratulate everybody that made this possible. In the first place the congratulations go to the participants who contributed with their papers. Without your high

quality articles, we would not be here today. We would like to express our deepest gratitude to the "army" of voluntary hard working reviewers whose effort contributed for the outstanding quality of the paper selection process. In order to make this conference possible many people abdicated of their personal research, family life, and free time and worked day and night, some of them were paid, many others were not... Special thanks go to all those who contributed with their time and effort for the success of this conference! Last but not least we would like to acknowledge the participation of our reliable industrial friends and colleagues.

We expect that Bulgaria, with its many thousands of years of history, beautiful nature and friendly people will become a frequent venue for the IEEE conferences. We expect to be imaginative in creating new models of conferences, with high value and contribution to humanity. We will be responsive to the changes and provide the environment and culture that fosters talented young human resources for a new and more advanced world.

Please have a look at the conference program and booklet to find out the most important themes for you. We also hope the industrial visitors will draw their conclusions about the research perspectives and applications. We expect next time more companies will send representatives and exhibitors. We wish you a productive conference and hope you enjoy your stay in the beautiful Varna town, a multicultural city with a great selection of outstanding places to visit and to remember!

Welcome to IEEE-PEMC 2016!

PEMC 2016 Organizing Committees

Honorary Chairs

Georgi Mihov, Bulgaria
Kamal Al-Haddad, Canada
Leopoldo Franquelo, Spain
Rosen Vasilev, Bulgaria

General Co-Chairs

Ivan Yatchev, Bulgaria
Stanimir (Stan) Valtchev, Portugal and Bulgaria

PEMC Council statutory representatives:

Pavol Bauer, The Netherlands
Peter Korondi, Hungary

Chairs

Technical program

Mihai Cernat, Romania,
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Industry forum

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Georgy Todorov, Bulgaria

Round table discussion

Marian Kazmierkowski, Poland

Exhibition

Mariusz Malinowski, Poland and
Rozalina Dimova, Bulgaria

Publicity

Kouhei Ohnishi, Japan and
Isaak Y. Braslavskiy, Russia

Technical tour

Boyan Mednikarov, Bulgaria

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 Dan Lascu
 Dan Milici
 Dan Valentin Nicolae
 David Cavalheiro
 Dong-Sung Kim
 Dorin Petreus
 Doron Shmilovitz
 Doru Vatau
 Dragos Deaconu
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 Egon Ortjohann
 Elena Helerea
 Emma Grunditz
 Ersan Kabalci
 Eugen Subtirelu
 Felix Alberto Farret
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 Filippo Neri
 Francisco Alegria
 Frede Blaabjerg
 G. Siva Kumar
 Gabriel Gasparesc
 Gabriela Nicoleta Sava
 Gabriele Grandi
 Gheorghe Militaru
 Gheorghe Vuc
 Gheorghe-Daniel Andreescu
 Gheorghe-Eugen Subtirelu
 Giuseppe Buja
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 Valery D. Yurkevich
 Valery Vodovozov
 Vanja Ambrozic
 Victor Mendes
 Viliam Fedak
 Virgil Dumbrava
 Vlad Suru
 Volker Staudt
 Xiaodong Wu
 Xiaohua Jiang
 Xiaoqiang Guo
 Xueqing Li
 Yasue Mitsukura
 Yousef Soufi
 Yves Mollet
 Zaiyue Yang
 Zheng Zeng

Program At a Glance

Tutorials

25 September Varna Naval Academy	
08:00-09:00	Registration
08:30-10:30	Tutorials 1 (3 rooms) Tu-1, Tu-2, Tu-3
10:30-11:00	Coffee break
11:00-13:00	Tutorials 1 (continuation) Tu-1, Tu-2, Tu-3
14:00-16:00	Tutorials 2 (3 rooms) Tu-4, Tu-5, Tu-6
16:00-16:30	Coffee break
16:30-18:30	Tutorials 2 (continuation) Tu-4, Tu-5, Tu-6

PEMC Council Meetings

25 September Varna Naval Academy		27 September Festival and Congress Center	
		13:00-14:30	Meeting 2 BM City Restaurant
16:00-19:00	Meeting 1 Varna Naval Academy		

Tu-1: Johann Kolar, Switzerland
 Tu-2: Kaloyan Mihaylov, Bulgaria
 Tu-3: Slobodan Mircevski, Macedonia

Tu-4: Tomislav Dragicevic, Denmark
 Tu-5: Alex Ruderman, Kazakhstan
 Tu-6: Luis Palma Brito, Portugal

	26 September Festival and Congress Center	27 September Festival and Congress Center					28 September Festival and Congress Center					
8:00-19:00	Registration	Registration					Registration					
8:30-9:00	Opening ceremony	Plenary Session 3: KA4+KA5+KA6					Parallel sessions 4 (4 rooms)					
09:00-10:30	Plenary Session 1: In memoriam István Nagy						SS02 4	SS03 6	TT05-1 6	TT07-2 6		
10:30-11:00	Coffee break	Coffee break					Coffee break					
11:00-13:00	Plenary Session 2: KA1+KA2+KA3	Parallel sessions 2 (4 rooms)					Parallel sessions 5 (4 rooms)					
		TT01-2 6	TT03-2 6	TT04-2 6	TT02-1 6		SS06 5	SS09 6	TT05-2 6	TT07-3 6		
13:00-14:30	Lunch	Lunch					Lunch					
14:30-16:30	Parallel sessions 1 (4 rooms)	Parallel sessions 3 (5 rooms)										
	TT01-1 6	TT03-1 6	TT04-1 6	SS04 6	TT01-3 6	TT03-3 6					SS01 6	TT07-1 6
16:30-19:00 Including coffee between 16:30-17:00	Dialogue sessions 1 (DS1)	Dialogue session 2 (DS2)										
	TT01 15	TT03 18	TT10 2		TT02 7	TT04 13					TT05 10	SS01 1
20:00-21:00	Welcome Cocktail	Gala Dinner										
21:00-22:00												

KA1 - Kouhei Ohnishi, Japan

KA2 - İlhami Colak, Turkey

KA3 - Peter Palenski, Austria

KA4 - Zdeněk Peroutka

KA5 - David Del Regno

KA6 - Pavol Bauer

- TT01** = Power Electronic Converter Topologies, Design and Control, Power Supplies
- TT02** = Power Electronics in Transportation (Road, Aerospace, Marine and Railway Vehicles, Electric and Hybrid Vehicles)
- TT03** = Power Electronics in Electrical Energy Systems (Generation, Transmission and Distribution, Smart Grid Technologies, Renewable Energy Systems)
- TT04** = Electrical Machines and Actuators
- TT05** = Motion Control, Adjustable Speed Drives
- TT06** = Robotics and Mechatronics
- TT07** = Sensors, Measurement and Observation Techniques
- TT08** = Active Filtering and Unity Power Factor Correction
- TT09** = Semiconductor Devices Modelling, Packaging and Integration
- TT10** = Education
- SS01** = Contactless Charging of Electric vehicles
- SS02** = Demand Response in Smart Grid
- SS03** = Intelligent Fault Monitoring and Fault-Tolerant Control in Power Electronics and Electric Drives
- SS04** = Power electronics and control technology application to railway power supply systems
- SS05** = Application of nature-inspired approaches to motion control
- SS06** = Multilevel Converters for Drives, Renewable Energy and Grid Power Quality Applications
- SS07** = Efficient and Reliable Hybrid and Electric Propulsion Systems
- SS08** = Electrical Energy Systems with High Temperature Superconducting Technology
- SS09** = Concentrating Solar Photo-Voltaic-Thermal Collectors: Efficiency, Redesign And Industrial Applications.

Session Chairs

Session	Date, Time	Session Co-Chairs		
Opening ceremony	26 September, 8:30-9:00	Stan Valtchev Ivan Yatchev	Yousef Ibrahim Mihai Cernat	2 local organizing committee members
Istvan Nagy	26 September, 9:00-10:30	Peter Korondi Pavol Bauer	Hitoshi Hayashiya	Giuseppe Buja Teresa Orłowska-Kowalska
PEMC Council Meeting 1	25 September 16:00-19:00	Peter Korondi	Slobodan Mircevski	Ilhami Colak
PEMC Council Meeting 2	27 September 13:00-14:30	Peter Korondi	Pavol Bauer	Marian Kazmierkowski
KA1	26 September, 11:00-13:00	Giuseppe Buja	Teresa Orłowska-Kowalska	Marian Kazmierkovski
KA2				
KA3				
KA4	27 September, 8:30-10:30	Ilhami Colak	Slobodan Mircevski	Sandor Halasz
KA5				
KA6				
SS01	27 September 14:30-16:30	Giuseppe Buja	Andrei Marinescu	
SS02	28 September 8:30-10:30	Zaiye Yang	Catalin Mihai	
SS03	28 September 8:30-10:30	Teresa Orłowska-Kowalska	Vanja Ambrozic	
SS04	26 September 14:30-16:30	Hitoshi Hayashiya	Ilhami Colak	
SS06	28 September 11:00-13:00	Viliam Fedak	Mihai Cernat	
SS09	28 September 11:00-13:00	Carlos Fernandes	Luigi Costanzo	
TT01-1	26 September 14:30-16:30	Giuseppe Buja	David Del Regno	
TT01-2	27 September, 11:00-13:00	Asif Şabanoviç	Viliam Fedak	
TT01-3	27 September, 14:30-16:30	Doron Shmilowitz	Longya Xu	
TT01-DS1 (15)	26 September, 16:30-19:00	Slobodan Mircevski Doron Shmilovitz	Sandor Halasz	Felix Himmelstoss
TT02+SS07	27 September, 11:00-13:00	Calin Ciufudean	Petre-Marian Nicolae	
TT02-DS2 (2)	27 September, 16:30-19:00	Calin Ciufudean	Petre-Marian Nicolae	
TT03-1 (+SS08)	26 September, 14:30-16:30	Elena Helerea	Yusuke Hayashi	
TT03-2 (+SS08)	27 September, 11:00-13:00	Felix Himmelstoss	Leonid Bulyga	
TT03-3 (+SS08)	27 September, 14:30-16:30	Francois Bruno	Ivan Yatchev	

Session	Date, Time	Session Co-Chairs		
TT03-DS1 (18)	26 September, 16:30-19:00	Kostandinos Sourkounis Sorina Costinas	Massimo Vitelli Carlos Cardeira	Hideki Omori Ileana-Diana Nicolae
TT04-1	26 September, 14:30-16:30	Leonard Livadaru	Sergei Ryvkin	
TT04-2	27 September, 11:00-13:00	Alex Ruderman	Jawad Faiz	
TT04-DS2	27 September, 16:30-19:00	Marian Kazmierkowski	Sandor Halasz	
TT05-1 (+TT06+SS05)	28 September, 8:30-10:30	Sergey Ryvkin	Jan Vittek	
TT05-2 (+TT06+SS05)	28 September, 11:00-13:00	Krzysztof Zawirski	Goga Cvetkovski	
TT05-DS2 (9)	27 September, 16:30-19:00	Kazumasa Miura	Slobodan Mircevski	
TT07-1 (+TT08+TT09)	27 September, 14:30-16:30	Mihaela Popescu	Alex Van den Bossche	
TT07-2	28 September, 8:30-10:30	Ileana-Diana Nicolae	Marian Gaiceanu	
TT07-3	28 September, 11:00-13:00	Alexandru Bitoleanu	Michal Gwozdz	
TT07-DS2 (15)	27 September, 16:30-19:00	Dan Valentin Nicolae	Mihaela Popescu	Alexander Ruderman
TT10-DS1	26 September, 16:30-19:00	Kostandinos Sourkounis	Sandor Halasz	

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Sunday 25th of September

TU 1 - Solid-State Transformers – Key Design Challenges, Applicability, and Future Concepts

Tut-1 - Tutorial 1, Sunday 25th of September, 08:30

Lecturer/s: Johann Kolar, Switzerland

This tutorial introduces participants to the Solid-State Transformer (SST) concept in a comprehensive and easy-to-follow fashion. After a brief review of transformer basics and of the SST concept history, the motivation, requirements, and challenges associated with SST applications in future locomotives, smart distribution systems, and source-side (e.g., connection of wind power generators to a DC collecting grid, or of photovoltaic power plants to the MV AC grid) as well as load-side applications (e.g., medium voltage interface of high-power EV battery chargers or general MV-connected power supplies) are identified.

Conceptual aspects like, e.g., single-cell vs. multi-cell converter approaches, isolated front-end vs. isolated back-end converter architectures, reliability of multi-cell converters, protection, etc. are discussed. Furthermore, the operation of high-power isolated DC/DC converters is detailed, and modern SiC power semiconductors, medium-frequency transformer design, multi-cell converter control system partitioning, etc. are discussed. Finally, aspects of testing high-power medium-voltage systems and construction issues of modular medium-voltage converters are summarized. In order to render the discussions more tangible, the challenges and potential solutions are illustrated using an exemplary 1MVA multi-cell distribution level SST system.

Finally, future concepts such as unidirectional SSTs are addressed, and the most promising application scenarios for SSTs as well as future research areas are identified, before the tutorial concludes with a critical evaluation of the SST concept. The tutorial is tailored to serve the interests of a broad audience with academic or industrial backgrounds.

TU 2 - Tutorial 2

Tut-2 - Tutorial 2, Sunday 25th of September, 08:30

Lecturer/s: TBA

TU 3 - EU Project Motor Challenge - Recommendations and Comments

Tut-3 - Tutorial 3, Sunday 25th of September, 08:30

Lecturer/s: Slobodan Mircevski, Macedonia

In this tutorial you will inform about results of EU project Motor Challenge. It is well known that electric drives are the greatest consumers of electric energy, so as the best kWh is the saved one. In this you will learn how to save electric energy in electric drives, improving the production process with lower production costs and reducing global pollution with emission of green house gasses (GHG). You will understand that consumption of non-active energy (reactive and distortion) is not negligible. The tutorial is supported by practical examples with real measurements. Presented material is based on duty cycles of electric drives (IEC 60034-1), power measurement (DIN 40110) and power quality/harmonics (IEC 6100-3-2, IEC 61000-3-4).

Contents

Results of EU project “Motor Challenge” are presented. Energy efficiency is basis of technical systems working. Electric drives account for approximately 65% of the electricity consumed by EU industry. The efficiency of an electric drive depends on more factors, including: motor efficiency, motor speed control, proper sizing, power supply quality, distribution losses, mechanical transmission, maintenance practices, end-use mechanical efficiency (pump, compressor, fan, etc.). The energy efficiency has influence on the work of electric drive, its consumption and paying of electric energy (active, reactive), the working life etc. What energy efficiency practice for? The answer is simple - because of getting high quality and cheaper products, lower production costs and reducing of global pollution. How to realize energy efficiency in electric drives? The right way is with usage of better working machines, power convertors for getting variable speed to reduce power losses and energy efficient motors. These lectures deal strongly with energy efficiency in electric drives through energy parameters - efficiency η and power factor λ (in special case with ideal supply without harmonics $\cos \phi$). The attention is focused on motor speed control with saving potential of 50 billion kWh/year for EU-25 and motor losses expressed through its efficiency and power factor, with saving potential more than 27 billion kWh/year for EU-25, as it is recommended in results of MChP.

TU 4 - Power architectures, applications and control of DC distribution systems and microgrids

Tut-1 - Tutorial 1, Sunday 25th of September, 14:00

Lecturer/s: Tomislav Dragicevic, Denmark

Scope and benefits

DC distribution systems have higher efficiency, better current carrying capacity and faster response when compared to conventional AC systems. They also provide more natural interface with many types of RES and ESSs and better compliance with consumer electronics. Furthermore, when components are coupled around a DC bus, there are no issues with reactive power flow, power quality and frequency regulation, resulting in a notably less complex control system when compared to the AC coupled systems. All these facts lead to more and more applications of DC systems in modern power systems, including data/telecom centers, maritime industry, high voltage transmission systems, electric vehicle charging infrastructure, and DC microgrids. Still, design and operation of general DC systems imposes a number of specific challenges. The aim of this tutorial is to identify these challenges and transmit to the audience the instructor's industrial and academic experiences in the field. Tutorial will provide a framework in hardware and control design of DC distribution systems and microgrids, as well as overview of recent research activities in this area. Practical requirements and implementation details of several types of DC distribution systems used in real world industrial applications will be presented. Also, a number of study cases power architectures will be discussed in the first part of the tutorial. On the other hand, second part will address the features of several types of coordinated control design concepts that can assure intelligent real-time control of MGs. Moreover, the concepts of constant power load (CPL) and negative impedance instability will be explained in detail. In line with this, principles of linear stability analysis techniques will be reviewed and a broad class of stabilization techniques for MGs loaded with CPLs will be presented and examined. Tutorial will also present the view of the instructor on the promising research directions and future industrial applications in this area.

Tutorial Contents

Tutorial will be organized in the two main parts:

a) DC Distribution Power Systems Introduction: Applications, Architectures and Control

This part of tutorial aims firstly to shed light on the practical design aspects of DC distribution technology concerning typical power hardware topologies and their suitability for different existing and emerging applications. Following this introduction, a systematical control structure for DC distribution systems is presented and classified into local and coordinated control levels according to the respective functionalities in each level. As opposed to local control which relies only on local measurements, some line of communication between units needs to be made available in order to achieve coordinated control. In this view, the overall control is, depending on the communication method, divided into three basic coordinated control strategies, i.e. decentralized, centralized and distributed control. These methods are briefly reviewed and the foundation is being laid for their deeper evaluation in the second part of the tutorial.

b) DC Distribution System Coordination Strategies

The second part of the tutorial goes more in detail with regard to functionalities of each coordinated control strategy. It also assesses stability analysis and stabilization techniques for DC distribution systems. Decentralized control can be regarded as an extension of local control since it is also based exclusively on local measurements. In contrast, centralized and distributed control strategies rely on digital communication technologies. A number of approaches of using these three coordinated control strategies to achieve various control objectives are reviewed in the paper. Moreover, properties of DC MG dynamics and stability are discussed. The paper illustrates that tightly regulated point-of-load (POL) converters tend to reduce the stability margins of the system since they introduce negative impedances, which can potentially oscillate with lightly damped power supply input filters. It is also demonstrated how the stability of the whole system is defined by the relationship of the source and load impedances, referred to as the minor loop gain. Several prominent specifications for the minor loop gain are reviewed. Finally, a number of active stabilization techniques are presented.

TU 5 - Natural Balancing in Multilevel Converters - What You Always Wanted to Know but Had No Chance to Ask

Tut-2 - Tutorial 2, Sunday 25th of September, 14:00

Lecturer/s: Alex Ruderman, Kazakhstan

This Tutorial will present the original research on natural capacitor voltage balancing in multilevel converters conducted by the author over the past decade.

The first major topic is converters with capacitive filtering – reconfigurable Switched Capacitor Converters (SCC) with multiphase switching. The major contributions are related to balanced switching that makes charge flow for buck type converters as smooth as possible, newly discovered additional voltage target ratios for classic Flying Capacitor Converter (FCC) based and Fibonacci SCC topologies, and charge flow (equivalent resistance) analysis for SCC described by underdetermined linear equations (Minimal Norm principle).

The second major topic is natural balancing for different multilevel DC-DC and DC-AC converters with inductive loads or LC-filtering. Here the major results include simple and powerful time averaging based analytical methodology, understanding root causes of poor balancing, improved balancing rate by modified switching patterns, simple time domain theory for balance booster that essentially speeds-up natural balancing dynamics, understanding possible capacitor balanced voltage offsets for ideal symmetric switching and due to non-ideal unbalanced switching. Based on good natural balancing it is possible to make self-precharge that is charging capacitors to their predefined balanced voltages during power-up (start-up) at virtually no cost.

Each subtopic is illustrated by an in-depth analysis of simple representative demo cases. The presented material is self-explanatory intended for an entry / intermediate level audience.

TU 6 - Intelligent Fault Tolerant Control Systems - Application to Industrial Processes and X8-Quadcopter Drones.

Tut-3 - Tutorial 3, Sunday 25th of September, 14:00

Lecturer/s: Luis Palma Brito, Portugal

A typical feedback control structure for an industrial process plant or vehicle system may result in unsatisfactory closed-loop performance, in the event of faults or failures in actuators, sensors, controllers or other components of the overall system. Faults or failures can also generate dangerous situations for humans or machines, reduce products quality, and cause economic losses. Intelligent fault tolerant control systems (I-FTCS) should guarantee that faults don't provoke dangerous failures, using intelligent fault detection / diagnosis and fault tolerance approaches.

The tutorial aims to present theoretical concepts, in a comprehensive and integrated framework, related to dynamical systems, classical control techniques, fault detection / diagnosis and intelligent fault tolerant control approaches. Besides concepts, industrial and academic experiences are to be transmitted to the audience, as well as new challenges in these fields. In order to clarify the concepts, simulations and real applications in the industrial processes field, and also in multi-rotors drones, will be presented.

Main tutorial topics:

- * dynamical signals and systems: modeling and system identification;
- * linear and nonlinear control techniques;
- * optimization approaches;
- * control loop performance analysis;
- * faults and failures concepts;
- * fault detection techniques;
- * fault diagnosis techniques;
- * intelligent fault tolerant control approaches;
- * industrial processes applications;
- * X8-quadcopter drones: kinetics and dynamics modeling, identification, simulation in Matlab/Simulink and in virtual reality environment, real world experiments, and intelligent fault tolerant control;
- * concluding remarks and future trends;
- * discussion with the audience.

Monday 26th of September

CE - Opening Ceremony

Plenary Session Room - Europe, Monday 26th of September, 08:30

CE - Keynote Address 1

Plenary Session Room - Europe, Monday 26th of September, 11:00

Keynote Addresser: Kouhei Ohnishi, Japan

Presenter: Teresa Orłowska-Kowalska

Abstract - We can immediately know what the object is when we touch it. If the object is soft, it must be a sponge (or similar thing.) If it is rigid, it may be a metal block. That sensation is an ability of the human being called "haptic sense". "Real-haptics" is a technology to reconstruct haptic sense by acquiring dynamic physical information that is transferred bi-directionally between the surrounding environment and the human. An abandonment of haptics causes difficulty in further advance in automated machine, or may even result in threatening the safety and security of the process.

Maybe large gap between real human and robot comes from the excessive expectation induced at first

from the S.F. movie entitled "Metropolis" released in 1926. In fact, the artificial machine has been developed from the machine tool.

The performance has been measured by its stiffness almost proportional to the forward gain in the servo control. High stiffness seems to give high performance, however it loses compliant motion.

The robot motion based on the existing servo system is quite stiff and generates the motion far from the human action. Soft robotics is a new concept coming from real haptics. This gives not only compliant motion but also skillful motion to the robot and/or mechatronics. The talk will show the structure of motion control together with its implementation including a newly developed "haptic core-chip". Also the talk will introduce various applications by visual demonstrations.

CE - Keynote Address 2 - A survey on the contributions of power electronics to smart grid systems

Plenary Session Room - Europe, Monday 26th of September, 11:40

Keynote Addresser: İlhami Colak, Turkey

Presenter: Teresa Orłowska-Kowalska

Abstract - The smart grid (SG) as a research area is advancing dealing with a wider range of topics such as power systems, energy generation and telecommunication. The conventional utility grid is used to operate in a passive mode absorbing energy from the substations and delivering it to the customers. This approach is well developed but the needs of the state-of-the-art technology require a bidirectional flow of power and data. Nevertheless, smart grid systems provide more flexible, reliable, sustainable, secure and two-way communication service. Especially, integration of renewable energy sources, electrical vehicles and distributed generations (DG) into network can be achieved in an efficient way in smart grid systems. Moreover, control and monitoring capabilities, automatic configuration of the grid, and active involvement of consumers in energy production extend the importance of smart grids. All these positive aspects of smart grids have been attained by integration of power electronics and telecommunication technologies with the grid. This talk deals with contributions of power electronics to SG in the context of generation,

conversion, distribution, and control of power. The recent power electronic devices and systems adapted to SG are also introduced in detail with several power control methods.

Moreover, the renewable energy sources (RESs), which are an extensively studied topic of power engineering and their integration to smart grid, are also surveyed in terms of DG units, control and management features. Thus, a particular section is dedicated to RES utilization in SG covering almost all aspects of a monotype and hybrid energy plants. Finally, the talk is carried on by reviewing the most recent and comprehensive articles to highlight the importance of power electronics in a logical way in the smart grids for reader

CE - Keynote Address 3 - Simulation of heterogeneous energy systems

Plenary Session Room - Europe, Monday 26th of September, 12:20

Keynote Addresser: Peter Palenski, Austria

Presenter: Teresa Orlowska-Kowalska

Abstract - This talk will introduce the audience into the concepts of smart grid with its current research topics and the principles of cyber-physical energy systems, how to describe and how to work with them. The smart grid is the ICT answer to the power challenges of today and tomorrow by enabling flexible loads, active distribution grids, storage management, smart energy markets, and bidirectional power flows. Conceptually it is a distributed IT and automation system that is amalgamated with the physical power infrastructure: a cyber-physical system, and even a system of systems. Designing, optimizing, running, and diagnosing such systems requires reliable and scalable models which is the main problem with cyberphysical systems: hybrid models (discrete and continuous) are hard to deal with. There are, however, new and promising languages and methods to deal with such systems. Learn what works and what does not, and see how you can enhance your research and development with these methods.

TT01 1 - Power Electronic Converter Topologies 1

Room 4 - Hermann Ludwig Ferdinand von Helmholtz, Monday 26th of September, 14:30

Chair/s: Giuseppe Buja, David Del Regno

Thermo-Puncture Devices - Mechanical and Electrical Concepts

Dr. Felix A Himmelstoss, Dr. Karl H. Edlmoser

Time Domain Optimization of Voltage and Current THD for a Three-Phase Cascade H-Bridge Inverter

Mr. Rassul Bairamkulov, Prof. Alex Ruderman, Prof. Yakov Familiant

UDE-Based Robust Average Current Control of Bi-Directional Non-Inverting Buck-Boost Converter

Mr. Ilan Aharon, Prof. Doron Shmilovitz, Prof. Alon Kuperman

Design of a Robust Cascaded Controller for Cuk Converter

Mr. Fiaz Ahmad, Mr. Akhtar Rasool, Dr. Esraf Emre Ozsoy, Prof. Asif Sabanovic, Prof. Meltem Elitas

Optimum SPWM parameters for unbalanced grid voltage of n parallel connected inverters

Dr. Zebbadji Tahar, Prof. Ibtouen Rachid, Prof. Hadji Seddik

One Switch Three Phase Modified Vienna/Modular-Boost Rectifiers

Ms. Amina Hasan Abedin, Prof. Mohammad Ali Choudhury

TT03 1 - Power Electronics in Electrical Energy Systems 1

Room 5 - Hendrik Antoon Lorentz, Monday 26th of September, 14:30

Chair/s: Elena Helerea, Yusuke Hayashi

Refurbishing Existing MVAC Distribution Cables to Operate Under DC Conditions

Mr. Aditya Shekhar, Mr. Epameinondas Kontos, Prof. Armando Rodrigo Mor, Prof. Laura Ramirez-Elizondo, Prof. Pavol Bauer

Comparison of Battery Management Approaches for Energy Flow Optimization in Microgrids

Prof. Mario Vasak, Mr. Goran Kujundzic

Stability Study of Large-Scale Photovoltaic Plant Containing Polytype Inverters

Dr. Chen Zheng, Prof. Lin Zhou, Mr. Ke Guo, Mr. Qiang Liu, Dr. Bao Xie

Considerations on a MV/LV Transformer which Supplies a Distorting Load

Prof. Petre - Marian Nicolae, Mr. Ionut Daniel Smarandescu, Prof. Ileana-Diana Nicolae, Dr. Marian-Stefan Nicolae, Dr. Dinut-Lucian Popa

Energy-Saving Sliding Mode Control for Pumping System Fed by Renewable Energy

Prof. Sergey Ryvkin

The Mathematical Modeling of Alternating Current Electric Drive with DC-DC Converter and Ultracapacitors

Prof. Isaak Braslavskiy, Mr. Iurii Plotnikov, Prof. Stanimir Valtchev

TT04 1 - Electrical Machines and Actuators 1

Room 6 - Carl Friedrich Gauss, Monday 26th of September, 14:30

Chair/s: Leonard Livadaru, Sergey Ryvkin

Impact of Smooth Torque on Efficiency Performance in a High-Speed Automotive SRM Drive

Mr. Iliya Ralev, Mr. Fang Qi, Mr. Bernhard Burkhardt, Ms. Annegret Klein-Hessling, Prof. Rik W. De Doncker

Investigation of a 2V 1.1kW MOSFET Commutated DC Motor

Mr. Stefan Haller, Dr. Peng Cheng, Prof. Bengt Oelmann

Diagnostic Methods of Frequency Response Analysis for Power Transformer Winding A Review

Mr. Gideon Nnachi, Prof. Dan Valentin Nicolae

Operation of an Electrical Excited Synchronous Machine by Contactless Energy Transfer to the Rotor

Mr. Marcel Maier, Prof. Nejila Parspour

Flexible Lyapunov Function based Model Predictive Direct Current Control of Permanent Magnet Synchronous Generator

Mr. Tin Bariša, Dr. Andor Š. Ileš, Prof. Damir Sumina, Prof. Jadranko Matuško

Design, simulation and use of an energy harvester based on a permanent magnet synchronous generator

Mr. Jelle De Vlieger, Dr. Dries Vanoost, Dr. Joan Peuteman, Mr. Stefan Verbrugge, Prof. Herbert De Gersem, Prof. Davy Pissoort

SS04 - Power Electronics on Railway Power Supply Systems

Room 7 - Michael Faraday, Monday 26th of September, 14:30
Chair/s: Hitoshi Hayashiya, Ilhami Colak

Regenerative energy utilization in a.c. traction power supply system

Dr. Hitoshi Hayashiya

AC Electrification Systems with Power Converters for 25 kV 50 Hz Railways: a Comparative Study

Dr. Nilanjan Mukherjee, Dr. Stuart Hillmansen, Dr. Pietro Tricoli

Enhanced Operating Scheme of ESS for DC Transit System

Mr. Kyoungmin Kwon, Mr. Kyoung-Gu Lee, Mr. Taesuk Kim, Mr. Jinkook Lee, Mr. Byoung-Jeen Jone, Prof. Jaeho Choi, Prof. Ilhami Colak

Feasibility Study on Application of Force Control to Wear Test Apparatus for Contact Current Collection System

Mr. Minoru Yokoyama, Prof. Tomoyuki Shimono, Dr. Chikara Yamashita, Mr. Sei Nagasaka, Mr. Takuya Ohara

Robust State Estimation for Double Pantographs with Random Missing Measurements in High-Speed Railway

Dr. Xiaobing Lu, Prof. Zhigang Liu, Dr. Yanbo Wang, Dr. Hongrui Wang, Dr. Fuchuan Duan

The function development for emergency train running by battery application in traction power supply system

Mr. Yoshiki Shimizu, Mr. Junichi Kaminishi, Mr. Hirotaka Takahashi, Mr. Yasunori Kume, Mr. Kazuharu Honda, Mr. Hironori Kawatsu

ST DS1 - Dialog Session 1

Poster - Main Hall, Monday 26th of September, 17:00
Chair/s:

P01 A Novel Five-level Optimized Carrier Multilevel PWM Quad-Inverter Six-Phase Asymmetrical AC Drive

Dr. P. Sanjeevikumar, Prof. Frede Blaabjerg, Prof. Patrick Wheeler, Prof. Viliam Fedák, Prof. Mario Javier Duran, Prof. Pierluigi Siano

P02 Predetermining the size of Inrush Current at Power Transformers Coupling using LabVIEW

Ms. Maria-Cristina Nitu, Mrs. Claudiu-Ionel Nicola, Mr. Dorin Popa, Ms. Viorica Voicu, Mr. Marian Duta

P03 Unconventional technologies for achieving the contacts for the current paths

Mr. Silviu Andreescu, Ms. Maria-Cristina Nitu, Mr. Marian Duta, Ms. Viorica Voicu

P04 Synchronous PWM Control of Triple Transformer-Connected Inverters for Photovoltaic System

Dr. Valentin Oleschuk, Prof. Mihai Cernat, Dr. Marek Pastor, Dr. P. Sanjeevikumar

P05 A Three-Phase Power Factor Corrected (PFC) Single Ended Primary Inductor (SEPIC) AC-DC Converter

Ms. Amina Hasan Abedin, Ms. Khandaker Lubaba Bashar, Prof. Mohammad Ali Choudhury

P06 Power Electronics Controlled Voltage Source Based on Modified Sigma-Delta Modulator

Prof. Michał Gwóźdź, Mr. Dominik Matecki

P07 HVDC Power Transmission Simulation for Offshore Wind System with Three-Level Converter

Mrs. Mafalda Seixas, Prof. Rui Melicio, Prof. Victor Mendes

P08 Non Isolated and Non-Inverting Cockcroft Walton Multiplier Based Hybrid 2Nx Interleaved Boost Converter For Renewable Energy Applications

Mr. Mahajan Sagar Bhaskar, Dr. P. Sanjeevikumar, Prof. Frede Blaabjerg, Prof. Viliam Fedák, Prof. Mihai Cernat, Mr. Rishi Kulkarni

P09 Comparative Analysis of Modulation Techniques in Frequency Converter

Dr. Anshul Agarwal, Dr. P. Sanjeevikumar, Dr. Vineeta Agarwal, Dr. Rajasekar Selvamuthukumarn, Prof. Marek Pastor, Prof. Mihai Cernat

P10 Experimental study on SVPWM Switching Sequences for VSIs

Mr. G Vivek, Mrs. Meenu Nair, Mrs. Mukti Barai

P11 AC Voltage Regulators with Switched Capacitors

Dr. Aleksey Udovichenko, Prof. Gennady Zinoviev

P12 Hybrid 5-level cascaded H-Bridge converter with model predictive controller.

Mr. Pawel Wiatr, Prof. Marian Kazmierkowski

P13 Wind Energy Conversion System under a Supervisor Deterministic Finite State Machine

Dr. Carla Vivieros, Prof. Rui Melicio, Prof. José Igreja, Prof. Victor Mendes

P14 Harmonic Minimization In Modulated Frequency Single-Phase Matrix Converter

Dr. Anshul Agarwal, Dr. P. Sanjeevikumar, Dr. Vineeta Agarwal, Dr. Rajasekar Selvamuthukumarn, Prof. Viliam Fedák, Prof. Mihai Cernat

P15 Technical Aspects of Common-Mode Leakage Current Suppression in PV-Generation Systems

Mr. Evgeny Grishanov, Prof. Sergey Brovanov, Dr. Maxim Dybko, Prof. Sergey Kharitonov, Prof. Sergey Leonov

P16 Calculation of Steady Non-Sinusoidal Modes and Electric Power Losses in Complex Electrical Networks

Dr. Nikolay N. Kharlov, Mr. Vyacheslav S. Borovikov, Prof. Vasily Ya. Ushakov, Mr. Evgeniy V. Tarasov, Mr. Leonid L. Bulyga

P17 Implementation of Genetic Algorithm to find the optimal timing of Overcurrent relays.

Mr. Anand Pandey, Dr. Sheeraz Kirmani

P18 Economic Evaluation on the Use of Reconfiguration Systems for Energy Production Increase in PV Plants

Dr. Giuseppe Schettino, Dr. Massimo Caruso, Prof. Rosario Miceli, Dr. Fabio Viola, Dr. Pietro Romano

P19 Prediction of events in the smart grid: interruptions in distribution transformers

Mr. Joaquim Viegas, Dr. Susana Vieira, Dr. Rui Melicio, Dr. João Sousa, Mr. Hugo Matos

P20 Design and Simulation of a 10 MW Photovoltaic Power Plant using MATLAB and Simulink

Dr. Dinut-Lucian Popa, Dr. Marian-Stefan Nicolae, Prof. Petre-Marian Nicolae, Mr. Marius Popescu

P21 Effects of Renewable Energy Sources on the Power System

Prof. Ramazan Bayindir, Dr. Sevki Demirbas, Dr. Erdal Irmak, Mr. Umut Cetinkaya, Mr. Ahmet Ova, Mr. Merden Yesil

P22 A wind turbine two level back-to-back converter power loss study

Dr. Ivan Mrcela, Prof. Damir Sumina, Mr. Filip Sacic, Mr. Tin Bariša

P23 Design a Grid Tie Inverter for PMSG Wind Turbine using FPGA & DSP Builder

Prof. Ilhami Colak, Mr. Eklas Hossain, Prof. Ramazan Bayindir, Mr. Jakir Hossain

P24 PV Module Parameters Extraction with Maximum Power Point Estimation Based on Flower Pollination Algorithm

Mr. Rabah Benkercha, Dr. Samir Moulahoum, Prof. Ilhami Colak, Mr. Bilal Taghezouit

P25 Standards-Based Investigation of Voltage Dips and Voltage Imbalances in an Organized Industrial Zone

Prof. Ramazan Bayindir, Dr. Mehmet Yesilbudak, Mr. Salih Ermis

P26 An Approach to Quantify the Technical Impact of Power Factor Correction in Medium Voltage Distribution Systems

Mr. Felix Dlamini, Prof. Dan Valentin Nicolae

P27 Study on Electromagnetic Emissions from Wireless Energy Transfer

Mrs. Elena Baikova, Prof. Stanimir Valtchev, Prof. Rui Melicio, Prof. Anastassia Krusteva, Mr. George Gigov

P28 Industrial internet of micro smart grid for educational process

Mr. Lev Khruslov, Mr. Vladimir Shishov, Mr. Sergei Kireev, Mr. Mikhail Rostowikov

P29 On Adequacy of Electrical Engineering and Computers Curriculum to Current and Future Technological Challenges - A Case Study

Prof. Elena Helerea, Prof. Nicolae Danut Ilea, Dr. Moasa Beatrice Costela

P30 Bidirectional DAB DC-DC Converter with Hysteresis Current Mode Control

Mr. Georgi T. Kunov, Prof. Ilona I. Iatcheva, Mr. Danail H. Marinov, Prof. Elissaveta D. Gadjeva, Prof. Ivan S. Yatchev

P31 Steep Voltage Gain Quadratic Boost Converter Steep Voltage Gain Quadratic Boost Converter With a Switched-Coupled Inductor

Dr. Boris Axelrod, Dr. Yefim Berkovich

P32 Resonant converter for charging a supercapacitor stack

Prof. Dimitar Aranudov, Prof. Nikolay Hinov, Mr. Ivan Nedyalkov

P33 Conception of a YBCO Superconducting ZFC-Magnetic Bearing Virtual Prototype

Mr. Arsénio Carvalho, Mr. Martim Carvalho, Prof. Carlos Carneira, Prof. Paulo Branco, Prof. Rui Melicio

P34 Viability of a Frictionless Bearing with Permanent and HTS Magnets

Mr. António Arsénio, Mr. Martim Carvalho, Prof. Carlos Carneira, Prof. Rui Melicio, Prof. Paulo Branco

CE - Welcome Cocktail

Restaurant - BM City Restaurant, Monday 26th of September, 20:00

Tuesday 27th of September

CE - Keynote Address 4 - Keynote speech: Challenges of Modern AC Motor Traction Drives

Plenary Session Room - Europe, Tuesday 27th of September, 08:30

Keynote Addresser: Zdeněk Peroutka, Slovakia

Presenter: Ilhami Colak

Abstract - Research of modern ac motor traction drives brings many challenges including a drive concept, a design of particular drive components, a drive and vehicle control, interactions of a vehicle with its environment, etc. One of the most important characteristics of a traction drive is its reliability and safety. Thus, the experimental testing and validation are important part of the research of new traction drive technologies. R&D center RICE opened in June 2016 in Pilsen, Czech Republic a world unique laboratory for transportation systems and medium-voltage power electronics. Its technology will be briefly discussed in the first part of this contribution. A drive concept is a big issue to be discussed in the next part of the presentation. There exist many solutions from conventional wheel-set/axle drives with gearbox to either direct axle or wheel drives. Many solutions have been introduced specifically in light traction vehicles, where full low-floor design is a standard requirement at present. The main research challenge is the significant reduction of the weight and volume of the traction drive unit while keeping its tractive effort, long lifetime and as low as possible cost. A design of power electronics converters is the next big issue which will be discussed in the third part of this contribution. New packages (such as XHP) and new power electronics devices (specifically with wide bandgap semiconductors) require new concepts of converter design. The last part of this presentation will be dedicated to a traction drive control. A control has to provide the traction drive not only with excellent dynamics, but it must also secure the drive stability and appropriate interaction between the drive and a supplying system. Application of optimal control theory, specifically model predictive control techniques, in modern ac motor traction drives will be discussed.

CE - Keynote address 5 - A Holistic Framework For Power Electronics

Plenary Session Room - Europe, Tuesday 27th of September, 09:10

Keynote Addresser: David Del Regno, USA

Presenter: Ilhami Colak

Abstract - The ubiquitous role of Power Electronics in delivering and controlling electrical energy makes the innovation of these technologies a strong priority in relation to sustainable development goals all over the world. Power electronics technologies were deemed mature already in the early 2000s and have always relied on innovations in materials for their own progress, while the design processes have remained substantially unchanged. Approaches based on Linear Design Workflow, roadmapping, and traditional forms of modelling and simulations seems to be unfit to fulfill the current need for innovation of Power Electronics. It is here introduced an overview on a holistic framework for power electronics design that tackles innovation needs with systems engineering, decision making, multidisciplinary optimization, and knowledge-based technologies. The framework is based on subject-independent, process-independent abstractions from systems engineering and decision making, and exploits multidisciplinary optimization for automatic exploration of the design space. The framework is said to be "holistic" because it can address the problems related to power electronics design considering the whole system from source to load and allows integration in the design process of

information from the context (market, societal systems) thus reducing the gap between designers and customers and, more in general, reducing the uncertainty associated to the design decisions. The framework employs also knowledge-based technologies to support the accurate construction of power electronics systems descriptions, the automatic management of the models used for analyses, the capturing and reuse of knowledge generated during the design process, and the automatic validation against domain knowledge. This approach has already found applications in other industries (aerospace, automotive) achieving remarkable time reductions in complex designs and with the added advantage of automating the less creative design activities.

CE - Keynote address 6 - Solutions for System Integration of Renewable Energy and Storage

Plenary Session Room - Europe, Tuesday 27th of September, 09:50

Keynote Addresser: Pavol Bauer, Netherlands

Presenter: Ilhami Colak

Abstract - Integration of renewable energy sources namely solar, wind and storage (e.g. electric vehicles) is addressed in the presentation. Two different scenarios are discussed: renewable energy at convenient location and also local energy production and integration into smart cities with storage. Several examples of integration with LV DC grids and needed power electronic interfaces and systems with high efficiency will be shown. Development of power electronics technology for DC grids and challenges, solutions for Electric mobility (charging with renewable energy, inductive charging) related to smart cities are suggested. DC systems and (micro) grids for integration of Renewable Energy Sources and Energy Storage in applications such as smart (green) cities; electric mobility; utilization, reliability and controllability of DC grids are briefly discussed. HV/MV DC Transmission Networks for large scale implementation of Renewable Energy Sources (solar, wind, wave), optimization and controllability of HVDC transmission grids are addressed too.

TT02 - Power Electronics in Transportation

Plenary Session Room - Europe, Tuesday 27th of September, 11:00

Chair/s: Calin Horatiu Ciufudean, Petre-Marian Nicolae

Proposal of a novel control method of Li-ion battery system for regenerative energy utilization in traction power supply system

Dr. Hitoshi Hayashiya, Mr. Shotaro Abe, Mr. Yuuki Iino, Mr. Katsutoshi Nakao, Mr. Masami Hino, Mr. Hiroshi Ikarashi, Mr. Haruo Nemoto, Mr. Hironori Kawatsu, Mr. Tetsuya Kato

Evaluation of installation effect of the energy storage system in d.c. traction power supply system

Mr. Yuuki Iino, Mr. Masami Hino, Mr. Shotaro Abe, Mr. Katsutoshi Nakao, Mr. Kishin Kudo, Dr. Hitoshi Hayashiya

A Robust Active Stabilization Technique for DC Microgrids with Tightly Controlled Loads

Dr. Bijan Zahedi, Dr. Babak Nahid-Mobarakeh, Prof. Serge Pierfederici, Prof. Lars Norum

Improving Magnetic Coupling for Battery Charging Through 3D Magnetic Flux

Mr. Luis Jorge, Prof. Stanimir Valtchev, Prof. Rui Melicio

Energy Management Strategy of a Propulsion System with Supercapacitors for Electric and Hybrid Vehicles

Mr. Waled M. Elsayed, Dr. Jorge Estima, Prof. Chiara Boccaletti, Prof. Antonio J. Marques Cardoso

TT01 2 - Power Electronics Converter Topologies 2

Room 4 - Hermann Ludwig Ferdinand von Helmholtz, Tuesday 27th of September, 11:00
Chair/s: Asif Sabanovic, Viliam Fedák

Development Of 30kva Inverter Using Sic Mosfet For 180°C Ambient Temperature Operation

Prof. Longya Xu

A Study of Parallel Structures of DC-DC Converters for Application in Wind Energy Conversion Systems

Prof. Zahari Zarkov, Mr. Ivan Bachev, Prof. Ludmil Stoyanov, Prof. Vladimir Lazarov

Seven Level Asymmetric Cascade Inverter with Space Vector PWM Added PR Control

Prof. Ilhami Colak, Dr. Ersan Kabalci, Mr. Gökhan Keven

Optimization of PWM for Overmodulation Region of Two-level Inverters

Dr. Peter Stumpf, Prof. Sándor Halász

Novel Hybrid Buck L Converter for Wide Conversion Ratios

Prof. Folker Renken, Mr. Udo Schürmann, Mrs. Qingyue Chen, Dr. Ioana-Monica Pop-Calimanu

A comparison of TFET rectifiers for RF energy harvesting applications

Mr. David Cavalheiro, Prof. Francesc Moll, Prof. Stanimir Valtchev

TT03 2 - Power Electronics in Electrical Energy Systems 2

Room 5 - Hendrik Antoon Lorentz, Tuesday 27th of September, 11:00
Chair/s: Felix Himmelstoss, Leonid Bulyga

Analysis and prototyping of multicellular ac-dc converter for future dc distribution system

Dr. Yusuke Hayashi, Mr. Yoshikatsu Matsugaki, Dr. Tamotsu Ninomiya, Dr. Hiromichi Ohashi

Resonant Electromagnetic Vibration Harvesters feeding Sensor Nodes for real-time Diagnostics and Monitoring in Railway Vehicles for Goods Transportation: a numerical-experimental analysis

Prof. Massimo Vitelli, Dr. Luigi Costanzo, Dr. Marco Balato, Prof. Roberto Langella, Dr. Alessandro Lo Schiavo, Dr. Osvaldo Brignole, Dr. Claudio Cavalletti, Dr. Antonino Maresca, Dr. Nadia Mazzino, Prof. Alfredo Testa

Linear Programming Based Optimization Tool For Day Ahead Energy Management Of A Lithium-Ion Battery For Industrial Application

Mr. Juri Fedjaev, Dr. Sid-Ali Amamra, Prof. Bruno Francois

Control design and Day-Ahead Supervision of a Distributed Energy Storage Systems

Dr. Sid-Ali Amamra, Prof. Bruno Francois

Stability Analysis of an Isolated Power System controlled by a Virtual Synchronous Machine

Dr. Salvatore D'Arco, Dr. Jon Are Suul

Power Transfer Computations for Medium Voltage AC Link by Imposing Rated Current at Sending End

Mr. Aditya Shekhar, Mr. Epameinondas Kontos, Prof. Laura Ramirez-Elizondo, Prof. Armando Rodrigo Mor, Prof. Pavol Bauer

TT04 2 - Electrical Machines and Actuators 2

Room 6 - Carl Friedrich Gauss, Tuesday 27th of September, 11:00

Chair/s: Alexander Ruderman, Jawad Faiz

Flywheel Energy Storage System with Magnetic HTS Suspension and Embedded in the Flywheel Motor-Generator

Mr. Pavel Dergachev, Mr. Kosterin Alexander, Ms. Ekaterina Kurbatova, Dr. Kurbatov Pavel

An improved Dynamic Model for Induction Motors Including Core Losses

Mr. Gabriel Khoury, Prof. Ragi Ghosn, Dr. Flavia Khatounian, Prof. Maurice Fadel, Mr. Mathias Tientcheu

Study of Cage Torsional Resonance Failures in Inverter-Fed Fabricated-Cage Induction Motors Used in Traction Drives

Prof. Claudio Bruzzese, Prof. Ezio Santini

No-Load Analysis of Permanent Magnet Machines With Bread-Loaf Magnets and Fractional-Slot Winding Using Conformal Mapping and Magnetic Equivalent Circuits

Mrs. Ana Hanic, Prof. Damir Zarko, Prof. Dalibor Kuhinek, Mr. Zlatko Hanic

Model-Based Development of Induction Motor Control Algorithms with Modular Architecture

Mr. Krisztián Horváth, Mr. Márton Kuslits

Performance Comparison of Control Strategies for Mono-Inverter Dual-PMSM System

Mr. Tianyi Liu, Prof. Maurice Fadel

TT01 3 - Power Electronic Converter Topologies 3

Room 4 - Hermann Ludwig Ferdinand von Helmholtz, Tuesday 27th of September, 14:30

Chair/s: Doron Shmilowitz, Yousef Ibrahim

An Improved Fully Soft Switched PWM Boost Converter

Dr. Sevilay Cetin

Novel High Frequency Soft Switching DC/DC Converter with Active Rectifier and Active Snubber

Mr. Róbert Atkovič, Prof. Jaroslav Dudrik

High-Frequency Soft-Switching DC-DC Converter With Full-Bridge Output Rectifier

Mr. Marek Pastor, Mr. Jaroslav Dudrik, Mr. Ondrej Revak

Modular Multilevel Converter based Test Bed for MVDC Applications - A Case Study with a 12 kV, 5 MW Setup

Mr. Pawel Blaszczyk, Dr. Michael Steurer, Mr. Dionne Soto, Mr. Ferenc Bogdan, Mr. John Hauer, Mr. Karl Schroder

A generic method of Pulse Width Modulation applied to 3-Level T-type NPC inverter

Dr. Simon Cailhol, Dr. Paul-Etienne Vidal, Prof. Frédéric Rotella

Highly Efficient High Frequency Inverter for Induction Heating Using SiC Power Module.

Prof. Hiroyuki Ogiwara, Prof. Misao Itoi, Prof. Mutsuo Nakaoka

TT03 3 - Power Electronics in Electrical Energy Systems 3

Room 5 - Hendrik Antoon Lorentz, Tuesday 27th of September, 14:30

Chair/s: Francois Bruno, Ivan Yatchev

Synchronous Reluctance Generator with FPGA Control of Three-Level Neutral-Point-Clamped Converter for Wind Power Application

Mr. Mohammed Alnajjar, Prof. Dieter Gerling

Comparative Study of IGBT and SiC-MOSFET in a Wireless V2H System with a New Bidirectional Single-Ended ZVS Converter

Mr. Shinya Ohara, Prof. Hideki Omori, Dr. Kenji Fukuda, Dr. Hisato Michikoshi, Prof. Noriyuki Kimura, Prof. Toshimitsu Morizane, Prof. Mutsuo Nakaoka

Modeling of PV Generators from Different Technologies - Case Study

Prof. Zahari Zarkov, Prof. Ludmil Stoyanov, Mr. Valentin Milenov, Mrs. Hristina Voynova, Prof. Vladimir Lazarov

An Efficient Maximum Power Point Tracking Algorithm for Photovoltaic Arrays under Partial Shading Conditions

Mr. Jawad Ahmad, Prof. Filippo Spertino, Prof. Paolo Di Leo, Mr. Alessandro Ciocia

State Trajectory Analysis for Modular Multilevel Converter

Mr. Chen Li, Mr. Yadong Lyu, Dr. Fred C. Lee

Continuity of power supply in smart grid with PV penetration

Dr. Vesselin Chobanov

SS01 - Contactless Charging of Electric Vehicles

Room 6 - Carl Friedrich Gauss, Tuesday 27th of September, 14:30
Chair/s: Giuseppe Buja, Andrei Marinescu

Mathematical Model of Series-Parallel Compensation for Contactless Power Transfer System

Mr. Brijesh Kumar Kushwaha, Mr. Gautam Rituraj, Dr. Praveen Kumar, Prof. Pavol Bauer

Contribution to the System Design of Contactless Energy Transfer Systems

Mr. David Maier, Mr. Jörg Heinrich, Mr. Marco Zimmer, Mr. Marcel Maier, Prof. Nejila Parspour

Using VNA for IPT Coupling Factor Measurement

Prof. Andrei Marinescu, Mr. Ionel Dumbrava

Analysis and Comparison of Multi-Coil Inductive Power Transfer Systems

Mr. Venugopal Prasanth, Mr. Soumya Bandyopadhyay, Prof. Pavol Bauer, Prof. Braham Ferreira

Efficiency and power sizing of SS vs. SP topology for wireless battery chargers

Prof. Giuseppe Buja, Prof. Manuele Bertoluzzo, Mr. Rupesh Jha, Mr. Giacomuzzi Stefano, Mr. Kishore Naik Mude

3D space transformers analysis for Inductive Energy Transfer

Dr. Artur Moradewicz, Mr. Rafal Miskiewicz, Dr. Renata Sulima, Prof. Jan Sikora

TT07 - Sensors, Active Filtering, Semiconductor Devices

Room 7 - Michael Faraday, Tuesday 27th of September, 14:30

Chair/s: Mihaela Popescu, Alex Van den Bossche

Electrical parameter observation for induction machine sensorless drive using a sensitivity and observability based ekf

Mr. Gaëtan Lefebvre, Dr. Jean-Yves Gauthier, Dr. Alaa Hijazi, Mr. Vincent Le Digarcher, Prof. Xuefang Lin-Shi

High Performance Load Acceleration Control based on Singular Spectrum Analysis for Industrial Robot

Dr. Thao Tran Phuong, Prof. Kiyoshi Ohishi, Dr. Yuki Yokokura, Mr. Thang Bo Xuan, Mr. Akinori Yabuki

Optimal Controllers Design in Indirect Current Control System of Active DC-Traction Substation

Prof. Alexandru Bitoleanu, Prof. Mihaela Popescu, Dr. Vlad Suru

Behavioral Modeling of CMOS Digital Potentiometers Using VHDL-AMS

Dr. Ivailo Pandiev

Peltier Module based Temperature Control System for Power Semiconductor Characterization

Mr. Georges Engelmann, Mr. Michael Laumen, Mr. Karl Oberdieck, Prof. Rik W. De Doncker

Wavelet Packet Transform, a Reliable and Fast Method to Obtain the Fundamental Components Required for Active Filtering in Power Plants

Prof. Ileana-Diana Nicolae, Prof. Petre-Marian Nicolae, Dr. Marian-Stefan Nicolae, Mr. Ionut Daniel Smarandescu

ST DS2 - Dialog Session 2

Poster - Main Hall, Tuesday 27th of September, 17:00

Chair/s:

P01 Contactless Power Transfer Modeled in Software ANSYS

Mr. Radek Fajtl, Mr. Michal Košík

P02 Some aspects of the reliability increasing of the transport electric drives

Dr. Isaak Braslavskiy, Dr. Vladimir Metelkov, Dr. Stanimir Valtchev, Mrs. Dina Esaulkova, Dr. Alex Kostylev, Dr. Andrey Kirillov

P03 Designing the universal vector control system using relay current regulation principle for controlling of general purpose industrial AC drives

Prof. Victor Mesherayakov, Mr. Vladimir Voekov, Mr. Vladimir Ivashkin, Prof. Stanimir Valtchev

P04 Angular Rate Damping Algorithm of the SamSat-218D Nanosatellite

Mr. Andrey V. Kramlikh, Mrs. Maria E. Melnik

P05 Modeling, Simulation and Validation of DC Motor with Spring Load System

Mr. Zafer Ibrahim Esen, Mr. Semih Cakiroglu, Dr. Murat Sahin, Mr. Zafer Kulunk

P06 Optimization Of The Control Loops Of The Variable Frequency Induction Motor Drive Of The Flame Reactor Feed Screw

Mr. Yury Dementyev, Mr. Nikolay Koyain, Mr. Sergey Kladiev, Mr. Kirill Negodin, Mr. Konstantin Obraztsov

P07 Nonlinear Redesign of Vibration Energy Harvester: Linear Operation Test and Nonlinear Simulation of Extended Bandwidth

Mr. Ondrej Rubes, Mr. Jan Smilek, Mr. Martin Brablc, Prof. Zdenek Hadas

P08 Position and Attitude Control of Quadrotor UAV

Mr. Yusuf Atalay, Mr. Kemal Buyukkabasakal, Prof. Aydogan Savran

P09 Modeling and Supervisory Control of a Virtual X8-VB Quadcopter

Mr. Vasco Brito, Prof. Luis Brito Palma, Prof. Fernando Vieira Coito, Prof. Stanimir Valtchev

P10 Optimizing The Automation of an Iron Ore Production Line - A Case Study, Part I: Optimal Automated Logistics

Prof. Lubomir T. Dechevsky, Dr. Gabor Sziebig, Prof. Peter Korondi

P11 A Novel Type of High Power-Factor Miniaturized Wireless EV Charger with Optimized Power Receiving Circuit and Single-Ended Inverter

Mr. Takuya Kitamoto, Prof. Hideki Omori, Mr. Shinya Ohara, Prof. Toshimitsu Morizane, Prof. Noriyuki Kimura, Prof. Mutsuo Nakaoka

P12 Analysis of Power Converters with Devices of SiC for Applications in Electric Traction Systems.

Mr. Efren Fernandez, Mr. Alejandro Paredes, Dr. Luis Romeral, Dr. Vicent Sala

P13 Supercapacitor Based Storage System for Efficiency Improvement of Lead-Acid Powered Light Electric Vehicle

Mr. Kaspars Kroics, Prof. Viesturs Brazis

P14 Development of Constant Current Power System for HHO Cell operations to reduce fuel consumption

Mr. Pavan Kumar K A, Mr. Nikhil S. Arora, Dr. M. Mahesh

P15 Experimental study of wireless inductive system for electro vehicles batteries charging

Prof. George Gigov, Prof. Anastassia Krusteva, Prof. Stanimir Valtchev

P16 Electronic Differential for Electric Vehicle with Evenly Split Torque

Mr. Jorge Folgado, Prof. Stanimir Valtchev, Prof. Fernando Coito

P17 An Induction Motor Design for Urban Use Electric Vehicle

Dr. Muhammet Tahir Güneşer, Mr. Adem Dalcalı, Mr. Turgut Öztürk, Mr. Cemil Ocak, Prof. Mihai Cernat

P18 Analysis of broken rotor bar fault in a squirrel-cage induction motor by means of stator current and stray flux measurement

Mrs. Ielyzaveta Chernyavska, Dr. Ondřej Vitek

P19 Performance Verification of Saturated IPM Bearingless Motors Considering Magnetic Pull Variation

Prof. Jawad Faiz, Dr. Zahra Nasiri-Gheidari, Prof. M. Azizur Rahman

P20 Maximisation of back EMF in a high performance PMSM machine with concentrated windings

Mr. Niklas Förster, Prof. Roberto Leidhold, Prof. Stefan Palis

P21 Estimation of Losses in Inverter-fed Induction Machines including Electrical Insulation Losses

Prof. Jawad Faiz, Mr. A Ghasemi

P22 Optimizing of Tram DC Traction Motors Pairing

Dr. Miroslav Novak, Prof. Zelmira Ferkova

P23 Modelling of Switched Reluctance Motor Drive Based on ANSYS/Simplorer

Mr. Lubos Suchy, Dr. Zelmira Ferkova

P24 Comparative Finite Element Analysis of Two PM Fractional Slot Machines with 9/8 and 9/10 Structure

Mr. Madalin Bodea, Prof. Alecsandru Simion, Dr. Leonard Livadaru

P25 Analysis of electromagnetic processes in high-speed electrical machines with foil gas-dynamic bearings

Dr. Mikhail Rumyantsev, Dr. Alexey Sizyakin, Mr. Nikolay Shevyrev

P26 Numerical and Experimental Comparison of TLA Synchronous Reluctance Motor and Induction Motor

Mr. U. Emre Dogru, Mr. N.Gökhan Ozcelik, Mr. Hakan Gedik, Dr. Murat İmeryüz, Prof. Lale T. Ergene

P27 Design of a Position Controlled Electric Actuator Used in Fluid Control Valves

Mr. Gurkan Tosun, Mr. Omer Cihan Kivanc, Mr. Ender Oguz, Mr. Yasar Mutlu, Dr. Ozgur Ustun

P28 Multi-objective Optimal Design of Permanent Magnet Synchronous Motor

Prof. Goga Cvetkovski, Prof. Lidija Petkovska

P29 Importance of Reliability for Power Electronic Circuits, Case Study: Inrush Current Test and Calculating of Fuse Melting Point

Mr. Murat Demir, Prof. Ali Bekir Yıldız, Mr. Gürmen Kahramanoğlu

P30 Design of Buck DC-DC Converters from the Linear Quadratic Regulator Approach

Ms. Diana Mata-Hernandez, Dr. Victor R. Gonzalez-Diaz, Dr. J. Fermi Guerrero-Castellanos, Dr. Gerardo Mino-Aguilar, Dr. Fabio Pareschi

P31 Virtual Instrumentation for No-Load Testing of Induction Motor

Dr. Gheorghe-Eugen Subtirelu, Prof. Mircea Dobriceanu, Dr. Mihaita Linca

P32 Development of an Experimental Classification Method for Lithium-Ion Secondary Battery State Indication

Mr. Martin Pecnik, Mr. Christoph Uran, Mr. Stephan Thaler

P33 Asymptotic Calculation of a Single-Phase Multilevel Inverter Current Total Harmonic Distortion in the Presence of LCL-Filter

Mr. Ramazan Abdikarimuly, Mr. Boris Reznikov, Prof. Yakov Familiant, Prof. Alex Ruderman

P34 A new analytical approach for modelling the switching losses of a power MOSFET

Mr. Vladimir Dimitrov, Prof. Peter Goranov, Mr. Dimcho Hvarchilkov

P35 Wireless technologies for Controlling a Traffic Lights Prototype

Mr. João Cunha, Prof. Carlos Cardeira, Prof. Rui Melicio, Dr. Nelson Batista

P36 Infrastructure Development for Implementation Control-as-a Service in Substations

Mr. Atanas Iovchev, Dr. Peter Yakimov

P37 Functional verification of a torque sensor based on volumetric strain method

Mr. Muhammad Nazar Ul Islam, Dr. Peng Cheng, Prof. Bengt Oelmann

P38 A Novel Method for Online Correction of Amplitude and Phase Imbalances in Sinusoidal Encoders Signals

Mr. Asem Khattab, Prof. Mohieddine Benammar, Dr. Faycal Bensaali

P39 Approaches and Instruments for Overcoming the Challenges of the Smart Grids Control

Dr. Peter Yakimov

P40 Biometric Access Control Systems: a review on technologies to improve their efficiency

Mr. Tiago Duarte, Mr. Sérgio Onofre, Prof. João Paulo Pimentão, Prof. Pedro Sousa

P41 Distributed Regenerative Drive System

Prof. Marian Gaiceanu, Dr. Silviu Epure, Mr. Stefan Ciuta

P42 Analysis of the Current Balancing Device Based on Power Electronic Converter

Dr. Yuriy Rozanov, Mr. Mikhail Kiselev, Mr. Mikhail Lapanov, Mr. Konstantin Kryukov, Mr. Pavel Dergachev

P43 Active power filter based on dual-converter topology

Prof. Michał Gwóźdź

P44 Optimizing The Automation of an Iron Ore Production Line - A Case Study, Part II: Optimal Automated Quality Control

Prof. Lubomir T. Dechevsky, Dr. Gabor Sziebig, Prof. Peter Korondi

P45 The impact of PV orientation in smart grids

Dr. Vesselin Chobanov

CE - Gala Dinner

Restaurant - BM City Restaurant, Tuesday 27th of September, 20:00

Wednesday 28th of September

SS02 - Demand Response in Smart Grid

Room 4 - Hermann Ludwig Ferdinand von Helmholtz, Wednesday 28th of September, 08:30
Chair/s: Zaiyue Yang , Catalin Mihai

Load Profiling for Gas Stations using cluster techniques

Dr. Catalin Mihai, Mr. Cosmin Popa, Dr. Paul Mihai Mircea

Flexible Load Control In Electric Power Systems With Distributed Energy Resources And Electric Vehicle Charging

Prof. Metody Georgiev, Prof. Rad Stanev, Prof. Anastasia Krusteva

Stochastic Optimization of Coordinated Wind-Photovoltaic Bids in Electricity Markets

Mr. Isaias Gomes, Prof. Hugo Pousinho, Prof. Rui Melicio, Prof. Victor Mendes

SS03 - Intelligent Fault Monitoring and Fault-Tolerant Control

Room 5 - Hendrik Antoon Lorentz, Wednesday 28th of September, 08:30
Chair/s: Teresa Orłowska-Kowalska, Vanja Ambrožič

Simplified Model of Induction Machine with Broken Rotor Bars

Dr. Mitja Nemec, Dr. Klemen Drobnič, Prof. Rastko Fišer, Prof. Vanja Ambrožič

Stator Current Modeling of an Induction Motor for Rotor Faults Diagnosis

Mr. Mohammed El Amine Khodja, Dr. Ahmed Hamida Boudinar, Dr. Nouredine Benouzza, Dr. Azeddine Bendiabdellah

Rotor-Flux-Based Diagnosis Method for IGBT Open-Circuits Faults in a Field-Oriented-Control Induction Motor Drive

Mr. Piotr Sobanski, Prof. Teresa Orłowska-Kowalska

Modified space vector modulation for fault tolerant control of PMSM drive

Mr. Krzysztof Siembab, Prof. Krzysztof Zawirski

Stator Current Sensor Fault Detection and Isolation for Vector Controlled Induction Motor Drive

Dr. Mateusz Dybkowski, Mr. Kamil Klimkowski

Neural Network Approach for Stator Current Sensor Fault Detection and Isolation for Vector Controlled Induction Motor Drive

Mr. Kamil Klimkowski, Dr. Mateusz Dybkowski

TT06 1 - Motion Control, Robotics, Mechatronics 1

Room 6 - Carl Friedrich Gauss, Wednesday 28th of September, 08:30

Chair/s:

Artificial bee colony based auto-tuning of PMSM state feedback speed controller

Dr. Tomasz Tarczewski, Prof. Lech M. Grzesiak

Suppression of Motion-Induced Vibration for a Two-DoF System Using State Feedback Control

Prof. Kuo-Shen Chen, Ms. Wan-Tzu Lin, Mr. Yu-Chen Chen, Prof. Stanislav Vechet

Advanced calibration applied to a collaborative robot

Mr. Pierre Besset, Dr. Adel Olabi, Prof. Olivier Gibaru

Resonant Electromagnetic Vibration Energy Harvesters: the Harvester Ideal Utilization Factor

Prof. Massimo Vitelli, Dr. Luigi Costanzo, Dr. Marco Balato

Adaptive Neural Speed Controller for Direct Drive with PMSM

Dr. Tomasz Pajchrowski, Mr. Wojciech Kogut

Experimental Analysis of Selected Control Algorithms of Electromechanical Object with Backlash and Elastic Joint

Prof. Krzysztof Zawirski, Mr. Krzysztof Nowopolski, Mr. Bartlomiej Wicher

TT07 2 - Sensors, Active Filtering, Semiconductor Devices 2

Room 7 - Michael Faraday, Wednesday 28th of September, 08:30

Chair/s: Ileana-Diana Nicolae, Marian Gaiceanu

A New Design Method of an LCL Filter in Active DC-Traction Substations

Prof. Mihaela Popescu, Prof. Alexandru Bitoleanu, Dr. Alexandra Preda

Characterization of High-Voltage-SiC-Devices with 15 kV Blocking Voltage

Mr. Jürgen Thoma, Mr. Sven Kolb, Mr. Christopher Salzmänn, Mr. Dirk Kranzer

Performance Benchmark of Si IGBTs vs. SiC MOSFETs in Small-Scale Wind Energy Conversion Systems

Mr. Abdallah Suliman Hussein, Dr. Alberto Castellazzi, Prof. Pat Wheeler, Dr. Christian Klumpner

Petri Net Model for Energy Sparing in Railway Traffic

Prof. Calin Ciufudean, Dr. Cornel Buzduga

The crankshaft position sensor based on magnetoelectric materials

Dr. Roman Petrov

Evaluation of Short-Time Fourier-transformation spectrograms derived from the vibration measurement of internal-combustion engines

Mr. Gabor Manhertz, Mr. Daniel Modok, Dr. Akos Bereczky

SS06 - Multilevel Converters for Drives, Grid Power Quality Applications

Room 4 - Hermann Ludwig Ferdinand von Helmholtz, Wednesday 28th of September, 11:00
Chair/s: Viliam Fedák, Mihai Cernat

Design and implementation of a multi-DSP based digital control system architecture for Modular Multilevel Converters

Mr. Elie Talon Louokdom, Mr. Serge Gavin, Dr. Daniel Siemaszko, Prof. Frederic Biya Motto, Prof. Bernard Essimbi Zobo, Prof. Mauro Carpita

Multiphase Quad-Inverter System with Feedforward Synchronous PWM and Nonlinear Voltage Regulation

Dr. Valentin Oleschuk, Dr. P. Sanjeevikumar, Prof. Mihai Cernat, Prof. Viliam Fedák, Dr. Marek Pastor

Stable DC Bus Voltage Balancing in a Renewable Source Grid Connected Neutral Point Clamped Inverter

Mr. Ivano Forrasi, Dr. Jean-Philippe Martin, Dr. Babak Nahid-Mobarakeh, Prof. Giovanni Petrone, Prof. Giovanni Spagnuolo, Prof. Serge Pierfederici

A SVPWM for reduction of common mode and bearing currents applied to diode clamped three level inverter fed induction motor

Mr. Deepak Ronanki, Dr. Parthiban Perumal

Contribution to the Prediction of Photovoltaic Module Performances

Ms. Bouaziz Nadia, Prof. Benfdila Arezki, Dr. Lakhlef Ahcene

SS09 - Concentrating Solar Photo-Voltaic-Thermal Collectors

Room 5 - Hendrik Antoon Lorentz, Wednesday 28th of September, 11:00
Chair/s: Carlos A.F. Fernandes, Luigi Costanzo

Optimum Control Strategy based on an Equivalent Sliding Mode for Solar Systems with Battery Storage

Dr. Abdelhakim Belkaid, Prof. Ilhami Colak, Dr. Korhan Kayisli

Stationary Solar Concentrating Photovoltaic-Thermal Collector -Cell String Layout

Prof. Carlos Fernandes, Dr. João Torres, Prof. Paulo Branco, Dr. João Gomes, Dr. Samuel Nashih

Analysis of different C-PVT reflector geometries

Dr. João Gomes, Dr. Bonfiglio Luc, Dr. Giovinazzo Carine, Prof. Carlos Fernandes, Dr. João Torres, Dr. Olle Olsson, Dr. Paulo Branco, Dr. Samuel Nashih

Aging of Solar PV plants and mitigation of their consequences

Prof. Carlos Fernandes, Dr. João Torres, Dr. Miguel Morgado, Dr. Jose Morgado

Model and Research of Power Electronics Solar Converter Working with Power Grid

Dr. Michał Krystkowiak, Mr. Adam Gulczyński, Dr. Michał Gwóźdź

Series-Parallel PV arrays: a comparison between the performances of two algorithms for strings with an equal or with a different number of PV modules

Prof. Massimo Vitelli, Dr. Luigi Costanzo, Dr. Marco Balato

TT05 2 - Motion Control, Robotics, Mechatronics 2

Room 6 - Carl Friedrich Gauss, Wednesday 28th of September, 11:00
Chair/s: Krzysztof Zawirski, Goga Cvetkovski

Rotor Flux Control with Copper Losses Reduction in a High Power Drive System

Dr. Khoudir Marouani, Mr. Mokhtar Nesri, Mr. Kamal Nounou

Case Study of Energy Optimal and Energy Near-optimal Control Algorithms for the Drives with Constant, Linear and Quadratic Frictions

Prof. Jan Vittek, Dr. Branislav Ftorek, Mr. Peter Butko, Mr. Tomas Fedor

Application of Unscented Kalman Filter in Adaptive Control Structure of Two-Mass System

Mr. Krzysztof Drozd, Prof. Krzysztof Szabat

Assessment of Industrial Robots Accuracy in relation to Accuracy Improvement in Machining Processes

Mr. Tomas Kubela, Mr. Ales Pochyly, Mr. Vladislav Singule

Virtual short pitch control model for fully pitched switched reluctance machines using a three-phase inverter

Mr. Abraham J. Visser, Prof. Duco W.J. Pulle, Prof. Rik W. De Doncker

High-Speed Position Control of Dynamic Elastic Actuator Using Elastic Potential Energy

Mr. Kazumasa Miura, Prof. Seiichiro Katsura

TT07 3 - Sensors, Active Filtering, Semiconductor Devices 3

Room 7 - Michael Faraday, Wednesday 28th of September, 11:00

Chair/s: Alexandru Bitoleanu, Michał Gwóźdź

Surpassing Bluetooth Low Energy Limitations on Distance Determination

Mr. Pedro Silvestre, Prof. João Pimentão, Mr. Sérgio Onofre, Prof. Pedro Sousa

Improvement of Power Quality and Energy Efficiency in Bucharest Metro Traction Substations

Prof. Mihaela Popescu, Prof. Alexandru Bitoleanu, Dr. Ionut Deaconu, Prof. Mircea Dobriceanu

Design and Analysis of the Compensating Capacitor Charging Algorithm for Active Filtering Systems

Mr. Constantin Vlad Suru, Mr. Mihaita Linca, Mrs. Alexandra Preda, Mr. Eugen Subtirelu

Winding Resistance and Power Loss for Inductors With Litz and Solid-Round Wire

Dr. Rafal Wojda

Simultaneous Total Harmonic Distortion Minimization and Selective Harmonic Elimination: Combining the Best of Both Worlds

Mr. Kenessary Koishybay, Prof. Tohid Alizadeh, Prof. Yakov Familant, Prof. Alex Ruderman

Analytical simulation and experimental comparison of the losses in resonant DC/DC converter with Si and SiC switches

Prof. Alex Van den Bossche, Mr. Nikolay Dukov, Dr. Angel Marinov, Prof. Vencislav Valchev, Mr. Radko Stoyanov

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Program At a Glance

Tutorials

25 September Varna Naval Academy	
08:00-09:00	Registration
08:30-10:30	Tutorials 1 (3 rooms) Tu-1, Tu-2, Tu-3
10:30-11:00	Coffee break
11:00-13:00	Tutorials 1 (continuation) Tu-1, Tu-2, Tu-3
14:00-16:00	Tutorials 2 (3 rooms) Tu-4, Tu-5, Tu-6
16:00-16:30	Coffee break
16:30-18:30	Tutorials 2 (continuation) Tu-4, Tu-5, Tu-6

PEMC Council Meetings

25 September Varna Naval Academy		27 September Festival and Congress Center	
		13:00-14:30	Meeting 2 BM City Restaurant
16:00-19:00	Meeting 1 Varna Naval Academy		

Tu-1: Johann Kolar, Switzerland
 Tu-2: Kaloyan Mihaylov, Bulgaria
 Tu-3: Slobodan Mircevski, Macedonia

Tu-4: Tomislav Dragicevic, Denmark
 Tu-5: Alex Ruderman, Kazakhstan
 Tu-6: Luis Palma Brito, Portugal

	26 September Festival and Congress Center	27 September Festival and Congress Center					28 September Festival and Congress Center					
8:00-19:00	Registration	Registration					Registration					
8:30-9:00	Opening ceremony	Plenary Session 3: KA4+KA5+KA6					Parallel sessions 4 (4 rooms)					
09:00-10:30	Plenary Session 1: In memoriam István Nagy						SS02 4	SS03 6	TT05-1 6	TT07-2 6		
10:30-11:00	Coffee break	Coffee break					Coffee break					
11:00-13:00	Plenary Session 2: KA1+KA2+KA3	Parallel sessions 2 (4 rooms)					Parallel sessions 5 (4 rooms)					
		TT01-2 6	TT03-2 6	TT04-2 6	TT02-1 6		SS06 5	SS09 6	TT05-2 6	TT07-3 6		
13:00-14:30	Lunch	Lunch					Lunch					
14:30-16:30	Parallel sessions 1 (4 rooms)	Parallel sessions 3 (5 rooms)										
	TT01-1 6	TT03-1 6	TT04-1 6	SS04 6	TT01-3 6	TT03-3 6					SS01 6	TT07-1 6
16:30-19:00 Including coffee between 16:30-17:00	Dialogue sessions 1 (DS1)	Dialogue session 2 (DS2)										
	TT01 15	TT03 18	TT10 2		TT02 7	TT04 13					TT05 10	SS01 1
20:00-21:00	Welcome Cocktail	Gala Dinner										
21:00-22:00												

KA1 - Kouhei Ohnishi, Japan

KA2 - İlhami Colak, Turkey

KA3 - Peter Palenski, Austria

KA4 - Zdeněk Peroutka

KA5 - David Del Regno

KA6 - Pavol Bauer

Distribution of papers to sessions September 19th

Crt. No.	ID No. VD-00xxxx	Grade	Country	Presenter	July	Aug
1	4227	7.37	RO	Andrei Marinescu	SS01	
2	6424	7.67	IN	Pavol Bauer	SS01	
3	6467	7.30	NL	Venugopal Prasanth, Pavol Bauer	SS01	
4	6807	7.63	DE	David Maier	SS01	
5	7021	5.90	PL	Renata Sulima	SS01	
6	7293	7.26	IT	Rupesh Kumar Jha, Giuseppe Buja	SS01	
7	6955	7.00	CZ	Radek Fajtl??	SS01-DS2	
8	3751	7.54	BG	Veselin Chobanov	TT07-DS2	
9	4618	7.50	RO	Catalin MIHAI	SS02	
10	5053	7.21	BG	Metody Georgiev, Anastassia Krusteva	SS02	
11	7757	6.93	PT	Rui Melicio	SS02	
12	1333	7.81	PL	Mateusz Dybkowski, Kamil Klimkowski	SS03	
13	3077	8.86	PL	Piotr Sobanski, Teresa Orlowska-Kowalska	SS03	
14	3557	6.44	DZ	Mohammed El Amine Khodja	SS03	
15	5045	7.00	SLO	Vanja Ambozic	SS03	
16	6157	8.07	PL	Mateusz Dybkowski, Kamil Klimkowski	SS03	
17	7498	7.39	PL	Krzysztof Zawirski, Krzysztof Siembab	SS03	
18	0582	7.05	China	Hongrui Wang	SS04	
19	1562	8.18	JP	Hitoshi Hayashiya	SS04	
20	1813	7.65	UK	Pietro Tricoli	SS04	
21	3069	7.54	JP	Tomoyuki Shimono, Minoru Yokoyama	SS04	
22	3115	8.74	KR	Jaeho Choi, Ilhami Çolak	SS04	
23	4391	6.88	JP	Yoshiki Shimizu, Masato Iwataki	SS04	
24	1422	6.91	Cameroon	Serge Gavin, Biya Motto Frederic	SS06	
25	1821	6.73	DZ	Nadia Bouaziz	SS06	
26	1902	5.62	FR	Babak Nahid-Mobarakeh	SS06	
27	2224	6.98	India	Parthiban Perumal	SS06	
28	5703	6.81	MD	Marek Pastor	SS06	
29	2038	5.42	PL	Adam Gulczyński	SS09	
30	2933	8.10	IT	Massimo Vitelli, Marco Balato	SS09	
31	5894	8.72	PT	João Torres	SS09	
32	7374	7.51	TR	Ilhami Çolak	SS09	
33	8117	7.42	PT	Carlos Fernandes	SS09	
34	8192	8.34	PT	João Torres	SS09	
35	2429	8.22	IL	Doron Shmilovitz	TT01-1	
41	2992	6.30	BD	Amina Hasan Abedin	TT01-1	
36	3492	8.39	AU	Felix Himmelstoss	TT01-1	
38	4928	6.44	DZ	Tahar Zebbadji	TT01-1	
39	5142	6.62	TR	Asif Şabanoviç	TT01-1	
40	6734	8.34	KZ	Alexander Ruderman	TT01-1	
56	2747	7.93	USA	Longya Xu	TT01-2	
42	3158	7.75	BG	Zahari Zarkov	TT01-2	
43	3913	7.49	TR	Gökhan Keven, Ilhami Çolak	TT01-2	

44	4421	6.45	HU	Péter Pál Stumpf, Sandor Halasz	TT01-2	
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47	0086	6.97	JP	Hiroyuki Ogiwara	TT01-3	
48	0116	7.34	TR	Sevilay Çetin	TT01-3	
49	0574	7.20	SK	Jaroslav Dudrik, Marek Pastor	TT01-3	
50	2852	7.17	PL	Pawel Blaszcuk, Ferenc Bogdan	TT01-3	
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52	5592	7.30	SK	Róbert Žatkovič, Jaroslav Dudrik	TT01-3	
53	0094	7.15	IL	Boris Axelrod	TT01-DS1	
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37	4804	6.32	BG	Dimitar Arnaudov	TT01-DS1	
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68	0108	6.38	RU	Gennady Zinoviev	TT02	
69	0434	7.51	JP	(Hitoshi Hayashiya, Shotaro Abe), Yuuki Iino	TT02	
70	0485	7.71	JP	Hitoshi Hayashiya, Shotaro Abe, Yuuki Iino	TT02	
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72	5843	7.69	IT, PT	Antonio J. Marques Cardoso, Waled Mohamed Ahmed Mahmoud	TT02	
73	7935	7.53	PT	Luis R. Jorge, Stanimir Valtchev	TT02	
74	0442	6.37	JP	Hideki Omori, Shinya Ohara, Takuya Kitamoto	TT02-DS2	
75	1848	5.86	ES	Efren Fernandez	TT02-DS2	
76	3395	5.70	LV	Kaspars Kroics	TT02-DS2	
77	4987	5.06	IN	Pavan Kumar	TT02-DS2	
78	5134	5.45	BG	Anastassia Krusteva	TT02-DS2	
79	6963	6.52	PT	Stanimir Valtchev	TT02-DS2	
80	8214	5.94	TR	Muhammet Tahir Guneşer	TT02-DS2	
81	2178	8.38	NL	Adithya Shekhar, Pavol Bauer	TT03-1	
101	2186	7.84	NL	Adithya Shekhar, Pavol Bauer	TT03-1	

82	3506	8.34	HR	Mario Vasak, Goran Kujundžić	TT03-1	
104	3743	6.48	BG	Sergey Ryvkin	TT03-1	
83	6076	8.68	China	Chen Zheng	TT03-1	
84	6785	8.82	RO	Ileana-Diana Nicolae, Petre-Marian Nicolae	TT03-1	
87	0817	8.00	JP	Yusuke Hayashi	TT03-2	
88	1724	8.08	IT	Luigi Costanzo, Massimo Vitelli	TT03-2	
107	5886	7.91	RU	Iurii Plotnikov, Stan Valtchev	TT03-2	
90	6351	7.99	FR	Francois Bruno	TT03-2	
91	6777	7.87	FR	Francois Bruno	TT03-2	
92	6815	7.92	NO	Salvatore D'arco	TT03-2	
93	0019	7.23	DE	Mohammed Alnajjar	TT03-3	
94	0469	7.44	JP	Hideki Omori, Shinya Ohara	TT03-3	
95	3131	7.58	BG	Zahari Zarkov	TT03-3	
96	5355	7.75	IR	Jawad Ahmad	TT03-3	
97	5525	7.67	RU	Veselin Chobanov	TT03-3	
98	7668	7.71	USA	Chen Li	TT03-3	
99	1007	6.32	RO	Maria-Cristina Nitu	TT03-DS1	
100	1015	6.13	RO	Viorica Voicu	TT03-DS1	
102	3123	7.36	RU	Maksim Dybko	TT03-DS1	
103	3484	6.19	RU	Leonid Bulyga	TT03-DS1	
105	3824	5.92	IN	Sheeraz Kirmani	TT03-DS1	
89	4235	6.46	PL	Adam Szelag	TT03-DS1	
105	5835	7.41	IT	Giuseppe Schettino??	TT03-DS1	
108	6068	6.18	PT	Rui Melicio	TT03-DS1	
109	6637	7.24	RO	Petre-Marian Nicolae	TT03-DS1	
110	6645	5.42	TR	Ümüt Çetinkaya??	TT03-DS1	
111	6653	7.37	HR	Tin Bariša	TT03-DS1	
112	7005	5.43	TR	Ilhami Çolak	TT03-DS1	
113	7684	7.15	TR	Ilhami Çolak	TT03-DS1	
114	7811	7.14	TR	Salih Ermis	TT03-DS1	
85	7862	8.15	PT	Carlos Cardeira	TT03-DS1	
115	7889	6.03	ZA	Dan-Valentin Nicolae	TT03-DS1	
86	7919	9.24	PT	Carlos Cardeira	TT03-DS1	
116	8125	6.55	PT	Anastassia Krusteva, Stanimir Valtchev	TT03-DS1	
117	2658	7.03	BE	Joan Peuteman	TT04-1	
118	5339	8.59	HR	Tin Bariša	TT04-1	
119	5398	8.11	DE	Marcel Maier	TT04-1	
120	5924	8.94	DE	Iliya Ralev	TT04-1	
121	5959	8.42	SW	Stefan Haller	TT04-1	
122	7927	8.18	ZA	Dan-Valentin Nicolae	TT04-1	
123	0604	7.67	Lebanon	Maurice Fadel, Gabriel Khoury	TT04-2	

124	1856	7.38	FR	Maurice Fadel	TT04-2	
125	2496	7.76	RU	Ekaterina Kubartova, Pavel Kurbatov	TT04-2	
126	5207	7.40	HU	Krizstian Horváth	TT04-2	
127	5517	7.63	IT	Claudio Bruzzese	TT04-2	
128	5673	7.62	HR	Zlatko Hanic, Ana Hanic	TT04-2	
129	4553	6.19	C	Lelyzaveta Ishkova	TT04-DS2	
130	5061	6.76	IR	Jawad Faiz	TT04-DS2	
131	5088	6.83	DE	Niclas Förster	TT04-DS2	
132	5118	6.10	IR	Jawad Faiz	TT04-DS2	
133	5746	6.77	SK	Zelmira Ferkova	TT04-DS2	
134	5819	6.27	SK	Luboš Suchý, Zelmira Ferkova	TT04-DS2	
135	5916	7.11	RO	Leonard Livadaru	TT04-DS2	
136	6459	7.06	RU	Alexey Sizyakin, Mikhail Yu. Rumyantsev	TT04-DS2	
137	6912	6.38	TR	Nezih Gökhan Özçelik	TT04-DS2	
138	6947	7.12	TR	Omer Cihan Kivanc	TT04-DS2	
139	7749	6.30	MK	Goga Cvetkovski	TT04-DS2	
140	0493	8.14	FR	Pierre Besset	TT05-1	
147	2232	7.50	IT	Luigi Costanzo, Massimo Vitelli	TT05-1	
141	3565	7.70	PL	Tomasz Tarczewski	TT05-1	
142	3956	8.27	Taiwan	Kuo-Shen Chen, Stanislav Vechet	TT05-1	
143	4898	8.05	PL	Tomasz Pajchrowski	TT05-1	
144	7676	8.01	PL	Krzysztof Zawirski, Bartłomiej Wicher	TT05-1	
152	0175	6.94	RU	Alex Kostylev , Stanimir Valtchev	TT05-2	
146	0965	6.79	SK	Jan Vittek	TT05-2	
148	4189	7.50	DZ	Khoudir Marouani	TT05-2	
149	5789	7.22	ZA	Abraham Johannes Visser	TT05-2	
150	6599	7.30	CZ	Tomas Kubela	TT05-2	
145	7773	8.16	JP	Kazumasa Miura	TT05-2	
153	0531	6.22	RU	Vladimir Ivashkin, Stanimir Valtchev	TT05-DS2	
154	1775	6.83	RU	Maria E. Melnik??	TT05-DS2	
155	1953	5.93	TR	Murat Sahin, Semih Cakiroglu	TT05-DS2	
156	5304	5.31	RU	5886Yury Dementyev??	TT05-DS2	
157	5851	6.84	CZ	Ondrej Rubes	TT05-DS2	
158	6025	6.10	TR	Yusuf Atalay??	TT05-DS2	
159	6661	7.20	PT	Vasco Brito, Luis Brito Palma	TT05-DS2	
151	7838	7.69	PL	Krzystof Drozd	TT05-DS2	
160	8206	6.38	NO	Gabor Sziebig	TT05-DS2	
161	8249	x	NO	Gabor Sziebig	TT05-DS2	
162	0558	8.78	FR	Gaetan Lefebvre	TT07-1	
163	1309	8.66	RO	Alexandru Bitoleanu	TT07-1	
164	2437	8.89	JP	Thao Tran Phuong , Kiyoshi Ohishi	TT07-1	

165	2828	9.00	BG	Ivaylo Pandiev	TT07-1	
166	4626	7.61	DE	Georges Engelmann	TT07-1	
167	6386	9.00	RO	Ileana-Diana Nicolae, Petre-Marian Nicolae	TT07-1	
168	0825	7.82	RO	Alexandru Bitoleanu, Mihaela Popescu	TT07-2	
169	1791	6.53	RO	Calin Horatiu Ciufudean	TT07-2	
170	2011	7.54	DE	Jürgen Thoma	TT07-2	
171	4812	7.56	UK	Abdallah Suliman Hussein	TT07-2	
172	4847	7.15	HU	Gabor Manhertz	TT07-2	
173	6173	7.17	RU	Roman Petrov	TT07-2	
174	2283	5.99	BE+BG	Alex Van den Bossche	TT07-3	
175	2518	7.42	PT	João Paulo Branquinho Pimentão	TT07-3	
176	2801	7.38	RO	Mihaela Popescu	TT07-3	
177	3263	7.19	RO	Gheorghe-Eugen Subtirelu, Mihaita Linca	TT07-3	
178	3425	7.43	KZ	Alexander Ruderman	TT07-3	
179	6211	7.23	PL	Rafal Piotr Wojda	TT07-3	
180	0671	6.27	Mexico	Gerardo Mino Aguilar	TT07-DS2	
181	0752	6.40	TR	Murat Demir	TT07-DS2	
182	1341	6.62	RO	Gheorghe-Eugen Subtirelu, Mihaita Linca	TT07-DS2	
183	1783	7.35	PL	Michal Gwozdz	TT07-DS2	
184	2666	5.17	AT	Stephan Thaler??	TT07-DS2	
185	2798	5.52	KZ	Boris Reznikov, (Alexander Ruderman)	TT07-DS2	
186	2984	6.40	BG	Vladimir Dimitrov	TT07-DS2	
187	4499	5.78	PT	Carlos Cardeira	TT07-DS2	
188	5509	7.46	BG	Peter Yakimov	TT07-DS2	
189	5827	7.00	SV	Muhammad Nazar Ul Islam	TT07-DS2	
190	6394	6.77	Qatar	Mohieddine Benammar	TT07-DS2	
191	6416	5.69	BG	Peter Yakimov	TT07-DS2	
192	6572	6.60	PT	João Paulo Branquinho Pimentão	TT07-DS2	
193	6904	6.83	RO	Marian Găiceanu	TT07-DS2	
194	7463	6.38	RU	Mikhail Kiselev, Yuriy Rozanov, Mikhail Lapanov	TT07-DS2	
195	5622	6.90	RU	Lev Khruslov	TT10-DS1	
196	7722	7.58	RO	Elena Helerea	TT10-DS1	
197	7846	7.94	TR	Withdrawn	TT04-1	Lost in
198	7854	7.05	TR	Withdrawn	TT04-DS2	Lost in
199	0124	7.73	KR	No final version	1	lost c
200	1295	5.39	KR	No final version	10	lost c
201	1317	7.35	Iran	No final version	11	lost c
202	1708	6.36	RO	No final version	12	lost c
203	1759	6.26	BR	No final version	13	lost c
204	1929	7.11	KR	No final version	14	lost c

205	1945	6.01	KR	No final version	15	lost c
206	2216	6.26	China	No final version	16	lost c
207	2291	8.00	PK	No final version	17	lost c
208	2305	6.83	IN	No final version	18	lost c
209	2755	8.00	ZA	No final version	19	lost c
210	0167	7.89	RU	No final version	2	lost c
211	3352	5.36	IR	No final version	20	lost c
212	4502	7.26	IL	No final version	21	lost c
213	4537	5.90	IL	No final version	22	lost c
214	4952	8.26	RS	No final version	23	lost c
215	5193	6.19	TR	No final version	24	lost c
216	5495	5.03	RO	No final version	25	lost c
217	5878	7.09	BG	No final version	26	lost c
218	5908	7.33	Estonia	No final version	27	lost c
219	6602	7.28	China	No final version	28	lost c
220	7137	7.19	UK	No final version	29	lost c
221	0647	6.74	China	No final version	3	lost c
222	7323	7.34	DZ	No final version	30	lost c
223	0795	6.10	Morocco	No final version	4	lost c
224	0884	7.83	IL	No final version	5	lost c
225	0892	7.66	IL	No final version	6	lost c
226	0906	6.61	IL	No final version	7	lost c
227	0914	6.91	IL	No final version	8	lost c
228	0922	6.47	IL	No final version	9	lost c

Without papers

Gregory Skawinski
Atsushi Maeda
David Anthony Eugene Del Regno (Keynote Speaker)
Mukti Barai
Yoichi Egashira
Yoshihito Imai
Kostadinos Sourkounis
Takahashi Hirotaka
Simon Nottingham
Alan Budden
Abdur Razzaq Kotwal
Mohammad Shoaib Ahmadzai
Samir Moulahoum
Jan Michalik
Dmitry Tsisar

Session Chairs

Session	Date, time	Session co-chairs		
Opening ceremony	26 September, 8:30-9:00	Stan Valtchev Ivan Yatchev	Yousef Ibrahim Mihai Cernat	2 local organizing committee members
Istvan Nagy	26 September, 9:00-10:30	Peter Korondi Pavol Bauer	Hitoshi Hayashiya	Giuseppe Buja Teresa Orłowska-Kowalska
PEMC Council Meeting 1	25 September 16:00-19:00	Peter Korondi	Slobodan Mircevski	Ilhami Colak
PEMC Council Meeting 2	27 September 13:00-14:30	Peter Korondi	Pavol Bauer	Marian Kazmierkowski
KA1	26 September, 11:00-13:00	Giuseppe Buja	Teresa Orłowska-Kowalska	Marian Kazmierkovski
KA2				
KA3				
KA4	27 September, 8:30-10:30	Ilhami Colak	Slobodan Mircevski	Sandor Halasz
KA5				
KA6				
SS01	27 September 14:30-16:30	Giuseppe Buja	Andrei Marinescu	
SS02	28 September 8:30-10:30	Zaiye Yang	Catalin Mihai	
SS03	28 September 8:30-10:30	Teresa Orłowska-Kowalska	Vanja Ambrozic	
SS04	26 September 14:30-16:30	Hitoshi Hayashiya	Ilhami Colak	
SS06	28 September 11:00-13:00	Viliam Fedak	Mihai Cernat	
SS09	28 September 11:00-13:00	Carlos Fernandes	Luigi Costanzo	
TT01-1	26 September 14:30-16:30	Giuseppe Buja	David Del Regno	
TT01-2	27 September 11:00-13:00	Asif Şabanoviç	Viliam Fedak	
TT01-3	27 September 14:30-16:30	Doron Shmilowitz	Longya Xu	
TT01-DS1 (15)	26 September 16:30-19:00	Slobodan Mircevski Doron Shmilovitz	Sandor Halasz	Felix Himmelstoss
TT02+SS07	27 September 11:00-13:00	Calin Ciufudean	Petre-Marian Nicolae	
TT02-DS2 (2)	27 September 16:30-19:00	Calin Ciufudean	Petre-Marian Nicolae	
TT03-1 (+SS08)	26 September 14:30-16:30	Elena Helerea	Yusuke Hayashi	
TT03-2 (+SS08)	27 September 11:00-13:00	Felix Himmelstoss	Leonid Bulyga	
TT03-3 (+SS08)	27 September 14:30-16:30	Francois Bruno	Ivan Yatchev	
TT03-DS1 (18)	26 September 16:30-19:00	Kostandinos Sourkounis Sorina Costinas	Massimo Vitelli Carlos Cardeira	Hideki Omori Ileana-Diana Nicolae

TT04-1	26 September 14:30-16:30	Leonard Livadaru	Sergei Ryvkin	
TT04-2	27 September 11:00-13:00	Alex Ruderman	Jawad Faiz	
TT04-DS2	27 September 16:30-19:00	Marian Kazmierkowski	Sandor Halasz	
TT05-1 (+TT06+SS05)	28 September 8:30-10:30	Sergey Ryvkin	Jan Vittek	
TT05-2 (+TT06+SS05)	28 September 11:00-13:00	Krzysztof Zawirski	Goga Cvetkovski	
TT05-DS2 (9)	27 September 16:30-19:00	Kazumasa Miura	Slobodan Mircevski	
TT07-1 (+TT08+TT09)	27 September 14:30-16:30	Mihaela Popescu	Alex Van den Bossche	
TT07-2	28 September 8:30-10:30	Ileana-Diana Nicolae	Marian Gaiceanu	
TT07-3	28 September 11:00-13:00	Alexandru Bitoleanu	Michal Gwozdz	
TT07-DS2 (15)	27 September 16:30-19:00	Dan Valentin Nicolae	Mihaela Popescu	Alexander Ruderman
TT10-DS1	26 September 16:30-19:00	Kostandinos Sourkounis	Sandor Halasz	

A BRIEF BIOGRAPHY OF Dr. KOUHEI OHNISHI



Dr. Kouhei Ohnishi B.E. (1975), M.E.(1977) and Ph.D.(1980) all in electrical engineering from the University of Tokyo. Since 1980, he has been with Keio University, and is Professor at Dept. of System Design Engineering. He has been active in the IEEE IES for long time. He served as a President (2008- 2009) for IES and is now serving as a Co-Editor-in-Chief of the IEEE Transactions on Industrial Electronics. He also served as a President at the Institute of Electrical Engineers of Japan (IEEJ 2015 -2016). He has been a fellow of IEEE since 2001, a fellow of IEEJ since 2011 and a fellow of the Japan Society of Mechanical Engineering since 2002. He received numerous awards including EPE-PEMC Council Award in 2004. He is a member of the Science Council of Japan.

Abstract of the keynote speech

We can immediately know what the object is when we touch it. If the object is soft, it must be a sponge (or similar thing). If it is rigid, it may be a metal block. That sensation is an ability of the human being called “haptic sense”. “Real-haptics” is a technology to reconstruct haptic sense by acquiring dynamic physical information that is transferred bi-directionally between the surrounding environment and the human. An abandonment of haptics causes difficulty in further advance in automated machine, or may even result in threatening the safety and security of the process.

Maybe large gap between real human and robot comes from the excessive expectation induced at first from the S.F. movie entitled "Metropolis" released in 1926. In fact, the artificial machine has been developed from the machine tool. The performance has been measured by its stiffness almost proportional to the forward gain in the servo control. High stiffness seems to give high performance, however it loses compliant motion. The robot motion based on the existing servo system is quite stiff and generates the motion far from the human action.

Soft robotics is a new concept coming from real haptics. This gives not only compliant motion but also skillful motion to the robot and/or mechatronics. The talk will show the structure of motion control together with its implementation including a newly developed “haptic core-chip”. Also the talk will introduce various applications by visual demonstrations.

Short CV:



ILHAMI COLAK was born in 1962 in Turkey. He received his diploma in Electrical Engineering from Gazi University, Turkey in 1985. Then he did his MSc in Electrical Engineering in the field of *Speed Control of Wound Rotor Induction Machines Using Semiconductor Devices* at Gazi University in 1991. After that he received his MPhil at Birmingham University in England by preparing a thesis on *High Frequency Resonant DC Link Inverters* in 1991.

Finally he got his PhD at Aston University in England on *Mixed Frequency Testing of Induction Machines Using Inverters* in 1994. He became an assistant professor, an associate professor and a full professor in 1995, 1999 and 2005 respectively.

He has published more than 225 papers in different subjects including electrical machines, drive systems, machine learning, reactive power compensation, inverter, converter, artificial neural networks, distance learning, automation, renewable energy sources and smart grids. More than 86 of his papers have been cited in SCI database of Thomson Reuters. His papers have received more than 445 citations. He supervised 19 MSc students and 13 PhD students. He is member of IEEE, IES, IAS, PELS and PES. He is also a member of PEMC Council. He has organised 54 international conferences and workshops. Last ten years, he has been concentrated his studies on renewable energy and smart grids by publishing papers, journals (www.ijrer.org) and organizing international IEEE sponsored conferences (www.icrera.org). He is also the Editor-in-Chief of International Engineering Technologies (<http://dergipark.ulakbim.gov.tr/ijet>), and one of the editors of Journal of Power Electronics (<http://www.jpels.org>). He has 1 international and 3 national patents. He also spent around 3 years at European Commission Research Centre (JRC) as an expert in the field of smart grid in Netherlands. He is currently holding positions of Vice Rector and Dean of Engineering And Architecture Faculty of Istanbul Gelisim University.

icolak@gelisim.edu.tr; ilhcol@gmail.com
<http://w3.gazi.edu.tr/~icolak/english.htm>

Title: A survey on the contributions of power electronics to smart grid systems

Abstract:

The smart grid (SG) as a research area is advancing dealing with a wider range of topics such as power systems, energy generation and telecommunication. The conventional utility grid is used to operate in a passive mode absorbing energy from the substations and delivering it to the customers. This approach is well developed but the needs of the state-of-the-art technology require a bidirectional flow of power and data. Nevertheless, smart grid systems provide more flexible, reliable, sustainable, secure and two-way communication service. Especially, integration of renewable energy sources, electrical vehicles and distributed generations (DG) into network can be achieved in an efficient way in smart grid systems. Moreover, control and monitoring capabilities, automatic

configuration of the grid, and active involvement of consumers in energy production extend the importance of smart grids. All these positive aspects of smart grids have been attained by integration of power electronics and telecommunication technologies with the grid. This talk deals with contributions of power electronics to SG in the context of generation, conversion, distribution, and control of power. The recent power electronic devices and systems adapted to SG are also introduced in detail with several power control methods.

Moreover, the renewable energy sources (RESs), which are an extensively studied topic of power engineering and their integration to smart grid, are also surveyed in terms of DG units, control and management features. Thus, a particular section is dedicated to RES utilization in SG covering almost all aspects of a monotype and hybrid energy plants. Finally, the talk is carried on by reviewing the most recent and comprehensive articles to highlight the importance of power electronics in a logical way in the smart grids for readers.

Title: Simulation of heterogeneous energy systems

Abstract:

This talk will introduce the audience into the concepts of smart grid with its current research topics and the principles of cyber-physical energy systems, how to describe and how to work with them.

The smart grid is the ICT answer to the power challenges of today and tomorrow by enabling flexible loads, active distribution grids, storage management, smart energy markets, and bidirectional power flows.

Conceptually it is a distributed IT and automation system that is amalgamated with the physical power infrastructure: a cyber-physical system, and even a system of systems. Designing, optimizing, running, and diagnosing such systems requires reliable and scalable models which is the main problem with cyber-physical systems: hybrid models (discrete and continuous) are hard to deal with. There are, however, new and promising languages and methods to deal with such systems.

Learn what works and what does not, and see how you can enhance your research and development with these methods.

CV:



Peter Palensky is Professor for intelligent electric power grids at TU Delft, Netherlands. Before that he was Principal Scientist for Complex Energy Systems at the Austrian Institute of Technology (AIT) / Energy Department, Austria, Head of Business Unit "Sustainable Building Technologies" at the AIT, CTO of Envidatec Corp., Hamburg, Germany, associate Professor at the University of Pretoria, South Africa, Department of Electrical, Electronic and Computer Engineering, University Assistant at the Vienna University of Technology, Austria, and researcher at the Lawrence Berkeley National Laboratory, California. He is active in international committees like

IEEE and is associate editor for the IEEE Transactions on Industrial Informatics. His main research field is complex energy systems.

Keynote speech:

Challenges of Modern AC Motor Traction Drives

Prof. Zdeněk Peroutka



Zdeněk Peroutka received the Master's and Ph.D. degrees in electrical engineering from the University of West Bohemia (UWB), Pilsen, Czech Republic, in 2000 and 2004, respectively. He is a Full Professor of power electronics and drives and the Vice Dean for science and strategy with the Faculty of Electrical Engineering, UWB. From October 2010 to June 2016, he was a Scientific Director and Principal Investigator of the R&D center RICE at UWB. Since July 2016, he has been a CEO and Principal Investigator of the R&D center RICE. He has published more than 200 papers in international journals and conference proceedings. He is the inventor of two international patents and two utility models. His main research topic is control of drives of modern transport systems and vehicles and power electronics converters for medium-voltage applications.

Abstract:

Research of modern ac motor traction drives brings many challenges including a drive concept, a design of particular drive components, a drive and vehicle control, interactions of a vehicle with its environment, etc. One of the most important characteristics of a traction drive is its reliability and safety. Thus, the experimental testing and validation are important part of the research of new traction drive technologies. R&D center RICE opened in June 2016 in Pilsen, Czech Republic a world unique laboratory for transportation systems and medium-voltage power electronics. Its technology will be briefly discussed in the first part of this contribution. A drive concept is a big issue to be discussed in the next part of the presentation. There exist many solutions from conventional wheel-set/axle drives with gearbox to either direct axle or wheel drives. Many solutions have been introduced specifically in light traction vehicles, where full low-floor design is a standard requirement at present. The main research challenge is the significant reduction of the weight and volume of the traction drive unit while keeping its tractive effort, long lifetime and as low as possible cost. A design of power electronics converters is the next big issue which will be discussed in the third part of this contribution. New packages (such as XHP) and new power electronics devices (specifically with wide bandgap semiconductors) require new concepts of converter design. The last part of this presentation will be dedicated to a traction drive control. A control has to provide the traction drive not only with excellent dynamics, but it must also secure the drive stability and appropriate interaction between the drive and a supplying system. Application of optimal control theory, specifically model predictive control techniques, in modern ac motor traction drives will be discussed.

A HOLISTIC FRAMEWORK FOR POWER ELECTRONICS

DAVID A.E. DEL REGNO BIOGRAPHY EXCERPTS



B.Sc. Mechanical Engineering (1984) Bari University ("Universita' di Bari" / currently "Politecnico di Bari" - Italy), B.Sc. M.Sc. Aeronautical Engineering (1989) Rome University "La Sapienza" ("Universita' di Roma I" - Italy) with honors in Aerodynamics, Electrical Engineering, Technical Physics (Applied Thermodynamics). Work engagements includes project management of design/development/deployment of information systems and implementation of knowledge services for B2B consultancy firms (1989-'93, private sector, Italy); simulation models for industrial processes; project management in design/production/implementation of data acquisition/elaboration systems for industrial processes (1995-'01, private sector, Italy). In 2002 joined the Lawrence Tech University (Michigan U.S.) for IT technologies and industrial engineering. In 2003 joined the TU Delft University

(Netherlands) for aerospace technologies and systems engineering applied to researches on sustainability. Developed numerical models, analyses and simulations for fluid-mechanics and structural engineering, commercial aviation (performance analyses, energy management), alternative fuels for commercial aviation (analysis of energy performance); electric propulsion systems for general aviation; analysis and design of energy systems for exploitation of solar, wind, and hydro power. Areas of expertise and interest: design theory and methods, design for sustainability, models in engineering, engineering of systems, model-based systems engineering, aerospace technologies applied to design and production of energy systems, economic and societal benefits of aerospace technologies and sustainable design.

Abstract

The ubiquitous role of Power Electronics in delivering and controlling electrical energy makes the innovation of these technologies a strong priority in relation to sustainable development goals all over the world. Power electronics technologies were deemed mature already in the early 2000s and have always relied on innovations in materials for their own progress, while the design processes have remained substantially unchanged. Approaches based on Linear Design Workflow, roadmapping, and traditional forms of modelling and simulations seems to be unfit to fulfill the current need for innovation of Power Electronics. It is here introduced an overview on a holistic framework for power electronics design that tackles innovation needs with systems engineering, decision making, multidisciplinary optimization, and knowledge-based technologies. The framework is based on subject-independent, process-independent abstractions from systems engineering and decision making, and exploits multidisciplinary optimization for automatic exploration of the design space. The framework is said to be "holistic" because it can address the problems related to power electronics design considering the whole system from source to load and allows integration in the design process of information from the context (market, societal systems) thus reducing the gap between designers and customers and, more in general, reducing the uncertainty associated to the design decisions. The framework employees also knowledge-based technologies to support the accurate construction of power electronics systems descriptions, the automatic management of the models used for analyses, the capturing and reuse of knowledge generated during the design process, and the automatic validation against domain knowledge. This approach has already found applications in other industries (aerospace, automotive) achieving remarkable time reductions in complex designs and with the added advantage of automating the less creative design activities.

Pavol Bauer, Delft University of Technology, Netherlands

Solutions for System Integration of Renewable Energy and Storage.

Abstract:

Integration of renewable energy sources namely solar, wind and storage (e.g. electric vehicles) is addressed in the presentation. Two different scenarios are discussed: renewable energy at convenient location and also local energy production and integration into smart cities with storage. Several examples of integration with LV DC grids and needed power electronic interfaces and systems with high efficiency will be shown. Development of power electronics technology for DC grids and challenges, solutions for Electric mobility (charging with renewable energy, inductive charging) related to smart cities are suggested. DC systems and (micro) grids for integration of Renewable Energy Sources and Energy Storage in applications such as smart (green) cities; electric mobility; utilization, reliability and controllability of DC grids are briefly discussed. HV/MV DC Transmission Networks for large scale implementation of Renewable Energy Sources (solar, wind, wave), optimization and controllability of HVDC transmission grids are addressed too.

Biography:



Pavol Bauer is currently a full Professor with the Department of Electrical Sustainable Energy of Delft University of Technology and head of DC Systems, Energy Conversion and Storage group. He received Masters in Electrical Engineering at the Technical University of Kosice ('85) and Ph.D. from Delft University of Technology ('95). From 2002 to 2003 he was working partially at KEMA (DNV GL, Arnhem) on different projects related to power electronics applications in power systems. He published over 72 journal and almost 300 conference papers in his field (with H factor Google scholar 30, Web of science 17), he is an author or co-author of 8 books, holds 4 international patents and organized several tutorials at the international conferences. He has worked on many projects for industry concerning wind and wave energy, power electronic applications for power systems such as Smarttrafo; HVDC systems, projects for smart cities such as PV charging of electric vehicles, PV and storage integration, contactless charging; and he participated in

several Leonardo da Vinci and H2020 EU projects as project partner (ELINA, INETELE, E-Pragmatic) and coordinator (PEMCWebLab.com-Edipe, SustEner, Eranet DCMICRO). He is a Senior Member of the IEEE ('97), former chairman of Benelux IEEE Joint Industry Applications Society, Power Electronics and Power Engineering Society chapter, member of the Power Electronics and Motion Control (PEMC) council, member of the Executive Committee of European Power Electronics Association (EPE) and also member of international steering committee at numerous conferences.

Solid-State Transformers – Key Design Challenges, Applicability, and Future Concepts

Abstract

This tutorial introduces participants to the Solid-State Transformer (SST) concept in a comprehensive and easy-to-follow fashion. After a brief review of transformer basics and of the SST concept history, the motivation, requirements, and challenges associated with SST applications in future locomotives, smart distribution systems, and source-side (e.g., connection of wind power generators to a DC collecting grid, or of photovoltaic power plants to the MV AC grid) as well as load-side applications (e.g., medium voltage interface of high-power EV battery chargers or general MV-connected power supplies) are identified.

Conceptual aspects like, e.g., single-cell vs. multi-cell converter approaches, isolated front-end vs. isolated back-end converter architectures, reliability of multi-cell converters, protection, etc. are discussed. Furthermore, the operation of high-power isolated DC/DC converters is detailed, and modern SiC power semiconductors, medium-frequency transformer design, multi-cell converter control system partitioning, etc. are discussed. Finally, aspects of testing high-power medium-voltage systems and construction issues of modular medium-voltage converters are summarized. In order to render the discussions more tangible, the challenges and potential solutions are illustrated using an exemplary 1MVA multi-cell distribution level SST system.

Finally, future concepts such as unidirectional SSTs are addressed, and the most promising application scenarios for SSTs as well as future research areas are identified, before the tutorial concludes with a critical evaluation of the SST concept. The tutorial is tailored to serve the interests of a broad audience with academic or industrial backgrounds.

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Presenter Biographies



Johann W. Kolar is a Fellow of the IEEE and received his M.Sc. and Ph.D. degree (summa cum laude) from the University of Technology Vienna, Austria. He is currently a Full Professor and the Head of the Power Electronic Systems Laboratory at the Swiss Federal Institute of Technology (ETH) Zurich. Dr. Kolar has proposed numerous novel PWM converter topologies, and modulation and control concepts, e.g., the Vienna Rectifier, the Swiss Rectifier, and the Three-Phase AC-AC Sparse Matrix Converter and has published over 600 scientific papers in international journals and conference proceedings and has filed more than 100 patents. He received 10 IEEE Transactions Prize Paper Awards, 10 IEEE Conference Prize

Paper Awards, the SEMIKRON Innovation Award 2014, the Middlebrook Achievement Award of the IEEE Power Electronics Society, and the ETH Zurich Golden Owl Award 2011 for Excellence in Teaching. The focus of his current research is on ultra-compact and ultraefficient converter topologies employing latest power semiconductor technology (SiC and GaN), Solid-State Transformers, Power Supplies on Chip, and ultra-high speed and bearingless motors.



Jonas E. Huber received his MSc degree (with distinction) from the Swiss Federal Institute of Technology (ETH) Zurich, Switzerland, in 2012. He then joined the Power Electronic Systems Laboratory, ETH Zurich, as a PhD student, where his main research interests are in the area of solid-state transformers for smart grid applications, focusing on the analysis, optimization, and design of high-power multi-cell converter systems, reliability considerations, control strategies, and grid integration aspects, among others.



Tutorial: Power architectures, applications and control of DC distribution systems and microgrids

Instructor: Associate Professor Tomislav Dragičević, Aalborg University, Denmark (tdr@et.aau.dk)

1. Scope and benefits

DC distribution systems have higher efficiency, better current carrying capacity and faster response when compared to conventional AC systems. They also provide more natural interface with many types of RES and ESSs and better compliance with consumer electronics. Furthermore, when components are coupled around a DC bus, there are no issues with reactive power flow, power quality and frequency regulation, resulting in a notably less complex control system when compared to the AC coupled systems. All these facts lead to more and more applications of DC systems in modern power systems, including data/telecom centers, maritime industry, high voltage transmission systems, electric vehicle charging infrastructure, and DC microgrids. Still, design and operation of general DC systems imposes a number of specific challenges.

The aim of this tutorial is to identify these challenges and transmit to the audience the instructor's industrial and academic experiences in the field. Tutorial will provide a framework in hardware and control design of DC distribution systems and microgrids, as well as overview of recent research activities in this area. Practical requirements and implementation details of several types of DC distribution systems used in real world industrial applications will be presented. Also, a number of study cases power architectures will be discussed in the first part of the tutorial. On the other hand, second part will address the features of several types of coordinated control design concepts that can assure intelligent real-time control of MGs. Moreover, the concepts of constant power load (CPL) and negative impedance instability will be explained in detail. In line with this, principles of linear stability analysis techniques will be reviewed and a broad class of stabilization techniques for MGs loaded with CPLs will be presented and examined. Tutorial will also present the view of the instructor on the promising research directions and future industrial applications in this area.



2. Tutorial contents

Tutorial will be organized in the two main parts:

a) DC Distribution Power Systems Introduction: Applications, Architectures and Control

This part of tutorial aims firstly to shed light on the practical design aspects of DC distribution technology concerning typical power hardware topologies and their suitability for different existing and emerging applications. Following this introduction, a systematical control structure for DC distribution systems is presented and classified into local and coordinated control levels according to the respective functionalities in each level. As opposed to local control which relies only on local measurements, some line of communication between units needs to be made available in order to achieve coordinated control. In this view, the overall control is, depending on the communication method, divided into three basic coordinated control strategies, i.e. decentralized, centralized and distributed control. These methods are briefly reviewed and the foundation is being laid for their deeper evaluation in the second part of the tutorial.

b) DC Distribution System Coordination Strategies

The second part of the tutorial goes more in detail with regard to functionalities of each coordinated control strategy. It also assesses stability analysis and stabilization techniques for DC distribution systems. Decentralized control can be regarded as an extension of local control since it is also based exclusively on local measurements. In contrast, centralized and distributed control strategies rely on digital communication technologies. A number of approaches of using these three coordinated control strategies to achieve various control objectives are reviewed in the paper. Moreover, properties of DC MG dynamics and stability are discussed. The paper illustrates that tightly regulated point-of-load (POL) converters tend to reduce the stability margins of the system since they introduce negative impedances, which can potentially oscillate with lightly damped power supply input filters. It is also demonstrated how the stability of the whole system is defined by the relationship of the source and load impedances, referred to as the minor loop gain. Several prominent specifications for the minor loop gain are reviewed. Finally, a number of active stabilization techniques are presented.

About the instructor



Tomislav Dragičević (S'09-M'13) received the M.E.E. and the industrial Ph.D. degree from the Faculty of Electrical Engineering, Zagreb, Croatia, in 2009 and 2013, respectively. His PhD thesis has been carried out in close cooperation with industry and he has received highest honors for it. From 2013 till 2016 he has been a PostDoctoral researcher at Institute of Energy

Technology, Aalborg University, Denmark, where is currently an Associate Professor. His principal field of interest is overall system design of autonomous and grid connected DC and AC microgrids, and industrial application of advanced modelling, control and protection concepts to shipboard power systems, remote telecom stations, domestic and commercial facilities and electric vehicle charging stations. He has authored and co-authored more than 80 technical papers in his domain of interest. 23 of them are published in international journals. Dr. Dragičević is a Member of the IEEE Power Electronics and IEEE Power Systems Societies. He has served in Scientific Committee Boards in several IEEE conferences and has been invited for guest lectures and tutorials in universities and companies around the world.

3. Intended audience

Researchers and engineers who seek for the basic knowledge for entering in this field, ranging from architectural design of DC distribution systems to advanced coordinated control and stabilization concepts. Prerequisite is basic knowledge about power electronics and classical control concepts.

4. Contact details

Tomislav Dragičević, Associate Professor

Aalborg University, Department of Energy Technology, Pontoppidanstraede 111, 9220 Aalborg East, Denmark, tel: +45 2498 9882, email: tdr@et.aau.dk



Tutorial Session.

Title: Intelligent Fault Tolerant Control Systems - Application to Industrial Processes and X8-Quadcopter Drones.

Instructors: Professor Luis Brito Palma and Bachelor Vasco Silva Brito.

Abstract. A typical feedback control structure for an industrial process plant or vehicle system may result in unsatisfactory closed-loop performance, in the event of faults or failures in actuators, sensors, controllers or other components of the overall system. Faults or failures can also generate dangerous situations for humans or machines, reduce products quality, and cause economic losses.

Intelligent fault tolerant control systems (I-FTCS) should guarantee that faults don't provoke dangerous failures, using intelligent fault detection / diagnosis and fault tolerance approaches.

The tutorial aims to present theoretical concepts, in a comprehensive and integrated framework, related to dynamical systems, classical control techniques, fault detection / diagnosis and intelligent fault tolerant control approaches. Besides concepts, industrial and academic experiences are to be transmitted to the audience, as well as new challenges in these fields.

In order to clarify the concepts, simulations and real applications in the industrial processes field, and also in multi-rotors drones, will be presented.

Main tutorial topics:

- dynamical signals and systems: modeling and system identification;
- linear and nonlinear control techniques;
- optimization approaches;
- control loop performance analysis;
- faults and failures concepts;
- fault detection techniques;
- fault diagnosis techniques;
- intelligent fault tolerant control approaches;
- industrial processes applications;
- X8-quadcopter drones: kinetics and dynamics modeling, identification, simulation in Matlab/Simulink and in virtual reality environment, real world experiments, and intelligent fault tolerant control;
- concluding remarks and future trends;
- discussion with the audience.

Short CV. Luis Brito Palma.



Luis Brito Palma received the Licentiate Degree in Physics Engineering and the PhD degree in Electrical Engineering from the Faculty of Sciences and Technology (FCT) of New University of Lisbon (UNL), Portugal, in 1991 and 2007, respectively. The PhD thesis is entitled "Fault Detection, Diagnosis and Fault Tolerance Approaches in Dynamic Systems based on Black-Box Models".

In 1990 he worked at INETI Institute in the optoelectronics and lasers areas. From 1990 to 1992 he worked at INESC Institute in the electronics and image processing areas. In 1992 he has been Teaching Assistant in the Physics Department at FCT-UNL within electronics area. From 1993 to 1998 he has been Teaching Assistant in the Electrical Engineering Department at FCT-UNL within electrotechnical, electronics, automation and control areas. From 1998 to 2007 he has been Research and Teaching Assistant in the Electrical Engineering Department at FCT-UNL within dynamical signals and systems, automation and control areas.

From 2007 to present, he has been a Professor of Decision and Control Systems at Electrical Engineering Department at FCT-UNL, and also a Researcher at Uninova-CTS Research Institute, Caparica - Lisboa, Portugal.

The main research interests are automation, fault detection / diagnosis, intelligent fault tolerant control systems, industrial process control, aeronautical control systems and distributed systems. He has authored and co-authored more than 100 scientific papers in journals and international conferences. He supervised 7 Licentiate students, 20 MSc students and now 1 ongoing PhD student.

Short CV. Vasco Silva Brito.



Vasco Silva Brito received the Bachelor Degree in Electrical and Computer Engineering Sciences from the Faculty of Sciences and Technology of New University of Lisbon, Portugal, in 2014. Currently he is at the final stage of the MSc work with a thesis entitled "Fault Tolerant Control of a X8-VB Quadcopter".

In 2013 he has worked in the electronics area, for instance the development of audio tube power amplifiers. In 2014 he developed and implemented PID industrial controllers embedded in microcontrollers.

In 2015 he participated in a national Siemens contest with a project entitled "Hybrid System of Distributed Automation", regarding distributed automation and fault tolerant control systems, reaching the final stage.

From the beginning of 2016 he has been a Researcher at Uninova-CTS Research Institute, Caparica - Lisboa, Portugal, in the areas of dynamical signals and systems, intelligent fault tolerant control systems, aeronautical systems and multi-rotors drones.

Non-conventional energy harvesting and power supply

(new methods for supplying sensors and smart grids and a future concept for signaling and power supply through single wire or through the earth as propagation medium)

Abstract

Most often the process of energy harvesting is associated with the ambient power sources (light, temperature gradients and kinetic energy). This energy however doesn't need to be naturally produced (sunlight, wind, solar or other heating sources) but is available by the artificial sources (artificial lighting, fans, machinery vibrations, electromagnetic emissions).

Our research revealed some unusual ways to harvest energy by utilizing the expected potential differences (of the neutral conductor) in some types of electrical networks. Moreover in some cases there is not only energy available to power small electronic devices, but also means for measuring fully or partially the electrical network load, thus giving the opportunity for decision making and smart load/network management.

Technical details will be revealed on how different problems were solved, including rectifier design, voltage drop avoidance and step-up transformer design. Additional circuits that offer non-conventional low-power supply will be discussed. Comparison will be made against some monolithic power management IC.

Following the nature of the topic the presentation will pass to some unconventional/conceptual methods for single-wire signaling and power transfer. The current achievements will be presented together with the results of our own practical research. Next is a general conclusion for the possibilities for wireless ground/marine signaling and energy transmission. It is backed up by patents and real work by different researchers and enthusiasts.

Although electrical engineering knowledge is sufficient, some knowledge of RF engineering will be helpful for understanding the single-wire and wireless concepts.

Key points

- Brief overview of the common energy harvesting methods.
- Overview of some of the LV electrical network types.
- Opportunities for doing power measurements through the potentials of the neutral conductor.
- Ways for load management and decision making in smart and non-smart grids.
- The Neutral as a low-impedance power source.
- Possibilities for energy harvesting from the neutral conductor via the protective earth.
- Utilization of ultra-low voltage sources.
- Tricking the (diode's) voltage drop faced with ultra-low voltage AC sources.
- Solution for emergency power supply.
- Single wire earth return.
- Conceptual one-wire signaling and power supply.
- Conceptual "wireless" signaling and power supply through the earth.

Short biography



KALOYAN MIHAILOV is currently a PhD student in the Faculty of Telecommunications at the Technical University of Sofia, guided by Prof Stan Valtchev. Has received his MSc degree in 2012 and continued scientific developments of energy harvesting, low power supplies, low-power sensors and wireless sensor networks. Research and development was successfully conducted on single-wire galvanic energy transmission system (non-inductive, non-capacitive). 2006-2014 administrator and owner of Bulgaria's largest alternative energy discussion boards website.

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STANIMIR (STAN) VALTCHEV (IEEE Member'90-Senior Member'08)



Professor Auxiliar of Power Electronics, Department of Electrical Engineering of the Faculty of Science and Technology, Universidade Nova de Lisboa, Portugal,

Best graduate (MSc) of 1974, Technical University Sofia (TUS), in semiconductor and electronics technology, military service in radars, researcher in medical equipment and power converters and laser supplies, Auxiliary Director of the Centre of Robotics of TUS. In 1987 worked in TU Delft as Assistant Professor, since 1988 Assistant Professor in TUS (Power Supplies and Converters), Deputy Dean of TUS. Working on HF resonant power converters, IEEE Meritorious Paper Award, 1997, Best Paper Award from PEMC2014. Since 1994, teaching and consulting in Portugal and in the Netherlands. Based on a versatile experience, the research includes energy conversion, energy harvesting, wireless energy transfer, electric vehicles, energy management and storage, smart grids, tunnel FET devices and biosensors. He is now the International General Chair of the IEEE-PEMC2016 conference and Invited Full Professor of Burgas Free University.



Title of Tutorial

Natural Balancing in Multilevel Converters - What You Always Wanted to Know but Had No Chance to Ask

Abstract

This Tutorial will present the original research on natural capacitor voltage balancing in multilevel converters conducted by the author over the past decade.

The first major topic is converters with capacitive filtering – reconfigurable Switched Capacitor Converters (SCC) with multiphase switching. The major contributions are related to balanced switching that makes charge flow for buck type converters as smooth as possible, newly discovered additional voltage target ratios for classic Flying Capacitor Converter (FCC) based and Fibonacci SCC topologies, and charge flow (equivalent resistance) analysis for SCC described by underdetermined linear equations (Minimal Norm principle).

The second major topic is natural balancing for different multilevel DC-DC and DC-AC converters with inductive loads or LC-filtering. Here the major results include simple and powerful time averaging based analytical methodology, understanding root causes of poor balancing, improved balancing rate by modified switching patterns, simple time domain theory for balance booster that essentially speeds-up natural balancing dynamics, understanding possible capacitor balanced voltage offsets for ideal symmetric switching and due to non-ideal unbalanced switching. Based on good natural balancing it is possible to make self-precharge that is charging capacitors to their predefined balanced voltages during power-up (start-up) at virtually no cost.

Each subtopic is illustrated by an in-depth analysis of simple representative demo cases. The presented material is self-explanatory intended for an entry / intermediate level audience.

Short Bio

Alex Ruderman obtained his MSc (with Honors) and PhD from Leningrad Electrical Engineering and Polytechnic Institutes in 1980 and 1987 respectively (both Leningrad, USSR).

In 1995-2003, Alex worked as a research scientist for Intel Microprocessor Development Center, Haifa, Israel. After teaching several electronics related courses at Bar Ilan University and Holon

Institute of Technology in 2004-2005, he joined as Chief Scientist Elmo Motion Control Ltd, Petach Tikva, Israel, the makers of compact intelligent servo drives (Elmo drives are allegedly used by NASA in Mars Curiosity mission).

Since 2013, Alex is Associate Professor at Nazarbayev University (NU), Astana, Kazakhstan, new (2010) English-speaking research oriented university. Over the past years, he has been extensively involved in research on multilevel converters (voltage / current quality evaluation and natural balancing mechanisms) and co-authored about 50 conference and journal papers on the subjects.

Alex is a regular reviewer for IEEE Transactions on Industrial Electronics and Power Electronics and a technical program committee member for several international Power Electronics Conferences. He was a member of IEEE Power Electronics Technical Committee (PETC) (2010-2013) and is currently Associate Editor for the IET Power Electronics Journal.



IEEE - PEMC 2016 in Varna - BULGARIA
VARNA, BULGARIA | from 25 to 30 of September 2016

17th International Conference on Power Electronics and Motion Control



TITLE: EU Project Motor Challenge – Recommendations and Comments

NAME AND AFFILIATION OF THE AUTHORS

Slobodan Mirchevski, Ss. Cyril and Methodius University, Skopje, R. Macedonia

SCOPE AND BENEFITS

In this tutorial you will inform about results of EU project Motor Challenge. It is well known that electric drives are the greatest consumers of electric energy, so as the best kWh is the saved one. In this you will learn how to save electric energy in electric drives, improving the production process with lower production costs and reducing global pollution with emission of green house gasses (GHG). You will understand that consumption of non-active energy (reactive and distortion) is not negligible. The tutorial is supported by practical examples with real measurements. Presented material is based on duty cycles of electric drives (IEC 60034-1), power measurement (DIN 40110) and power quality/harmonics (IEC 6100-3-2, IEC 61000-3-4).

CONTENTS

Results of EU project “Motor Challenge” are presented. Energy efficiency is basis of technical systems working. Electric drives account for approximately 65% of the electricity consumed by EU industry. The efficiency of an electric drive depends on more factors, including: motor efficiency, motor speed control, proper sizing, power supply quality, distribution losses, mechanical transmission, maintenance practices, end-use mechanical efficiency (pump, compressor, fan, etc.). The energy efficiency has influence on the work of electric drive, its consumption and paying of electric energy (active, reactive), the working life etc. What energy efficiency practice for? The answer is simple - because of getting high quality and cheaper products, lower production costs and reducing of global pollution. How to realize energy efficiency in electric drives? The right way is with usage of better working machines, power convertors for getting variable speed to reduce power losses and energy efficient motors. These lectures deal strongly with energy efficiency in electric drives through energy parameters - efficiency η and power factor λ (in special case with ideal supply without harmonics $\cos \varphi$). The attention is focused on motor speed control with saving potential of 50 billion kWh/year for EU-25 and motor losses expressed through its efficiency and power factor, with saving potential more than 27 billion kWh/year for EU-25, as it is recommended in results of MChP.

WHO SHOULD ATTEND

This tutorial is convenient for large scale participants: students, engineers, researchers.

Technical Level: Technical level of the tutorial is advanced, interdisciplinary and multidisciplinary, because knowledge of electric drives, power electronics and global pollution is needed.



Slobodan Angel Mirchevski was born on February 16, 1950 in Skopje, Republic of Macedonia. He has received the B.Sc. degree in electrical engineering, M.Sc. degree and Ph.D. degree from University "Sts. Cyril and Methodius"-Skopje, in 1975, 1984 and 1990 respectively. From 1975 to 1979 he was with Mines and Steelworks "Skopje", where he worked in the fields of electrical machines and control of drives in rolling mills. From 1979 to the present he is with Faculty of Electrical Engineering and Information Technologies in Skopje. In more mandates he was a head of the Institute for power engineering. Twice his duties were positions of vice dean for education (1997-1999) and vice dean for finances (1999-2001). He was a member of the University Senate (2001-05) and member of inter universities conference (2005-09). As DAAD stipendium user he realized two specializations in Germany, University Erlangen-Nuremberg, Institute for electric drives and control, in 1984 and 1995. Now he is a full professor for electrical drives and a head of Laboratory for electric drives. Also he was a head of the three years (1994-1996) research project "Rational using of electric energy in AC drives", financed by Ministry of Science. He is an author of more than 150 scientific and professional papers and many application works (more than 50) in industry. He is an author of more invited papers. He has been a member of IEEE (IAS), CIGRE, IFAC for more years. From March 2002 he is a Senior Member of IEEE. He was a participant as a scientific investigator in TEMPUS PHARE JEP S 12103-97 "Development of Power Electronics Courses" and TEMPUS PHARE CME 03118-97 "System of Quality Assurance in Higher Education in Macedonia". As a participant in the TEMPUS PHARE JEP S 12103-97 "Development of Power Electronics Courses" he was on retraining at the Università degli Studi di Milano, Dipartimento di Fisica, Sezione Elettronica from 01.07.2000 to 25.07.2000. As a participant in DAAD Project (Mechatronics in high education in the countries of South-East Europe) he stayed in Ilmenau, Germany from 16.02.2002 to 10.03.2002. Under his leadership 104 diploma works, 7 M.Sc. works and 1 Ph.D. thesis are realized. His areas of interest are electric drives, their control and energy efficiency. He was observer member of SC A1 CIGRE and president of SC A1 of Mako CIGRE, 2006-14. He is founder and president of Macedonian Association for Power electronics, drives and control 2009-13. He was a member of Editorial Board of EPE Journal - Brussels and Editorial Board of International Journal of Renewable Energy Sources 2009-13. Also he is a member of PEMC Council, EPE Executive Council and EPE General Assembly. He had an opportunity to be the general chairman of the successful conference EPE-PEMC 2010, held in Ohrid, Republic of Macedonia, 6-8 September 2010. At EPE'13 ECCE in Lille he was a chairman of dialogue session about energy efficiency. He has 2 participations on JRC Workshops about smart grids in Antalya, in September 2013 and in April 2014. In November 2014 he was a visiting professor on "Advanced PhD EU Project" at Gdansk University of Technology with the course Energy Efficiency in Electric Drives. He was a lecturer of tutorial "Energy Efficiency in Electric Drives" at EPE ECCE'15 in Geneva.