EPE 2007 AALBORG

FINAL PROGRAMME

12th European Conference on Power Electronics and Applications

2 - 5 September 2007
Aalborg, Denmark

http://www.epe2007.com/

EPE

AALBORG UNIVERSITY DENMARK

emotron DEDICATED DRIVE

GRUNDFOS

DOF Det Obelske Familiefond

Gamesa

MITSUBISHI ELECTRIC

Danfoss

Vestas

SIEMENS

Cover 1

12th European Conference

on

Power Electronics and Applications

2 to 5 September 2007
Aalborg, Denmark

Sponsored by: European Power Electronics and Drives Association

Hosted by: Aalborg University, Denmark

Local secretariat by: VisitAalborg Convention

In cooperation with: AIM, IEEE-IAS, IEEE-IES, IEEE-PELS,
IEEE Denmark Section, IET, KIPE, KIVI-NIRIA, NEF, OVE, SEE,
SEP, SER, SRBE/KBVE, TI-KVIV, VDE-ETG

Contents

2-6 September 2007
European Power Electronic conference
in Aalborg, Denmark,
goes strongly renewable
Welcome!

Five tutorials, the EPE Wind day, six parallel lecture sessions covering all areas related to Power Electronics, three dialogue sessions allowing face-to-face discussion with the authors, six specialized workshops and panel discussions on state-of-the-art topics, including a match-making workshop in preparation of the coming calls of FP7, industrial exhibition and technical tours.

Venue

The European Power Electronics and Adjustable Speed Drives community is gathering this time in Aalborg, Denmark, to exchange views on research progresses and technological developments and I want to extend a warm welcome to all of you. The EPE 2007 conference (www.epe2007.com) is sponsored by the EPE Association and is held in the Aalborg Congress & Culture Centre. It is hosted by Aalborg University's Institute of Energy Technology.

The conference has received more than 950 synopsis and about 600 papers from 48 countries will be discussed during the sessions. We expect more than 900 participants from all over the world enjoying Aalborg and the spirit of EPE 2007 as one of the leading power electronics conferences in the world.

Denmark is one of the frontiers in renewable energy supplies and distributed generation. Today about 20 % of all electrical energy is produced by wind turbines and further 30 % is covered by small combined heat and power plants, which is a record in this scale. Further due to strong national energy savings programmes the use of electricity has almost been 25 years even though production and population have increased. Europe has set up new targets for renewable energy and Denmark has the goal to remain one of the leading countries in the world. These issues will of course be addressed at the EPE 2007 conference.

Content and programme

The conference is organized with 5 tutorials on Sunday with the following topics:

1. Modeling and Control of Permanent Magnet Synchronous Motors
2. Propulsion systems for hybrid and fuel cell electric vehicles
3. Superjunction devices & technologies - Benefits and Limitations of a revolutionary step in power electronics

4. Power Electronics and Control for Renewable Energy Systems
5. Grid Requirements, Monitoring, Synchronization and Control of Wind Turbines under Grid Faults

During the three days of main conference 160 papers will be presented in lecture sessions – done in the morning through six parallel tracks. In the afternoons papers will be presented in dialogue sessions. One of the highlights will be on Monday September 3 where many high level technical papers will be presented in wind turbine and wind power system technology with contributions from several leading manufacturers. The 100 papers received in this field highlight the present technological importance. Also other fields like adjustable speed drives, switched mode power supplies, automotive, custom power systems, new power devices will be thoroughly represented through highly interesting papers. Key-note presentations will highlight multi-level converters for utility applications, silicon carbide components and system optimisation, respectively on Tuesday and Wednesday mornings. Each day, the late afternoons hold several workshops in power electronics, power systems, education etc. Finally a match-making workshop is organized in order to facilitate joint projects for international R&D programmes. To spice the renewable energy spirit further, you have seen the full scale 3MW wind turbine nacelle, placed at the entrance of the conference site for inspection – and inspiration. There is free wireless connection during the conference for your convenient use.

Do not miss the commercial exhibition. This is a unique opportunity for you to see products and to have prolonged discussions with fellow specialists in the field of Power Electronics and Drives. The aim of the exhibition is to promote technical exchanges and business contacts. Special products presentations will be organized on request. Check the daily programme for information.

The three main sponsors for the conference are Vestas Wind Systems A/S, Danfoss A/S and Grundfos A/S.

For more information about technical as well as sightseeing tours please contact the conference desk. We will be happy to help.

We wish you a successful, fruitful and nice to remember EPE 2007 here in Aalborg!

Frede Blaabjerg
Aalborg University
Conference Chairman
fbl@iet.aau.dk

Philip C. Kjaer
Vestas Wind Systems A/S
Conference Co-chairman
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A. DEVICES, PACKAGING AND SYSTEM INTEGRATION

Topic 1: Active devices
chair Josef Lutz
co-chair Stephane Azzopardi

Topic 2: Passive components, system integration & packaging
chair Braham Ferreira
co-chair Martin Fasching

Topic 3: Power system integration
chair Roger Bassett
co-chair José Millan

B. POWER CONVERTERS TOPOLOGIES AND DESIGN

Topic 4: Soft switching converters and control
chair Alex Van den Bossche
co-chair Peter Steimer

Topic 5: Hard switching converters and control
chair Thierry Meynard
co-chair Frans Dijkhuizen

C. MEASUREMENT AND CONTROL

Topic 6: Modulation strategies and specific control methods for static converter
chair Jon Clare
co-chair Eric Monmasson

Topic 7: Application of control methods to electrical systems
chair Jean-Paul Louis
co-chair Greg Asher

Topic 8: Measurements and sensors (except speed and position sensors)
chair Bill Ray
co-chair Marian Kazmierkowski

D. ELECTRICAL MACHINES AND DRIVE SYSTEMS

Topic 9: Motion control and robotics, communication in drive systems
chair Yves Perriard
co-chair Betty Semail

Topic 10: Electrical Machines
chair Marcel Jufer
co-chair Alfio Consoli

Topic 11: Adjustable speed drives
chair Emil Levi
co-chair Jurgen Reinert

Topic 12: High performance drives
chair Walter Schumacher
co-chair Sjoerd Bosga
co-chair Robert D Lorenz

E. APPLICATIONS OF POWER ELECTRONICS IN GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY

Topic 13: Electrical energy generating systems, renewable energy systems
chair Philip C. Kjaer
co-chair Jouko Niiranen

Topic 14: Transmission and distribution of electrical energy
chair Colin Oates
co-chair Ronnie Belmans

F. APPLICATIONS OF POWER ELECTRONICS IN USERS DEVICES/PROCESSES

Topic 15: Power supplies
chair Alain Berthon
co-chair Jose Marcos Alonso

Topic 16: Electrical systems in aerospace, space, surface and marine transport
chair Joeri Van Mierlo
co-chair Andrea Vezzini

Topic 17: Operating quality of systems
chair Helmut Weiss
co-chair Sergej Kalaschnikow

Topic 18: Industry specific energy conversion and conditioning technologies
chair Enrique Dede
co-chair Guiseppe Buja

Topic 19: Energy saving technologies
chair Günter Schröder
co-chair Wlod Koczara

Topic 20: Energy conversion and conditioning technologies in physics research and related applications
chair Frederick Bordry
co-chair Sandro Tenconi

G. EDUCATION

Topic 21: Education
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co-chair André Vandenput

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Local Conference Secretariat

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www.visitaalborg.com

Tourist information

The City of Aalborg welcomes you…
As the fourth largest city in Denmark with some 180,000 inhabitants, Aalborg is a bustling university city boasting a lively, intimate and historic city centre. Aalborg is a multi-faceted city – full of contrasts.

The Vikings founded the city of Aalborg in the 7th century at the narrowest banks of the Limfjord. The Viking settlement at Lindholm Høje just north of Aalborg was extremely influential in the Viking era's international trade patterns. Today, Lindholm Høje is one of Scandinavia's largest and most beautiful ancient monuments from this proud era in Danish history and includes a magnificent burial ground and a modern museum.

In 'Old Aalborg' trade and wealth have set their mark and many of the old buildings have been preserved as natural elements in the city scene. A special mention must be made of Jens Bang's House, a five-storied Renaissance structure dating from 1624, as well as Jørgen Olufsens Gård from 1616 and the lovely Aalborghus Castle dating from 1539.

Aalborg offers a variety of tourist attractions, sights, many exciting activities and events which include the Zoo, the amusement park Karolinelund, carnival, casino, museums, shopping, theatres and a wide selection of clubs and restaurants. Within the next five years the harbor front will undergo a complete renovation developing a cultural center in Aalborg e.g. a new Utzon-center for architecture.

Nowadays, Aalborg is known for being at the forefront of innovation as a high-technology region with ICT as a key technology. http://www.visitaalborg.com/





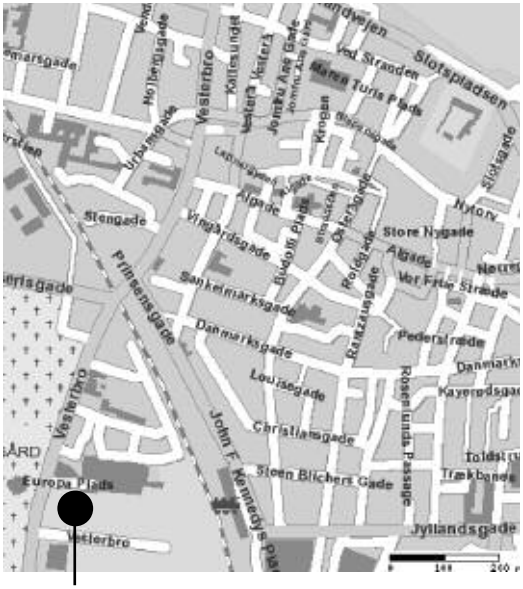
Denmark's premier holiday region
Being the Danes' preferred holiday region, North Denmark offers the perfect setting for combining business with pleasure. The region of North Denmark is famous not only for its fabulously rich scenery and the extra hours of sunshine it receives compared to the rest of the country, but also for its unique, varied natural phenomenon of the two seas that meet here, bringing their own distinctive appeal to this region of Denmark. This region has the wild and foaming North Sea with its miles-long sandy beaches and vast dune landscapes. The milder and far more tranquil Kattegat is to the east, and the wonderful, glittering Limfjord to the south with its wealth of idyllic coves and sounds with large and small islands, sheer cliffs and green forests. In fact, the region boasts more than 2,500 kilometres of coastline, so you are never more than 30 minutes from the seashore.

Do not miss the clashing meeting of two seas at the very "Top of the Continent" - it is a world-class experience! Add to this, a rich choice of fairytale castles, great museums, traditional inns, glass blowers, superb restaurants, intimate seaside resorts and the relaxed and easygoing attitude of the Danes themselves, and you are well off for a memorable stay at the "Top of the Continent". http://www.visitnordjylland.dk/




Conference information

Congress and Exhibition Venue
The event will be held at the Aalborg Congress & Culture Centre, which is one of the largest and most versatile centre's in Scandinavia. Located in the heart of Aalborg, the Congress Centre ensures an intimate atmosphere.



Aalborg Congress & Culture Centre
Europa Plads 4
DK-9000 Aalborg
www.akkc.dk

General Information

On-site Registration - Opening Hours

Sunday	2 September 2007	08.00-17.30
Monday	3 September 2007	07.30 -17.30
Tuesday	4 September 2007	08.00-17.30
Wednesday	5 September 2007	08.00-14.30

The helpdesk
During the conference you can contact the helpdesk (in the Main Foyer in Aalborg Congress and Culture Centre) for any questions you may have, and we will do the best to help you.

Assistants
We have organized a number of students, who are studying the curriculum in Energy Technology at Aalborg University and members of staff, to assist our delegates during the conference. They will all be wearing a blue t-shirt with EPE 2007 logo and STAFF printed on the back. Please take contact and they will assist you or find the right person to help you.

Internet
Free wireless internet access is available throughout the conference area. To access the wireless network enable your wireless network card and connect to the network "TDC". (Remember to have enabled DHCP).

Open a web-browser and you will rerout to the login page.
(If not rerouted, open the page tdchotspot.dk)

At the login page enter following data:
Username (Brugernavn): epe2007
Password (Adgangskode): aalborg

In addition computers will be available for internet browsing together with limited printing facilities for printing a few pages.

The computers are located in room no. 6 – Skipperstuen on the first floor, and in the Front Hall next to the Main Hall.

Coffee and refreshment
During the conference there will all day be coffee, ice water and fresh fruit served around the conference site. In addition to this there will every day be a scheduled coffee break from 10.30-11.00 to meet friends and visit the exhibition.

Lunch
A lunch buffet will be served each day from 13.00-14.30 in the Foyer in Aalborg Congress and Culture Centre. Lunch is included in the full registration fee.

Welcome reception
The City of Aalborg is delighted to mark the EPE Conference 2007. The delegates are invited for a welcome reception Monday September 3 with a special welcome from the

Vice Mayor in Aalborg. A light course and wine will be served. The reception will take place in the Foyer in Aalborg Congress and Culture Centre. The reception starts at 18.30 in the evening so the delegates have the possibility to visit Aalborg and maybe one of the many restaurants in the City Center. Please come to meet friends and be there in time.

Gala evening
Our gala evening will take place in Aalborg Congress and Culture Centre Tuesday September 4. You will find the ticket for the gala evening in your conference bag. We start with a welcome drink at 19.00 and hope to see you all at that time. We have planned an enjoyable evening with nice food, good wine and a little entertainment with professional staff to make the evening successful. The gala dinner is included in the full registration fee. Different awards will also be given this evening.

Tutorials
On Sunday September 2 there will be running 5 tutorials. This day sandwiches will be served in the lecture area in 1st floor from 13.00-14.00 and there will be coffee, ice water and fresh fruit served during the day. Please register at the registration/helpdesk. The tutorials are:

1. Modeling and Control of Permanent Magnet Synchronous Motors
   09.30-17.30 Radiosalen
2. Propulsion systems for hybrid and fuel cell electric vehicles
   09.30-18.00 Musiksalen
3. Superjunction devices & technologies - Benefits and Limitations of a revolutionary step in power electronics
   09.30-13.00 Laugsstuen
4. Power Electronics and Control for Renewable Energy Systems
   09.30-17.30 Gæstesalen
5. Grid Requirements, Monitoring, Synchronization and Control of Wind Turbines under Grid Faults
   09.30-13.00 Latinerstuen

Lecture presentations
Your presentation is ready for presentation on the session computer. In case of any problems should appear, please bring your presentation on a memory stick.

Show up at least 10 minutes before the session starts and meet the session chairman so you have the possibility to inspect the lecture hall and its facilities. They are:

– projection equipment
– pointer
– lights
– microphone

At the session:

– speak slowly and as simple as possible
– stick to the time limit so questions can be raised

General Information

Dialogue presentation
You are asked to set up your display between 08:30 - 10:30 hrs in the morning of your presentation day. Please see the Programme for your day of presentation. Assistants will be present to assist you to find the location of the poster.

The dialogue sessions run from 14:40 - 16:40 hrs on Monday, Tuesday and Wednesday. They take place in Main Hall West, the exhibition room.

No lecture sessions will take place in parallel and the presenting author should attend his/her booth throughout this time.

Display material must be removed by 18:00 hrs on the day of your presentation. Any material not removed will be thrown away.

Tradition of EPE conferences is that there will be no author's breakfast before the sessions. Authors and session chairpersons will meet on site 10 minutes before the session starts.

Workshops
In the afternoons different workshops are organized to discuss academic and industrial trends. Just sign up to participate actively during those events.

Industrial session of the joint EPE and IEEE Wind day
(EPE Chapter on Wind Energy and joint IAS/PELS/IES Danish and German Chapters)
Monday 15.30 Main Hall

EU Frame Work Program 7: Get informed and find partners
For the projects (Laugsstuen – Gæstesalen – Latinerstuen)
Monday 15.30 Det lille Teater

Education for the future
Tuesday 16.50 Det lille Teater

The UNIFLEX-PM project – presentation of results
Tuesday 16.50 Radiosalen

Built-in Reliability from the Beginning - a Holistic Approach in Design for Reliability of Power Electronics Systems
Tuesday 16.50 Laugsstuen

ElectroMagnetic Compatibility (EMC) and power-quality disturbances
Tuesday 16.50 Gæstesalen

Exhibition
The Industrial Exhibition is composed of below exhibitors in Main Hall West. The exhibition will be open every day during the conference from 09.30 -17.40. The dialogue session will take place in the same area every afternoon. In the conference bag you will find a up-to-date list for the exhibitors and a ground plan for the exhibition stands in the conference area. Please visit them all and get new ideas.

CST - Computer Simulation Technology	Germany
Microchip Ltd.	United Kingdom
Mitsubishi Electric Europe B.V.	Germany
Power Electronic Measurements Ltd.	United Kingdom
ANSOFT France	France

Infineon Technologies AG	Germany
Kempower Oy, Kemppi-Group	Finland
Plexim GmbH	Switzerland
TriPhase nv	Belgium
Danfoss Silicon Power GmbH	Germany
Yokogawa Measurement Technologies AB	Sweden
Vestas Wind Systems A/S	Denmark
Technosoft S.A.	Switzerland
Danfoss Drives	Denmark
ECPE European Center for Power Electronics e.V.	Germany
Mesago PCIM GmbH	Germany
Aalborg University	Denmark
EPE Association	Belgium
CEDRAT	France
Powersem	Germany
Tyco	USA
Hesse & Knipps Gmbh	Germany

Industrial visits

The technical tours to Vestas Wind Systems, Grundfos A/S, the Wind Farm Tour and the visit at Aalborg University will be on Thursday September 6. If you want to join, and if there are still available seats, please register at the registration/helpdesk as soon as possible. All tours start (meeting time 10 minutes before start) and end at the parking place by Aalborg Congress and Culture Centre. The start and expected return time for every tour are listed below.

Vestas Wind Systems:	Start: 07.00	Expected return: 17.30	(Fully booked)
Wind farm tour:	Start: 08.00	Expected return: 12.00	(Euro 40)
Grundfos:	Start: 08.30	Expected return: 15.00	(Euro 60)
Aalborg University:	Start: 09.00	Expected return: 13.30	(Free)

Spouse Program

We have arranged 2 excursions. A city tour in Aalborg Monday and an all-day trip to Skagen Tuesday (the most Northern-based town in Denmark). If you have not already booked any of these tours by your registration, please contact the help-desk if you want to join. The staff here can also assist if you have other wishes for your stay in Aalborg. Both tours will start from Aalborg Congress and Culture centre. The start and expected return time for every tour is listed below

Aalborg city tour : (Monday) Start: 10.00 Expected return: 13.00 (Euro 10)




General Information

All-day trip to Skagen: Start: 09.00 Expected return: 17.00 (Euro 100) (Tuesday)



Aalborg is an excellent starting point for great golf experiences

Every golfer's paradis
Denmark has been called 'The Undiscovered Golf Paradise'. Maybe because golf in Denmark to a certain extent is synonymous with unceremonious unwinding and a relaxed atmosphere. Here there is plenty of room for green-fee guests most of the year. There are great family caourses, challanging championship courses, well kept park courses, breezy coast courses and not least important social gatherings in the club house... and if the rest of the family want to do something else there is never far to other great experiences.

In Northern Jutland alone there are more than 20 professional golf courses and Aalborg is a great starting point for many alternating golfing experiences.
Tee off here for inspiration to great golf experiences in Northern Jutland:

Aalborg Golf Klub
The golf course is situated about 10 km from Aalborg, near the Limfjord.

It is an 18 hole international championship course in a slightly hilly terrain with lakes and wood and several Danish and European championships have been held there as well as the European Challenge Tour in 2001.

The modern club house has very good changing- and shower facilities, a well-stocked golf shop and a large restaurant with excellent food on the menu.

Information & reservation: Tel. +45 9834 1476 - Aalborg Golf Klub

Ørnehøj Golf Club

Ørnehøj Golf club is located about fifteen minutes from Aalborg in the small town Gistrup.

The 18 hole course is varied, beautiful and well kept. The view from many of the holes is magnificient. This is mainly due to the seven grave mounds that are included in the hilly terrain.

You can also see the Aalborg Tower in the distance.
Information & reservation: Tel. +45 9831 4344 - Ørnehøj Golf Klub

Practical information

Aalborg Airport www.aal.dk
Aalborg Airport, Lufthavnsvej 100, 9400 Nørresundby, is placed 8 km from the conference site
The public bus Metro/Airportbus route 2 stops at Aalborg Airport
The public bus route 22 stops at the airport evenings and weekends
The buses depart from Aalborg Bus Station in the centre of Aalborg
The Aalborg Bus Station is situated next to Aalborg Congress & CultureCentre
Taxi's are also available

Aalborg Bus Station
Kennedys Plads, 9000 Aalborg
All national, regional and public buses leave from this station which is placed in the centre of Aalborg. The bus station is right next to Aalborg Train Station.

Currency and Credit Cards
The currency in Denmark is Danish kroner (DKK) - the approximate exchange rate is DKK 7,50 to EUR 1.
Denmark is not part of the EURO-monetary system, but major shops will probably accept EURO. Most major international credit cards are accepted in all shops and restaurants in Aalborg City.
Banking hours in the city are 09.00-16.00, Monday to Friday. Please note that banks are closed Saturday and Sunday.

Chemist Shops
Chemist shops are open Monday to Friday from 9.30 to 17.30 and Saturday from 10.00 to 14.00.
Aalborg Budolfi Chemist shop, Algade 60, 9000 Aalborg, is open 24 hours.

Emergency services
Police, Fire department or Ambulance
Dial 112

Restaurants
In Aalborg there is never far between the great culinary experiences. In the conference bag you will find a Restaurant Guide for some of the city's many great restaurants. Welcome and enjoy!

Shopping
You will find two main shopping streets in the centre of Aalborg. You can also visit Aalborg Storcenter with 65 different shops. This center is located 8 km from the city centre. In general the shops are open from 10.00 to 17.30 Monday to Thursday, Fridays from 10.00 to 18.00 and Saturday from 10.00 to 15.00.

Taxi
Taxis are available in Aalborg around the clock.
Tel: +45 9810 1010
Can also be ordered in the main foyer of the Aalborg Congress and Culture Centre using a free phone

General Information

Tourist Information
VisitAalborg
Østertågade 8, 9000 Aalborg
info@visitaalborg.com
www.visitaalborg.com
Tel: +45 9931 7500

Water
The tap water is drinkable in Denmark.

Weather
The weather in Denmark varies a lot so you may expect both sunshine and rain during the month of September. The average temperature in September will usually range between 14°C and 20°C.
http://www.dmi.dk/eng/index/forecasts.ht

Tutorials Programme

Place: Aalborg Congress and Culture Centre

Tutorial 1: Modeling and Control of Permanent Magnet Synchronous Motors
09.30-17.30 - Location: Radiosalen
Lecturers:
Joachim Böcker, Head of the group of Power Electronics and Electrical Drives at Paderborn University, Germany
Michael Meyer, Research associate at the group of Power Electronics and Electrical Drives at, Paderborn University, Germany

Tutorial 2: Propulsion systems for hybrid and fuel cell electric vehicles
09.30-18.00 - Location: Musiksalen
Lecturers:
Joeri Van Mierlo, Vrije Universiteit Brussel, VUB, Belgium
Uwe Schäfer, Technical University Berlin, Germany
Rik De Donker, RWTH, Aachen University, Germany
Nigel Schofield, University of Manchester, Great Britain
Dirk Uwe Sauer, RWTH, Aachen University , Germany

Tutorial 3: Superjunction devices & technologies – Benefits and Limitations of a revolutionary step in power electronics
09.30-13.00 - Location: Laugsstuen
Lecturers:
Dr. Gerald Deboy, Infineon Technologies Austria AG
Dr. Florin Udrea, Engineering Department, University of Cambridge, Cambridge, UK

Tutorial 4: Power Electronics and Control for Renewable Energy Systems
09.30-17.30 - Location: Gæstesalen
Lecturers:
Johanna Myrzik, Technische Universiteit Eindhoven Electrical Power Systems, The Netherlands
Alfred Engler, Institut für Solare Energieversorgungstechnik ISET e.V., Germany
Mike Barnes, University of Manchester Department of Electrical Engineering & Electronics, United Kingdom
Mike Meinhardt, SMA Technologie AG, Germany (Coordination of Tutorial)

Tutorial 5: Grid Requirements, Monitoring, Synchronization and Control of Wind Turbines under Grid Faults
09.30-13.00 - Location: Latinerstuen
Lecturers:
Remus Teodorescu, Aalborg University.Institute of Energy Technology. Denmark
Marco Liserre, Polytechnic of Bari. Department of Electrotechnical and Electronic Engineering. Italy
Pedro Rodríguez, Technical University of Catalonia. Electrical Engineering Department. Spain
Lars Helle, Vestas Wind Systems A/S Denmark

08h30 – 9h30: Opening session **Room: Main Hall East**

Chair: Prof. Frede BLAABJERG, AALBORG UNIVERSITY, DENMARK
Co-Chair: Dr. Philip C. KJAER, VESTAS WIND SYSTEMS A/S, DENMARK

Welcome address from the EPE 2007 chairpersons
Prof. Frede Blaabjerg, Aalborg University and Dr. Philip Kjaer, Vestas Wind Systems A/S, Denmark

Welcome address by the president of EPE Association
Marcel Jufer, EPFL, Switzerland

Welcome to Aalborg University and the City of Aalborg
Rector Finn Kjaersdam, Aalborg University

Introductory address to the Joint EPE and IEEE Wind day*
Prof. Tore Undeland, Norwegian University of Science and Technology, Norway, Chairman of the EPE Chapter on Wind Energy

Denmark as Wind Power Hub – the future challenges
Bjarne Lundager Jensen, Director of the Danish Wind Industry Association

Wind Power Integration and Trends of Future Power Generation
Dr. Markus Ewert, E.ON, Germany

* Joint EPE and IEEE WIND DAY - Joint Meeting of EPE represented by the EPE Chapter on Wind Energy and IEEE represented by IEEE Joint IAS/PELS/IES Danish Chapter, IEEE Joint IAS/PELS/IES German Chapter and IEEE PES German Chapter

LECTURE SESSIONS

09h40 – 10h40: Lecture sessions 1

LS1a topic 13 (Joint EPE and IEEE Wind day): Power electronics for wind energy **Room: Main Hall East**

Chair: Dr. Andreas LUXA, SIEMENS AG - POWER TRANSMISSION AND DISTRIBUTION, GERMANY
Co-Chair: Dr. Philip C. KJAER, VESTAS WIND SYSTEMS A/S, DENMARK

0830 - Control of Back-to-Back-Connected Neutral-Point-Clamped Converters in Wind Mill Applications
POU Josep, ZARAGOZA Jordi - TECHNICAL UNIVERSITY OF CATALONIA; ROBLES Eider, CEBALLOS Salvador, ARIAS Antoni, IBAÑEZ Pedro - ROBOTIKER-TECNALIA - SPAIN

0946 - Reactive Power Generation by DFIG based Wind Farms with AC Grid Connection
ERLICH Istvan, WILCH Michael, FELTES Christian - UNIVERSITY OF DUISBURG-ESSEN - GERMANY

0951 - Estimation of the costs due to renewable energies for a transmission system operator
HANDSCHIN Edmund, REHTANZ Christian, WANIEK Daniel, SCHULZ Woldemar, HÄGER Ulf, HORENKAMP Willi - UNIVERSITY OF DORTMUND - GERMANY

LS1b topic 1: IGBT and freewheeling diodes **Room: Det Lille Teater**

Chair: Prof. Josef LUTZ, TU CHEMNITZ, GERMANY
Co-Chair: Dr. Stephane AZZOPARDI, IXL , FRANCE

0445 - Turn-off failure mechanism analysis of Trench IGBT under clamped inductive switching operation
BENMANSOUR ADEL, AZZOPARDI Stephane, MARTIN Jean Christophe, WOIRGARD Eric - IXL - FRANCE

0288 - Next Generation of IGBT-Modules Applied to High Power Traction
BAKRAN Mark, HELSPER Martinm, NAGEL Andreas, ECKEL Hans-Günter - SIEMENS AG - GERMANY

0650 - New Plasma Shaping Technology for Optimal High Voltage Diode Performance
KOPTA Arnost, RAHIMO Munaf, SCHLAPBACH Ulrich - ABB SWITZERLAND LTD, SEMICONDUCTORS - SWITZERLAND

LS1c topic 4: Soft switching converters: resonant, ZVS, ZCS **Room: Laugsstuen**

Chair: Prof. Alex VAN DEN BOSSCHE, UGENT, BELGIUM
Co-Chair: Dr. Georgios DEMETRIADES, ABB AB CORPORATE RESEARCH , SWEDEN

0331 - Comparison of single-phase matrix converter and H-bridge converter for radio
NGUYEN-QUANG Nam, STONE David, BINGHAM Chris, FOSTER Martin - SHEFFIELD UNIVERSITY - UNITED KINGDOM

0811 - Wide input Voltage range Compensation in DC/DC Resonant Architecture for On-Board Traction Power Supplies
COCCIA Antonio - ABB CORPORATE RESEARCH - SWITZERLAND

LS1d topic 15: DC power supplies **Room: Gaestesalen**
Chair: Ir. Sjoerd DE HAAN, DELFT UNIVERSITY OF TECHNOLOGY, NETHERLANDS
Co-Chair: Dr. TORBJORN THIRINGER, CHALMERS, SWEDEN

0104 - Influences of magnetic inductance, leakage inductance and saturable inductance on an active clamp forward converter
TIAN Jian - FRAUNHOFER INSTITUT-IISB; REIMANN Tobias, SCHERF Marko - ISLE GMBH; PETZOLDT Juergen - TECHNISCHE UNIVERSITÄT ILMENAU – GERMANY; DEBOY Gerald - INFINEON TECHNOLOGIES AUSTRIA AG - AUSTRIA

0281 - Advantages of 3-stage-DC/DC-converters for Server Switch Mode Power Supply (SMPS) applications
SCHWALBE Ulf, SCHERF Marko, REIMANN Tobias - ISLE GMBH – GERMANY; DEBOY Gerald - INFINEON TECHNOLOGIES AUSTRIA - AUSTRIA

0509 - Digitalizing Gate Control of High Efficiency, High Frequency and High Power Chopper Circuit SAZZ Using FPGA
TSURUTA Yukinori, KAWAMURA Atsuo, PAVLOVSKY Martin - YOKOHAMA NATIONAL UNIVERSITY - JAPAN

LS1e topic 10: Switched reluctance machines **Room: Radiosalen**
Chair: Prof. Robert D. LORENZ, UNIVERSITY OF WISCONSIN - MADISON, UNITED STATES OF AMERICA
Co-Chair: Dr. Peter Omand RASMUSSEN, AALBORG UNIVERSITY, DENMARK

0124 - Novel Analytical Calculation Method for the Non-Linear Psi-i-Characteristic of Switched-Reluctance-Machines in Arbitrary Rotor Positions
GERLING Dieter - UNIVERSITY OF FEDERAL DEFENSE - GERMANY

0678 - GA-Based Autonomous Electromagnetic Design and Experimental Verification of Two-Phase Switched Reluctance Compressor Drive
KANO Yoshiaki, MATSUI Nobuyuki, KOSAKA Takashi - NAGOYA INSTITUTE OF TECHNOLOGY - JAPAN

0891 - Active piezoelectric vibration controls for high speed switched reluctance machine
OJEDA Xavier, GABSI Mohamed, HLIOUI Sami, LECRIVAIN Michel - ENS CACHAN SATIE; MININGER Xavier - LGEP - FRANCE

LS1f topic 8: Measurements and sensors **Room: Musiksalen**
Chair: Dr. Jero AHOLA, LAPPEENRANTA UNIVERSITY OF TECHNOLOGY, FINLAND
Co-Chair: Adriano CARVALHO, UNIVERSITY OF PORTO, PORTUGAL

0135 - Analysis and Calibration of a High Precision AD Converter
EMMENEGGER Martin - PAUL SCHERRER INSTITUTE - SWITZERLAND

0559 - Evaluation of the Iron Loss of an Inductor Based on Dynamic Minor Characteristics
TERASHIMA Kazuhito - TOKYO METROPOLITAN UNIVERSITY - JAPAN

0857 - Parameter Estimation of a DC/DC Buck Converter Using a Continuous Time Model
BUIATTI Gustavo - ALSTOM TRANSPORT – FRANCE; AMARAL Acacio - POLYTECHNIC INSTITUTE OF COIMBRA, ISEC; CARDOSO Antonio - UNIVERSITY OF COIMBRA, FCTUC / IT - PORTUGAL

10h40 - 11h00: Coffee break

11h00 – 12h00: Lecture sessions 2

LS2a topic 13 (Joint EPE and IEEE Wind day): Power electronics for wind energy **Room: Main Hall East**
Chair: Dr. Jouko NIIRANEN, ABB OY, FINLAND
Co-Chair: Ing. John Godsk NIELSEN, VESTAS, DENMARK

0608 - Performance Comparison of a Left Shunt UPQC and a Right Shunt UPQC applied to Enhance Fault-Ride-Through Capability of a Fixed Speed Wind Generator
JAYANTI N. G., BASU Malabika, CONLON Michael, GAUGHAN Kevin - DUBLIN INSTITUTE OF TECHNOLOGY - IRELAND

0187 - A high power density converter system for the Gamesa G10x 4,5 MW turbine
ANDRESEN Björn, BIRK Jens - GAMESA WIND ENGINEERING APS - DENMARK

0144 - Control of Doubly-fed Induction Generators under Asymmetrical Grid Conditions
RICHTER Marlies - TECHNICAL UNIVERSITY ILMENAU – GERMANY; NAVARRO Daniel - GAMESA EÓLICA, S.A. - SPAIN

LS2b topic 2: Passive components and integrated passive components **Room: Det Lille Teater**
Chair: Prof. Braham FERREIRA, DELFT UNIVERSITY OF TECHNOLOGY, NETHERLANDS
Co-Chair: Prof. Hans-Peter NEE, KTH ROYAL INSTITUTE OF TECHNOLOGY, SWEDEN

0278 - Core loss model for nanocrystalline cores for full and half bridge waveforms
NIKOLOV Georgi, VALCHEV Vencislav - TECHNICAL UNIVERSITY OF VARNA – BULGARIA; VAN DEN BOSSCHE Alex - UGENT - BELGIUM

0494 - Dynamic Iron Loss Measurement Method for an AC Filter Inductor on a PWM Inverter
KIM Kwan-Ryol - TOKYO METROPOLITAN UNIVERSITY - JAPAN

0589 - A New Model for the Determination of Copper Losses in Transformer Windings with Arbitrary Conductor Distribution under High Frequency Sinusoidal Excitation
DIMITRAKAKIS Georgios, TATAKIS Emmanuel - UNIVERSITY OF PATRAS - GREECE

LS2c topic 5: Control of multilevel converters **Room: Laugsstuen**
Chair: Dr. Frans DIJKHUIZEN, ABB CORPORATE RESEARCH, SWEDEN
Co-Chair: Dr. Hector ZELAYA, ABB AB CORPORATE RESEARCH, SWEDEN

0062 - Reduction of common mode currents generated by three-level inverters with consideration of motor overvoltages
VIDET Arnaud, LE MOIGNE Philippe - ECOLE CENTRALE DE LILLE; IDIR Nadir, FRANCHAUD Jean-Jacques - UNIVERSITY OF LILLE 1 (USTL) ; BAUDESSON Philippe - SCHNEIDER TOSHIBA INVERTER EUROPE - FRANCE

0152 - A new stacked NPC converter: 3L-topology and control
FLORICAU Dan - POLITEHNICA BUCHAREST – ROMANIA; GATEAU Guillaume - INP TOULOUSE – France; DUMITRESCU Mariana - DUNAREA DE JOS UNIVERSITY OF GALATI – ROMANIA; TEODORESCU Remus - INSTITUTE OF ENERGY TECHNOLOGY - DENMARK

0171 - Carrier PWM Algorithm For Multi-leg Multilevel Inverters
NHO NGUYEN VAN - HOCHIMINHCITY UNIVERSITY OF TE – VIETNAM; LEE HONG-HEE - UNIVERSITY OF ULSAN - KOREA

LS2d topic 17: Operating quality of systems **Room: Gaestesalen**
Chair: Prof. Helmut WEISS, UNIVERSITY OF LEOBEN, AUSTRIA
Co-Chair: Dr. Sergej KALASCHNIKOW, DANFOSS GMBH, AUSTRIA

0033 - Predicting the influence of placement of passive components on EMI behaviour
LISSNER Andre, HOENE Eckart - FRAUNHOFER IZM - GERMANY

0596 - Noise propagation path identification of variable speed drive in time domain via common mode test mode
ZHAO D., FERREIRA J.A., POLINDER H. - TU DELFT; ROC'H A., LEFERINK F.B.J. - UNIVERSITY OF TWENTE – THE NETHERLANDS

0815 - Diagnosis of rotor faults in direct and indirect FOC induction motor drives
CRUZ Sérgio, CARDOSO António - UNIVERSITY OF COIMBRA / IT - PORTUGAL

LS2e topic 11: Inverter/motor control **Room: Radiosalen**
Chair: Prof. Emil LEVI, LIVERPOOL JOHN MOORES UNIVERSI, UNITED KINGDOM
Co-Chair: Prof. Lennart HARNEFORS, ABB POWER SYSTEMS, SWEDEN

0674 - Medium voltage three level inverter for high speed applications
JANNING Jörg - CONVERTEAM GMBH – GERMANY; MERCIER Jean-Charles - CONVERTEAM - FRANCE

0708 - Field Oriented Control of IPM Drives for Optimal Constant Power Operation
PELLEGRINO Gianmario, GUGLIELMI Paolo, ARMANDO Eric - POLITECNICO DI TORINO - ITALY

0905 - Variable sampling period IM vector control for high performance medium voltage drive
SIALA Sami, TERRIEN Franck, FLURY Guy - CONVERTEAM - FRANCE

LS2f topic 16: Automotive **Room: Musiksalen**
Chair: Prof. UWE SCHÄFER, TU BERLIN, GERMANY
Co-Chair: Prof. Joeri VAN MIERLO, VRIJE UNIVERSITEIT BRUSSEL, BELGIUM

0446 - Power Stage for Permanent Magnet Synchronous Motors in High Current Automotive Applications
GRAOVAC Dusan, KIEP Andreas, PUERSCHEL Marco - INFINEON TECHNOLOGIES AG - GERMANY

0676 - Integration of Supercapacitors as Transient Energy Buffer in Automotive Power Nets
POLENOV Dieter, PRÖBSTLE Hartmut, BRÖSSE Andreas - BMW GROUP; LUTZ Josef - TU CHEMNITZ; DOMORAZEK Gottfried - FH REGENSBURG - GERMANY

0788 - Power Electronics for Hybrid-Drive Systems
RENKEN Folker, WOLF Jürgen - SIEMENS VDO AUTOMOTIVE AG - GERMANY

12h10 – 13h10: Lecture sessions 3

LS3a topic 13 (Joint EPE and IEEE Wind day): Power electronics for wind energy **Room: Main Hall East**
Chair: Dr. Marta MOLINAS, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, NORWAY
Co-Chair: Prof. Andreas LINDEMANN, OTTO-VON-GUERICKE-UNIVERSITÄT, GERMANY

0238 - A New Architecture for Offshore Wind Farms
PRASAI Anish, DIVAN Deepak, KREIKEBAUM Frank - GEORGIA INSTITUTE OF TECHNOLOGY; BENDRE Ashish - DRS TECHNOLOGIES - UNITED STATES OF AMERICA; YIM Jung-Sik, SUL Seung-Ki - SEOUL NATIONAL UNIVERSITY - KOREA

0538 - Design and Comparison of Full-size Converters for Large Variable-Speed Wind Turbines
ZENG Xiangjun, CHEN Zhe, BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0953 - Storage of fluctuating wind energy
LERCH Edwin - SIEMENS AG - POWER TRANSMISSION AND DISTRIBUTION - GERMANY

LS3b topic 3: Power system integration **Room: Det Lille Teater**
Chair: Dr. Roger BASSETT, AREVA T&D TECHNOLOGY CENTRE, UNITED KINGDOM
Co-Chair: Dr. WAFFENSCHMIDT Eberhard, PHILIPS RESEARCH, GERMANY

0150 - Stability of DC link with reduced energy storage for regenerative synchronous drive
ROUX Nicolas, RICHARDEAU Frédéric - LAPLACE-ENSEEIHT / INPT / CNRS - FRANCE

0454 - An approach to building more compact power electronic converters
POPOVIC GERBER Jelena - ECPE – GERMANY; GERBER Mark, FERREIRA Jan Abraham - DELFT UNIVERSITY OF TECHOLOGY - NETHERLANDS

0518 - Comparison of DC-DC-converter Architectures of Power Management Circuits for Thermoelectric Generators
DOMS Inge, VAN HOOF Chris – KULEUVEN; MERKEN Patrick - IMEC - BELGIUM

LS3c topic 5: Multilevel converter topologies **Room: Laugsstuen**
Chair: Dr. Thierry MEYNARD, LAPLACE-ENSEEIHT, FRANCE
Co-Chair: Prof. Peter BARBOSA, ABB CORPORATE RESEARCH, SWITZERLAND

0315 - Optimization of Soft-switched Flying Capacitor Multi-level Converters applied to STATCOMs
FUJII Kansuke - FUJI ELECTRIC ADVANCED TECHNOL – JAPAN; DE DONCKER Rik - RWTH AACHEN UNIVERSITY - GERMANY

0825 - A Comparative Analysis between the Symmetric and the Hybrid Asymmetric Nine-Level Series Connected H-Bridge Cells Inverter
ZAMBRA Diorge A.B., PINHEIRO José Renes - FEDERAL UNIVERSITY OF SANTA MARIA; RECH Cassiano - UNIVERSIDADE REGIONAL DO NOROESTE DO ESTADO DO RS - BRAZIL

0856 - A three level inverter concept for low voltage applications
KAMINSKI Bartlomiej, KOCZARA Wlodzimierz - WARSAW UNIVERSITY OF TECHNOLOGY – POLAND; AL-KHAYAT Nazar - CUMMINS GENERATOR TECHNOLOGIES - UNITED KINGDOM

LS3d topic 18: Industry specific energy conversion and conditioning technologies **Room: Gaestesalen**
Chair: Prof. Enrique DEDE, UNIVERSITY OF VALENCIA, SPAIN
Co-Chair: Prof. Giuseppe BUJA, UNIVERSITY OF PADOVA, ITALY

0714 - 3-Level High Power Converter with Press Pack IGBT
JAKOB Roland, KELLER Christian, MÖHLENKAMP Georg - CONVERTEAM GMBH – GERMANY; GOLLENTZ Bernard - CONVERTEAM - FRANCE

0906 - High Power Inverter using Press Pack IGBT for High Speed Applications
GOLLENTZ Bernard, DIRAND Olivier - CONVERTEAM - FRANCE

0931 - Improvement of a static system for water condensation supplied with Photo Voltaic energy
FERRARIS Luca, FERRARIS Paolo - POLITECNICO DI TORINO - ITALY

LS3e topic 11: Topics in modern AC motor control **Room: Radiosalen**
Chair: Dr. Jürgen REINERT, EMOTRON, SWEDEN
Co-Chair: Dr. Sami SIALA, CONVERTEAM, FRANCE

0283 - A Novel Control Algorithm of a Three-phase PWM Inverter with Output LC Filter
KIM Kwang-Seob, KWON Byung-Ki, CHOI Chang-Ho - POSCON - KOREA

0919 - Control of Induction Motor Drives Equipped with Small DC-Link Capacitance
HINKKANEN Marko, LUOMI Jorma - HELSINKI UNIV. OF TECHNOLOGY – FINLAND; HARNEFORS Lennart - ABB POWER SYSTEMS - SWEDEN

0922 - High Reliability Motor Control for Aerospace Applications
GOETZ Jay, BHATACHARYYA Deb - INTERNATIONAL RECTIFIER - UNITED STATES OF AMERICA

LS3f topic 16: Transportation **Room: Musiksalen**
Chair: Dr. Gérard COQUERY, INRETS, FRANCE
Co-Chair: Dr. Helge KOLSTAD, THINK TECHNOLOGY AS, NORWAY

0059 - High efficiency High reliability Inverter for Aeronautical Applications
VIEILLARD Sébastien - HISPANO SUIZA (SAFRAN GROUP) - FRANCE

0223 - Research and test platform for hybrid electric vehicle with the super capacitor based energy storage
CHENG Yonghua, VAN MIERLO Joeri, LATAIRE Philippe - VRIJE UNIVERSITEIT BRUSSEL - BELGIUM

0884 - Integrated series active filter for aerospace flight control surface actuation
GANTHONY Duncan, BINGHAM Chris - SHEFFIELD UNIVERSITY - UNITED KINGDOM

DIALOGUE SESSIONS 1: 14h40 – 16h40 Room: Main Hall West

DS1.1 topic 1: MOS controlled silicon power devices I
Chair: Dr. Jean-Louis SANCHEZ, LAAS-CNRS, FRANCE

0060 - Robustness and turn-off losses of high voltage IGBT **Panel A1**
ECKEL Hans-Günter, BAKRAN Mark M. - SIEMENS AG - GERMANY

0636 - Sic-Powerdiodes: Design and Performance **Panel A23**
BARTSCH Wolgang, THOMAS Bernd, MITLEHNER Heinz - SICED BLOECHER Bernd, GEDIGA Swen, SIEMENS AG - GERMANY

0424 - Thermal Runaway Evaluation for High Temperature Triacs **Panel A2**
JACQUES Sebastien, BATUT Nathalie - LMP / STMICROELECTRONICS; GONTHIER Laurent - STMICROELECTRONICS - FRANCE

0463 - Novel Voltage Balancing Technique For Series Connection of IGBTs **Panel A3**
WITHANAGE Ruchira - AREVA T&D UK LTD; SHAMMAS Noel - STAFFORDSHIRE UNIVERSITY - UNITED KINGDOM

0574 - Recent developments in IGCT gate units **Panel A4**
BACKLUND Björn, LUSCHER matthias - ABB SWITZERLAND LTD, SEMICONDUCTORS - SWITZERLAND

0600 - Deep Trench MOSFET structures study for a 1200 Volts application **Panel A5**
THEOLIER Loïc, ISOIRD Karine, MORANCHO Frederic, ROIG Jaume, MAHFOZ-KOTB Hicham, BRUNET Magali, DUBREUIL Pascal - LAAS/CNRS - FRANCE

0720 - Simulation based analysis of a monolithically integrated fast and slow IGBT structure **Panel A6**
DE MAGLIE Rodolphe - LAAS/CNRS - FRANCE

0721 - Silicon Carbide (SiC) D-MOS for Grid-Feeding Solar-Inverters **Panel A7**
STALTER Olivier, BURGER Bruno - FRAUNHOFER ISE - GERMANY

0760 - Regenerative Turn-off Power Devices **Panel A8**
VEMULAPATI Umamaheswara Reddy, SILBER Dieter - UNIVERSITY OF BREMEN; ROSENSAFT Boris - TU-BRAUNSCHWEIG - GERMANY

0822 - A novel technique to reduce reverse recovery charge of a power diode **Panel A9**
SHAMMAS Noel - STAFFORDSHIRE UNIVERSITY - UNITED KINGDOM

0860 - SMIS – a prospective solution for power MOSFET transistor **Panel A10**
PODGORSKI Jacek, LISIK Zbigniew - TECHNICAL UNIVERSITY OF LODZ; SZMIDT JAN - WARSAW UNIVERSITY OF TECHNOLOGY, IMIO - POLAND

0899 - Comparative Evaluation of IGCT and GTO Thyristor for series connection in high power voltage source inverter based FACTS applications **Panel A11**
BHATTACHARYA SUBHASHISH - NORTH CAROLINA STATE UNIV - UNITED STATES OF AMERICA

DS1.2 topic 2: Passive components and integrated passive components
Chair: Ing. Pierre ALOÏSI, LAAS/CNRS, FRANCE

0054 - Comparing piezoelectric transformer working with PLL and with non-linear load approaches in DC-DC converter **Panel A12**
MINAZARA Ericka, VASIC Dejan, COSTA Francois - ENS CACHAN SATIE - FRANCE

0081 - Core Losses Measurements in Intercell Transformers for Interleaved Converters **Panel A13**
COSTAN Valentin, MEYNARD Thierry - LAPLACE-ENSEEIHT / INPT / CNRS; FOREST François - LEM/UNIVERSITÉ MONTPELLIER 2; LABOURE Eric - SATIE CACHAN - FRANCE

0579 - Integrated design procedure for printed circuit board inductors in DC-to-DC converters **Panel A14**
WAFFENSCHMIDT Eberhard, JACOBS Joep - PHILIPS RESEARCH - GERMANY

0630 - A new modeling approach for circular spiral inductors **Panel A15**
ARTILLAN PHILIPPE, ESTIBALS Bruno, ALONSO Corinne - LAAS/CNRS - FRANCE

0652 - Performance of 3D capacitors integrated on silicon for DC-DC converter applications. **Panel A16**
BRUNET Magali, BENAZZI Amine, MAURAN Nicolas, BARY Laurent, SANCHEZ Jean-Louis, DUBREUIL Pascal - LAAS/CNRS - FRANCE

0675 - On the common mode resonant frequency of transformers **Panel A17**
MEURER Evandro, DE HAAN S. W. H., FERREIRA J. A. - TU DELFT - NETHERLANDS

DS1.3 topic 3: Power system integration
Chair: Dr.Peter KAMP, SIEMENS AG, GERMANY

0095 - An Optimized Controller with Zero Steady Circulating Current in Multi-inverter Parallel Operation **Panel A18**
LI wuhua - ZHE JIANG UNIVERSITY - CHINA

0407 - Contribution to the stress grading in integrated power modules **Panel A19**
DUCHESNE Cyrille, MERMET-GUYENNET Michel, DUTARDE Emmanuel, DAGDAG Selim – PEARL; LEBEY Thierry - LGET - FRANCE

0741 - Power Loss Design Platform for High Output Power DensityConverters **Panel A20**
HAYASHI Yusuke, TAKAO Kazuto, OHASHI Hiromichi – AIST; SHIMIZU Toshihisa - TOKYO METROPOLITAN UNIVERSITY - JAPAN

DS1.4 topic 4: Soft switching converters: resonant, ZVS, ZCS
Chair: Prof. Jorma KYYRÄ, HELSINKI UNIVERSITY OF TECHNOLOGY, FINLAND

0045 - Three Phase Current Source Auxiliary Resonant Commutated Pole Inverter using IGBTs **Panel A24**
CANDERS Wolf-Ruediger - TU BRAUNSCHWEIG; LESCOW Nicolai, HINRICHSEN Frank - TU BRAUNSCHWEIG, IMAB - GERMANY

0605 - Experimental Characterisation of High Efficiency Resonant Gate Driver Circuit **Panel B1**
ABBATE CARMINE, BUSATTO Giovanni, IANNUZZO Francesco - UNIVERSITY OF CASSINO; FRATELLI Luigi - ANSALDOBREDA S.P.A. - ITALY

0696 - A review of current state-of-the-art piezoelectric transformer technology **Panel B2**
HORSLEY Edward, FOSTER Martin, STONE Dave - UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

0785 - Full Bridge Phase-Shifted Soft Switching High-Frequency Inverter with Boost PFC Function for Induction Heating System **Panel B3**
EIJI Hiraki, YUKI KAWAGUCHI, TOSHIHIKO TANAKA, MUTSUO Nakaoka - YAMAGUCHI UNIVERSITY - JAPAN

0789 - An Improved ZVT PWM Boost Rectifier with High Power Factor and Low Conduction Losses **Panel B4**
GANG Yao, MINGYAO Ma, YAN Deng, RUI Xie, WUHUA Li, XIANGNING He - ZHEJIANG UNIVERSITY - CHINA

0855 - A method of power regulation applied to the high frequency inverter for the IH home appliances **Panel B5**
KIFUNE Hiroyasu, HATANAKA Yoshihiro - TOKYO UNIVERSITY OF MARINE SCIENCE AND TECHNOLOGY - JAPAN

0883 - A Soft-Switched Bi-Directional DC-DC Converter **Panel B6**
RYLKO Marek, EGAN Michael, HAYES John, POWER Daithi - POWER ELECTRONICS RESEARCH LABORATORIES, UCC - IRELAND

0903 - The Design Method of the Inverter for Heating Both a Ferromagnetic Metal and a Paramagnetic Metal **Panel B7**
KUBOTA Sachio, SATO Muneo, ITO Fumio, OGAWA Nobuo, SHIMAOKA Yoshihiro - TOBA NATIONAL COLLEGE OF MARITIME TECHNOLOGY - JAPAN

DS1.5 topic 5: Multilevel converter topologies

Chair: Dr. Frans DIJKHUIZEN, ABB CORPORATE RESEARCH, SWEDEN

0004 - A Five-Level Inverter Scheme with Common-Mode Voltage Elimination by Cascading Conventional Two-Level and Three-Level NPC Inverters for an Induction Motor Drive **Panel B8**
K Gopakumar, MONDAL Gopal, TEKWANI Pragneshkumar - INDIAN INSTITUTE OF SCIENCE – INDIA; LEVI Emil - LIVERPOOL JOHNMOORES UNIVERSITY - UNITED KINGDOM

0798 - Simplifying Approach for Analysis of Space-Vector PWM for Three-Phase and Multiphase Converters **Panel B9**
OLESCHUK Valentin, PROFUMO Francesco, TENCONI Alberto - POLITECNICO DI TORINO - ITALY

0066 - An adaptive hysteresis current control for a five-level inverter for active power filters **Panel B10**
ZARE Firuz, LEDWICH Gerard - QUT – AUSTRALIA; ZABIHI Sasan - MAZANDARAN UNIVERSITY - IRAN

0079 - Development of a 1.2MVA Active Front End Using Parallel Industrial Units **Panel B11**
GODBERSEN Jens - DANFOSS DRIVES A/S – DENMARK; CLAERBOUT James - DANFOSS DRIVES - UNITED STATES OF AMERICA

0100 - A New On-line Approach for Determining Conducting Angles in Multilevel Cascaded Inverters **Panel B12**
PHAN QUOC Dzung, LE MINH Phuong, NGUYEN VAN Nho - HCMUT - VIETNAM; SAITO Yoshifuru - HOSEI UNIVERSITY - JAPAN

0143 - Multi-level Converter Dimensioning with Structure and Losses Consideration for DFACTS Applications **Panel B13**
LE PELLETER Erwan, JEANNIN Pierre-Olivier, FREY David, SCHANEN Jean-Luc - LEG - FRANCE

0173 - Analysis of Carrier PWM Method for Common Mode Elimination in Multilevel Inverters **Panel B14**
NHO NGUYEN VAN - HOCHIMINHCITY UNIVERSITY OF TE – VIETNAM; LEE HONG-HEE - UNIVERSITY OF ULSAN - KOREA

0176 - Operational Analysis and Modulation Control of Three-Level Z-Source Inverters With Enhanced Output Waveform Quality **Panel B15**
LOH Poh Chiang, LIM Sok Wei, GAO Feng - NANYANG TECHNOLOGICAL UNI – SINGAPORE; BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0188 - Modular pulsed generator for kV and kHz applications based on forward converters association **Panel B16**
REDONDO Luis, MARGATO Elmano - INSTITUTO SUP. ENG. LISBOA; SILVA José - INSTITUTO SUPERIOR TECNICO - PORTUGAL

0193 - A Back to Back Multilevel Converter for Driving Low Inductance Brushless AC Machines **Panel B17**
MINSHULL Steve, BINGHAM Chris, STONE Dave, FOSTER Martin - UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

0285 - Multilevel converters for UPS applications: comparison and implementation **Panel B18**
LEGA Alberto, CASADEI Domenico - UNIVERSITY OF BOLOGNA – ITALY; MUNK-NIELSEN Stig, BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0416 - Current Demand of High Performance Inverters for Renewable **Panel B19**
DAHER Sergio, ANTUNES Fernando - UNIVERSIDADE FEDERAL DO CEARÁ – BRAZIL; SCHMID Jürgen - UNIVERSITAT KASSEL - GERMANY

0508 - Performance Evaluation of Buck-Boost Three-Level Inverters with Topological and Modulation Development **Panel B20**
GAO FENG, LOH Poh Chiang, VILATHGAMUWA D Mahinda - NANYANG TECHNOLOGICAL UNI – SINGAPORE; TEODORESCU Remus, BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0593 - Space Vector Modulation Extended to Voltage Source Converters With Multiple Legs in Parallel **Panel B21**
PINHEIRO Humberto, DA COSTA Jean Patric, GABE Ivan Jorge, STEFANELLO Márcio, JASGULSKI Igor - UNIVERSIDADE FED SANTA MARIA - BRAZIL

0602 - Three-Level Quadratic Non-Insulated Basic DC-DC Converters **Panel B22**
BOTTARELLI Marlos Gatti, BARBI Ivo - FEDERAL UNIVERSITY OF SANTA CATARINA – BRAZIL; DE NOVAES Yales Rômulo, RUFER Alfred - ECOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE - SWITZERLAND

0656 - Fault-Tolerant Hybrid Four-Leg Multilevel Converter **Panel B23**
CEBALLOS Salvador, ROBLES Eider, IBAÑEZ Pedro – ROBOTIKER; POU Josep, ZARAGOZA Jordi - UNIJVERSIDAD POLITECNICA DE CATALUNA; MARTIN Jose Luis - UNIVERSIDAD DEL PAIS VASCO - SPAIN

0819 - Active rectifier design and advanced control for medium voltage **Panel B24**
FLURY Guy, GOLLENTZ Bernard, SIALA Sami - CONVERTEAM - FRANCE

DS1.6 topic 8: Measurements and sensors
Chair: Adriano CARVALHO, UNIVERSITY OF PORTO, PORTUGAL

0234 - Increase Pedestrian Safety by Critical Crossroads Lighting Measurements and Analysing **Panel C1**
ARMAS "Jelena" - TUT - ESTONIA

0254 - Analysis of Stator Voltage Observers for a Doubly Fed Induction Generator **Panel C2**
THOMSEN Sönke, ROTHENHAGEN Kai, FUCHS Friedrich W. - UNIVERSITY OF KIEL - GERMANY

0255 - Determination of the feedback capacity of a low voltage trench gate MOSFET from dynamic measurements **Panel C3**
HÖCH Vera, LÜBBERS Melanie, PETZOLDT Jürgen - TU ILMENAU; JACOBS Heiner – ISLE; HEEB Michael - UNIVERSITÄT KASSEL - GERMANY

0294 - Thermal behaviour of the power transistors in transient state: local temperature measurement by a close infra-red radiometric method **Panel C4**
DHOKKAR Sonia, LAGONOTTE Patrick - LABORATOIRE DES ÉTUDES THERMIQUES - FRANCE

0318 - Fully FPGA-Based System on Chip Solution for Current Control of AC Machine **Panel C5**
IDKHAJINE Lahoucine, MONMASSON Eric - UNIVERSITY OF CERGY-PONTOISE, PRATA Antonio - HISPANO-SUIZA – FRANCE; NAOUAR Wissem - ENIT - TUNISIA

0567 - Demodulation Methodson Fully FPGA-Based System for Resolver Signals Treatment **Panel C6**
BOUALLAGA Kamel – EPMI; PRATA Antonio - HISPANO SUIZA; MONMASSON Eric, IDKHAJINE Lahoucine - SATIE - UNIVERSITY OF CERGY PONTOISE - FRANCE

0730 - A Wireless ZigBee-based Torque Sensor for an Underwater Power Generator **Panel C7**
SÄRKIMÄKI Ville; TIAINEN Risto, LINDH Tuomo, AHOLA Jero - LAPPEENRANTA UNIVERSITY OF TECHNOLOGY - FINLAND

0738 - Optimising high frequency integrator operation of Rogowski current transducers **Panel C8**
HEWSON Christopher, RAY William, METCALFE Joanne - PEM LTD - UNITED KINGDOM

0755 - Real-time estimation of fundamental frequency and harmonics for active power filters applications in aircraft electrical systems **Panel C9**
LAVOPA Elisabetta, SUMNER Mark, ZANCHETTA Pericle, LADISA Claudia - UNIVERSITY OF NOTTINGHAM - UNITED KINGDOM; CUPERTINO Francesco - POLITECNICO DI BARI - ITALY

0792 - A First Evaluation on the Usage of Threshold Triggered Magnetic Field Sensors for Current Polarity Detection in Power Conversion Systems **Panel C10**
KRAUß Sebastian, HOFMANN Wilfried - TU CHEMNITZ - GERMANY

DS1.7 topic 10: Switched reluctance machines

Chair: Dr. Abelardo MARTINEZ, UNIVERSIDAD DE ZARAGOZA, SPAIN

0076 - Sensorless Operation of the Switched Reluctance Machine **Panel C11**
SCHROEDER Günter, BEKIESCH Joanna - UNIVERSITY OF SIEGEN - GERMANY

0117 - One-Phase Reluctance Generators in Low-Power Wind Plants **Panel C12**
KAMOLINS Edmunds - RIGA TECHNICAL UNIVERSITY - LATVIA

0168 - Characteristics of a Novel Switched Reluctance Motor having Permanent Magnets between the Stator Pole-Tips **Panel C13**
NAKAMURA Kenji, ICHINOKURA Osamu, MUROTA Kohei - TOHOKU UNIVERSITY - JAPAN

0260 - On-line Phase Measurements in Switched Reluctance Motor Drives **Panel C14**
COSSAR Calum, POPESCU Mircea - UNIVERSITY OF GLASGOW - UNITED KINGDOM

0375 - Efficient Control Method of Switched Reluctance Motor Using Direct Neighboring Phase Torque Distribution Technique **Panel C15**
GOTO Hiroki, HAI-JIAO Guo, ICHINOKURA Osamu - TOHOKU UNIVERSITY - JAPAN

0526 - A Simple Excitation Position Detection Method for Sensorless SRM Drive **Panel C16**
KIM Tae-Hyoung, AHN Jin-Woo - KYUNGSUNG UNIV – KOREA; SCHRÖDER Günter, BEKIESCH Joanna - UNIVERSITY OF SIEGEN - GERMANY

0614 - Steady-State Behaviour of an AC Autonomous Switched Reluctance Generator **Panel C17**
MARTINEZ Abelardo, PEREZ Francisco, MARTIN Bonifacio, LALOYA Eduardo, POLLAN Tomás, SANCHEZ Beatriz, LLADO Juan - UNIVERSIDAD DE ZARAGOZA; VICUÑA Javier Esteban - UNIVERSIDAD DE LA RIOJA - SPAIN

0834 - Development of High Torque Density and Efficiency Switched Reluctance Motor with 0.1mm short airgap **Panel C18**
KOSAKA TAKASHI, MATSUI NOBUYUKI, WAKAYAMA HIROSHI, KUME AKIYA - NAGOYA INSTITUTE OF TECHNOLOGY - JAPAN

0872 - Application of digital phase lock loop for control of SRM drive **Panel C19**
DESKUR Jan, MACIEJUK Adam - POZNAN UNIV. OF TECHNOLOGY - POLAND

DS1.8 topic 11: Adjustable speed drives
Chair: Dr. Miran RODIC, UNIVERSITY OF MARIBOR, SLOVENIA

0766 - Piezo-actuators for force feedback in human-computer interfaces: advantages and drawbacks with regard to electromagnetic actuation **Panel C24**
SEMAIL Betty, DAI Zheng, GIRAUD Frédéric - L2EP-UNIVERSITY OF LILLE - FRANCE

0077 - Earth-Fault Protection of VLT AutomationDrive FC 301 **Panel D1**
ANDERSEN Henrik Rosendal - DANFOSS DRIVES A/S - DENMARK

0083 - A two-motor centre-driven winder drive fed by a five-leg voltage source inverter **Panel D2**
JONES Martin, DUJIC Drazen, LEVI Emil - LIVERPOOL JOHN MOORES UNIVERSI - UNITED KINGDOM; BEBIC Milan - UNIVERSITY OF BELGRADE – SERBIA, JEFTENIC Borislav - UNIVERSITY OF BELGRADE - SERBIA

0138 - Lagrange's energy method based approach for switched reluctance drive systems modelling **Panel D3**
MOSON Ireneusz, WILK Andrzej - GDANSK UNIV. OF TECHNOLOGY - POLAND

0219 - An accurate evaluation of electric discharge machining bearings currents in inverter-driven induction motors **Panel D4**
COSTABILE Gianfranco, DE VIVO Biagio, EGIZIANO Luigi, TUCCI Vincenzo - UNIVERSITY OF SALERNO; VITELLI Massimo - SECOND UNIVERSITY OF NAPLES; BENEDUCE Luigi, IOVIENO Salvatore, MASUCCI Antonio - ANSALDOBREDA - ITALY

0236 - Simplified Drive System Models for Power System Transient Studies in Industrial Plants 5 **Panel D**
CHEN Peiyuan - AALBORG UNIVERSITY – DENMARK; SANNINO Ambra - ABB CORPORATE RESEARCH SWEDEN - SWEDEN

0257 - Loss Calculation of a Frequency Converter with a Fixed-Step Circuit Simulator **Panel D6**
AARNIOVUORI Lassi, LAURILA Lasse, NIEMELÄ Markku, PYRHÖNEN Juha - LAPPEENRANTA UNIVERSITY OF TECHNOLOGY - FINLAND

0269 - New Compensation Method of Unbalanced 3-phase Voltage Supply in Soft-Starter for Induction Motors **Panel D7**
JOO Hyeonggil, CHANG Doo Won - KOREA POLYTECHNIC UNIVERSITY - KOREA

0326 - A Simple Design Method Based on Vector Control of AC Machines with LC Filter **Panel D8**
SAITO Ryosuke, KUBOTA Hisao - MEIJI UNIVERSITY - JAPAN

0333 - Analysis and Implementation of a 2-Degree Of Freedom Control for a Three-Phase Induction Machine **Panel D9**
CREVITS Yvan, KESTELYN Xavier - ENSAM LILLE; LEMAIRE-SEMAIL Betty - ECOLE POLYTECHNIQUE UNIVERSITAIRE LILLE - FRANCE

0341 - Adjustment, measurement and on-line detection of air gap asymmetry in **Panel D10**
WOLBANK Thomas M., MACHEINER Peter E. - VIENNA UNIVERSITY OF TECHNOLOGY - AUSTRIA

0342 - Redundant Drive with Direct Torque Control (DTC) and Dual-Star Synchronous Machine, Simulations and Verifications **Panel D11**
BURZANOWSKA Halina, SARIO Petteri, STULZ Christian - ABB SWITZERLAND LTD - SWITZERLAND

0343 - A comparison of SPSA method and compact genetic algorithm for the optimization of induction motor position control **Panel D12**
CUPERTINO Francesco, MININNO Ernesto, NASO David, SALVATORE Luigi - POLITECNICO DI BARI - ITALY

0358 - Control Unit for a Laboratory Motor Test Bench for Monitoring and Controlling PMSMs and Induction Motors **Panel D13**
GANCHEV Martin - ARSENAL RESEARCH - AUSTRIA

0362 - Real-Time Simulation of Finite-Element Analysis Permanent Magnet Synchronous Machine Drives on a FPGA card **Panel D14**
DUFOUR Christian, BELANGER Jean, ABOURIDA Simon, LAPOINTE Vincent - OPAL-RT TECHNOLOGIES - CANADA

0444 - Torsional Dynamics of Generator-Units during Autonomous Operation **Panel D15**
MIRO·EVIå Marija, MILKOVIå Mateo - UNIVERSITY OF DUBROVNIK; MALJKOVIå Zlatko - FACULTY OF ELECTRICAL ENGINEERING AND COMPUTING - CROATIA

0524 - Doubly Fed Induction Machine Speed Drive for Hydro-Electric Power Station **Panel D16**
BONNET François, LOWINSKY Luc Anthony, PIETRZAK-DAVID Maria - LAPLACE-ENSEEIHT / INPT / CNRS; VIDAL Paul-Etienne - ENIT - FRANCE

0537 - Indirect Maximum Torque per Ampere Control of Induction Motor Drives **Panel D1**
CACCIATO Mario, CONSOLI Alfio, SCARCELLA Giuseppe, SCELBA Giacomo - UNIVERSITY OF CATANIA - ITALY

0545 - Optimal Operation of Induction Motor Drives **Panel D18**
ORLIK Bernd, TISBORN Guido - IALB, UNIVERSITY OF BREMEN - GERMANY

0598 - Assessment of an Induction Motor Drive for High Speed Operation based on Matrix Converter **Panel D19**
CASADEI Domenico, MENGONI Michele, SERRA Giovanni, TANI Angelo, ZARRI Luca - UNIVERSITY OF BOLOGNA - ITALY

0621 - A self-commissioning method for permanent magnet dc-motor drives **Panel D20**
SEEBACHER Roland R., DANNERER Guenther, KRISCHAN Klaus - GRAZ UNIVERSITY OF TECHNOLOGY - AUSTRIA

0694 - Hardware-in-the-loop simulation of the traction system of an automatic subway **Panel D21**
BOUSCAYROL Alain - UNIVERSITY OF LILLE - L2EP; VERHILLE Jean Noel - SIEMENS TRANSPORTATION SYSTEMS ; BARRE Pierre-Jean, HAUTIER Jean-Paul - ENSAM LILLE - L2EP - FRANCE

0711 - Presentation of a Four-Quadrant Converter Based System in Traction Applications – Reference to Modeling, Simulation and Analysis **Panel D22**
MACAN Miroslav - KONCAR - INSTITUTE - CROATIA

0743 - Novel Inverter Topologies for Two-Wheel Drive Electric Vehicles with Two Permanent Magnet Synchronous Motors **Panel D23**
SHIBATA Minoru, HOSHI Nobukazu - IBARAKI UNIVERSITY - JAPAN

0769 - AC Motor Transients and EMI Emission Analysis in the ASD by Parasitic Resonance Effects Identification **Panel D24**
LUSZCZ Jaroslaw, IWAN Krzysztof - GDANSK UNIVERSITY OF TECHNOLOG - POLAND

0784 - Analytical Calculation of the RMS Current Stress on the DC Link Capacitor for a VSI Employing Reduced Common Mode Voltage PWM **Panel E1**
WELCHKO Brian - GM ADVANCED TECHNOLOGY CENTER - UNITED STATES OF AMERICA

0790 - High First Torque Harmonic Due to Insufficient Function of Dead-Time Compensation in PWM Inverters **Panel E2**
PLOTKIN Juriy, SCHAEFER Uwe, HANITSCH Rolf - TU BERLIN - GERMANY

0867 - A network model for inverter-fed induction-motor drives **Panel E3**
HENZE Olaf, ROCKS Alexander, WEILAND Thomas, HINRICHSEN Volker, BINDER Andreas - TECHNISCHE UNIVERSITAET DARMSTADT – GERMANY; DE GERSEM Herbert - KATHOLIEKE UNIVERSITEIT LEUVEN - CAMPUS KORTRIJK - BELGIUM

0879 - Analysis and filtering of common mode and shaft voltages in adjustable speed AC drives **Panel E4**
STRÖM Juha, KOSKI Miia, MUITTARI Hanna, SILVENTOINEN Pertti - LAPPEENRANTA UNIVERSITY OF TECHNOLOGY - FINLAND

DS1.9 topic13 (Joint EPE and IEEE Wind day): Distributed, renewable energy systems
Chair: Ing. Stephan MEIER, ROYAL INSTITUTE OF TECHNOLOGY, SWEDEN

0159 - A Control Algorithm for Power Converters in the Field of Photovoltaic Application **Panel E5**
CHIMENTO Filippo, RACITI Angelo, MUSUMECI Salvatore, SAPUPPO Carmelo - UNIVERSITY OF CATANIA; DI GUARDO Mario - STMICROELECTRONICS - ITALY

0955 - Fault Ride-through Capability Implementation in Wind Turbine Converters Using a Decoupled Double Synchronous Reference Frame PLL **Panel E6**
RODRIGUEZ P., LUNA A. - TECHNICAL UNIVERSITY OF CATALONIA – SPAIN; TEODORESCU Remus, IOV Florin, BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0032 - A Single Sensor Type MPPT Control Method for PV Generation Systems **Panel E7**
ITAKO kazutaka - KANAGAWA INST. OF TECH. - JAPAN

0080 - Control and Energy Management of a Wind-Photovoltaic Hybrid System **Panel E8**
DALI Mehdi, BELHADJ Jamel - LSE-ENIT – TUNISIA; ROBOAM Xavier, BLAQUIERE Jean-Marc - LAPLACE-ENSEEIHT - FRANCE

0098 - Photovoltaic Power System with Simplified Cascade Boost Choppers **Panel E9**
UTSUMI Ryosuke, MASUKAWA Shigeo, IIDA shoji - TOKYO DENKI UNIVERSITY - JAPAN

0146 - High-Resolution Phase Shift and Digital Implementation of a Fuel Cell Powered UPS System **Panel E10**
TAO Haimin, DUARTE Jorge, HENDRIX Marcel - EINDHOVEN UNIV. OF TECHNOLOGY - NETHERLANDS

0194 - Inverter Power Sizing Considerations in Grid-Connected PV Systems **Panel E11**
VELASCO Guillermo, GUINJOAN Francesc, PIQUE Robert, CONESA Alfonso - UPC - SPAIN

0237 - Fast On-Line Symmetrical Components Separation Method for Synchronization and Control Purposes in Three Phase Distributed Power Generation Systems **Panel E12**
ALEPUZ Salvador - EUPMT-UPC; BORDONAU JOSEP - UPC – SPAIN; PONNT Jorge; RODRIGUEZ Jose, SILVA Cesar - UNIVERSIDAD TECNICA FEDERICO SANTA MARIA - CHILE

0259 - Modelling & Control of a Bidirectional Converter for a Stand-alone Photovoltaic Power Plant **Panel E13**
CHONG BENJAMIN VUI PING, ZHANG LI, DEHGHANI ABBAS - THE UNIVERSITY OF LEEDS - UNITED KINGDOM

0350 - Advanced modular communication concepts for data logging and conditioning in photovoltaic inverter systems **Panel E14**
MIELKE Jochen, IDE Peter - DELTA ENERGY SYSTEMS GMBH - GERMANY

0422 - Exercise Bike Powered Electric Generator for Fitness Club Appliances **Panel E15**
BENYSEK Grzegorz, JARNUT Marcin - UNIVERSITY OF ZIELONA GÓRA; STRZELECKI Ryszard - GDYNIA MARITIME UNIVERSITY - POLAND

0428 - Evaluation of Three-phase Transformerless PV Inverter Topologies **Panel E16**
KEREKES Tamas, KLUMPNER Christian, SUMNER Mark - NOTTINGHAM UNIVERSITY - UNITED KINGDOM; TEODORESCU Remus - AALBORG UNIVERSITY – DENMARK; FLORICAU Dan - POLITEHNICA UNIVERSITY OF BUCHAREST – ROMANIA; RODRIGUEZ Pedro - TECHNICAL UNIVERITY OF CATALONIA - SPAIN

0439 - Stationary Frame Voltage Harmonic Controller for Standalone Power Generation7 **Panel E1**
KULKA Arkadiusz, UNDELAND Tore - NTNU, DEPT. OF ELECTRICAL POWER ENGINEERING – NORWAY; VAZQUEZ Sergio, FRANQUELO Leopoldo - ESCUELA SUPERIOR DE INGENIEROS - SPAIN

0441 - Centralized supervision of reactive power generation for a wind farm **Panel E18**
FRANCOIS Bruno - L2EP - ECOLE CENTRALE DE LILLE ; BEUGNIEZ Aurelien - L2EP ; ROBYNS Benoit - L2EP HEI – FRANCE; GHENNAM T - LABORATORY OF PROCESS CONTROL, POLYTECHNIQUE; BERKOUK E.M. - LABORATORY OF PROCESS CONTROL - ALGERIA

0452 - Balanced Grid Currents in Three-Level Voltage-Source Inverters Connected to the Utility under Distorted Condition using Symmetrical Components and Linear Quadratic Regulator **Panel E19**
ALEPUZ Salvador - EUPMT-UPC; BUSQUETS SERGIO; BORDONAU Josep - UPC – SPAIN; RODRIGUEZ Jose; PONTT Jorge; SILVA Cesar - UNIVERSIDAD TECNICA FEDERICO SANTA MARIA - CHILE

0481 - Contribution of Energy Storage Systems for Power Generation and Demand Balancing with Increasing Integration of Renewable Sources: Application to the Portuguese Power System **Panel E20**
FAIAS Sergio, SOUSA Jorge - ISEL/DEEA; CASTRO RUI - IST / TECHNICAL UNIV LISBON - PORTUGAL

0514 - Precise Digital Control Method with Sinusoid based Model for SinglePhase Utility Interactive Inverter with FPGA based Hardware Controller **Panel E21**
HAYASHI Kenta, TAKAMATSU Sayaka, YOKOYAMA Tomoki - TOKYO DENKI UNIVERSITY - JAPAN

0544 - A novel Parallel Active Filter for Current Pulsation Smoothing on Single Stage Grid-connected AC-PV Modules **Panel E22**
KYRITSIS Anastasios, TATAKIS Emmanuel - UNIVERSITY OF PATRAS; PAPANIKOLAOU Nikolaos - HELLENIC TRANSMISSION SYSTEM OPERATOR - GREECE

0569 - A Novel Topology with High Efficiency for Grid Connected Photovoltaïcs PCS **Panel E23**
MIN BYUNG DUK, LEE JONGPIL, KIM JONGHYUN, KIM TAEJIN, YOO DONG WOOK - KERI - KOREA

0692 - Studies on a LV DC network **Panel E24**
DEACONU Dragos, CHIRILA Aurel, ALBU Mihaela, TOMA Lucian - UNIVE. "POLITEHNICA" BUCURESTI - ROMANIA

0700 - A Novel Maximum Power Point Tracker Controlling Several Converters Connected to Photovoltaic Arrays with Particle Swarm Optimization Technique **Panel F1**
MIYATAKE Masafumi, TORIUMI FUHITO, ENDO TSUGIO, FUJII NOBUHIKO - SOPHIA UNIVERSITY - JAPAN

0704 - Improved STATCOM Operation Under Transient Disturbances for Wind Power Applications **Panel F2**
ETXEBERRIA-OTADUI Ion, VISCARRET Unai – IKERLAN; ZAMAKONA Izaskun - OLDAR ELECTRONICA; ARENAL REDONDO Beatriz – JEMA; IBIRICU Javier - EÓLICAS DE EUSKADI - SPAIN

0722 - Association of wind turbine based dispersed generators and storage systems to participate in primary frequency control **Panel F3**
COURTECUISSE Vincent, EL MOKADEM Mostafa, ROBYNS Benoit, FRANCOIS Bruno, PETIT Marc - SUPELEC – FRANCE; DEUSE Jacques - SUEZ-TRACTEBEL - BELGIUM

0745 - Phase-Locked Loop with Adaptive Signal Cancellation for Three-phase Network Side Voltage Source Inverter **Panel F4**
ØSTREM Trond, SULKOWSKI Waldemar - NARVIK UNIVERSITY COLLEGE; NORUM Lars - NORWEGIAN UNIVERSITY OF SCIENCE AND TECH - NORWAY

0768 - Modelling and control of a 100kW photovoltaic inverter with an LCL grid filter for distributed power systems **Panel F5**
FIGUERES Emilio, GARCERA Gabriel, SANDIA Jesus, GONZALEZ-ESPIN Fran - UNIV. POLITECNICA DE VALENCIA; CALVO Jesus, VALES Manuel - NEXUN POWER ELECTRONICS S.L. - SPAIN

0771 - Using the model of the solar cell for determining the maximum power point of photovoltaic systems **Panel F6**
HARTMANN Lucas - UNIVERSIDADE DE CAMPINA GRANDE - BRAZIL

0826 - A Stand-Alone Photovoltaic System Based on DC-DC Converters in a Multi-String Configuration **Panel F7**
IMHOFF Johninson, RODRIGUES Guilherme Fração, PINHEIRO José Renes, HEY Hélio Leães - FEDERAL UNIVERSITY OF SANTA MARIA - BRAZIL

0893 - A current-controlled fuel cell system with short-time storage for gird feeding application **Panel F8**
MEHLICH Heiko, JÄHNERT Stefan, MEHLICH Jan, VEIT Bjorn, KÖNIG Stefan - CHEMNITZ UNIVERSITY OF TECHNOLOGY - GERMANY

0952 - A Simple Method for Analytical Evaluation of LVRT in Wind Energy for Induction Generators with STATCOM or SVC **Panel F9**
MOLINAS Marta, UNDELAND Tore - NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY; SUUL Jon Are - SINTEF ENERGY RESEARCH - NORWAY

DS1.10 topic 17: Operating quality of systems

Chair: Prof. Helmut WEISS, UNIVERSITY OF LEOBEN, AUSTRIA

0235 - Power Quality Monitoring System in a Low Cost Hardware/Software **Panel F10**
PARANHOS Igor - PUCRS - BRAZIL

0290 - Measurements of HF Current Propagation to Low Voltage Grid through Frequency Converter **Panel F11**
KOSONEN Antti, AHOLA Jero, SILVENTOINEN Pertti - LAPPEENRANTA UNIVERSITY OF TEC - FINLAND

0729 - Current Measurement-Based Detection of Load Torque Changes in a Variable Speed VSI Induction Motor Drive to Support Motor Diagnostics **Panel F12**
TIAINEN Risto, SÄRKIMÄKI Ville, AHOLA Jero, LINDH Tuomo, NIEMELÄ Markku - LAPPEENRANTA UNIVERSITY OF TECHNOLOGY - FINLAND

0871 - Developing a Simple, Modern and Cost Effective System for EMC Pre-Compliance Measurements of Conducted Emissions **Panel F13**
PONTT Jorge; OLIVARES Ricardo, CARRASCO Hector, LOPEZ Manuel, ROBLES Hernan, DIAZ Sergio, TORO Alam, FUENTES Cristian - UTFSM – CHILE; KELLER Valentin - ETH ZURICH - SWITZERLAND

DS1.11 topic 18: Industry specific energy conversion and conditioning technologies
Chair: Prof. Joan PERACAULA, TECHNICAL UNIVERSITY OF CATALONIA, SPAIN

0084 - Voltage and Current Ripple Considerations for Improving Ultra-Capacitor Lifetime While Charging with Switch Mode Converters **Panel F14**
BASU SUPRATIM - BOSE RESEARCH (P) LTD. – INDIA; UNDELAND Tore, GUIDI Giuseppe - NTNU,DEPT OF ELECT.POWER ENGINEERING - NORWAY

0302 - Design and experimental investigation of a magnetically suspended rotary table **Panel F15**
PALIS Frank, SCHALLSCHMIDT Thomas, DRAGANOV Denis - OTTO-VON-GUERICKE-UNIVERSITÄT - GERMANY

0474 - A Novel Class-D Amplifier for Automotive and Public Audition Audio Applications **Panel F16**
VINCENZI F. R. S., SILVA L. R., GOMES DE FREITAS Luiz, FREITAS M. A. A., FERNANDES E. R. - CEFET-GO/UNED JATAI; VIEIRA JR. JOAO B., FREITAS L. C. - UNIVERSIDADE FEDERAL DE UBERLANDIA - FEELT - NUEP - BRAZIL

0670 - Analysis Methods and Design of Transformers with Low Leakage Inductance for Pulsed Power Applications **Panel F17**
DOEBBELIN Reinhard, HERMS Ronny, TEICHERT Christian, SCHAETZING Wolfgang, LINDEMANN Andreas - OTTO-VON-GUERICKE-UNIVERSITÄT MAGDEBURG - GERMANY

0795 - Specialized Receivers for Three-Phase Contactless Energy Transfer Desktop Applications **Panel F18**
SONNTAG Christoph, LOMONOVA Elena, DUARTE Jorge, VANDENPUT Andre - EINDHOVEN UNIVERSITY OF TECHNOLOGY - NETHERLANDS

0831 - Design of closed loop audio power amplifiers by means of an accurate model of vented box loudspeakers **Panel F19**
GONZALEZ-ESPIN Fran, FIGUERES Emilio, GARCERA Gabriel, SANDIA Jesus - UNIV. POLITECNICA DE VALENCIA - SPAIN

0910 - Analysis and Development of a Ride-through Device for AC Contactors **Panel F20**
SILVA SIDELMO, BRAGA MARCELO - CEFET-MG; MILAGRES Thiago - HPE - HIGH POWER ENGINEERING - BRAZIL

WORKSHOPS AND ROUNDTABLE DISCUSSION

15h30 – 18h00: Industrial session of the joint EPE and IEEEWind day (EPE Chapter on Wind Energy and joint IAS/PELS/IES Danish and German Chapters) **Room: Main Hall East**

Chair: Dr. Philip C. KJAER, VESTAS WIND SYSTEMS A/S, DENMARK

0959 - Industrial Session: Utility-Connected Power Electronic Compensators in Wind Power Applications
ROSS Michael, KEHRLI Bud - AMERICAN SUPERCONDUCTOR POWER SYSTEMS - UNITED STATES OF AMERICA

0960 - Industrial Session: Grid Compliance Conditioning of Renewable Power Sources by Means of Modern Power Electronics
ZINGEL Reinhard - CONVERTEAM GMBH - GERMANY

0961 - Industrial Session: Wind Farm Flexible AC Transmission Systems
DE PREVILLE Guillaume, ASKAR Jean-Sayed - AREVA T&D - FRANCE

0962 - Industrial Session: STATCOM: Utility-Connected Power Electronic Compensator
MAIBACH Philippe, WERNLI Jonas - ABB - SWITZERLAND

15h30 – 18h00: EU Frame Work Program7: Get informed and find partners For the projects (Langsstuen – Gæstesalen - Latinerstuen) **Room: Det Lille Teater**

Interested participants in the conference are invited to participate in the matchmaking workshop where industry and academia get the opportunity to meet, define and share project ideas and create interest groups for future energy projects.
The Workshops are divided into different energy themes. Each participant select workshop according to his/her area of interest. If interested each participant is asked to bring a max 5 slide presentation on company/department and project idea. More information follows regarding presentations.

Preliminary programme:

15.30 – 16.15: Presentation on FP7 Energy Programme by EU representative
16.15 – 17.45: Participants split up into thematised workshops.
Presentation of ideas
Discussion of project ideas and possibilities
Creation of interest groups
17.45 – 18.00: Sum up – next step

18h30: Reception in the Foyer of the Aalborg Congress and Culture Center

08h30 – 9h00: Keynote session 1 **Room: Main Hall East**
Chair: Dr. Roger BASSETT, AREVA T&D TECHNOLOGY CENTRE, UNITED KINGDOM
Co-Chair: Prof. Tore UNDELAND, NTNU, NORWAY

0957 - Keynote: Today's and Tomorrow's Meaning of Power Electronics within the Grid Interconnection
RUFER Alfred - EPFL – SWITZERLAND

Power Electronics is expected to become a major component in the field of the global electric power management, as it is already today within most of electric power applications like variable speed drives or other conventional user applications.

From the end of the sixties, up to the beginning of the 21st century, high power electronic converters have been used more and more for many usages connected to the grid, from the reactive power compensation to the long distance transmission lines. More recent examples have shown a large potential of new flexible management systems like UPFC's, or other Flexible AC Transmission Systems.

The paper presents the actual state of the art of the use of large power electronic converters within the grid interconnection, and for different fast growing new techniques of decentralized generation and within the context of the integration of renewable energy sources.

Dedicated DC grids for energy collection from multiple medium size generators or for electric energy distribution are intended to play a major role in the future, as other new flexible structures based on the use of MF transformations.

Alfred Rufer (1951) received the M.S. degree from the Swiss Federal Institute of Technology Lausanne (EPFL), Lausanne, Switzerland, in 1976. In 1978, he joined BBC/ABB where he was involved in the fields of power electronics and control, such as high-power variable-frequency converters for drives. In 1993, he became an Assistant Professor at EPFL.

Since 1996, he has been a full Professor and Head of the Industrial Electronics Laboratory, EPFL. He has authored or coauthored several publications on power electronics and applications, and he holds several patents.

In Alfred Rufer's lab, the actual research activities focuse on one hand on power converters, where several solutions and applications of multilevel converters have been studied, especially in the field of asymmetric or hybrid topologies.

Another important field initiated by Alfred Rufer is dedicated to supercapacitive energy storage, where many applications have been studied or are currently underway. New research and development activities have recently been presented, where alternative energy storage devices with reduced aging phenomena or are easier to recycle than classical batteries are investigated and modeled.

In 2006, Alfred Rufer was elected to the IEEE Fellow grade.

09h00 – 9h30: Keynote session 2 **Room: Main Hall East**
Chair: Mr.LEO LORENZ, INFINEON TECHNOLOGIES, CHINA
Co-Chair: Mr.Josef LUTZ, TU CHEMNITZ, GERMANY

0954 - Silicon Carbide power devices - Status and upcoming challenges
FRIEDRICHS Peter - SICED ELECTRONICS DEVELOPMENT - GERMANY

The contribution will give an overview of the status of SiC power devices with a focus on commercial, non-military applications. Besides the use in power supplies SiC was able to enter the drives market too. This was possible because of considerable progress in devices power rating, making it feasible to implement these chips in modules. Performance and cost issues will be mentioned in order to explain why the SiC market is growing more slowly than numerous market analyses may suggest. However, it will be shown that the position of SiC in power electronics is manifested. For the further penetration of these components into applications the use of efficiency advantages given by the use of SiC components will be worked out as an important argument for justifying the higher device costs. The current version of commercially available diodes will be mentioned as well as an insight into the field of SiC power switches. A special focus will be given to the question of a right concept, topics like MOSFET and JFET as well as normally on and normally off will be addressed. Pro's and cons of switches as well as the field of high voltage SiC devices will be highlighted in the final paragraphs as well as a short guide to decide whether the use of SiC components should be considered or not in certain applications.

Dr. Peter Friedrichs was born in 1968 in Aschersleben, Germany. After achieving his Dipl.-Ing. in microelectronics from the Technical University of Bratislava in 1993, he started a Ph.D work at the Fraunhofer Institut FhG-IIS-B in Erlangen. In 1996 he joined the Corporate Research of the Siemens AG and was involved in the development of power switching devices on SiC, mainly power MOSFETs and vertical junction FETs. He joined SiCED GmbH & Co. KG, a company originated from the former Siemens research group, on March the 1st, 2000. Since July 2004 he is the managing director of SiCED, responsible for all technical issues. He holds several patents in the field of silicon carbide technology and devices and has published more than 20 papers in scientific journals as well as at international conferences.

09h40 – 10h40: Lecture sessions 4

LS4a topic 13: Distributed Generation **Room: Main Hall East**
Chair: Prof. Birgitte BAK-JENSEN, AALBORG UNIVERSITY, DENMARK
Co-Chair: Dr. Samuel GALCERAN, CITCEA-UPC, SPAIN

0622 - Influence Analysis of the effects of an Inductive-Resistive Weak Grid over L and LCL Filter Current Hysteresis Controllers
COBRECES Santiago, RODRIGUEZ Francisco J., BUENO Emilio, HUERTA Francisco - UNIVERSITY OF ALCALA - SPAIN

0863 - Parallel Operation of Uninterruptible Power Supply Systems in MicroGrids
GUERRERO Josep - UPC - EUETIB - SPAIN

0085 - Optimized destabilizing islanding protection scheme for grid-tied inverters insensitive to short term network disturbances
MAYR Christoph, BRÜNDLINGER Roland - ARSENAL RESEARCH - AUSTRIA

LS4b topic 2: Materials and interconnection technologies, thermal management **Room: Det Lille Teater**
Chair: Dr. Martin FASCHING, MFTEC, AUSTRIA
Co-Chair: Prof. Emmanuel TATAKIS, UNIVERSITY OF PATRAS, GREECE

0810 - High Voltage 3D-Capacitor
BERBERICH Sven, BAUER Anton, RYSSEL Heiner - FRAUNHOFER INSTITUT-IISB - GERMANY

0230 - High temperature behaviour of aluminium nitride
DAGDAG Selim - LGET/PEARL; LEBEY Thierry, DINCULESCU Sorin - LABORATOIRE DE GENIE ELECTRIQUE, DUTARDE Emmanuel, SAIZ Jose - PEARL/ALSTOM - FRANCE

0651 - Experimental Analysis of Temperature Distribution within Traction IGBT Modules
PERPINYA Xavier, GARONNE Olivier, ROCHET Jean-Paul, JALBY Phillippe, MERMET-GUYENNET Michel - ALSTOM – FRANCE; REBOLLO José - CNM-CSIC - SPAIN

LS4c topic 4: Soft switching converters: resonant, ZVS, ZCS **Room: Laugsstuen**
Chair: Dr. Stig MUNK-NIELSEN, AALBORG UNIVERSITY, DENMARK
Co-Chair: Dr.Antonio COCCIA, ABB CORPORATE RESEARCH, SWITZERLAND

0121 - A Novel Soft-Switching Bridgeless Power Factor Correction Circuit
TSAI Hsien-Yi, HSIA Tsun-Hsiao, CHEN Dan - NATIONAL TAIWAN UNIVERSITY - TAIWAN

0204 - Power factor control of the LCC current-output resonant converter
GILBERT Adam, BINGHAM Chris, STONE David, FOSTER Martin - UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

0206 - Design of an LCC current-output resonant converter for use as a constant current source
GILBERT Adam, STONE David, BINGHAM Chris, FOSTER Martin - UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

LS4d topic 6: Converter control, current/ voltage control **Room: Gaestesalen**
Chair: Prof. Joan PERACAULA, TECHNICAL UNIVERSITY OF CATALONIA, SPAIN
Co-Chair: Lars HELLE, VESTAS WIND SYSTEMS A/S, DENMARK

0157 - Control of Grid Connected AC-DC Converters with Minimized DC Link Capacitance under Unbalanced Grid Voltage Condition
HWANG Jae-Won George, LEHN Peter W. - UNIVERSITY OF TORONTO – CANADA; WINKELNKEMPER Manfred - ABB SWITZERLAND LTD. CORPORATE RESEARCH - SWITZERLAND

0486 - Four leg parallel Z-source inverter based DG systems to enhance the grid performance under unbalanced conditions
GAJANAYAKE Chandana Jayampathi, VILATHGAMUWA Don Mahinda, LOH Poh Chiang - NTU – SINGAPORE; TEODORESCU Remus, BLAABJERG Frede - IET - DENMARK

0590 - Stability Analysis of Current Digital Controllers for LCL Filters Connected to the Grid using State Feedback
PINHEIRO Humberto, MASSING Jorge Rodrigo, GABE Ivan Jorge - UNIVERSIDADE FED SANTA MARIA - BRAZIL

LS4e topic 10: Integrated electrical machines **Room: Radiosalen**
Chair: Prof. Hans-Peter NEE, KTH ROYAL INSTITUTE OF TECHNOLOGY, SWEDEN
Co-Chair: Dr. FLEMMING BENDIXEN, VESTAS WIND SYSTEMS A/S, DENMARK

0383 - Design of PM integrated motor-drive system for axial pumps
JANJIC Boris, BINDER Andreas - TU DARMSTADT - GERMANY

0885 - Prototype of an Axial Flux Permanent Magnet Generator for Wind Energy Systems Applications
FERREIRA Ângela - POLYTECHNIC INSTITUTE OF BRAGANÇA; SILVA Amândio, COSTA Artur - FEUP - PORTUGAL

0783 - Parameter estimation for induction motors to study the effects of voltage, frequency and slip
REPO Anna-Kaisa, HINKKANEN Marko, ARKKIO Antero - HELSINKI UNIVERSITY OF TECHNOLOGY - FINLAND

LS4f topic 20: Energy conversion and conditioning technologies in physics research and related applications **Room: Musiksalen**

Chair: Dr. Frederick BORDRY, CERN, SWITZERLAND
Co-Chair: Prof. Alfred RUFER, EPFL, SWITZERLAND

0309 - A novel 60MW Pulsed Power System based on Capacitive Energy Storage for Particle Accelerators
BORDRY Frederick, BURNET Jean-Paul, FAHRNI Claude, RUFER Alfred - EPFL - SWITZERLAND

0430 - Comparison of Direct Resonant Converter Topologies for High Power RF Applications
COOK David, CLARE Jon, WHEELER Pat, WEYLER Marcus - NOTTINGHAM UNIVERSITY; PRZYBYLA Jan, RICHARDSON Robert - E2V TECHNOLOGIES - UNITED KINGDOM

0497 - 200kV Pulse Power Supply Implementation
KIM Jong Hyun, RYU Myung-Hyo, MIN BYUNG-DUK, RIM Geun-Hie - KERI - KOREA

10h40 - 11h00: Coffee break

11h00 – 12h00: Lecture sessions 5

LS5a topic 14: HVDC **Room: Main Hall East**
Chair: Prof. Lennart HARNEFORS, ABB POWER SYSTEMS, SWEDEN
Co-Chair: Dr. Peter KAMP, SIEMENS AG, GERMANY

0467 - Grid Frequency Control Design for Offshore Wind Farms with Naturally Commutated HVDC Link Connection
RISHENG LI – UON; SERGEY Bozhko - UNIVERSITY OF NOTTINGHAM - UNITED KINGDOM

0292 - WINDFACT, a solution for the grid code compliance of the windfarms in operation
VISIERS MANUEL, MENDOZA JAVIER, BUNEZ JULIAN, CONTRERAS ANGEL, GONZALEZ FERNANDO, MOLINA S., AGUDO Andres - GAMESA-ENERTRON; AMARIS HORTENSIA - UNIVERSIDAD CARLOS III - SPAIN

0378 - A New FACTS Component — Distributed Power Flow Controller (DPFC)
YUAN Zhihui, DE HAAN Sjoerd W.H., FERREIRA Braham - TU DELFT - NETHERLANDS

LS5b topic 1: SiC devices **Room: Det Lille Teater**
Chair: Prof. Philip MAWBY, UNIVERSITY OF WAWRICK, UNITED KINGDOM
Co-Chair: Dr. Hans-Günter ECKEL, SIEMENS AG, GERMANY

0426 - 1.2 kV Rectifiers Thermal Behaviour: comparison between Si PiN, 4H-SiC Schottky and 4H-SiC JBS diodes
BROSSELARD Pierre, JORDA Xavier, VELLVEHI Miquel, PEREZ-THOMAS Amador, GODIGNON Philippe, MILLAN Jose - CNM-IMB - SPAIN

0552 - Comparison of Si- and SiC-Powerdiodes in 100A-Modules
BARTSCH Wolfgang, GEDIGA Swen, KOEHLER Hubertus, SOMMER Rainer, ZAISER Georg - SIEMENS AG - GERMANY

LS5c topic 5: Matrix converters **Room: Laugsstuen**
Chair: Dr. Pat WHEELER, UNIVERSAITY OF NOTTINGHAM, UNITED KINGDOM
Co-Chair: Dr. Staffan NORRGA, ABB CORPORATE RESEARCH, SWEDEN

0448 - A Novel Control Strategy for Direct Interface Converters Used for DC and AC Power Supplies
ITOH JUNICHI, KATO Kouji - NAGAOKA UNIVERSITY OF TECH. - JAPAN

0298 - The Modulation Method for The Three-level-Output-Stage Sparse Matrix Converter
LEE Meng Yeong, WHEELER Patrick, KLUMPNER Christian - THE UNIVERSITY OF NOTTINGHAM - UNITED KINGDOM

0736 - Resonance Suppression Control in Complex Frame for Three-Phase to Three-Phase Matrix Converters
TAKESHITA Takaharu, NUNOKAWA Tomoyasu - NAGOYA INSTITUTE OF TECHNOLOGY - JAPAN

LS5d topic 7: Optimal control, robust control, non-linear control **Room: Gaestesalen**

Chair: Prof. Dr. Ir. Krzysztof ZAWIRSKI, POZNAN UNIVERSITY OF TECHNOLOGY, POLAND
Co-Chair: Prof. Dr. Ir. Jean-Paul LOUIS, ECOLE NORMALE SUPERIEURE , FRANCE

0075 - Potentials for Reducing the Power Requirement of Magnetic Suspension Systems by implementing a Linear Quadratic Gaussian Controller
SCHUHMANN Thomas, HOFMANN Wilfried, FLEISCHER Erik - TU CHEMNITZ - GERMANY

0107 - Design of robust PID controllers for PMSM drive with uncertain load parameters
SOUSA Marcus, CAUX Stephane, FADEL Maurice - LAPLACE-ENSEEIHT / INPT / CNRS – FRANCE; LIMA Antonio - UNIVERSIDADE FEDERAL DE CAMPINA GRANDE - BRAZIL

0316 - Analysis of stability for networks including converters
STROBL Bernhard - SIEMENS AG - GERMANY

LS5e topic 21: Education **Room: Radiosalen**

Chair: Prof. Dr. Ir. André VANDENPUT, EINDHOVEN UNIV. OF TECHNOLOGY, NETHERLANDS
Co-Chair: Prof. Dr. Ir. Tore UNDELAND, NTNU, NORWAY

0073 - Construction of a Hybrid Electrical Racing Kart as a Student Project
KNOKE Tobias, SCHNEIDER Tobias, BÖCKER Joachim - UNIVERSITY OF PADERBORN - GERMANY

0459 - Modeling the Space Elevator – A Project Oriented Approach for Teaching Experimental Power Electronics
FRIEDLI Thomas, ROUND Simon D., KOLAR Johann W. - ETH ZURICH - SWITZERLAND

0477 - VIRTUAL LABORATORY FOR COMBINED SOLAR ENERGY SYSTEM
HAMAR Janos, JARDAN Rafael, NAGY Istvan - BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS – HUNGARY; OHSAKI Hiroyuki - THE UNIVERSITY OF TOKYO - JAPAN

LS5f topic 15: Power supplies **Room: Musiksalen**

Chair: Prof. Dr. Ir. Alain BERTHON, L2ES-UNIVERSITY OF FRANCHE-COM, FRANCE
Co-Chair: Dr. Yales Rômulo DE NOVAES, EPFL, SWITZERLAND

0572 - A New Soft-Switching Multi-Output Forward Converter with Independent and Precise Voltage Regulation
ERTIKE Sukru, YILDIRIM Deniz - ISTANBUL TECHNICAL UNIVERSITY - TURKEY

0718 - Power Supply with Independently Regulated Multiple Outputs
SABATE Juan - GE GLOBAL RESEARCH - UNITED STATES OF AMERICA; LIU Yunfeng - GE – CHINA; WIZA Margaret - GENERAL ELECTRIC HEALTHCARE - UNITED STATES OF AMERICA

0029 - Dynamic characterization of Power Converters for Distributed Power Supply
RIVA Marco, BELLONI Federico - UNIVERSITY OF MILAN - ITALY

12h10 – 13h10: Lecture sessions 6

LS6a topic 14: Active, passive and combined filtering **Room: Main Hall East**

Chair: M.Sc Asle SKJELLNES, SIEMENS A/S PEC , NORWAY
Co-Chair: Dr. Ir. Yonghua CHENG, VRIJE UNIVERSITEIT BRUSSEL, BELGIUM

0677 - Three Phase Four Wires LC Coupled Shunt Active Power Filter (APF): New topology and control
LAMICH Manuel, BALCELLS Josep, GONZALEZ David, GAGO Javier - UPC - SPAIN

0747 - Design of Current Controllers for Active Power Filters using Naslin Polynomial Technique
DUMITRESCU Ana-Maria, BOSTAN Valeriu, MAGUREANU Razvan - POLITEHNICA UNIVERSITY OF BUCHAREST – ROMANIA; GRIVA Giovanni, BOJOI Radu - POLITECNICO DI TORINO - DIP. ING. ELETTRICA - ITALY

0791 - Power Conditioning of a 132 MW Wind Farm
PLOTKIN Juriy, HANITSCH Rolf, SCHAEFER Uwe - TU BERLIN - GERMANY

LS6b topic 1: Power MOSFET and IGBT **Room: Det Lille Teater**

Chair: Prof. José MILLAN, CNM, SPAIN
Co-Chair: Dr.-Ing. Ralf SIEMIENIEC, INFINEON TECHNOLOGIES AUSTRIA , AUSTRIA

0945 - Ruggedness of High Voltage Diodes under very hard Commutation Conditons
HEINZE Birk, LUTZ Josef - TU CHEMNITZ; FELSL Hans Peter, SCHULZE Hans-Joachim - INFINEON TECHNOLOGIES AG - GERMANY

0047 - Design of Avalanche Capability of Power MOSFET by Device Simulation
PAWEL Ilja, SIEMIENIEC Ralf, ROESCH Maximilian - INFINEON TECHNOLOGIES AUSTRIA AG – AUSTRIA; HIRLER Franz, GEISSLER Christian - INFINEON TECHNOLOGIES AG; PUGATSCHOW Anton, BALK Ludwig-Josef - BERGISCHE UNIVERSITÄT WUPPERTAL - GERMANY

0057 - ESBT Power Switch in High-Power High-Voltage converters
BUONOMO Simone, ENEA Vincenzo, NANIA Massimo, RONSISVALLE Cesare, SCOLLO Rosario – STM; CRISAFULLI Vittorio, RACITI Angelo - CATANIA UNIVERSITY - ITALY

LS6c topic 5: Hard switching converters **Room: Laugsstuen**

Chair: Prof. Marian KAZMIERKOWSKI, WARSAW UNIVERSITY OF TECHNOLOG, POLAND
Co-Chair: Prof. Dr. Jiri PAVELKA, CTU, CZECH REPUBLIC

0181 - A Cascaded H-Bridge BLDC Drive Incorporating Battery Management
WILKIE Keir, STONE Dave, BINGHAM Chris, FOSTER Martin - THE UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

0930 - A NEW BALANCING TECHNIQUE WITH POWER LOSSES MINIMIZATION IN DIODE-CLAMPED MULTILEVEL CONVERTERS
MARCHESONI Mario, BORGHETTI Giovanni, CARPANETO Matteo, VACCARO Luis - UNIVERSITY OF GENOVA; TENCA Pierluigi - ANSALDO SISTEMI INDUSTRIALI S.P.A. - ITALY

0179 - A new 7.2kV Medium Voltage 3-Level-NPC inverter using 6.5kV-IGBTs
DIETRICH Christian, GEDIGA Swen, HILLER Marc, SOMMER Rainer, TISCHMACHER Hans - SIEMENS AG - GERMANY

LS6d topic 7: Application of control methods to electrical systems **Room: Gaestesalen**
Chair: Prof. Greg ASHER, UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM
Co-Chair: Jean-Luc THOMAS, CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS ELECTRO, FRANCE

0460 - Stability Analysis of Converter-Grid Interaction using the Converter Input Admittance
HARNEFORS Lennart - ABB POWER SYSTEMS; BONGIORNO Massimo, LUNDBERG Stefan - CHALMERS UNIVERSITY OF TECHNOLOGY - SWEDEN

0943 - QFT-Based Robust Controller Design for a DC-DC Switching Power Converter
ALTOWATI Ali - HELSINKI UNIVERSITY OF TECHNOLOGY - FINLAND

0044 - New algorithm for grid synchronization based on Fourier series.
FREIJEDO Francisco, DOVAL-GANDOY Jesus, LOPEZ Oscar, M. PENALVER Carlos - VIGO UNIVERSITY - SPAIN

LS6e topic 12: Sensorless techniques **Room: Radiosalen**
Chair: Dr. Ir. Sjoerd BOSGA, ABB CORPORATE RESEARCH, SWEDEN
Co-Chair: Prof. Dr. Ir. Manfred SCHROEDL, TU WIEN, AUSTRIA

0131 - Sensorless Control of PMSM Based on Extended Kalman Filter
ZHENG Zedong, FADEL Maurice - LAPLACE-ENSEEIHT / INPT / CNRS – FRANCE; LI Yongdong - TSINGHUA UNIVERSITY - CHINA

0457 - On the Properties of Full-Order Observers for Sensorless Induction Motor Drives
HARNEFORS Lennart - ABB POWER SYSTEMS – SWEDEN; HINKKANEN Marko - HELSINKI UNIVERSITY OF TECHNOLOGY - FINLAND

0597 - Disturbance rejection limitations of back-emf based sensorless PM drives
HARKE Michael - HAMILTON SUNDSTRAND - UNITED STATES OF AMERICA; RIBEIRO Luiz A. De S. - CEFET-MA – BRAZIL; LORENZ Robert - UNIVERSITY OF WISCONSIN - MADISON - UNITED STATES OF AMERICA

LS6f topic 16: Urban transportation **Room: Musiksalen**
Chair: Ing. Christian RUDOLPH, STILL GMBH, GERMANY
Co-Chair: Prof. Dr. Thomas M. WOLBANK, VIENNA UNIVERSITY OFTECHNOLOGY, AUSTRIA

0311 - Energy Storage System with UltraCaps on Board of Railway Vehicles
STEINER Michael, KLOHR Markus - BOMBARDIER TRANSPORTATION - GERMANY

0303 - Traction Power Converter for PEM Fuel Cell Multi-Stack Generator
VULTURESCU Bogdan, DE BERNARDINIS Alexandre, LALLEMAND Richard, COQUERY Gerard - INRETS - FRANCE

0456 - New Field Weakening Strategy for AC Machine Drives for Light Traction Vehicles
PEROUTKA Zdenek, ZEMAN Karel - UNIVERSITY OF WEST BOHEMIA - CZECH REPUBLIC

14h40 – 16h40: Dialogue sessions 2 Room: Main Hall West

DS2.1 topic 1: Active devices
Chair: Dr. Laurent GONTHIER, STMICROELECTRONICS, FRANCE
Co-Chair: Prof. Dr. Noel SHAMMAS, STAFFORDSHIRE UNIVERSITY, UNITED KINGDOM

0120 - Preliminary experimental evaluation on PT-IGBT in parallel connection **Panel A1**
SELGI Lorenzo, SORRENTINO Giuseppe, FRAGAPANE Leonardo, MELITO Maurizio - STM - ITALY

0245 - Design approach of newly developed 3.3kV IGBT modules **Panel A2**
IURA SHINICHI - MITSUBISHI ELECTRIC CORP. – JAPAN; DONLON John - POWEREX, INC. - UNITED STATES OF AMERICA; THAL Eckhard - MITSUBISHI ELECTRIC EUROPE B.V. - GERMANY

0274 - Low EMI noise Techniques of the 6th Generation IGBT module **Panel A3**
IGARASHI SEIKI - FUJI ELECTRIC DEVICE TECHNOLOG - JAPAN

0277 - Evaluation of Silicon Carbide Devices for Hybrid Vehicle Drives **Panel A4**
ROBERTS Graham, BRYANT Angus, MAWBY Philip - UNIVERSITY OF WARWICK - UNITED KINGDOM; UETA Takashi, NISIJIMA Tosifumi, HAMADA Kimimori - TOYOTA MOTOR CORPORATION - JAPAN

0314 - A Novel High Channel Density Trench Power MOSFETs Design by Asymmetric Wing-cell Structure **Panel A5**
CHIEN Fengtso - FENG CHIA UNIVERSITY, LIAO Chien-Nan, TSAI Yao-Tsung - NATIONAL CENTRAL UNIVERSITY - TAIWAN

0322 - Active Snubber Circuit for Source Commutated Converters **Panel A6**
KJELLQVIST Tommy - ROYAL INSTITUTE OF TECHNOLOGY; NORRGA Staffan - ABB AB - SWEDEN

0409 - VHDL-AMS model of IGBT for electro-thermal simulation **Panel A7**
IBRAHIM THEIR, ALLARD Bruno, MRAD Sabrine, MOREL Hervé - AMPERE, INSA-LYON - FRANCE

0440 - 600V SOI Gate Driver IC with Advanced Level Shifter Concepts for Medium and High Power Applications **Panel A8**
ROSSBERG Matthias, HERZER Reinhard – SEMIKRON; VOGLER Bastian - TU-ILMENAU - GERMANY

0464 - High temperature characterization of SiC-JFET and modelling **Panel A9**
MOUSA Rami, PLANSON Dominique, MOREL Herve, RAYNAUD Christophe - INSA LYON - FRANCE

0476 - Feed Forward Control of Turn off Performances of an IGBT in Short Circuit Conditions **Panel A10**
GRBOVIC Petar - STIE - FRANCE

0512 - Benefits of System-oriented IGBT Module Design for High Power Inverters **Panel A11**
LUNIEWSKI Piotr, JANSEN Uwe - INFINEON TECHNOLOGIES AG - GERMANY

0561 - A Physics-based Power Diode Model Optimized Through Parameter Extraction with Experiment Basis **Panel A12**
CHIBANTE rui - INSTITUTO SUPERIOR ENG. PORTO; ARAÚJO Armando, CARVALHO Adriano - FACULDADE ENGENHARIA UNIVERSIDADE PORTO - PORTUGAL

0580 - Analysis of the base current and the saturation voltage in 4H-SiC power BJTs **Panel A13**
DOMEIJ Martin, LEE Hyung-Seok, ZETTERLING Carl-Mikael, ÖSTLING Mikael - KTH ROYAL INSTITUTE OF TECHNOLOGY - SWEDEN

0586 - High Voltage, High Power Switches on CVD Diamond **Panel A14**
SCHNEIDER Henri - LAPLACE-ENSEEIHT / INPT / CNRS - FRANCE

0767 - Electrical characterization of 5kV SiC bipolar diodes in switching transient regime **Panel A15**
BEN SALAH Tarek, BESBES Kamel, GHEDIRA Sami - FACULTÉ DES SCIENCES DE MONASTIR – TUNISIA ; RISALETTO Damien, RAYNAUD Christophe, BERGOGNE Dominique, PLANSON Dominique, MOREL Hervé - CEGELY - INSA LYON - FRANCE

0854 - Study on advanced power device performance under real circuit conditions with an exact power loss simulator **Panel A16**
TAKAO Kazuto, HAYASHI Yusuke, HARADA Shinsuke, OHASHI Hiromichi - AIST - JAPAN

0878 - A new Cycle Test System emulating Inductive Switching Waveforms **Panel A17**
GLAVANOVICS Michael, KOECK Helmut, KOSEL Vladimir - KAI KOMPETENZZ. AUTOMOBIL- & INDUSTRIEELEKTR. GMBH – AUSTRIA; EDER Herbert - CARINTHIA UNIVERSITY OF APPLIED SCIENCES – AUSTRIA; SMORODIN Tobias - INFINEON TECHNOLOGIES AG - GERMANY

DS2.2 topic 2: System integration & packaging

Chair: Prof. Philip MAWBY, UNIVERSITY OF WAWRICK, UNITED KINGDOM

0319 - Failure models in power device interconnects **Panel A18**
HANSEN Peter, MCCLUSKEY Patrick - UNIVERSITY OF MARYLAND - UNITED STATES OF AMERICA

0543 - Multi-domain simulation platform for virtual prototyping of integrated power systems **Panel A19**
SOLOMALALA Pierre, SAIZ José, MERMET-GUYENNET Michel – ALSTOM, LAFOSSE Annick - POWER ELECTRONICS ASSOC. RESEARCH LAB – FRANCE; CASTELLAZZI Alberto - SWISS FEDERAL INSTITUTE OF TEC – SWITZERLAND; FRADIN Jean-Pierre, CHAUFFLEUR Xavier - EPSILON INGENIERIE - FRANCE

0210 - Real-Time Compact Electronic Thermal Modelling for Health Monitoring **Panel A20**
MUSALLAM Mahera, JOHNSON Mark, BUTTAY Cyril, WHITEHEAD Michael - UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

0265 - High performance cooling system for automotive inverters **Panel A21**
BUTTAY Cyril - UNI. OF NOTTINGHAM, PEMC GROUP; RASHID Jeremy, UDREA Florin, AMARATUNGA Gehan - UNIVERSITY OF CAMBRIDGE; JOHNSON Mark - UNIVERSITY OF NOTTINGHAM; IRELAND Peter - UNIVERSITY OF OXFORD - UNITED KINGDOM; MALHAN Rajesh Kumar - DENSO CORPORATION - JAPAN

0360 - Ageing Test Results of low voltage MOSFET Modules for Electrical Vehicles **Panel A22**
DUPONT Laurent, LEFEBVRE Stéphane, FAUGIERES Jean-Claude – SATIE; BOUAROUDJ Mounira, KHATIR Zoubir - INRETS - FRANCE

0386 - Base-plate solder reliability study of IGBT modules for aeronautical application **Panel A23**
LHOMMEAU Tony – PEARL; MARTIN Carmen, KARAMA Moussa – ENIT ; MEURET Régis - HISPANO SUIZA (SAFRAN GROUP); MERMET-GUYENNET Michel - PEARL/ALSTOM - FRANCE

0404 - Optimization of Combined Thermal and Electrical Behavior of Power Converters Using Multi-Objective Genetic Algorithms **Panel A24**
MALYNA Dmytro, DUARTE Jorge L., HENDRIX Marcel, VAN HORCK Frank - EINDHOVEN UNIV. OF TECHNOLOGY - NETHERLANDS

0405 - Comparison of stress distributions and failure modes during thermal cycling and power cycling on high power IGBT module **Panel B1**
BOUARROUDJ Mounira, KHATIR Zoubir, OUSTEN Jean-Pierre, BADEL Frederic – INRETS; LEFEBVRE Stephane, DUPONT Laurent - SATIE/CNAM/ENS-CACHAN - FRANCE

0462 - An experimentally verified Compact Transient Electro-thermal modelingprocedure for Power systems **Panel B2**
M'RAD SABRINE - AMPERE - FRANCE

0525 - Hermetic Packaging for Power Multichip Modules **Panel B3**
SCHULZ-HARDER Jürgen - CURAMIK ELECTRONICS GMBH - GERMANY

0690 - Experimental Characterization Methods for Power MOSFET Assemblies **Panel B4**
WERNICKE Thies, DIECKERHOFF Sibylle, FEIX Gudrun, REICHL Herbert - TU BERLIN; KIRFE Tino, GUTTOWSKI Stephan - FRAUNHOFER INSTITUTE IZM - GERMANY

0800 - Power Cycling Induced Failure Mechanisms in Solder Layers **Panel B5**
HERRMANN Tobias, BAYERER Reinhold - INFINEON TECHNOLOGIES AG, LUTZ Josef - TU CHEMNITZ - GERMANY

0859 - Study of CVD diamond films for thermal management in power electronics **Panel B6**
SCHNEIDER Henri - LAPLACE-ENSEEIHT / INPT / CNRS - FRANCE

0947 - Advanced Composite Materials with Tailored Thermal Properties for Heat Sink Applications **Panel B7**
NEUBAUER Erich - AUSTRIAN RESEARCH CENTERS GMBH - ARC - AUSTRIA

DS2.3 topic 5: Matrix converters
Chair: Dr. Alex RUDERMAN, ELMO MOTION CONTROL, ISRAEL

0048 - Matrix converter with advanced control for contactless energy transmission **Panel B8**
MECKE Rudolf - HOCHSCHULE HARZ, KÜRSCHNER Daniel - INSTITUT F. AUTOMATION U. KOMMUNIKATION - GERMANY

0291 - Intelligent bidirectional power switch module for matrix converter applications **Panel B9**
GALVEZ Jose-Luis, JORDA Xavier, VELLVEHI Miquel, BROSSELARD Pierre, MILLAN Jose – CNM; PRIETO Miguel Angel, MARTIN Juan - UNIVERSIDAD DE OVIEDO - SPAIN

0479 - Hybrid Cycloconverters: An Exploration of Benefits **Panel B10**
XU Tianning, KLUMPNER Christian, CLARE Jon - NOTTINGHAM UNIVERSITY - UNITED KINGDOM

0631 - A Novel Engine Generator System with Active Filter and UPS Functions Using a Matrix Converter **Panel B11**
ITOH JUNICHI, TAMADA Syunsuke - NAGAOKA UNIVERSITY OF TECH. - JAPAN

DS2.4 topic 5: Emerging and fault tolerant topologies
Chair: Dr. Frédéric RICHARDEAU, LAPLACE / CNRS / INPT / UPS, FRANCE
Co-Chair: Prof. Dr. Josep POU, TECHNICAL UNIV. OF CATALONIA, SPAIN

0001 - Harmonic Draining Transformer-Coupled Boost-Type Rectifier Systems with Sinusoidal Input Currents **Panel B12**
OGUCHI Kuniomi, HOSHI Nobukazu, KUBOTA Tomotsugu, NAMATAME Takahiro - IBARAKI UNIVERSITY - JAPAN

0089 - Inverter topology comparison for remedial solution in transistor faulty case **Panel B13**
DOC Caroline, LANFRANCHI Vincent, FRIEDRICH Guy - L.E.C. (U.T.C.) - FRANCE

0108 - The bidirectional Z-source inverter for energy storage application **Panel B14**
RABKOWSKI Jacek - WARSAW UNIVERSITY OF TECHN. - POLAND

0172 - Diode-Assisted Buck-Boost Voltage Source Inverters **Panel B15**
GAO FENG - NTU – SINGAPORE; LOH Poh Chiang - NANYANG TECHNOLOGICAL UNIVERSITY – SINGAPORE; BLAABJERG Frede, TEODORESCU Remus - AALBORG UNIVERSITY - DENMARK

0370 - A Novel Nine-Switch PWM Rectifier-Inverter Topology for Three-Phase UPS Applications **Panel B16**
LIU CONGWEI, WU BIN, XU DEWEI - RYERSON UNIVERSITY; ZARAGARI NAVID - ROCKWELL AUTOMATION CANADA - CANADA

0530 - Fault-Tolerant Inverter for on-board aircraft EHA **Panel B17**
RICHARDEAU Frédéric, MAVIER Jérôme, PIQUET Hubert, GATEAU Guillaume - LAPLACE CNRS / INPT / UPS - FRANCE

0533 - A New Topology for PV DC/DC Converter with High Efficiency Under Wide Load Range **Panel B18**
LEE JONGPIL, MIN BYUNGDUK, KIM TAEJIN, YOO DONGWOOK - KERI – KOREA; YOO JIYOON - KOREA UNIVERSITY - KOREA

DS2.5 topic 6: Converter control, current/voltage control
Chair: Prof. Dr. Axel MERTENS, LEIBNIZ UNIVERSITY OF HANNOVER, GERMANY

0092 - FPGA based Sequential Switching control strategy for a Three Phase Inverter **Panel B19**
POLIC Ales, JEZERNIK Karel - UNIVERSITY OF MARIBOR - SLOVENIA

0151 - Dual-Inductive Snubber Circuit Design for Three-Level Inverter **Panel B20**
ALNASSEIR Jamal, WEINDL Christian, HEROLD Gerhard - EEV - GERMANY

0177 - Predictive Direct Power Control of MV-Grid-connected Two-Level and Three-Level NPC Converters: Experimental Results **Panel B21**
AURTENECHEA Sergio, RODRIGUEZ Miguel - MONDRAGON UNIBERTSITATEA - SPAIN

0264 - Active Damping of LCL Resonance with Minimum Sensor Effort by Means of a Digital Infinite Impulse Response Filter **Panel B22**
DICK Christian, RICHTER Sebastian, ROSEKEIT Martin, ROLINK Johannes, DE DONCKER Rik W. - RWTH AACHEN UNIVERSITY - GERMANY

0295 - Three-Phase Inverter with Output LC Filter Using Predictive Control for UPS Applications **Panel B23**
CORTES Patricio, RODRIGUEZ Jose - UNIVERSIDAD TECNICA FEDERICO SANTA MARIA - CHILE

0349 - Digital compensation of a high-frequency voltage-mode dc-dc converter **Panel B24**
HSIA Tsun-Hsiao, TSAI Hsien-Yi, LIN Yu-Zheng, CHEN Dan - NATIONAL TAIWAN UNIVERSITY; CHANG Wei-Hsu - RICHTEK TECHNOLOGY CORP. - TAIWAN

0765 - A Robust Control Technique for Parallel Operation of Uninterruptible Power Supply Inverters **Panel C1**
PASCUAL Marcos, GARCERÁ Gabriel, FIGUERES Emilio, BENAVENT Jose, GONZALEZ-ESPIN Fran - UNIV. POLITECNICA DE VALENCIA - SPAIN

0385 - Digital Control of a Three-Phase Four-Leg Inverter under Unbalanced Voltage Conditions **Panel C2**
VECHIU Ionel, CAMBLONG Haritza, CUREA Octavian - ESTIA – FRANCE; VILLATE MARTINEZ Jose Luis, CEBALLOS Salva - ROBOTIKER ENERGÍA, TECNALIA - SPAIN

0388 - Output Voltage Distortion Compensation for Half-Bridge Inverters **Panel C3**
CHEN Yaow-Ming - NATIONAL CHUNG CHENG UNIVERSIT - TAIWAN

0410 - A simple indirect voltage sensing method for line-connected inverters **Panel C4**
BECKER Frank, SCHERER Alexander, WEIGOLD Joerg, BRAUN Michael - UNIVERSITÄT (TH) KARLSRUHE - GERMANY

0488 - DC-link Voltage Balancing Algorithm Using a Space-Vector Hysteresis Current Control for Three-level VSI Applied for Wind Conversion System **Panel C5**
GHENNAM Tarak - POLYTECHNIC SCHOOL OF ALGIERS; BERKOUK Ebdelmadjid - POLYTECHNIC SCHOOL OF EL HARRACH - ALGERIA; FRANÇOIS Bruno - ECOLE CENTRALE DE LILLE (FRANCE) - FRANCE

0495 - CRA Based Robust Digital Controller for a Single Phase UPS Inverter **Panel C6**
CHOI Jaeho, LEE Jinmok - CHUNGBUK NATIONAL UNIVERSITY; PARK Gawoo - PLASPO - KOREA

0522 - PWM Rectifier with LCL-Filter using different Current Control Structures **Panel C7**
DANNEHL Joerg, FUCHS Friedrich W. - UNIVERSITY OF KIEL – GERMANY; HANSEN Steffan - DANFOSS DRIVES A/S - DENMARK

0534 - Comparison of 3D-SVPWM and Carrier-Based Pwm of Three-Phase Four-Leg Voltage Source Inverter for Power Supply Units **Panel C8**
GLASBERGER Tomas, PEROUTKA Zdenek, MOLNAR Jan - UNIVERSITY OF WEST BOHEMIA IN PILSEN - CZECH REPUBLIC

0617 - A New Control Method of Single-stage 4-Leg Matrix Converter **Panel C9**
YUE Fan, WHEELER Patrick, CLARE Jon, MASON Nick, EMPRINGHAM Lee - UNIVERSITY OF NOTTINGHAM - UNITED KINGDOM

0705 - Application of Multiple integrator based controllers for low switching frequency Multilevel NPC Power Active Filters: limitations and improved structures **Panel C10**
LOPEZ DE HEREDIA Amaia, ETXEBERRIA-OTADUI Ion - IKERLAN IK4 TECHNOLOGICAL RESEARCH CENTRE; AURTENECHEA Sergio, ABAD Gonzalo, RODRIGUEZ Miguel Angel - MONDRAGON UNIBERTSITATEA – SPAIN; BACHA Seddik - G2ELAB - GRENOBLE GENIE ELECTRIQUE - FRANCE

0710 - FPGA-based Vector PI Regulator for Electrical Drives Control **Panel C11**
ABDELLATIF Meriem, NAOUAR Wissem, SLAMA-BELKHODJA Ilhem - ENIT – TUNISIA; MONMASSON Eric - SATIE-IUP GEII - FRANCE

0756 - Compensation of Output Voltage Distortion Analysis of PWM Inverter with LC Filter Caused by Device Voltage Drop **Panel C12**
NAKAMURA Yuusuke, FUNATO HIROHITO, OGASAWARA SATOSHI - UTSUNOMIYA UNIVERSITY - JAPAN

DS2.6 topic 7: Optimal control, robust control, non-linear control

Chair: Jean-Luc THOMAS, CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS ELECTRO, FRANCE

0028 - An Online Control Strategy for a Modular DC Coupled Hybrid Power System **Panel C13**
OMARI OSAMA - THE ARAB AMERICAN UNIVERSITY – ISRAEL; MOHD Alaa, ORTJOHANN Egon - SOUTH WESTPHALIA UNIVERSITY - GERMANY; MORTON DANNY - THE UNIVERSITY OF BOLTON - UNITED KINGDOM; LINGEMANN Max - FH SOEST - GERMANY

0051 - A Mathematical Description of Control Method on the Basis of Difference Correction **Panel C14**
ISKHAKOV Albert - OPEN SOCIETY "CONCERN "MORINFORMSISTEMA - AGAT" – RUSSIA; SKOVPEN Sergey - MARINE TECHNICAL UNIVERSITY - RUSSIA

0154 - State Control of an Electromagnetic Guiding System for Ropeless Elevators **Panel C15**
SCHMÜLLING Benedikt, EFFING Oliver, HAMEYER Kay - RWTH AACHEN UNIVERSITY - GERMANY

0182 - Convergence Test of Model Reference Signal Adaptive SRM Drives **Panel C16**
SZAMEL Laszlo - BUDAPEST UNIV. OF TECHNOLOGY - HUNGARY

0201 - A Buck-Boost bidirectional converter to drive piezoelectric actuators **Panel C17**
GOMIS BELLMUNT Oriol, MONTESINOS MIRACLE Daniel, GALCERAN ARELLANO Samuel, SUDRIÀ ANDREU Antoni - CITCEA-UPC - SPAIN

0307 - Friction compensation for a robust H∞-optimal position control of low order for a multi-mass system **Panel C18**
JOOST Matthias, ORLIK Bernd - UNIVERSITY OF BREMEN - GERMANY

0355 - Modified Sliding Mode Controller for Positioning of Micro Linear Motors **Panel C19**
WIEDMANN Karsten, DEMMIG Sven, MERTENS Axel - LEIBNIZ UNIVERSITAET HANNOVER - GERMANY

0408 - Robust performance of self-scheduled LPV control of doubly-fed induction generator in wind energy conversion systems **Panel C20**
NGUYEN TIEN Hung, W. SCHERER Carsten - DELFT UNIVERSITY OF TECHNOLOGY; M.A. SCHERPEN Jacquelien - UNIVERSITY OF GRONINGEN - NETHERLANDS

0556 - Nonlinear adaptive control of a magnetic bearing **Panel C21**
PALIS Stefan, STAMANN Mario, SCHALLSCHMIDT Thomas - UNIVERSITÄT MAGDEBURG - GERMANY

0625 - Maximum Torque/Minimum Flux Control of Interior Permanent Magnet Synchronous Motor Based on Magnetic Energy Model **Panel C22**
TOSHIAKI Murata, TAKIGUCHI Masashi, TAMURA Junji - KITAMI INSTITUTE OF TECHNOLOGY; TSUCHIYA Takeshi - HOKKAIDO INSTITUTE OF TECHNOLOGY - JAPAN

0654 - Design of current controller in an AC drive using a state stimulator concept **Panel C23**
D¢BOWSKI Andrzej - TECHNICAL UNIVERSITY; LUKASIAK Przemyslaw - ENIKA - POLAND

0684 - A new method of adaptive predictive control in multimass electromechanical systems with variable parameters **Panel C24**
PODBORSKY Pavel, KOLESNIKOV Artem – HTW; WINTERNHEIMER Stefan - HTW des Saarlands - GERMANY

0858 - Accurate Sliding-Mode Control System Modeling for Buck Converters **Panel D1**
HØYERBY Mikkel – MOTOROLA; ANDERSEN Michael - TECHNICAL UNIVERSITY OF DENMARK - DENMARK

0876 - Comparative Study of Two Predictive Direct Power Control Algorithms for Three-Phase AC/DC Converters **Panel D2**
ANTONIEWICZ Patrycjusz, KAZMIERKOWSKI Marian P. - WARSAW UNIVERSITY OF TECHNOLOGY – POLAND; AURTENECHEA Sergio - TEAM, S.A, R&D DEPARTMENT, POWER ELECTRONICS – SPAIN; RODRIGUEZ Miguel - FACULTY OF ENGINEERING, UNIVERSITY OF MONDRAGON - SPAIN

0881 - Loop-Shaping H? Control for a Doubly Fed Induction Motor **Panel D3**
SALLOUM George - LAPLACE-ENSEEIHT - FRANCE

DS2.7 topic 7: Application of control methods to electrical systems
Chair: Prof. Dr. Thomas M. WOLBANK, VIENNA UNIVERSITY OFTECHNOLOGY, AUSTRIA

0030 - Design and implementation of a fuzzy controller for wind generators performance optimisation **Panel D4**
SIANO PIERLUIGI, CALDERARO Vito, GALDI Vincenzo, PICCOLO Antonio - UNIVERSITY OF SALERNO - ITALY

0053 - Control System Simulation of a 40 kW Half-Bridge Isolated DC-DC Converter **Panel D5**
ROASTO Indrek - TALLINN UNIVERSITY OF TECHNOLO - ESTONIA

0115 - Analysis of a DSP-system in order to flexibly control a switch mode power supply **Panel D6**
SCHMID Markus, KUEBRICH Daniel, DUERBAUM Thomas - UNIVERSITY ERLANGEN-NUREMBERG - GERMANY

0562 - Robust Speed and Position Control Based on Neuro and Fuzzy Techniques **Panel D7**
PAJCHROWSKI Tomasz, ZAWIRSKI Krzysztof - POZNAN UNIV. OF TECHNOLOGY - POLAND

0592 - Wide-Band Power Electronics Current Source for Reference Purposes **Panel D8**
GWOZDZ Michal, PORADA Ryszard - POZNAN UNIV. OF TECHNOLOGY - POLAND

0626 - Injecting position dependent currents in order to reduce oscillations caused by the gearbox of a dc-motor drive **Panel D9**
SEEBACHER Roland R., KRISCHAN Klaus, DANNERER Guenther - GRAZ UNIVERSITY OF TECHNOLOGY - AUSTRIA

0638 - Emulator for a DC-Machine, Working as an Actuator in a Torque Split Unit of an All-Wheel Driven Automobile **Panel D10**
SCHUSTER Thomas, KRISCHAN Klaus, SEEBACHER Roland R., DANNERER Günther - GRAZ UNIVERSITY OF TECHNOLOGY - AUSTRIA

0679 - Adaptive backstepping control of a completely unknown permanent magnet motor **Panel D11**
KABZIjSKI Jacek - TECHNICAL UNIWERSITY OF LODZ, - POLAND

0848 - Rotor Time Constant Adaptation with ANN Application **Panel D12**
BRANDSTETTER Pavel, CAJKA Radim, SKUTA Ondrej - VSB-TECHNICAL UNIVERSITY OF OSTRAVA - CZECH REPUBLIC

DS2.8 topic 12: Sensorless techniques

Chair: Prof. Dr. Ir. Manfred SCHROEDL, TU WIEN, AUSTRIA

0042 - Speed Measurement and Estimation Algorithms in AC Induction Motors **Panel D13**
CORTAJARENA Jose Antonio, DE MARCOS Julian, ALKORTA Patxi, ALVAREZ Pedro, VICANDI Javier – UPV; ALEGRIA Oscar - MONTELEC, S.A. - SPAIN

0175 - Novel Sensorless Control for PM Synchronous Motors Based on Maximum Torque Control Frame **Panel D14**
HIDA HAJIME, TOMIGASHI Yoshio, KISHIMOTO Keiji - SANYO ELECTRIC CO., LTD - JAPAN

0207 - Novel Adaptive Flux Observer for Wide Speed Range Sensorless Control of Induction Motor **Panel D15**
ADAMOWICZ Marek - GDYNIA MARITIME UNIVERSITY; KRZEMINSKI Zbigniew - GDANSK UNIVERSITY OF TECHNOLOGY - POLAND

0339 - Sensorless Control of SRM Using Position Observer **Panel D16**
URBANSKI Konrad, ZAWIRSKI Krzysztof - POZNAN UNIVERSITY OF TECHNOLOGY - POLAND

0377 - Sensorless Control of Hybrid Stepper Motor **Panel D17**
BENDJEDIA Moussa, WALTHER Bernard - HAUTE ECOLE ARC, ENGINEERING – SWITZERLAND; AIT AMIRAT Youcef, BERTHON Alain - UNIVERSITY OF FRANCHE-COMTE - FRANCE

0421 - Position Sensorless Control of Permanent Magnet Synchronous Motor at Low Speed Range Using Harmonic Voltage Injection **Panel D18**
TANIGUCHI Shun, WAKAO Shinji - WASEDA UNIVERSITY; KONDO Keiichiro - CHIBA UNIVERSITY; YONEYAMA Takashi - RAILWAY TECHNICAL RESEARCH INS - JAPAN

0528 - Extended EMF- and Parameter Observer for sensorless controlled PMSM-machines at low speed **Panel D19**
SCHROEDL Manfred, HOFER Matthias, STAFFLER Wolfgang - VIENNA UNIVERSITY OF TECHNOLOGY - AUSTRIA

0595 - Signal Processing of Zero Sequence Voltage Technique **Panel D20**
STULRAJTER Marek, VITTEK Jan - UNIVERSITY OF ZILINA – SLOVAKIA; CARUANA Cedric - UNIVERSITY OF MALTA – MALTA; SCELBA Giacomo - DIEES UNIVERSITY OF CATANIA - ITALY

0688 - A Zero Speed Operation Sensorless PMSM Drive Without Additional Test Signal Injection **Panel D21**
RAUTE Reiko - UNIVERSITY OF MALTA - MALTA

0719 - Sensorless Control of a Wound Rotor Synchronous Belt-Driven Starter-Alternator **Panel D22**
CHABOUR Ferhat, VILAIN Jean-Paul - L.E.C. (U.T.C.) ; MASSON PHILLIPE - VALEO ELECTRICAL SYSTEMS COMPANY - FRANCE

DS2.9 topic 13: Adjustable speed generation systems
Chair: Dr. DAVID THOMPSON, UNIVERSITY OF DUNDEE, UNITED KINGDOM

0020 - Additional Application Fields of a Modern Wind Generator Even at No–Wind **Panel D23**
SCHMIDT Istvan, VESZPREMI Karoly - BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS - HUNGARY

0101 - A Comparative Study of Steady-State Characteristics of Permanent Magnet Synchronous Generator Systems **Panel D24**
KATO Shinji, MICHIHIRA Masakazu - KOBE CITY COLLEGE OF TECHNOLOGY; INUI Yoshitaka - TOYOHASHI UNIVERSITY OF TECHNOLOGY - JAPAN

0153 - Comparison of Active Stabilization Methods for the Doubly-Fed Induction Generator - Quadrature versus Direct Inner Control Loops **Panel E1**
MARQUES Gil - IST TECHNICAL UNI LISBON - PORTUGAL

0162 - A Redundant Electrical Braking System for Wind Turbine Generators **Panel E2**
WANG Timothy, YANG Wenqiang, YUAN xiaoming - GE – CHINA; TEICHMANN Ralph - GE - UNITED STATES OF AMERICA

0178 - Induction generator model in phase coordinates for fault ride-through capability studies of wind turbines **Panel E3**
FAJARDO L.A., MEDINA-RIOS J.AURELIO - UNIVERSIDAD MICHOACANA OF SAN NICOLAS OF HIDALGO – MEXICO; IOV Florin, BLAABJERG Frede - INSTITUTE OF ENERGY TECHNOLOGY; HANSEN Anca Daniela - RISØ NATIONAL LABORATORY - DENMARK

0198 - Parallel-connected converters for optimizing efficiency, reliability and grid harmonics in a wind turbine **Panel E4**
BIRK Jens, ANDRESEN Björn - GAMESA WIND ENGINEERING - DENMARK

0218 - Sliding mode control of a doubly-fed induction generator **Panel E5**
PATIN Nicolas, LOUIS Jean-Paul - ENS DE CACHAN – France; NAASSANI Ammar - UNIVERSITE D'ALEP – SYRIA; MONMASSON Eric - UNIVERSITE DE CERGY-PONTOISE - FRANCE

0258 - Performance Characteristics of a Practical Scale Wind Turbine Generating System using a Shaft Generator System **Panel E6**
TATSUTA Fujio - TOKYO DENKI UNIVERSITY - JAPAN

0299 - Output Maximization of Wind Generation System Using Sensorless Controlled IPMSG **Panel E7**
KAWABE Izumi, MORIMOTO Shigeo, SANADA Masayuki - OSAKA PREFECTURE UNIVERSITY - JAPAN

0435 - Test bench for grid code simulations for multi-MW wind turbines **Panel E8**
SANITER Christoph, JANNING Jörg, BOCQUEL Aurelie - CONVERTEAM GMBH - GERMANY

0436 - Inverter Excited Induction Machine for High Performance Wind Power Generation System **Panel E9**
KIMURA Noriyuki, MORIZANE Toshimitsu, TANIGUCHI Katsunori, HAMADA Tomoyuki - OSAKA INSTITUTE OF TECHNOLOGY - JAPAN

0478 - Optimal Direct-Drive Permanent Magnet Wind Generator Systems for Different Rated Wind Speeds **Panel E10**
LI HUI, CHEN Zhe - IET - DENMARK

0527 - An Encoder-free Grid Synchronization Method for a Doubly-fed Induction Generator **Panel E11**
PARK Jungwoo, LEE Kiwook, KIM Dongwook – KERI; LEE Kwangsoo, PARK Jinsoon - KORDI - KOREA

0536 - Modeling and Simulation of Variable Speed Wind Generator System Using Boost Converter of Permanent Magnet Synchronous Generator **Panel E12**
OHYAMA Kazuhiro - FUKUOKA INST. OF TECHNOLOGY - JAPAN

0616 - A Control Strategy for an Autonomous Induction Generator Taking the Saturation Effect into Account **Panel E13**
REKIOUA Djamila - UNIVERSITY OF BEJAIA - ALGERIA

0632 - A Fault Converter topology for Wind Energy Conversion System with Doubly Fed Induction Generator **Panel E14**
GAILLARD Arnaud, KARIMI Shahram, SAADATE Shahrokh – GREEN; POURE Philippe - LIEN LABORATORY – FRANCE; GHOLIPOUR Eskandar - ISFAHAN HIGHER EDUCATION AND RESEARCH INSTITUTE – IRAN

0653 - A Novel Small-Scale Variable Speed Hydropower Emulator Using an Inverter-Controlled Induction Motor **Panel E15**
MAURI Marco, CASTELLI DEZZA Francesco - POLITECNICO DI MILANO; MARCHEGIANI Gabriele - MCM ENERGYLAB - ITALY

0737 - Simple Fault-Ride Through Capability Analysis for Wind Power Plants under Different Grid Code Requirements **Panel E16**
RABELO Balduino, HOFMANN Wilfried - TU CHEMNITZ - GERMANY

0752 - Static Synchronous Series Compensation applied to Small Wind Energy Conversion System **Panel E17**
SINGER Amr, HOFMANN Wilfried - CHEMNITZ UNIVERSITY OF TECHNOLGY - GERMANY

0772 - Analysis of Three Phase Grid Failure and Doubly Fed Induction Generator Ride-through using Crowbars **Panel E18**
LOHDE Ralf, JENSEN Simon, KNOP Andre, FUCHS F.W. - UNIVERSITY OF KIEL - GERMANY

0820 - Load Sharing of the Parallel Operating Adjustable Speed Generation Systems without Control Signal Interconnection **Panel E19**
KOCZARA Wlod, MOSKWA Marcin - WARSAW UNIVERSITY OF TECHNOLOGY – POLAND; AL-KHAYAT Nazar - CUMMINS GENERATOR TECHNOLOGIES - UNITED KINGDOM

DS2.10 topic 14:HVDC, FACTS, Active, passive and combined filtering

Chair: Dr. Sergej KALASCHNIKOW, DANFOSS GMBH, AUSTRIA
Co-Chair: Prof. Dr. Tonny RASMUSSEN, TECHNICAL UNIVERSITY OF DENMAR, DENMARK

0263 - Selective Harmonic Current Mitigation with Shunt Active Power Filter **Panel E20**
ASIMINOAEI Lucian, HANSEN Steffan - DANFOSS DRIVES – DENMARK; LASCU Cristian - UNIVERSITY POLITEHNICA OF TIMISOARA – ROMANIA; BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0317 - Parallel Operation of Thyristor- and IGBT-based HVDC **Panel E21**
PETTER Thorsten, ORLIK Bernd - IALB, UNIVERSITY OF BREMEN; RAFFEL Holger - BREMEN CENTER OF MECHATRONICS - GERMANY

0406 - Fast connection /reconnection of the VSC to the power network **Panel E22**
RASIC Andreja, HEROLD Gerhard - UNIVERSITAET ERLANGEN-NUERNBERG, KREBS Uwe - SIEMENS AG - GERMANY

0061 - FACTS for dynamic load balancing and voltage support in rail traction **Panel E23**
GRÜNBAUM Rolf - ABB POWER TECHNOLOGIES AB - SWEDEN

0156 - Performance Enhancement and Comparison of Discrete Time Current Regulators for Parallel Active Filters **Panel E24**
ÖZKAYA Hasan, fiENTÜRK Osman Selçuk, HAVA Ahmet - MIDDLE EAST TECHNICAL UNIVERSITY - TÜRKEY

0189 - Three-level Converter based Active Filter for harmonic compensation of 4 MW Induction Furnace **Panel F1**
AAMANTHRA KELOTH UNNIKRISHNAN, JOSHI TG SUBHASH, JOSEPH ABY - C-DAC, TRIVANDRUM – INDIA; V RAMANARAYANAN - INDIAN INSTITUTE OF SCIENCE - INDIA

0221 - Industrial D-STATCOM chain link modeling and control **Panel F2**
BENCHAIB Abdelkrim, LEE-KWET-SUN Evelyne, THIERRY Jean-Luc, DE-PREVILLE Guillaume - AREVA T&D - FRANCE

0279 - Active Power Filtering by A Flying-Capacitor Multilevel Inverter with Capacitor Voltage Balance **Panel F3**
HU Junfei, ZHANG Li - UNIVERSITY OF LEEDS - UNITED KINGDOM

0324 - Experimental Studies on Fault Current Limiter by Voltage Source Inverter with Line Voltage Harmonics Compensation **Panel F4**
HOJO Masahide, FUJIMURA Yuki, OHNISHI Tokuo - THE UNIVERSITY OF TOKUSHIMA; FUNABASHI Toshihisa - MEIDENSHA CORPORATION - JAPAN

0417 - Feasible series compensation applications using Magnetic Energy Recovery Switch (MERS) **Panel F5**
WIIK Jan, ISOBE Takanori, WIJAYA F Danang, USUKI Kazuhiro, ARAI Nobuyuki, SHIMADA Ryuichi - TOKYO INSTITUTE OF TECHNOLOGY; TAKAKU Taku - FUJI ELECTRIC DEVICE TECHNOLOG - JAPAN

0510 - On the Simulation of Valve Reactors **Panel F6**
FISCHER Werner - SIEMENS AG; LE TRUNG Arien - TECHNISCHE UNIVERSITÄT DRESDEN - GERMANY

0685 - Direct Power Control of Shunt Active Filter **Panel F7**
GAUBERT Jean-Paul - LAII-ESIP UNIVERSITÉ POITIERS – France; CHAOUI Abdelmadjid - LEPCI - UNIVERSITE FERHAT ABBAS - SETIF - ALGERIA

0761 - A novel hysteresis voltage control for Series Active Power filter **Panel F8**
FATIHA Mekri, NADIA Ait Ahmed, MOHAMED machmoum - IREENA – FRANCE; BENYOUNES Mazari - USTO - ALGERIA

0778 - STATCOM Operation under Single Line-Ground System Faults with Magnetic Saturation in Series Connected Transformers based 48-pulse Voltage-Source Converter **Panel F9**
XI Zhengping, BHATTACHARYA Subhashish - NC STATE UNIVERSITY - UNITED STATES OF AMERICA

0849 - A Low Voltage Dynamic Voltage Restorer with Self-Charging Capability **Panel F10**
SHAFIEE KHOOR Mohsen, MACHMOUM Mohamed - NANTES UNIVERSITY - FRANCE

DS2.11 topic 20: Energy conversion and conditioning technologies in physics research and related applications

Chair: Dr. Carlos DE ALMEIDA MARTINS, CERN, SWITZERLAND

0082 - Magnet Power Converters for the New Booster of Elettra **Panel F11**
VISINTINI Roberto, MOLARO Denis - SINCROTRONE TRIESTE – ITALY; KORHONEN Petri; TIIHONEN Tommi - KEMPOWER OY - FINLAND

0090 - Investigation on power supply operation for the Helias Stellarator Fusion Reactor **Panel F12**
BUCHNER Christian - SIEMENS AG; HARMEYER Ewald, WOBIG Horst - MAX-PLANCK-INSTITUT FUER PLASMAPHYSIK – GERMANY; HALLER Rainer, MÜHLBACHER Jan - WEST BOHEMIAN UNIVERSITY - CZECH REPUBLIC; WIECZOREK Andreas - FACHHOCHSCHULE REGENSBURG - GERMANY

0167 - A study on the Reactor Parameter of Atmosphere Plasma Power Supply **Panel F13**
LEE Yong Duk, LEE Woo-Cheol, LEE Taeck-Ki - HANKYONG NATIONAL UNIVERSITY - KOREA

0253 - High current capacitor discharge power converters for the magnetic lenses of a neutrino beam facility **Panel F14**
CRAVERO Jean-Marc, MAIRE Gilles, ROYER Jean-Pierre - CERN - SWITZERLAND

0296 - A High Voltage Pulsed Power Supply with Magnetic Switch for ESP **Panel F15**
XIE Rui, JIANDE Wu, WUHUA Li, XIANGNING He - ZHEJIANG UNIVERSITY - CHINA

0359 - A 4-quadrant 300kW-peak high precision and bandwidth switch mode power converter for particle accelerator magnets supply **Panel F16**
MARTINS Carlos, BEURET André, BURNET Jean-Paul, BORDRY Frederick - CERN - SWITZERLAND

0399 - Digital-closed loop high-speed thyristor firing system for line-commutated converters **Panel F17**
MAESTRI Sebastian, BENEDETTI Mario - UNMDP-CERN; UICICH Gustavo, FUNES Marcos - UNIVERSIDAD NACIONAL DE MAR DEL PLATA - ARGENTINA

0401 - Phase-controlled line-commutated converter control in discontinuous conduction mode **Panel F18**
MAESTRI Sebastian, BENEDETTI Mario - UNMDP-CERN; PETROCELLI Roberto, UICICH Gustavo - UNIVERSIDAD NACIONAL DE MAR DEL PLATA - ARGENTINA

0418 - Development of IGCT module and blip resistor for KSTAR **Panel F19**
SONG Inho, CHOI Changho – POSCON; CHO Moohyun - POSTECH UNIVERSITY - KOREA

0425 - The BTF (Beam Transfer Facility) DC/Pulsed 50 kW power converter for DAFNE injector **Panel F20**
MACCAFERRI Remo, CHIUSANO Frederico - CERN - SWITZERLAND

0571 - Full solid-state pulsed power supplies for injection/extraction at SOLEIL **Panel F21**
LAVIEVILLE Jean-Paul, LEBASQUE Pierre - SYNCHROTRON SOLEIL - FRANCE

0576 - Design of the DC and AC Magnet Power Supplies for The SOLEIL Synchrotron Radiation Source **Panel F22**
BOUVET Francois - SYNCHROTRON SOLEIL - FRANCE

0716 - Digital Power Supply Controller for control of extremely precise power supplies **Panel F23**
WOLF Renso, BRUINS Stefan, GROEN Ronnie - IMTECH VONK BV – NETHERLANDS; HU Wei, LONG Fengli - INSTITUTE OF HIGH ENERGY PHYSICS (IHEP) - CHINA

DS2.12 topic 21: Education
Chair: Prof. Ole-Morten MIDTGÅRD, AGDER UNIVERSITY COLLEGE, NORWAY

0011 - Universities Collaboration in Teaching Power Electronics **Panel G1**
VODOVOZOV Valery - ELECTROTECHNICAL UNIVERSITY – RUSSIA; LAUGIS Juhan - TALLINN UNIVERSITY OF TECHNOLOGY - ESTONIA

0180 - A New Low-Cost Motion Control Educational Equipment. **Panel G2**
MONTESINOS Daniel, GALCERAN Samuel, GOMIS Oriol, SUDRIÀ Antoni, PERACAULA Joan - CITCEA-UPC - SPAIN

0229 - An Education and Research Prototyping Platform for Switched Reluctance Motor Drives **Panel G3**
BLANQUÉ Balduí, ANDRADA Pere, LOPÉZ Jordi - UPC - SPAIN

0233 - A hybrid physical-behavioral flourescent lamp model suitable for use in SPICE and Simulink **Panel G4**
HOLLOWAY Arran, STONE Dave, TOZER Richard - SHEFFIELD UNIVERSITY - UNITED KINGDOM

0256 - The modern approach to practical trainings for specialists of automatics **Panel G5**
GRINKO Aleksandr - TALLINNA TÖÖSTUSHARIDUSKESKUS - ESTONIA

0373 - Two Examples of Pedagogical Applications of Electrical Go-Karts **Panel G6**
LEQUEU Thierry, DERRIEN Yann, GODEFROY Nicolas - IUT DE TOURS DEPARTEMENT GEII; BIDOGGIA Benoit - LMP, UNIVERSITE DE TOURS - FRANCE

0402 - An Improved Power Electronics Training Platform Using PIC Microcontrollers **Panel G7**
CEGLIA Gerardo, HEREIRA David, GUZMAN Victor, GIMENEZ DE GUZMAN Maria Isabel, WALTER Julio, RAINA Jan - USB - VENEZUELA

0557 - Reduction of magnetic field strength on PCB level - Laboratory for power electronics students **Panel G8**
SCHUH Stephan, ROSSMANITH Hans, ALBACH Manfred - UNIVERSITY ERLANGEN-NUREMBERG - GERMANY

0640 - An Education Tool for Laboratory Exercises with SMPS **Panel G9**
KOSTOV Konstantin, PALMUNEN Juhani, KYYRÄ Jorma - HELSINKI UNIVERSITY OF TECHNOL – FINLAND; BEKAERT David - KULEUVEN - BELGIUM

0693 - Teaching drive control using Energetic Macroscopic Representation - initiation level **Panel G10**
BOUSCAYROL Alain, BRUYERE Antoine, DELARUE Philippe, GIRAUD Frederic, LEMAIRE-SEMAIL Betty, LE MENACH Yvonnick, LHOMME Walter, LOCMENT Fabrice - UNIVERSITY OF LILLE - L2EP - FRANCE

0909 - A Novel Simulation Algorithm for Frequency Analysis of Switching Converters **Panel G11**
SATO Terukazu - OITA UNIVERSITY - JAPAN
NABESHIMA Takashi, KIMIHIRO Nishijima, TADAO Nakano - OITA UNIVERSITY - JAPAN

0923 - Remote controlled practical education for Power Electronics **Panel G12**
BAUER P. - TU DELFT – NETHERLANDS; STAUDT V. - UNIVERSITY OF BOCHUM - GERMANY

DS2.13 topic 16 automotive
Chair: UWE SCHÄFER, TU BERLIN, GERMANY

0361 - A new FPGA based control system for electrical propulsion with electronic differential **Panel G13**
CASTRO Ricardo Pinto de, OLIVEIRA Hugo Santos, SOARES José Ricardo, CERQUEIRA Nuno Miguel - MCA & ASSOCIADOS, LDA; ARAÚJO Rui Esteves - FEUP - PORTUGAL

0683 - EMI Characterisation and Communication Aspects for Power Electronics in Hybrid Vehicles **Panel G14**
SERRAO Vittoria, LIDOZZI Alessandro, SOLERO Luca, DI NAPOLI Augusto - UNIVERSITY OF ROME "ROMA TRE" - DIMI - ITALY

0713 - Power Electronic Converters Distribution in HOST Hybrid Propulsion System **Panel G15**
SOLERO Luca, LIDOZZI Alessandro, SERRAO Vittoria, CRESCIMBINI Fabio - UNIVERSITY ROMA TRE - ITALY

Workshops and Roundtable discussion

16h50- 18h00 - Power Electronics Education Room: Det Lille Teater
Panel Discussion

Moderator: A. Vandenput
Organizers: Johann W. Kolar / ETH Zurich, Tore M. Undeland / NTNU

Power Electronics is an enabling technology for all kinds of alternative energy utilization, sustainable mobility, high productivity manufacturing and energy efficiency. The highly dynamic developments in the field bring new challenges like interdisciplinary research, collaboration in international teams and international hiring. These could all benefit from insight into the power electronics curriculum and the required extensions to related domains like power systems, mechanical engineering, and material science.
The introductory part of the workshop will provide an overview of the structuring of university level education in power electronics in the US, Europe, Japan, and China. Teaching material on Power Electronics and Drives used at the University of Minnesota, will be presented, together with a related NSF sponsored activity on an Integrated Electric Energy Systems Curriculum. Furthermore, details on a first year student course on renewable energy at the NTNU will be discussed, along with the Problem-Based Teaching approach of Aalborg University, and the new release of the Interactive Power Electronics Seminar, iPES, which has been considerably extended in a collaboration of ETH Zurich and ECPE (European Center for Power Electronics). The ETH Zurich practical Space Elevator project, which is fascinating to undergraduates, will be shown, and the novel approach of EPFL in establishing a cross-departmental School of Engineering will be explained. Presentations giving details on the power electronics education and students interests in Japan and China will be further highlights.
The discussion part of the Workshop aims to identify the industry needs and to identify topics like multi-domain modeling, packaging and reliability engineering that could be integrated into future power electronics education.

Panelists: Panelists: H. Akagi, Tokyo Institute of Technology, Japan
F. Blaabjerg, Aalborg, Denmark
J. Kolar, ETH Zurich, Switzerland
N.N. (industry representatives)
A. Rufer, EPF Lausanne, Switzerland
T. Undeland, NTNU, Norway
D. Xu, Zhejiang University, China

Moderator: Andre Vandenput, TU Eindhoven, The Netherlands

16h50- 18h00 - The UNIFLEX-PM project Room: Radiosalen
Advanced Power Converters for Universal and Flexible Power Management In Future Electricity Networks

Animators: Roger Bassett, Coordinator of the UNIFLEX project and Chapter Chair of EPE Association, Senior Expert, Technology Consultant Power Electronics/Devices, AREVA T&D UK Ltd, United Kingdom.
Jon Clare, Principle Investigator of the UNIFLEX-PM, Project Professor Power Electronics, University of Nottingham, United Kingdom
More "green" power provided by Distributed Generation will enter into the European

electricity network in the near future. In order to control the power flow and to ensure proper and secure operation of this future grid, with an increased level of the renewable power, new power electronic converters for grid connection of renewable sources will be needed. These power converters must be able to provide intelligent power management as well as ancillary services.
The objective of the UNIFLEX-PM project is to develop advanced power conversion techniques to meet these new application needs, and to validate these techniques in hardware. The key technical advance will be the validation of modular power conversion architecture and associated control structures which have the required flexibility and performance to make a major impact in all aspects of the Future European Electricity Network. After a short presentation of the goals, methods and the results obtained so far, this workshop will discuss the technical choices and possible solutions.

16h50- 18h00 - Built-in Reliability from the Beginning - a Holistic Approach in Design for Reliability of Power Electronics Systems **Location: Musiksalen**

The workshop will cover all steps in the design process. This means:

– Mission profile
– Circuit design
– Thermal management
– Life time prediction
– Reliability risk analysis
– Accelerated reliability tests and robustness validation

The Panelists will be:

Eckhard Wolfgang Moderator, Jorgen Moltoft, Uwe Drofenik/ ETH Zurich

16h50- 18h00 - ElectroMagnetic Compatibility (EMC) and power-quality disturbances **Location: Gaestesalen**

Panelists:
Prof. Math Bollen, Chalmers University of Technology, Sweden
Supratim Basu, Bose Research, India
Prof. Tim Green, Imperial College, United Kingdom"

EMC today has a growing importance in power electronics since maturity of technologies makes competitor designs very similar in cost, size and features.
A significant part of emissions from most products are from the converters and inverters that interface the power source and the product. These converters often include an active power factor correction circuit (APFC) that reduces the ac input current's low-frequency distortion to comply with harmonic standards, in particular IEC 61000-3-2. Products must also allow operation with "worldwide" range of input voltages and frequencies and also be immune to short-duration large deviations from the normal operating voltage (voltage dips and swells). All theses generate emissions which are attenuated only to the extent necessary to meet the applicable EMC standards. The consequences of these high-frequency disturbances remain an uncharted territory, but there are sufficient indications of potential interference to justify further study of the various phenomena.
This panel including the audience will discuss about Electro Magnetic Compatibility (EMC) and power-quality disturbances in the frequency range of 2 kHz – 1 GHz.

08h30 – 9h00: Closing session **Room: Main Hall East**
Chair: Prof. Frede BLAABJERG, AALBORG UNIVERSITY, DENMARK
Co-Chair: Dr. Philip C. KJAER, VESTAS WIND SYSTEMS A/S, DENMARK

Status and final remarks
Prof. Frede Blaabjerg, Aalborg University, Denmark

Presentation of EPE-PEMC 2008, 1-3 September 2008, Poznan, Poland
Prof. Krzysztof Zawirski, Poznan University of Technology, Poland

Presentation of EPE 2009, 8-10 September 2009, Barcelona, Spain
Prof. Enrique Dede, University of Valencia, Spain

09h00 – 9h30: Keynote session 3 **Room: Main Hall East**
Chair: Prof. Dr. Ir. Marcel JUFER, EPFL, SWITZERLAND
Co-Chair: Jean-Luc THOMAS, CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS ELECTRO, FRANCE

0958 - System optimization based on the example of the solar plane SolarImpulse
PERRIARD Yves - EPFL - SWITZERLAND

A multidisciplinary solar airplane project, announced in 2004 in Lausanne, Switzerland, has attracted a great attention from all over the world. The goal of the project is to perform an around-the-world flight, with solar power being the only source of energy. The project is assumed to make important strides in technology and have an impact on ecology. The aircraft power train will consist of solar cells placed on the aircraft wings and body, the energy storage system, the energy management electronics, the brushless DC motor and propellers. The aim of this keynote is to present the method to optimize the motor together with the propellers, in order to save the maximum of energy in the power train and to show how to choose the best motor structure. Advance research on composite material allows realizing flexible solar cells to make it possible the wings movement. This will be described as well as some works on human machine interface, making this project interdisciplinary. The optimization method can also be applied to smaller motor designs, as blood pump system, integrated watch silent alarm or piezoelectric-cutter for spine surgery. Several applications will be discussed and presented to highlight the fact that thermal behavior together with electromagnetic and mechanical models must be analyzed globally.

Yves Perriard was born in Lausanne in 1965. He received the M. Sc. in Microengineering from the Swiss Federal Institute of Technology - Lausanne (EPFL) in 1989 and the Ph D. degree in 1992. Co-founder of Micro-Beam SA, he was CEO of this company involved in high precision electric drive. Senior lecturer from 1998 and professor since 2003, he is currently director of the Integrated Actuator Laboratory at EPFL. His research interests are in the field of new actuator design and associated electronic devices. He is author and co-author of more than 50 publications and patents.

09h40 – 10h40: Lecture sessions 7

LS7a topic 13: Fuel Cells **Room: Main Hall East**
Chair: Prof. Alfred RUFER, EPFL, SWITZERLAND
Co-Chair: Prof. Remus TEODORESCU, AALBORG UNIVERSITY, DENMARK

0461 - Design Considerations of a Voltage-fed Full Bridge DC-DC Converter with High Voltage Gain for Fuel Cell Applications
AVERBERG Andreas, MERTENS Axel - LEIBNIZ UNIVERSITÄT HANNOVER - GERMANY

0465 - Design and control of a Fuel Cell DC/DC Converter for Embarked Applications
NARJISS ABDELLAH, GUSTIN Frédéric, HISSEL Daniel, BERTHON Alain - UNIVERSITY OF FRANCHE COMTE; DEPERNET Daniel - UTBM - FRANCE

0758 - Clamping for current-fed dc/dc converters with recovery of clamping energy in fuel cell inverter systems
MOHR Malte, FUCHS Friedrich W. - UNIVERSITY OF KIEL - GERMANY

LS7b topic 15: Electronic ballasts and solid state lighting; high power density system design **Room: Det Lille Teater**
Chair: Prof. Dr. Jorma KYYRÄ, HELSINKI UNIVERSITY OF TECHNOLOGY, FINLAND
Co-Chair: Prof. Jan DESMET, HOWEST DEP PIH, BELGIUM

0103 - Impact of Remote Sensing on Converter Stability and Performance
KARPPANEN Matti, SUNTIO Teuvo - TAMPERE UNIVERSITY OF TECH.; SIPPOLA Mika - EFORE PLC - FINLAND

0393 - Dynamic Analysis of Hybrid DC–DC Converters
CONESA Alfonso, MARTINEZ Herminio, HUERTA Jose María - UPC - SPAIN

0241 - A variable frequency high-voltage power supply for hot-restrike modelling of HID lamps
TANT Peter, DRIESEN Johan, DECONINCK Geert – KULEUVEN, VANBRABANT Bart - SYLVANIA LIGHTING INTERNATIONAL - BELGIUM

LS7c topic 6: Converter control sets and modulation strategies **Room: Laugsstuen**
Chair: Prof. Dr. Axel MERTENS, LEIBNIZ UNIVERSITY OF HANNOVER, GERMANY
Co-Chair: Assoc. Prof. Waldemar SULKOWSKI, NARVIK UNIVERSITY COLLEGE, NORWAY

0091 - PERFORMANCE CHARACTERISTICS OF THE REDUCED COMMON MODE VOLTAGE NEAR STATE PWM METHOD
ÜN Emre, HAVA Ahmet - MIDDLE EAST TECHNICAL UNIV. - TURKEY

0515 - Variable Sampling Quasi Multirate Deadbeat Control Method for PWM Inverter in Low Carrier Frequency
TAHARA Suguru, YOKOYAMA tomoki - TOKYO DENKI UNIVERSITY - JAPAN

0868 - Harmonic Distortion of Multicarrier PWM Strategies in Cascaded Multilevel Converters with Unequal DC Sources
RÜGER Niklas E., KUHN Harald, MERTENS Axel - LEIBNIZ UNIVERSITÄT HANNOVER - GERMANY

LS7d Industrial session: Advanced Power Systems for Industrial Induction Processes **Room: Gaestesalen**
Chair: Prof. Enrique DEDE, Director de Investigación y Desarrollo, GH ELECTROTERMIA S.A., Spain

Power Converters for Induction Heating Applications
DEDE Enrique .J., GH ELECTROTERMIA S.A., Spain

Power Systems for Induction Heating Cookers
GARCIA J.R., BSH: BOSCH AND SIEMENS HOME APPLIANCES, Spain

Medium and High Power Systems for Industrial Induction
MAGRANER J.M., GH ELECTROTERMIA S.A., Spain

LS7e topic 12: High performance drives **Room: Radiosalen**
Chair: Prof. Alfio CONSOLI, UNIVERSITA' DI CATANIA, ITALY
Co-Chair: Dr. Hubert SCHIERLING, SIEMENS AG, GERMANY

0252 - New flux weakening control for high saliency interior permanent magnet synchronous machine without any tables
YOON Young-Doo, LEE Wook-Jin, SUL Seung-Ki - SEOUL NATIONAL UNIVERSITY - KOREA

0838 - Modelling Magnetic Saturation Effects in IPMSMs for use in Sensorless Saliency Based Methods
MATZEN Torben, O. RASMUSSEN Peter - INSTITUTE OF ENERGY TECHNOLOGY - DENMARK

0926 - Self-tuning of MTPA current vector generation scheme for IPM synchronous motor drives
BOLOGNANI Silverio, SGARBOSSA Luca - UNIVERSITY OF PADOVA; ZORDAN Marco - CONSULTANT - ITALY

LS7f topic 4: Soft switching converters: resonant, ZVS, ZCS **Room: Musiksalen**
Chair: Dr. David THOMPSON, UNIVERSITY OF DUNDEE, UNITED KINGDOM
Co-Chair: Lena MAX, CHALMERS UNIVERSITY OF TECHNOL, SWEDEN

0208 - Comparison of Methods for the Analysis of the Parallel Resonant Converter with Capacitive Output Filter
BUCHER Alexander, DUERBAUM Thomas, KUEBRICH Daniel - UNIVERSITY ERLANGEN-NUREMBERG - GERMANY

0645 - Control principle and modulation method for bi-directional and dual-coupled series resonant converters
CHENG Yonghua, VAN MIERLO Joeri, LATAIRE Philippe - VRIJE UNIVERSITEIT BRUSSEL - BELGIUM

0699 - Theoretical Analysis and Optimal Design of LLC Resonant Converter
JEE-HOON Jung, JOONG-GI Kwon - SAMSUNG ELECTRONICS - KOREA

10h40 - 11h00: Coffee break

11h00 – 12h00: Lecture sessions 8

LS8a topic 13: Photovoltaics I **Room: Main Hall East**
Chair: Prof. Dr. István NAGY, BUDAPEST UNIV. OF TECHNOLOGY, HUNGARY
Co-Chair: Prof. Dr. Eiji YAMADA, NAGASAKI UNIVERSITY, JAPAN

0489 - Development Of A Single-Stage Three-Phase PV Module Integrated Converter
SAHAN Benjamin, ENGLER Alfred, NOTHOLT VERGARA Antonio, ZACHARIAS Peter - ISET E.V. - GERMANY

0212 - A Current-Mode Controlled Maximum Power Point Tracking Converter for Building Integrated Photovoltaics
TAN Chee Wei, GREEN Tim C., HERNANDEZ-ARAMBURO Carlos A. - IMPERIAL COLLEGE LONDON - UNITED KINGDOM

0751 - Single-Phase Grid-Connected Photovoltaic Systems With Power Quality Conditioner Functionality
MASTROMAURO Rosa, LISERRE Marco, DELL'AQUILA Antonio - POLITECNICO DI BARI - ITALY

LS8b topic 14: Active, passive and combined filtering, power conditioning, power factor correction **Room: Det Lille Teater**
Chair: Prof. Dr. Michael BRAUN, UNIVERSITÄT (TH) KARLSRUHE, GERMANY
Co-Chair: Prof. Giovanni GRIVA, POLITECNICO DI TORINO, ITALY

0310 - A Novel Vector Controlled Current Source Active Power Filter and its Comparison with a Traditional Topology
PARKATTI Perttu, SALO Mika, TUUSA Heikki - TAMPERE UNIVERSITY OF TECH. - FINLAND

0832 - Improvement of the Voltage Compensation Performance of the Series Active Power Filter Using a Simple PI-Control Method
TURUNEN Juha, TUUSA Heikki - TAMPERE UNIVERSITY OF TECHNOLOGY - FINLAND

0637 - Use of resonant controller for grid-connected converters in case of large frequency fluctuations
GUILLAUD Xavier - EC LILLE ; DEGOBERT Philippe - ENSAM – France ; TEODORESCU Remus - AALBORG UNIVERSITY, INSTITUTE - DENMARK

LS8c topic 6: Converter control sets and modulation strategies **Room: Laugsstuen**
Chair: Prof. Jon CLARE, NOTTINGHAM UNIVERSITY, UNITED KINGDOM
Co-Chair: Prof. Eric MONMASSON, UNIVERSITY OF CERGY-PONTOISE , FRANCE

0164 - Predictive Direct Torque Control of an Induction Motor
RODRÍGUEZ José, PONTT Jorge, LEZANA Pablo, VARGAS René, GARCÍA Francisco - UNIVERSIDAD TÉCNICA FEDERICO S – CHILE; AMMANN Ulrich - UNIVERSITÄT STUTTGART – GERMANY; WHEELER Pat - UNIVERSITY OF NOTTINGHAM - UNITED KINGDOM

0327 - A Direct Predictive Control of Shunt Active Power Filters using Multicell
DEFAY Francois, FADEL Maurice, LLOR Ana Maria - LAPLACE-ENSEEIHT / INPT / CNRS - FRANCE

0432 - Modulation Strategies for a Mutually Commutated Converter System in Wind Farms
MEIER Stephan, NEE Hans-Peter - ROYAL INSTITUTE OF TECHNOLOGY; NORRGA Staffan - ABB CORPORATE RESEARCH - SWEDEN

LS8d topic 9: Motion control and robotics, communication in drive systems **Room: Gaestesalen**
Chair: Prof. Dr. Yves PERRIARD, EPFL, SWITZERLAND
Co-Chair: Prof. Dr. Ir. Ciro ATTAIANESE, UNIVERSITÀ DI CASSINO, ITALY

0697 - Parameterization of DC/DC Converter Models for System level Simulation
PRIETO Roberto, LAGUNA Leonardo, OLIVER Jesus, COBOS Jose - UPM - SPAIN

0345 - Physical Dynamic Modelling and Systematic Control Structure Design of a Double Linear Drive Moving Gantry Stage Industrial Robot
GOMAND Julien, BEAREE Richard, KESTELYN Xavier, BARRE Pierre-Jean - L2EP - ENSAM LILLE - FRANCE

0451 - Contactless Planar Actuator with Manipulator
DE BOEIJ Jeroen, LOMONOVA Elena, DUARTE Jorge L., VANDENPUT André J.A. - EINDHOVEN UNIVERSITY OF TECHNOLOGY - NETHERLANDS

LS8e topic 10: Synchronous, permanent magnet synchronous and brushless d.c. motor **Room : Radiosalen**
Chair: Prof. Dr. Ir. Johan GYSELINCK, Université Libre de Bruxelles, BELGIUM
Co-Chair: Prof. Dr. Bernhard PIEPENBREIER, UNIVERSITAET ERLANGEN-NUERNBERG, GERMANY

0184 - A New Electromagnetic Model for PM Synchronous Machines
DAJAKU Gurakuq, GERLING Dieter - UNIVERSITY OF FEDERAL DEFENSE MUNICH - GERMANY

0354 - Poles position identification of permanent magnet axial flux motor using PIPCRM sensorless method.
WISNIEWSKI Janusz, JAKUBOWSKI Piotr, KOCZARA Wlodzimierz - WARSAW UNIVERSITY OF TECHN. – POLAND; AL-KHAYAT Nazar - NEWAGE AVKSEG - UNITED KINGDOM

0725 - A Novel Method for PM Synchronous Machine Rotor Position Detection
POPA Dumitru-Daniel, GIUCLEA Raducu - TECHNOSOFT – SWITZERLAND; KREINDLER Liviu Mario, SARCA Aurelian - TECHNOSOFT - ROMANIA

LS8f topic 19: Energy saving technologies **Room: Musiksalen**
Chair: Prof. Dr. Günter SCHROEDER, UNIVERSITY OF SIEGEN, GERMANY
Co-Chair: Prof. Ole-Morten MIDTGÅRD, AGDER UNIVERSITY COLLEGE, NORWAY

0371 - High Performances Supercapacitor Recovery System Including Power Factor Correction (PFC) For Elevators
NARDI Vito, ATTAIANESE Ciro, TOMASSO Giuseppe - UNIVERSITY OF CASSINO - ITALY

0804 - Analysis on the increased losses in supply systems due to voltage drop and voltage distortion
DESMET Jan, PUTMAN Dries, VANALME Greet - HOWEST DEP PIH; BELMANS Ronnie - KULEUVEN - BELGIUM

0148 - Low stand by power, self oscillating power supply
VAN DEN BOSSCHE Alex - UGENT – BELGIUM; NIKOLOV Georgi, VALCHEV Vencislav - TECHNICAL UNIVERSITY VARNA - BULGARIA

12h10 – 13h10: Lecture sessions 9

LS9a topic 13: Photovoltaics II **Room: Main Hall East**
Chair: Dr. Josep BORDONAU, UPC, SPAIN
Co-Chair: Dr. Josep GUERRERO, UPC - EUETIB, SPAIN

0052 - Impact of power quality disturbances on PV inverters – Performance of integrated protective functions
BLETTERIE Benoit, BRUENDLINGER Roland, MAYR Christoph - ARSENAL RESEARCH - AUSTRIA

0261 - Simulation model based control development for a multifunctional PV-inverter
GEIBEL Dominik, JAHN Jörg - INSTITUT FUER SOLARE ENERGIEVERSORGUNGSTECHNIK; JUCHEM Ralf - SMA - GERMANY

0390 - A Simple Photovoltaic Simulator for Testing of Power Electronics
MIDTGÅRD Ole-Morten - AGDER UNIVERSITY COLLEGE - NORWAY

LS9b topic 14: Power conditioning, power factor correction, modern line side converters **Room: Det Lille Teater**
Chair: Prof. Dr. Johann KOLAR, ETH ZURICH, SWITZERLAND
Co-Chair: Jon Are SUUL, SINTEF ENERGY RESEARCH, NORWAY

0864 - Active Damping of Resonance Oscillations in LCL-Filters Based on Virtual Flux and Virtual resistor
GULLVIK William, NORUM Lars – NTNU; NILSEN Roy - WÄRTSILÄ NORWAY - NORWAY

0555 - Distributed Generation Power Inverters as Shunt Active Power Filters for Loss Minimization in the Distribution Network
BELENGUER Enrique, BELTRAN Hector, APARICIO Nestor - UNIVERSITAT JAUME I - SPAIN

0941 - Control of series compensated induction motor using magnetic energy recovery switch
ISOBE TAKANORI, WIIK Jan, KITAHARA Tadayuki, KATO Shuhei, INOUE Kouta, ARAI Nobuyuki, USUKI Kazuhiro, SHIMADA Ryuichi - TOKYO INSTITUTE OF TECHNOLOGY - JAPAN

LS9c topic 6: Converter control sets and modulation strategies III **Room: Laugsstuen**
Chair: Prof. Dr. Ir. Ralph KENNEL, BERGISCHE UNIVERSITAET WUPPERT, GERMANY
Co-Chair: Dr. Emilio FIGUERES, UNIV. POLITECNICA DE VALENCIA, SPAIN

0723 - Experimental Comparison of Three-Phase Distributed Generation Systems Based on VOC and DPC Control Techniques
PUCCI Marcello, GIGLIA Graziella, SERPORTA Calogero, VITALE Gianpaolo - ISSIA-CNR - ITALY

0781 - Digitally Controlled Point of Load Converter with Very Fast Transient Response
JAKOBSEN Lars T., ANDERSEN M. A. E. - TECHNICAL UNIVERSITY OF DENMARK - DENMARK

0796 - Multi-Dimensional Space Vector Pulse Width Modulation for Disturbance-Free Operation of a Five-Phase AC Motor Drive
DURAN MARIO J., BARRERO FEDERICO, TORAL Sergio - UNIVERSITY OF SEVILLE – SPAIN; LEVI EMIL - LIVERPOOL JOHN MOORES UNIVERSITY - UNITED KINGDOM

LS9e topic 10: Synchronous, permanent magnet synchronous and brushless d.c. motor II **Room: Radiosalen**
Chair: Prof. Dr. Ir. Wilfried HOFMANN, TU CHEMNITZ, GERMANY
Co-Chair: Prof. Dr.Habil.Sc.Ing. LEONIDS RIBICKIS, RTU, LATVIA

0671 - Modelling of Permanent Magnet Synchronous Machines for Simulations of Transient Phenomena
DEMPEWOLF Kay-Horst, PONICK Bernd - LEIBNIZ UNIVERSITÄT HANNOVER - GERMANY

0332 - Short-Circuit Faults in Distributed and Concentrated Windings of PM Synchronous Motors
CHEVAILLER Samuel, FENG Lin, BINDER Andreas - TU DARMSTADT - GERMANY

0014 - A New Structure of a Switching Flux Synchronous Polyphased Machine with Hybrid Excitation
HOANG Emmanuel, LECRIVAIN Michel, GABSI Mohamed - SATIE - ENS DE CACHAN - FRANCE

LS9f topic 16: Rail vehicles **Room: Musiksalen**
Chair: Prof. Dr. Alain BOUSCAYROL, UNIVERSITY OF LILLE - L2EP, FRANCE
Co-Chair: Prof. Dr. Walter SCHUMACHER, TU BRAUNSCHWEIG, GERMANY

0585 - Medium Frequency Topology in Railway Applications
STEINER Michael, REINOLD Harry - BOMBARDIER TRANSPORTATION - GERMANY

0170 - Fuel cell powered railway vehicle and experimental test results
YONEYAMA Takashi, YAMAMOTO Takamitsu, KONDO Keiichiro, FURUYA Takemasa, OGAWA Kenichi - RAILWAY TECHNICAL RESEARCH INS - JAPAN

0429 - Integrated Propulsion and Auxiliary Supply Systems for Cross-Border Operation
GERSTER Christian - BOMBARDIER TRANSPORTATION – SWITZERLAND; LARSSON Per L. - BOMBARDIER TRANSPORTATION LTD. - SWEDEN

14h40 – 16h40: Dialogue sessions 3 Room: Main Hall West

DS3.1 topic 4: Soft switching converters and control
Chair: Dr. Chris BINGHAM, THE UNIVERSITY OF SHEFFIELD, UNITED KINGDOM

0007 - High Efficiency Control Methods for Class-E Resonant Converter for Step-Down Applications Using Piezoelectric Transformers (PT) **Panel A1**
NITTAYARUMPHONG sadachai - IAIS FRAUNHOFER INSTITUT - GERMANY

0021 - DC-reactor-less hybrid DC-DC converter with a core composed of four legs **Panel A2**
UNNO Hiroshi, MATSUDA Yoshiaki, KIKUCHI Yoshihiko, YUKAWA Tadashi, YOSHIAKI MATSUDA - SHINDENGEN ELECTRIC MFG CO., LTD; SAOTOME Hideo, WAKATSUKI Yoshimasa, SAITO Tadashi - CHIBA UNIVERSITY - JAPAN

0094 - A Non-Isolated Interleaved ZVT Boost Converter with High Step-Up Conversion Derived from its Isolated Counterpart **Panel A3**
LI Wuhua, WU Jiande, XIE Rui, HE Xiangning - ZHEJIANG UNIVERSITY - CHINA

0096 - An Isolated Interleaved Active-Clamp ZVT Flyback-Boost Converter with Coupled Inductors **Panel A4**
LI Wuhua, SHI Jianjiang, HU Min, HE Xiangning - ZHEJIANG UNIVERSITY - CHINA

0122 - Control Model of a Closed Loop Power-Controlled Series-Type Resonant Induction Heating System **Panel A5**
WALTER Julio, CEGLIA Gerardo, GUZMÁN Víctor, GIMÉNEZ María - UNIVERSIDAD SIMON BOLIVAR - VENEZUELA

0209 - Control method and snubber selection for a 5 MW wind turbine single active bridge DC/DC converter **Panel A6**
MAX Lena, THIRINGER Torbjörn - CHALMERS UNIVERSITY OF TECHNOL - SWEDEN

0232 - Feed-forward control of non-linear inductors providing soft-switching of dc-dc-converters **Panel A7**
STADLER Michael, PFORR Johannes - UNIVERSITY OF APPLIED SCIENCES INGOLSTAD - GERMANY

0268 - Analysis of Self-Oscillating DC-DC Resonant Power Converters using a Hysteretic Relay **Panel A8**
WILLIAMS David, BINGHAM Chris, STONE Dave, FOSTER Martin, GILBERT Adam - THE UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

0564 - ZVS-ZCS Full-Bridge DC-DC Converter for Voltage Step-Up in Fuel Cell Distributed Generation Systems **Panel A9**
GRIVA Giovanni, KOVACEVIC Goran, BOJOI Radu, TENCONI Alberto - POLITECNICO DI TORINO - ITALY

DS3.2 topic 6: Converter control sets and modulation strategies
Chair: Dr. Ahmad RADAN, K.N.TOOSI UNIVERSITY OF TECHNO, IRAN

0013 - A Simple Feedback for Parrallel Operation of Current Controlled Inverters involved in UPS **Panel A10**
LE CLAIRE Jean-Claude, LEMBROUCK Grégory - IREENA - FRANCE

0022 - A Novel Space Vector Modulation Control Strategy for Three-leg Four-Wire Voltage Source Inverters **Panel A11**
ORTJOHANN Egon, MOHD Alaa, HAMSIC Nedzad - SOUTH WESTPHALIA UNIVERSIT - GERMANY

0063 - Real-Time Performance Testing of a Three-Phase Voltage-Source Six-Pulse Wavelet-Modulated Inverter-Fed Induction Motor **Panel A12**
SALEH Saleh, RAHMAN Mohammed - MUN - CANADA

0088 - Synchronous Balanced Control of Cascaded Two-Level Inverters with Separated DC-Sources **Panel A13**
OLESCHUK Valentin, PROFUMO Francesco - POLITECNICO DI TORINO - ITALY

0128 - Analysis and Compensation Methods of Dead-Time Effects in a PWM AC Chopper **Panel A14**
COUGO Bernardo - UFMG – BRAZIL; MEYNARD Thierry - LAPLACE-ENSEEIHT / INPT / CNRS - FRANCE

0158 - Algorithm Evaluation for the Optimal Selection of the Space Vector Voltage using DPC in Power Systems **Panel A15**
RESTREPO JOSE, VIOLA JULIO, ALLER JOSE M., BUENO ALEXANDER - UNIVERSIDAD SIMON BOLIVAR - VENEZUELA

0286 - Space vector modulation of nine-phase voltage source inverters based on three-phase decomposition **Panel A16**
GRANDI Gabriele, TANI Angelo, SERRA Giovanni - UNIVERSITY OF BOLOGNA - ITALY

0289 - Energy Generation System Behaviour using a Clocked Fuzzy Peak Current Control **Panel A17**
BIZON NICU - UNIVERSITY OF PITESTI - ROMANIA

0301 - Buck-Boost Impedance Networks **Panel A18**
LOH Poh Chiang, GAO Feng, GOH AiLian - NANYANG TECHNOLOGICAL UNIVERSITY – SINGAPORE; BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0304 - A Selective Harmonic Elimination system for restoring and equalising DC link voltages in a multilevel active rectifier **Panel A19**
WATSON Alan, WHEELER Patrick, CLARE Jon - UNI. OF NOTTINGHAM, PEMC GROUP - UNITED KINGDOM

0330 - Three-Phase Multi-Level PWM Rectifier Multi-Carrier Discontinuous Voltage Modulation Strategy **Panel A20**
RUDERMAN Alex - ELMO MOTION CONTROL - ISRAEL

0340 - Five-Phase Inverter Modulation Strategy for High Performance Motor Drives: Analysis of the Voltage Limit **Panel A21**
TANI Angelo, CASADEI Domenico, SERRA Giovanni, ZARRI Luca, MILANESI Filippo - BOLOGNA UNIVERSITY - ITALY

0352 - The self-switching management principle applied to active bidirectional switches **Panel A22**
SIEMASZKO Daniel, RUFER Alfred, BARRADE Philippe, DE NOVAES Yales - EPFL - SWITZERLAND

0366 - Introduction and Evaluation of Novel Multi-level Carrier-Based PWM Strategies Using a Generalized Algorithm **Panel A23**
DANESHI FAR ZAHRA, RADAN Ahmad, DAVARI FAR Mehrdad - I.A.U OF SCIENCE AND RESEARCH - IRAN

0806 - Research on Eliminating Common-mode Voltage of Cascaded Medium-voltage Variable Frequency Driver with Phase-difference SVPWM **Panel A24**
YANG Zhenyu, ZHAO Jianfeng, NI Xijun - SOUTHEAST UNIVERSITY; LU Jiaming, CHEN Bin - ZHENJIANG EAST CHINA ELECTIRC POWER EQUIPMENT FACT - CHINA

0875 - A new modulation technique for a three phase PWM buck rectifier **Panel B1**
PAVLOU KONSTANTINOS, KALETSANOS ATHANASIOS, MANOLAS IAKOVOS, MANIAS STEFANOS - NATIONAL TECHNICAL UNIVERSITY OF ATHENS - GREECE

0892 - A simpler and faster method for SVM implementation **Panel B2**
PABLO Santiago de, HERRERO Luis C., RUIZ José M. - UNIVERSITY OF VALLADOLID; REY Alexis B. - POLYTECHNIC UNIVERITY OF CARTAGENA - SPAIN

DS3.3 topic 9: Motion control and robotics, communication in drive systems
Chair: Assoc. Prof. Waldemar SULKOWSKI, NARVIK UNIVERSITY COLLEGE, NORWAY

0046 - Efficient Scheduler-Dispatcher Software Architecture of the Space Power Facility Distributed Control Computer **Panel B3**
ZDENEK Jiri - CTU FEE - CZECH REPUBLIC

0165 - The Automotive System Simulation by using Multi Domain Modeling Technique **Panel B4**
SHIGEMATSU Koichi, SEKISUE Takayuki - ANSOFT JAPAN; TSUJI Kimitoshi - TOYOTA MOTOR CORP. - JAPAN

0248 - Design of Brushless DC Motor for Air Management System of Fuel Cell Modules **Panel B5**
SEO JUNG-MOO, CHOI jun-hyuk, SUNG ha-gyeong - KETI - KOREA

0398 - Modeling of Common Mode Conducted Noise Emissions in PWM Inverter – Fed AC Motor Drive Systems **Panel B6**
GENOULAZ Jérôme – SATIE; JETTANASEN Chaiyan - CEGELY - FRANCE

0437 - Digital Speed Control System for a Motor Using Two Speed Detection Methodsof an Incremental Encoder **Panel B7**
HACHIYA Kohei, OHMAE Tsutomu - CHUO UNIVERSITY - JAPAN

0584 - Accurate Initial Pole-Position Estimation of Surface PM-LSM in the Position Control **Panel B8**
KIM Tae-Woong, JEONG Chung-Il - GYEONGSANG NATIONAL UNIVERSITY – KOREA; WHEELER P.W. - THE UNIVERSITY OF NOTTINGHAM - UNITED KINGDOM; CHOI Jaeho - CHUNGBUK NATIONAL UNIVERSITY – KOREA; KAWAMURA Atsuo - YOKOHAMA NATIONAL UNIVERSIYT - JAPAN

0606 - Optimal Sizing of Stand-Alone Hybrid Wind/PV System with Battery Storage **Panel B9**
BELFKIRA Rachid, BARAKAT Georges - UNIVERSITY OF LE HAVRE - FRANCE

0646 - Considerations of the Performance Characteristics of the Cableless Micro-actuator by Using Mechanical DC-AC Inverter **Panel B10**
YAGUCHI Hiroyuki, NANJO Yuta, ISHIKAWA Kazumi - TOHOKU GAKUIN UNIVERSITY - JAPAN

0735 - Induction Machine Modelling Using Permeance Network Method for Dynamic Simulation of Air-Gap Eccentricity **Panel B11**
MAHYOB Amin - UNIVERSITY OF LE HAVRE - FRANCE

0801 - New drive concepts reduce power requirements of arge servo presses **Panel B13**
BOSGA Sjoerd - ABB CORPORATE RESEARCH – SWEDEN; SEGURA Marc - ABB PRESS AUTOMATION - SPAIN

0802 - Servo drives introduce improved synchronization of large presses with robots **Panel B14**
BOSGA Sjoerd - ABB CORPORATE RESEARCH – SWEDEN; SEGURA Marc - ABB PRESS AUTOMATION - SPAIN

0808 - Use of Dynamic Emulation of Mechanical Loads in the Testing of Electrical Vehicle Driveline Control Algorithms **Panel B15**
RODIC Miran, JEZERNIK Karel, TRLEP Mladen - UNIVERSITY OF MARIBOR - SLOVENIA

0924 - Mechanical Resonance Damping in an Industrial Servo Drive **Panel B16**
BAEHR Alexander, BEINEKE Stephan - LUST ANTRIEBSTECHNIK GMBH - GERMANY

DS3.4 topic 10: Electrical Machines

Chair: Prof. Dr. Ir. Johan GYSELINCK, Université Libre de Bruxelles, BELGIUM

0215 - Two rotors designs' comparison of permanent magnet brushless synchronousmotor for an electric power steering application **Panel B17**
OMBACH Grzegorz, JUNAK Jacek - SIEMENS AG, SIEMENS VDO AUT. - GERMANY

0442 - Novel motion sensorless control of stand alone permanent magnet synchronous generator(PMSG): harmonics and negative sequence voltage compensation under nonlinear load **Panel B18**
FATU Marius, TUTELEA Lucian, BOLDEA Ion - UNIVERSITY POLITEHNICA OF TIMISOARA – ROMANIA; TEODORESCU REMUS - AALBORG UNIVERSITY - DENMARK

0482 - Induction Machines Fault Simulation Based on FEM Modelling **Panel B19**
CUSIDO Jordi, ROMERAL Luis, GARCIA Antoni, ORTEGA Juan Antonio - UPC - SPAIN

0483 - Fault detection in Induction Machines by using Continuous and Discrete Wavelet Decomposition **Panel B20**
CUSIDO Jordi, ROMERAL Luis, GARCIA Antoni, ROSERO Javier, ORTEGA Juan Antonio - UPC - SPAIN

0535 - Comparison of Signal Injection Methods for Sensorless Control of PMSM at Very Low Speeds **Panel B21**
WU Shanshan, LI Yongdong - TSINGHUA UNIVERSITY - CHINA

0578 - The System Simulation for Small size and Ultra-High Speed Motor Drive System using Coupled analysis **Panel B22**
ABE Takashi, OYAMA Jun, HIGUCHI Tsuyoshi - NAGASAKI UNIVERSITY; SHIGEMATSU Koichi - ANSOFT JAPAN - JAPAN

0649 - Steel Power losses simulation based on Inverter/Induction Machine Design **Panel B23**
GONCALVES Henrique, CARVALHO Adriano, ARAÚJO Armando, SOARES Orlando - FEUP - PORTUGAL

0895 - Detection of Rotor Faults in Torque Controlled Induction Motor Drives **Panel B24**
CUNHA Carla - UNIVERSIDADE FEDERAL DO ESPÍRITO SANTO – UFES; CARDOSO FILHO Braz, LYRA Renato - UNIVERSIDADE FEDERAL DE MINAS GERAIS - UFMG - BRAZIL

0929 - Small-Signal Model for Saturated Deep-Bar Induction Machines **Panel C1**
HINKKANEN Marko, REPO Anna-Kaisa, CEDERHOLM Mikaela, LUOMI Jorma - HELSINKI UNIV. OF TECHNOLOGY - FINLAND

0297 - Optimal Design of a Flux Switching Permanent Magnet Machine for Minimum Cogging Torque **Panel C2**
ZHANG Jianzhong, CHENG Ming - SOUTHEAST UNIVERSITY – CHINA; CHEN Zhe - AALBORG UNIVERSITY - DENMARK

0413 - A New Model of Vector-Controlled Doubly-Salient Permanent Magnet Motor in Brushless AC Operation **Panel C3**
CHENG Ming, HUA Wei, ZHANG Jianzhong - SOUTHEAST UNIVERSITY – CHINA; CHEN Zhe - AALBORG UNIVERSITY - DENMARK

DS3.5 topic 10: Linear machines, integrated electrical machines
Chair: Prof. Dr. Bernhard PIEPENBREIER, UNIVERSITAET ERLANGEN-NUERNBERG, GERMANY

0415 - ELECTROMAGNETIC ANALYSIS OF THE INDUCTION MOTOR WITH SPIRAL SHEET ROTOR **Panel C4**
MUJAL-ROSAS Ramon, NAVARRETE Hugo - POLYTECHNIC UNIVERSITY OF CATALONIA - SPAIN

0612 - Impact of Permanent Magnet Field on Inductance Variation of a PMLSM **Panel C5**
GOMAND Julien, REMY Ghislain, TOUNZI Abdelmounaïm, BARRE Pierre-Jean, HAUTIER Jean-Paul - L2EP - ENSAM LILLE - FRANCE

0668 - Detent force compensation in Segmented Long Stator Permanent Magnet Linear Drives using Finite Element Models **Panel C6**
BENAVIDES Rodrigo, MUTSCHLER Peter - TU DARMSTADT - GERMANY

DS3.6 topic 12: High performance drives
Chair: Prof. Dr. Ir. Krzysztof ZAWIRSKI, POZNAN UNIVERSITY OF TECHNOLOGY, POLAND

0019 - General Aspects of the Electrical Drive Systems Optimal Control **Panel C7**
BOTAN Corneliu, HORGA Vasile, OSTAFI Florin, ALBU Mihai, RATOI Marcel - TECHNICAL UNIVERSITY - ROMANIA

0058 - Direct Torque Control using Space Vector Modulation and dynamic performance of the drive, via a Fuzzy Logic controller for speed regulation **Panel C8**
ADAMIDIS Georgios, KOUTSOGIANNIS Z., FYNTANAKIS A. - DEMOCRITUS UNIVERSITY THRACE - GREECE

0097 - Robust DTC-SVM Method for Matrix Converter Drives with Model Reference Adaptive Control Scheme **Panel C9**
LEE KYO-BEUM, SIM KYUNG-HUN - CHONBUK NATIONAL UNIVERSITY; HUH SUNGHOI - KAIST – KOREA; BLAABJERG Frede - AALBORG UNIVERSITY - DENMARK

0116 - A FPGA Based New Space Voltage Vector Modulation Inverter Considering Voltage Saturation for Speed Servo System of Induction Motor **Panel C10**
KANMACHI Toshiyuki - ISHIKAWA NATIONAL COLLEGE OF TECHNOLOGY; TAKAHASHI Kenji, OHISHI Kiyoshi - NAGAOKA UNIVERSITY OF TECH. - JAPAN

0142 - Influence of voltage vectors of a NPC inverter on torque and flux variations of a DTC drive considering different load and speed conditions **Panel C11**
RADAN Ahmad, GHARAKHANI arbi - K.N.TOOSI UNIVERSITY OF TECHNO - IRAN

0163 - Comparative Study of IPMSM Control Strategies for Torque Ripple Reduction **Panel C12**
INOUE Yukinori, MORIMOTO Shigeo, SANADA Masayuki - OSAKA PREFECTURE UNIVERSITY - JAPAN

0250 - A simple parameter estimation method for vector control of an induction motor **Panel C13**
LEE Wook-Jin, YOON Young-Doo, SUL Seung-Ki - SEOUL NATIONAL UNIVERSITY; SHIM Young-Seok, CHOI Yoon-Young - HYUNDAI ELEVATOR - KOREA

0262 - Analytical model describing the operation behaviour of Transverse Flux Machines in flat magnet configuration **Panel C14**
SCHUETTLER Jochen, ORLIK Bernd - UNIVERSITY OF BREMEN - GERMANY

0266 - Position control of a Transverse Flux Motor with reduced torque ripples for Direct Servo-Drive Applications using shaped currents with harmonics control **Panel C15**
WERNER Uwe, SCHUTTLER Jochen, ORLIK Bernd - UNIVERSITY OF BREMEN, IALB - GERMANY

0276 - Direct Torque Control for Interior Permanent Magnet Synchronous Motors with Respect to Optimal Efficiency **Panel C16**
MEYER Michael, BÖCKER Joachim, GROTE Tobias - UNIVERSITY OF PADERBORN - GERMANY

0468 - Implementation of Dynamically Reconfigurable Control Structures on a Single FPGA Platform **Panel C17**
MATHAPATI Shashidhar, BÖCKER Joachim - UNIVERSITY OF PADERBORN - GERMANY

0504 - Nonlinear Dynamics in Direct Torque Controlled Induction Machines Analyzed by Recurrence Plots **Panel C18**
SÜTŐ Zoltán, NAGY István - BUDAPEST UNIV. OF TECH. AND ECONOMICS – HUNGARY; MASADA Eisuke - TOKYO UNIVERSITY OF SCIENCE - JAPAN

0550 - Analysis of Frame Alignment Issues in Natural Field Orientation Including Non-Linear and Leakage Inductance Effects **Panel C19**
MIRZAEVA Galina, BETZ Robert - UNIVERSITY OF NEWCASTLE - AUSTRALIA

0553 - Stability Analysis of the Instantaneous Power Control (IPC) Algorithm for Induction Machines. **Panel C20**
SUMMERS Terry, BETZ Robert - UNIVERSITY OF NEWCASTLE - AUSTRALIA

0773 - Run-Time Reconfiguration of FPGA-Based Drive Controllers **Panel C21**
SCHULZ Bernd, MATHAPATI Shashidhar - PADERBORN UNIVERSITY; PAIZ Carlos, PORRMANN Mario - HEINZ NIXDORF INSTITUT - GERMANY

0797 - Modelling of Quantization Effects in Current Control for a Synchronous Servo Drive **Panel C22**
GRÖLING Christian, SCHUMACHER Walter, AMLANG Bernd - INSTITUT FÜR REGELUNGSTECHNIK - GERMANY

0861 - MRAS Speed sensorless vector control of Induction Machine with saturation and Iron Loss Effects compensation **Panel C23**
MOULAHOUM Samir - CENTRE UNIVERSITAIRE DE MEDEA; TOUHAMI Omar - ECOLE NATIONAL POLYTECHNIQUE - ALGERIA

0862 - Improved Vector Control of Induction Motor Drive Using Genetic Algorithms-Base Machine and Control Parameters Estimation **Panel C24**
TRENTIN Andrew, ZANCHETTA Pericle, WHEELER Patrick, CLARE Jon - UNIVERSITY OF NOTTINGHAM - UNITED KINGDOM

0886 - Torque Ripple Reduction in PMSM DTC Drives using Matrix Converters **Panel D1**
ORTEGA Carlos - ESCOLA UNIVERSITARIA SALESIANA DE SARRIA. (EUSS); ARIAS Antoni, BALCELLS Josep - UNIVERSITAT POLITÈCNICA DE CATALUNYA – SPAIN; CARUANA Cedric, APAP Maurice - UNIVERSITY OF MALTA - MALTA

DS3.7 topic 13: Power Factor Correctors (PFC); modelling, simulation and design methods

Chair: Dr. Emilio FIGUERES, UNIV. POLITECNICA DE VALENCIA, SPAIN

0023 - Modeling of Electrical Power Distribution Systems with a Dynamic-RMS Method **Panel D2**
ORTJOHANN Egon, MOHD Alaa, SINSUKTHAVOR Worpong, HAMSIC Nedzad, SCHMELTER Andreas - SOUTH WESTPHALIA UNIVERSITY - GERMANY

0306 - A Simple Generic Wind Turbine Model for Grid Studies **Panel D3**
NIELSEN Peter, ANDERSEN Gert K., MADSEN Knud D. H., SKAUG Kenneth, BECH John - VESTAS WIND SYSTEMS A/S - DENMARK

0308 - Optimal operation of a single phase converter by switching frequency changes **Panel D4**
GEORGAKAS Konstantinos, SAFACAS Athanasios - UNIVERSITY - GREECE

0335 - Novel 3-Phase Phase-Locked Loop Composed of Adaptive Linear Combiner **Panel D5**
HAN Byung - MYONGJI UNIVERSITY - KOREA

0411 - Wind generation stabilization using a hydrogen buffer **Panel D6**
IBAÑEZ Fernando, PEREZ-NAVARRO Angel, SANCHEZ Carlos, SEGURA Isidoro, BERNAL Eva, PAYA Jorge - POLITECHNIC UNIV. OF VALENCIA - SPAIN

0587 - A simple model of photovoltaic module electric characteristics **Panel D7**
BOEKE Ulrich - PHILIPS RESEARCH - GERMANY

0588 - Optimization of a Linear Induction Oscillatory Machine in a Stirling Cogeneration system **Panel D8**
GARCIA BURREL Isabel, MONMASSON Eric, LE BALLOIS Sandrine - CERGY-PONTOISE UNIVERSITY; BEN AHMED Amid, MULTON Bernard - ENS Cachan - Antenne de Bretagne ; PREVOND Laurent - CNAM - FRANCE

0850 - A new method to define power and energy share in a DC link Hybrid wind-diesel powered system by means of storage and dual time-frequency approach **Panel D9**
DAKYO Brayima, EL MOKADEM Mostafa, NICHITA Cristian - UNIVERSITY OF LE HAVRE – FRANCE; KOCZARA Wlodzimierz - WARSAW UNIVERSITY OF TECHNOLOGY - POLAND

DS3.8 topic 14: Power conditioning, power factor correction, storage of electrical energy, low frequency EMC problems
Chair: Dr. Eng. Kamran SHARIFABADI, STATNETT SF, NORWAY

0873 - Implementation of a Control Strategy for PFC with FPGA **Panel D10**
MUSSA Samir, MOHR Hari, ALCALDE Andre, DAQUINO Felipe - FEDERAL UNIVERSITY OF SANTA CATARINA - BRAZIL

0160 - 600kJ High Temperature SMES-based Sag Compensator **Panel D11**
WOO Myung-Ho - HYUNDAI HEAVY INDUSTRIES - KOREA

0220 - Transformerless Topologies for Future Stationary AC-Railway Power Supply **Panel D12**
RANNEBERG Jens - AREVA T&D - GERMANY

0372 - Single-Phase Hybrid Transformer Using Matrix-Reactance Chopper with åuk Topology **Panel D13**
FEDYCZAK Zbigniew, KANIEWSKI Jacek - UNIVERSITY OF ZIELONA GORA – POLAND; KLYTTA Marius - UNIVERSITY OF APPLIED SCIENCES - GERMANY

0433 - A Multi-Pulse Diode Rectifier with a Coupled Three-Phase Reactor and Additional Small Shunt Active Power Filter **Panel D14**
MYSIAK Piotr, STRZELECKI Ryszard, WOJCIECHOWSKI Daniel - GDYNIA MARITIME UNIVERSITY – POLAND; ZINOVIEV Gennady S. - NOVOSIBIRSK STATE TECHNICAL UNIVERSITY - RUSSIA

0607 - Neural Network Controlled Voltage Disturbance Detector and Output Voltage Regulator for Dynamic Voltage Restorer **Panel D15**
CHUNG Y.H., KIM H.J, KWON G.H., PARK T.B., KIM S.H., KIM K.S., CHOE J.W. - LS INDUSTRIAL SYSTEMS CO. LTD - KOREA

0658 - EMC Issues of Controlled Rectifiers **Panel D16**
DRABEK Pavel, KUS Vaclav - ZCU - CZECH REPUBLIC

0727 - Modified Double-Modulation Signal PWM Control for D-STATCOM Using Five-Level Double Converter **Panel D17**
KIMURA Noriyuki, MORIZANE Toshimitsu, TANIGUCHI Katsunori - OSAKA INSTITUTE OF TECHNOLOGY, NISHIDA Yasuyuki - NIHON UNIVERSITY - JAPAN

0749 - The Control and Structure of the Power Electronic System Supplying the Flywheel Energy Storage (FES) **Panel D18**
SIOSTRZONEK Tomasz, PIROG Stanislaw, PENCZEK Adam - AGH - UST - POLAND

0894 - Modeling and Simulation of Controlled Bi-directional Power Electronic Converters in a DC Energy Distribution Line with AC Grid- and Motor-Side Active Filtering **Panel D19**
IMECS Maria, SZABO Csaba, INCZE Ioan Iov - TECHNICAL UNIVERSITY OF CLUJ-NAPOCA - ROMANIA

0908 - Harmonic Suppression Technology of Three-Phase Diode Rectifier Based on Third Harmonic Current Injection **Panel D20**
XIAOQING Li, GUOZHU Chen - ZJU - CHINA

0933 - Interleaved Boost Converter System for Unity Power Factor Operation **Panel D21**
GARINTO dodi - INDONESIAN POWER ELECTRONICS - INDONESIA

0934 - Tap Changer for Distributed Power **Panel D22**
OATES Colin - AREVA T&D - UNITED KINGDOM

DS3.9 topic 15: Power supplies

Chair: Dr. TORBJORN THIRINGER, CHALMERS, SWEDEN

0012 - Multi-Interleaved Zero-Ripple VRM to Power Future Microprocessors **Panel E1**
GARINTO dodi - INDONESIA POWER ELECTRONICS - INDONESIA

0093 - Development of SMES system using dry-type superconducting coil **Panel E2**
CHIKARAISHI Hirotaka, MITO Toshiyuki, HEMMMI Tsutomu - NAT. INTST. FOR FUSION SCI.; ABE Ryo - SHIBUYA CO.LTD.; KUGE Atsuko, OKUMURA Kagao - TECHNOVA - JAPAN

0106 - Envelope Model for Resonant Converters and Application in LLC Converters **Panel E3**
TIAN Jian, PETZOLDT Juergen, BERGER Gotthard - TECHNISCHE UNIVERSITÄT ILMENAU; REIMANN Tobias; SCHERF Marko - ISLE GMBH - GERMANY

0109 - Comparative study of the optimal number of phases for interleaved Voltage Regulator Modules **Panel E4**
SIMON Adan, CHAPTAL Jean Louis – FREESCALE ; ALONSO Corinne, BOITIER Vincent, ESTIBALS Bruno - LAAS/CNRS - FRANCE

0300 - Long Life UPS based on Active filter and Flywheel without Electrolytic Capacitor **Panel E5**
ANDO Itaru, SHIBATA Junji - AKITA NATIONAL COLLEGE OF TECHNOLOGY; HAGA Hitoshi , KIYOSHI Ohishi - NAGAOKA UNIVERSITY OF TECHNOLOGY - JAPAN

0328 - ZETA DC/DC Converter Used as LED lamp drive **Panel E6**
BRITTO JONAS R., DEMIAN JR AZIZ E., FREITAS LUIZ C, FARIAS VALDEIR J., COELHO ERNANE A. A., VIEIRA JR JOAO BATISTA - UNIVERSIDADE FED DE UBERLANDIA - BRAZIL

0329 - Microcontroller-Based Quadratic Buck Converter Used as LED lamp driver **Panel E7**
DEMIAN JR AZIZ E., BRITTO JONAS R., FREITAS LUIZ C., FARIAS VALDEIR J., COELHO ERNANE A. A., VIEIRA JR JOAO BATISTA - UNIVERSIDADE FED DE UBERLANDIA - BRAZIL

0374 - Output Voltage Control of a Four-Leg Inverter Based Three-Phase UPS Utilising Stationary Frame Resonant Filter Banks **Panel E8**
HAVA Ahmet, DEMIRKUTLU Eyyup - MIDDLE EAST TECHNICAL UNIVERSITY - TURKEY

0493 - A Novel High DC Voltage Generator by LC Resonance in Supply Frequency **Panel E9**
MATSUI Keiju, YAMAMOTO Isamu - CHUBU UNIVERSITY; ANDO Kenji, GUAN Erdong - NITTO KOGYO CORPORATION - JAPAN

0500 - Influence of power semiconductor and power supply design on EMC relevant emissions by the example of an arc welding inverter arrangement **Panel E10**
LINDEMANN Andreas, HERMS Ronny, DOEBBELIN Reinhard - OTTO-VON-GUERICKE-UNIVERSITÄT MAGDEBURG - GERMANY

0566 - Implementation of supercapacitors in uninterruptible power supplies **Panel E11**
STEPANOV Andrew, GALKIN Ilja, BISENIEKS Lauris - RIGA TECHNICAL UNIVERSITY - LATVIA

0623 - An Electronic Ballast for Driving HID Lamps controlled with a FPGA Device **Panel E12**
FONTOURA KLEBER L., COELHO ERNANE A. A., FREITAS LUIZ C., FARIAS VALDEIR J., VIEIRA JR JOAO BATISTA - UNIVERSIDADE FED DE UBERLANDIA - BRAZIL

0701 - A Novel Resonant Boost Converter with Double Switches Improved by PLL **Panel E13**
YAMAMOTO Isamu, MATSUI Keiju, HASEGAWA Masaru - CHUBU UNIVERSITY - JAPAN

0748 - Multiphase Converter Structures AppliedTo Integrated Micro-Power Application Circuits. **Panel E14**
PETIBON Stephane - LAAS-CNRS - FRANCE

0782 - Cancellation of the Common Mode Voltage in a 3-phase Current Source Rectifier **Panel E15**
JUNAIDI Aziz, KLUMPNER Christian, CLARE J.C - UNI. OF NOTTINGHAM, PEMC GROUP - UNITED KINGDOM

0920 - A Single-Stage Power Factor Correction Switched Mode Power Supply **Panel E16**
POSTIGLIONE Cícero – INEP; PERIN Arnaldo - INEP - UFSC - BRAZIL

DS3.10 topic 16: Electrical systems in aerospace, space, surface and marine transport
Chair: Prof. Dr. Ir. Joeri VAN MIERLO, VRIJE UNIVERSITEIT BRUSSEL, BELGIUM

0086 - A less sensor control method of PMSM using a hall sensor **Panel E17**
AKATSU KAN - TOKYO UNIV. OF AGRIC. AND TECH - JAPAN

0271 - A Software Simulation Program for a Hybrid Fuel Cell – Battery Power Supply for an Electric Forklift **Panel E18**
CHAN Edward, DAWSON Francis - UNIVERSITY OF TORONTO; LIVSHITS Eugene, BEKKER Henk - SAFT POWER SYSTEMS - CANADA

0346 - Electric Bicycle Using Batteries and Supercapacitors **Panel E19**
SOUSA Duarte, BRANCO Paulo, DENTE Joaquim - INSTITUTO SUPERIOR TÉCNICO - PORTUGAL

0368 - Bi-Directional DC- DC Converters for Supercapacitor Based Energy Buffer for Electrical Gen-Sets **Panel E20**
LEUCHTER Jan, RERUCHA Vladimir - UNIVERSITY OF DEFENCE - CZECH REPUBLIC; BAUER Pavol - DELFT UNIVERSITY OF TECHOLOGY – ThHE NETHERLANDS

0624 - High efficiency LEVs **Panel E21**
MAURI Marco, CASTELLI DEZZA Francesco - POLITECNICO DI MILANO; RIVA Marco - UNIVERSITA' DEGLI STUDI DI MILANO – ITALY; BIANCHI Roberto, PICCIOTTI GianMario - MES-DEA - SWITZERLAND

0639 - State space average modelling of 6- and 12-pulse diode rectifiers **Panel E22**
WANG Jiabin - UNIVERSITY OF SHEFFIELD - UNITED KINGDOM

0734 - A Simple Starting Method for Self-Controlled Synchronous Motors in Electric Propulsion Systems for Ships **Panel E23**
HASEGAWA Chihiro, NISHIKATA Shoji - TOKYO DENKI UNIVERSITY - JAPAN

DS3.11 topic 16: Automotive

Chair: UWE SCHÄFER, TU BERLIN, GERMANY

0956 - Hysteretic Current Controlled ZVS DC/DC Converter s for Automobile **Panel F1**
CERNAT Mihai, SCORTARU Petre, TANASE Alecu - TRANSILVANIA UNIVERSITY OF BRASOV – ROMANIA; IOV Florin - AALBORG UNIVERSITY - DENMARK

0038 - EPS System Analysis using Multi domain Simulation for conventional 12V Power network Design in a Vehicle **Panel F2**
KIMITOSHI TSUJI - TOYOTA MOTOR CORPORATION – JAPAN

0074 - Test Bench for the Simulation of a Hybrid Power Train **Panel F3**
GAUCHIA Lucia, MARTINEZ Juan Manuel, CHINCHILLA Monica, SANZ Javier - CARLOS III UNIVERSITY - SPAIN

0191 - Supercapacitors and Battery power management for Hybrid Vehicle Applications Using multi boost and full bridge Converters **Panel F4**
CAMARA Mamadou Bailo, GUSTIN Frederic, GUALOUS Hamid, BERTHON Alain - L2ES-UNIVERSITY OF FRANCHE-COMTE-UTBM - FRANCE

0226 - Method of identifying voltage difference of super capacitors and principle of voltage balancing **Panel F5**
CHENG Yonghua, VAN MIERLO Joeri, LATAIRE Philippe - VRIJE UNIVERSITEIT BRUSSEL – BELGIUM; BUECHEL Mathias, KNORR Rainer - SIEMENS VDO AUTOMOTIVE – GERMANY; GALLAY Roland - MAXWELL TECHNOLOGIES - SWITZERLAND

0228 - Configuration and verification of the super capacitor based energy storage as peak power unit in hybrid electric vehicles **Panel F6**
CHENG Yonghua, VAN MIERLO Joeri, LATAIRE Philippe - VRIJE UNIVERSITEIT BRUSSEL – BELGIUM; LIEB Michael - TESIS DYNAWARE FÜR BMW GROUP – GERMANY; VERHAEVEN Eric - VITO – BELGIUM; KNORR Rainer - SIEMENS VDO AUTOMOTIVE - GERMANY

0320 - Electric Power-Divider of Hybrid Car Propulsion Systems **Panel F7**
CEROVSKY Zdenek, MINDL Pavel - CZECH TECHNICAL UNIVERSITY IN PRAGUE - CZECH REPUBLIC

0594 - Test Platform for Hybrid Electric Power Systems:Development of a HIL Test platform **Panel F8**
TIMMERMANS Jean-Marc, VAN MIERLO Joeri, LATAIRE Philippe, VAN MULDERS Frederik, MCCAFFREE Zach - VRIJE UNIVERSITEIT BRUSSEL - BELGIUM

0644 - Universal Matrix Converter for Power Conditioning in Electrical Vehicles Fed by a Fuel Cell Combined with Ultracapacitors **Panel F9**
DJERDIR Abdesslem, BOUCHERIT A., AYAD Y. M., CIRRINCIONE Maurizio - UTBM – France; PUCCI Marcello, VITALE Gianpaolo - ISSIA-CNR - ITALY

0663 - Experimental study of supercapacitors ageing according to the temperature **Panel F10**
GUALOUS Hamid, MIRAOUI Abdellatif - L2ES-FC_LAB, ALCICEK Guven – UTBM; VENET Pascal - UNIVERSITÉ CLAUDE BERNARD LYON – FRANCE; GALLAY Roland - MAXWELL TECHNOLOGIES - SWITZERLAND

0907 - Design of Propulsion System for a Fuel Cell Vehicle **Panel F11**
SCHALTZ Erik, JUHL ANDREASEN Søren, RASMUSSEN Peter Omand - AALBORG UNIVERSITY - DENMARK

DS3.12 topic 16: Rail vehicles

Chair: Ing. Roberto VISINTINI, SINCROTRONE TRIESTE, ITALY

0102 - Numerical Analyses of Minimum Energy Operation of Multiple Trains under DC Power Feeding Circuit **Panel F12**
MIYATAKE Masafumi, KO Hideyoshi - SOPHIA UNIVERSITY - JAPAN

0224 - Energy Management and Sizing of Storage Devices of a Hybrid Locomotive **Panel F13**
AKLI Cossi Rockys, ROBOAM Xavier, SARENI Bruno - LAPLACE-ENSEEIHT / INPT / CNRS; JEUNESSE Alain - SNCF - FRANCE

0287 - Anti-slip Re-adhesion Control Based on Disturbance Observer Considering Bogie Vibration **Panel F14**
SHIMIZU Yosuke, OHISHI Kiyoshi - NAGAOKA UNIVERSITY OF TECHNOLOGY; SANO Takashi, YASUKAWA Shinobu - TOYO ELECTRIC MANUFACTURING CO., LTD.; KOSEKI Takafumi - THE UNIVERSITY OF TOKYO - JAPAN

0420 - Theoretical analysis of cancellation of DC-link current harmonics in the inverter-controlled DC electric railcar **Panel F15**
OGAWA Tomoyuki, WAKAO Shinji - WASEDA UNIVERSITY – JAPAN; TAUFIQ Jat - ALSTOM TRANSPORT – FRANCE; KONDO Keiichiro - CHIBA UNIVERSITY; TERAUCHI Nobuo - RAILWAY TECHNICAL RESEARCH INSTITUTE - JAPAN

0498 - Energy Consumption Analysis of FC-EDLC Hybrid Railway Vehicle by Dynamic Programming **Panel F16**
OGAWA Tomoyuki, YOSHIHARA Hiroaki, WAKAO Shinji, KONDO Keiichiro - CHIBA UNIVERSITY; KONDO Minoru - RAILWAY TECHNICAL RESEARCH INSTITUTE - JAPAN

0546 - Single-Phase Current-Source Active Rectifier for Traction Applications: New Control Strategy based on Phase Shift Controller **Panel F17**
MICHALIK Jan, MOLNAR Jan, PEROUTKA Zdenek - UNIVERSITY OF WEST BOHEMIA - CZECH REPUBLIC

0554 - Simulation results of Novel Energy Storage Equipment Series-Connected to the Traction Inverter **Panel F18**
TAGUCHI Yoshiaki, OGASA Masamichi, HATA Hiroshi - RAILWAY TECHNICAL RESEARCH INST.; IIJIMA Hiroyasu, OHTSUYAMA Sumiaki - WEST JAPAN RAILWAY COMPANY; FUNAKI Tsuyoshi - KYOTO UNIVERSITY - JAPAN

0633 - Quasi-Static Decoupled Load Flow Modelling of a Power Supply Network with AC-DC Converters Applied to Light Rail System **Panel F19**
CHENH Sylvie, SAUTREUIL Matthieu, RIU Delphine, RETIERE Nicolas - G2ELAB - FRANCE

0715 - Power Electronics Traction Transformer **Panel F20**
PELLERIN Marc, HUGO Nicolas, STEFANUTTI Philippe - ABB SÉCHERON LTD; AKDAG Alper - ABB SWITZERLAND LTD. - SWITZERLAND

0882 - Increased recuperation efficiency by increment of the recuperation voltage to 1950V in a 1500V DC catenary system. **Panel F21**
LIU Chris, MEERMAN Erwin - LLOYD'S REGISTER RAIL EUROPE B.V. - NETHERLANDS

DS3.13 topic 19: Energy saving technologies

Chair: Prof. Dr. Günter SCHROEDER, UNIVERSITY OF SIEGEN, GERMANY

0251 - Study and Simulation of the Energy Balance of an Urban Transportation Network **Panel F22**
DESTRAZ Blaise, BARRADE Philippe, RUFER Alfred - EPFL – SWITZERLAND; KLOHR Markus - BOMBARDIER TRANSPORTATION - GERMANY

0506 - 50kVA Regenerative Active load for power test system **Panel F23**
BAEK ju won - KOREA ELECTROTECHNOLOGY INSTIT - KOREA

Notes

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