

POWERENG 2009
**2nd International Conference on Power Engineering,
Energy and Electrical Drives**
18 – 20 March, 2009

Conference Guide

Organized by:

UNINOVA

Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa
Instituto Politécnico de Setúbal

Sponsors:

REN – Redes Energéticas Nacionais

Câmara Municipal de Almada

Technical Co-Sponsor:

IEEE Industrial Electronics Society

Cooperation:

IEEE Power Engineering Society (Portuguese Chapter)

COST Action 452 - High Performance Energy Storages for Mobile and Stationary Applications

Welcome Address



A. Leão Rodrigues



Armando Pires

Dear POWERENG2009 participants,

It is our great pleasure to welcome you all to the 2nd International Conference on Power Engineering, Energy and Electrical Drives (POWERENG 2009). The Conference is organized by UNINOVA, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, and Instituto Politécnico de Setúbal, Portugal.

The Conference is technically co-sponsored by the IEEE Industrial Electronics Society and financially sponsored by REN and Almada City Hall.

We benefit to receive the cooperation of the IEEE Power Engineering Society Portuguese Chapter and COST Action 542- High Performance Energy Storages for Mobile and Stationary Applications.

The purpose of the Conference is to provide the exchange of new ideas and results in the fields of Power Generation, Transmission and Distribution; Power Electronics, Systems and Applications, Electrical Machines and Adjustable Speed Drives, Renewable Energy Sources and Technology, and Education, bringing together researchers and engineers from all over the world, promoting international and national collaboration and attracting more young researchers, from different countries, to this important scientific area.

During three days the Conference offers you 6 keynote presentations, 2 invited sessions and 118 lecture presentations. The papers were reviewed according to high quality standards. We would like to express our sincere gratitude to all authors, session chairs, members of the International Program Committee and reviewers.

We particularly would like to express our gratitude to the outstanding keynote speakers, Leopoldo G. Franquelo (Universidad de Sevilla, Spain), João Peças Lopes, (Faculdade de Engenharia, Oporto University, Portugal), Frede Blaabjerg, (Aalborg University, Denmark), António Dente, (Instituto Superior Técnico, Lisbon Technical University, Portugal), Bogdan M. Wilamowski, (Auburn University, USA), and Teresa Correia de Barros, (Instituto Superior Técnico, Lisbon Technical University, Portugal), for adding significant scientific value to the conference.

On behalf of the Organizing Committee, we would like to thank our sponsors and co-sponsors. We also wish to extend our sincere appreciation to the Conference local support team for their excellent work done. We hope that your participation in the POWERENG 2009 will be a rewarding experience and that you have a smooth, successful and enriching Conference and that you enjoy your stay in Costa de Caparica and Portugal.

Amadeu Leão Rodrigues and Armando Pires
POWERENG2009 Conference Co-Chairs

CONFERENCE COMMITTEES

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Sérgio Cruz
Sílvio Mariano
Vitor Antunes
Vitor Mendes
Zita Vale

SCOPE

The purpose of the second 2009 International Conference on Power Engineering, Energy and Electrical Drives (POWERENG) is to bring together researchers, engineers and practitioners from all over the world, interested in the advances of power systems (energy and electrical drives). A number of simultaneous tracks will be held, covering different aspects of Power Engineering, including Power Generation, Transmission and Distribution; Power Electronics, Systems and Applications, Electrical Machines and Adjustable Speed Drives, Renewable Energy Sources and Technology and Power Engineering Education. Papers describing original work were invited in the scientific areas of the conference.

Articles describing advanced prototypes, systems, tools and techniques and general survey papers indicating future directions were also admitted. Accepted papers, presented at the conference by one of the authors, will be published in the Proceedings of POWERENG 2009. The proceedings will be included in IEEE Xplore database. Acceptance was based on quality, relevance and originality.

CONFERENCE AREAS

1. Power Generation, Transmission and Distribution.
2. Power Electronics, Systems and Applications.
3. Electrical Machines and Adjustable Speed Drives.
4. Renewable Energy Sources and Technology.
5. Education.

Area 1. Power Generation, Transmission and Distribution

- | | |
|---|---|
| 1.1 Generation Systems. | 1.6 Safety, Maintenance and Operation. |
| 1.2 Protective Relaying. | 1.7 Distribution System Planning and Reliability. |
| 1.3 Modelling and Simulation. | 1.8 Flexible AC Transmission Systems. |
| 1.4 Load Modelling, Forecasting and Management. | 1.9 Fault Current Limiters. |
| 1.5 Power Quality and Grounding. | |

Area 2. Power Electronics, Systems and Applications

- | | |
|---|--|
| 2.1 Soft Switching Converters. | 2.7 EMI and Over-Voltage Protection. |
| 2.2 Multilevel Converters. | 2.8 Active Filters and Harmonics. |
| 2.3 Matrix Converters. | 2.9 Power Supplies. |
| 2.4 Emerging Topologies. | 2.10 Power Electronics Components and Packaging. |
| 2.5 Power Converters Modelling, Simulation and Control. | 2.11 Reliability and Fault Tolerance. |
| 2.6 Power Factor Correctors (PFC). | |

Area 3. Electrical Machines and Adjustable Speed Drives

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|---|--|
| 3.1 AC and DC Machines and Drives. | 3.7 Modelling and Simulation. |
| 3.2 Reluctance Machines and Drives. | 3.8 Maintenance and Fault Diagnosis. |
| 3.3 Permanent Magnet Machines and Drives. | 3.9 Electrical Vehicles. |
| 3.4 Linear Machines and Drives. | 3.10 EMC Related Phenomena. |
| 3.5 Sensorless Control. | 3.11 Superconducting Electrical Devices. |
| 3.6 Piezo and Electrostatic Actuators. | |

Area 4. Renewable Energy Sources and Technology

- | | |
|---|--|
| 4.1 Energy Management and Environmental Issues. | 4.5 Marine Renewable Energy. |
| 4.2 Hybrid Power Systems. | 4.6 Biomass Energy and Geothermal Resources. |
| 4.3 Distributed and Co-Generation Systems. | 4.7 Solar Energy Systems. |
| 4.4 Wind Energy Systems. | 4.8 Hydro Power Plants. |
| | 4.9 Hydrogen Systems and Fuel Cells. |

Area 5. Education

- | | |
|----------------------------|-------------------------|
| 5.1 Education Methodology. | 5.3 Educational Tools. |
| 5.2 Simulation Software. | 5.4 Distance Education. |

VENUE

Hotel Costa da Caparica
Av. General Humberto Delgado 47, 2829-506 Costa da Caparica, Portugal
e-mail: recepcao@hotelcostacaparica.pt
Tel.: + 351 212 918 900, Fax: + 351 212 910 687

REGISTRATION

The Conference registration desk will be open at the following times:

Wednesday, March 18th	8:30am – 16:50pm
Thursday, March 19th	8:30am – 17:30pm
Friday, March 20th	8:30am – 17:30pm

PROGRAM SESSIONS

All sessions will consider oral presentations of 20 min per paper (15 min + 5 min for discussion). Presentation rooms will be equipped with windows based computers with Microsoft Office 2007 and Adobe pdf Reader software.

LANGUAGE

The working language will be English. No translation service will be available.

TRANSPORTATION FROM THE AIRPORT

By bus and boat:

The Aerobus (Bus Carris nº 91) leaves every 20 minutes, from 7.00 to 23.00.

It goes to "Cais do Sodré" (Sodré's Quay) from where boats are available to Cacilhas. The boat's Company is "Transtejo".

From Cacilhas a bus can be taken (Company "TST"), nº 124, to "Costa de Caparica".

By taxi:

During the day, it should cost roughly 30 €. Please be aware that you only pay what is marked, which includes luggage, plus toll back to Lisbon (1.35 €).

During the night, it should cost roughly 40 €.

Taxis have meters so make sure the driver is using it. There is an initial flag-fall charge (or "*bandeirada*") and then a charge for the distance is counted. Taxis are also more expensive at night (usually 10pm-6am), at weekends and on public holidays and a charge for luggage carried in the trunk is also added. It is slightly more expensive if you phone for a taxi than picking one up on the street.

CATERING

Lunches and Coffee Breaks will be available for delegates. Please be sure to wear your name badge in order to access lunch and coffee break areas.

CONFERENCE RECEPTION

The Conference Reception, kindly offered by the Mayor of Almada, will be held at Convento dos Capuchos, on Wednesday March 18th. Coaches will be provided to transport the delegates.

CONFERENCE GALA DINNER

The Conference Gala Dinner will be held at Quinta do Mira-Tejo, on Thursday March 19th. Coaches will be provided to transport the delegates.

INTERNET CONNECTION

Conference rooms will be provided with wireless internet connection.

KEYNOTE LECTURES

Keynote Lecture 1.1

Leopoldo G. Franquelo, Universidad de Sevilla, Spain.

New trends and Topologies in High Power Applications: Multilevel Solutions for High Power.

Chair: Amadeu Leão Rodrigues

18.03.2009 / Time: 9:20 – 10:20 Room: Costa Azul

Keynote Lecture 1.2

João Peças Lopes, Faculdade de Engenharia, Oporto University, Portugal.

Advanced Microgrids as a Component for Active Management of Distribution Networks.

Chair: Mário Ventim Neves

18.03.2009 / Time: 13:55 – 14:55 Room: Costa Azul

Keynote Lecture 2.1

Frede Blaabjerg, Aalborg University, Denmark.

Power Electronics for Renewable Energy Systems.

Chair: Armando Pires

19.03.2009 / Time: 8:30 – 9:30 Room: Costa Azul

Keynote Lecture 2.2

António Dente, Instituto Superior Técnico, Lisbon Technical University, Portugal.

Distributed and Lumped-Parameters Formulation of Electromechanical Systems.

Chair: João Martins

19.03.2009 / Time: 14:55 – 15:55 Room: Costa Azul

Keynote Lecture 3.1

Bogdan M. Wilamowski, Auburn University, USA.

Special Neural Network Architectures for Easy Electronic Implementations.

Chair: Luis Gomes

20.03.2009 / Time: 8:30 – 9:30 Room: Costa Azul

Keynote Lecture 3.2

Teresa Correia de Barros, Instituto Superior Técnico, Lisbon Technical University, Portugal.

Modelling and Design of Ground Electrodes.

Chair: Vitor Pires

20.03.2009 / Time: 14:55 – 15:55 Room: Costa Azul

INVITED SESSIONS

Invited Session 1 - European Network for Supercapacitors. *High Performance Energy Storages for Mobile and Stationary Applications.* *(co-organized with the COST Action 542)*

Chair: Armando Pires

19.03.2009 /Time: 14:55 – 15:55 Room: Costa Azul

Supercapacitor Technology

D. Sojref, P. Borza, G. Coquery.

Application of supercapacitors in the transportation

G. Coquery.

Stationary applications of supercapacitors

P. Borza.

High Power Supercapacitors' Solutions for Reliable Power Supply

A. Belyikov, D. Sojref.

Evaluation of the super capacitor energy storage as peak power unit

Yonghua Cheng.

Invited Session 2 - Quality of Supply Regulation. An European Perspective.

Jorge Esteves and Amanda Falcão.

Chair: Amadeu Leão Rodrigues

20.03.2009 / Time: 11:35 – 13:15 Room: Costa Azul

PROGRAM OVERVIEW

18.03.2009			
8:30 - 9:00	Registration		
9:00 - 9:20	Opening Session		
9:20 - 10:20	Keynote Lecture 1.1		
10:20 - 10:45	Coffee Break		
10:45 - 12:25	Session 1.1	Session 1.2	Session 1.3
12:25 - 13:55	Lunch		
13:55 - 14:55	Keynote Lecture 1.2		
14:55 - 16:35	Session 1.4	Session 1.5	Session 1.6
16:35 - 16:50	Coffee Break		
16:50 - 18:30	Session 1.7		Session 1.8
18:45	Reception		

19.03.2009			
8:30 - 9:30	Keynote Lecture 2.1		
9:30 - 9:55	Coffee Break		
9:55 - 11:35	Session 2.1	Session 2.2	Session 2.3
11:35 - 13:15	Session 2.4	Session 2.5	Session 2.6
13:15 - 14:55	Lunch		
14:55 - 15:55	Keynote Lecture 2.2		
15:55 - 17:35	Invited Session 1	Session 2.7	Session 2.8
18:15	Gala Dinner		

20.03.2009			
8:30 - 9:30	Keynote Lecture 3.1		
9:30 - 9:55	Coffee Break		
9:55 - 11:35	Session 3.1	Session 3.2	Session 3.3
11:35 - 13:15	Invited Session 2	Session 3.4	Session 3.5
13:15 - 14:55	Lunch		
14:55 - 15:55	Keynote Lecture 3.2		
15:55 - 17:35	Session 3.6	Session 3.7	Session 3.8

SESSIONS**18 March 2009****Session 1.1 - Power Electronics Applications I**

Chairs: Andreas Steimel and Ilhami Colak

Time: 10:45 – 12:25 Room: Almada

Paper	Title	Authors
34	Implementation of a New Structure for a Closed Loop Class D Amplifier	Sérgio Sousa, Victor M. E. Antunes, V. Fernão Pires, J. Fernando Silva
99	An Integrated Approach to Design High Performance Controllers for PWM VSC Converters	Carlos Ramos, António Martins, Adriano Carvalho
200	Analytical & Experimental Studies on Impedance Matching in RF Generators for Dielectric Loads	Mojtaba Heydari, Seyyed Mohammad Hosein Mirhoseini, Hossein Ali Mohammadpour, Abbas Shoulaie
195	Design & Simulation of a Contactless Power Transmission System with Maximum Efficiency & Soft Switching Realization of Related Inverter	Ali Deihimi, Pouriya G. Khorasani
147	Electric Vehicles and their Impact to the Electric Grid in isolated systems	Petr Kadurek, Christos Ioakimidis and Paulo Ferrão

Session 1.2 - Electrical Machines Design I

Chair: Alberto Tassarolo

Time: 10:45 – 12:25 Room: Costa Azul

Paper	Title	Authors
131	Drum and Disc Type Hysteresis Machines with Superconducting Rotors	A. Leão Rodrigues
154	Magnetic Characteristics Modelling for Regular Switched Reluctance Machines: Analytical and FEM Approaches	P. Lobato, S. Rafael, P. Santos, A. J. Pires
171	A mathematical model of Axial Flux Disc Machines	Chiara Boccaletti, Pietro Di Felice, Lorenzo Petrucci, Ezio Santini
56	Electromagnetic Design Workflow for Squirrel Cage Induction Machines	C. Grabner, J. Bacher
136	Novel Modeling Design of Three Phase Tubular Permanent Magnet Linear Generator for Marine Applications	A. Pirisi, G. Grusso, R. E. Zich

Session 1.3 - Power System Computation Techniques

Chair: Jorge Calderon-Guizar

Time: 10:45 – 12:25 Room: Caparica B

Paper	Title	Authors
149	Network Reconfiguration Using a Genetic Approach for Loss and Reliability Optimization in Distribution Systems	Romeu M. V. Vitorino, Humberto M. M. Jorge, Luís M. P. Neves
128	Mixed-Integer Nonlinear Programming for Head-Dependent Short-Term Hydro Scheduling	J.P.S. Catalão, H.M.I. Pousinho, V.M.F. Mendes
199	Use of available phasor measurements for system observability: a case study	Paula S. Castro Vide, F. P. Maciel Barbosa, Isabel M. Ferreira
139	Multi-Objective Differential Evolution for Optimal Power Flow	Mohammad A. Abido, N. A. Al-Ali
125	Composite Generation and Transmission Planning in a Competitive Environment	Ibrahim M. Elamin, Mohammed T. Al-Saba

Session 1.4 - Motion Control I

Chair: Jaime Gómez-Gil

Time: 14:55 – 16:35 Room: Costa Azul

Paper	Title	Authors
114	Evaluation of a DFIG Rotor Position-Sensorless Detector Based on a Hysteresis Controller	G. D. Marques, V. Fernão Pires, Sérgio Sousa, Duarte M. Sousa
168	Analysis of three methods for sensorless speed detection in DC motors	E. Vázquez-Sánchez, J. Gómez-Gil, M. Rodríguez-Álvarez
144	Novel Flux Weakening Control Algorithm for PMSMS	N. V. Olarescu, M. Weinmann, S. Zeh, S. Musuroi
55	Electrical Drives without DC Link Converter Component and Recuperation Capability	C. Grabner
82	A Novel Particle Swarm Optimization PSO Tuning Scheme for PMDC Motor Drives Controllers	Adel M. Sharaf, Adel A. A. El-Gammal

Session 1.5 - Power Converter Control

Chair: Yonghua Cheng

Time: 14:55 – 16:35 Room: Almada

Paper	Title	Authors
91	Stability Analysis of a Buck Converter with Input Filter Based on an LPV formalism	Pierre Lefranc, Emmanuel Godoy, Gilles Duc, Muhammad Usman Iftikhar
110	High Frequency Modeling of Peak Current Mode Control of DC-DC Converters	Charif Karimi, Emmanuel Godoy, Muhammad Usman Iftikhar, Pierre Lefranc, Daniel Sadarnac
111	Selective Harmonic Elimination PWM applied to H-Bridge topology in high speed applications	V. Guenegues, B. Gollentz, L. Leclere, F. Meibody-Tabar, S. Raël
146	Control of AC-DC Matrix Converter using digital PLL	I. Barbieri, P. Lambruschini, M. Raggio
69	Design and implementation of microcontroller based novel PWM technique for Sine wave Inverter	A.Ali Qazalbash, Awais Amin, Abdul Manan, Mahveen Khalid

Session 1.6 - Wind Technologies I

Chair: José A. Orosa

Time: 14:55 – 16:35 Room: Caparica B

Paper	Title	Authors
153	Wavelets Pre-Filtering in Wind Speed Prediction	Diogo L. Faria, Rui Castro, Cláudia Philippart, Alexandre Gusmão
42	Climate effects in low speed wind turbine's concentrators	J. A. Orosa, E. J. García-Bustelo, J. A. Pérez
43	Galician climatic change effect on wind power production	J. A. Orosa, E. J. García-Bustelo, J. A. Pérez
116	Problem of Wind Power Plant Engineering in the Czech Republic	Stanislav Mišák, Lukáš Prokop
54	Small-Disturbance Voltage Stability of Distribution Systems with Wind Turbine implemented with WRIG	H.R. Najafi, F.V.P. Robinson, F. Dastyar, A.A. Samadi

Session 1.7 - Hybrid Systems

Chair: Mário Ventim Neves

Time: 16:50 – 18:30 Room: Almada

Paper	Title	Authors
83	Camping Car with Self Power Generation	António Roque, Duarte M. Sousa, Cláudio Casimiro
211	Plug-in electric vehicles integration with renewable energy building facility – building/vehicle interface	J. F. Martins, V. Fernão Pires, Luis Gomes, O. Páscoa Dias
176	Simulation Results of a Micro Cogeneration System Using Stella and Matlab in a Residential Environment	Ana Aguiar, Marcio Kimpara, João Pinto
162	Modeling And Simulation of a Supervision and Management System of Hybrid Energy Systems for The Pantanal Region	Daniela L. C. Carneiro, João O. P. Pinto, Ruben B. Godoy, Alexandra M. A. C. Pinto, Alexandre A. Carniato
183	Zonal Guarantee Technology of Indoor Environment for the Underground Diesel Generator Plant, Part I: Introduction	Xibin Ma, Jinsheng Wang, Baoyi Cheng, Wenjie Liu, Guanzhong Peng
184	Zonal Guarantee Technology of Indoor Environment for the Underground Diesel Generator Plant, Part II: Application	Xibin Ma, Jinsheng Wang, Baoyi Cheng, Wenjie Liu, Guanzhong Peng

Session 1.8 - Power Systems I

Chair: João Catalão

Time: 16:50 – 18:30 Room: Costa Azul

Paper	Title	Authors
214	CO ₂ . A New Factor to be Considered on the Design of Electrical Distribution Grids	P. Casals, X. Granados, R. Bosch, J.A. Martínez
137	Line Stability Indices for Voltage Collapse Prediction	Cláudia Reis, António Andrade, F.P. Maciel
138	Voltage Stability Analysis of Electrical Power System	Cláudia Reis, António Andrade, F.P. Maciel
181	Impact of Cross-Border Electricity Trading on Market Participants	I. Androcec, I. Wangensteen, S. Krajcar
120	Game Based Strategic Bidding in Pay as Bid Markets Considering Incomplete Information and Risk Factor	A. Mozdawar, B. Khaki, M. H. Asgari, R. Riahi
36	Improvement of Power Quality and Voltage Stability of Load by Battery Energy Storage System	Xiaocong Li, lingyi kong, yiyiing liao, bo li and zhongyong wang

19 March 2009**Session 2.1 - Power Electronics Applications II**

Chair: Stan Valtchev

Time: 9:55 – 11:35 Room: Almada

Paper	Title	Authors
92	Intelligent Power Electronic Systems for the Grid Interaction with Large Scale Integration of RES	Yonghua Cheng
112	Advanced Simulation Concept for Interaction of Railway Grid Representation and Model Power Train of AC Locomotive	R. Bartelt, M. Oettmeier, C. Heising, V. Staudt, A. Steimel
113	Multivariable Pole-Placement Control Design for a Single-Phase 50-kW, 16.7-Hz Railway Traction Line-Side Converter	C. Heising, M. Oettmeier, R. Bartelt, V. Staudt, A. Steimel
115	Dead-Beat Control for a Single-Phase 50-kW, 16.7-Hz Railway Grid Representation Inverter Featuring Variable Grid Parameters	M. Oettmeier, C. Heising, V. Staudt, A. Steimel

Session 2.2 - Power Quality Issues

Chairs: Luis Sainz and Kalyan Kumar Boddeti

Time: 9:55 – 11:35 Room: Costa Azul

Paper	Title	Authors
101	Impact of Plug-in Hybrid Electric Vehicles in the Portuguese Electric Utility System	C. Camus, C.M. Silva, T. L. Farias, J. Esteves
218	The CEER and the 4th Benchmarking Report on Quality of Electricity Supply	Karstein Brekke, Jorge Esteves, Math Bollen, Luca Lo Schiavo, Ferruccio Villa, Geza Reti, Alfons Haber, Amanda Falcão, Thomas Westergaard, Rémy Kolessar
59	Deterministic and Stochastic Study of the Three-Phase Non-linear Load Behavior	Juan Jose Mesas, Luis Sainz, Albert Ferrer
60	Discharge Lamp Harmonic Interaction Study by Monte Carlo Simulation and Experimental Measurements	Juan Jose Mesas, Luis Sainz, Albert Ferrer
186	Voltage Quality Enhancement of PWM AC Voltage Controller Using Particle Swarm Optimization	Kouzou Abdellah, Saadi Slami, Mahmoudi Mohaned Oulhadje, Boucherit Mohamed Sghir

Session 2.3 - Switched Reluctance Machines

Chair: Gil Marques

Time: 9:55 – 11:35 Room: Caparica B

Paper	Title	Authors
201	Characterization of a New Linear Switched Reluctance Actuator	M. R. A. Calado, A. Espírito Santo, S. J. P. S. Mariano, C. M. P. Cabrita
204	Analysis of Different Driving Schemes Applied to a Linear Switched Reluctance Actuator	A. Espírito Santo, M. R. A. Calado, C. M. P. Cabrita
130	Position Control of an 8/6 Switched Reluctance Machine without Current Sensor	Silviano Rafael, P. J. Costa Branco, A. J. Pires
68	Thermal Analysis of a 30kW Switched Reluctance Starter/Generator System Used in Aircraft	Song Shoujun, Liu Weiguo, Uwe Schaefer
79	Impact of Inverter Switching Pattern on the Performance of a Direct Torque Controlled Synchronous Reluctance Motor Drive	Saeid Haghbin, Torbjörn Thiringer

Session 2.4 - Energy Storage

Chairs: Antoni Szumanowski and Dalik Sojref

Time: 11:35 – 13:15 Room: Costa Azul

Paper	Title	Authors
156	Supervision of a hybrid system based on photovoltaic arrays and supercapacitors	Mélissa Dondas, Firas Alkhalil, Philippe Degobert, Frédéric Colas, Benoit Robyns
217	High Power Supercapacitor's Solutions for Reliable Power Supply	Alexey I. Belyakov, Dalik A. Sojref
216	Comparison of Ultra Capacitors, Hydraulic Accumulators and Batteries Technologies to Optimize Hybrid Vehicle Efficiency	Jonathan Nzisabira, Yannick Louvigny, Pierre Duysinx
94	Integrated thin-film rechargeable battery in a thermoelectric scavenging microsystem	J. P. Carmo, R. P. Rocha, A. F. Silva, L. M. Gonçalves, J. H. Correia
124	Identification of Electrochemical Model Parameters in PEM Fuel Cells	Markku Ohenoja, Kauko Leiviskä

Session 2.5 - Power Systems Control

Chair: Mohammad Abido

Time: 11:35 – 13:15 Room: Almada

Paper	Title	Authors
202	Optimal Output Control: Load Frequency Control of a Large Power System	S. J. P. S. Mariano, J. A. N. Pombo, M. R. A. Calado, L. A. F. M. Ferreira
180	Electro-Mechanical Transients of Small Plant Generators Connected to a Transmission Grid	Jorge Guillermo Calderón-Guizar, Hugo Francisco García de Alba
48	Dynamics analysis of 220 V DC auxiliary system in power plant using different mathematical models	Javor Škare, Tomislav Tomiša, Miroslav Mesić
52	Transient Stability Analysis with Equal Area Criterion Directly Used to a Non-Equivalent Generator Pair	Lu Fang, Yu Ji-lai
29	Efficient System Parameter Selection to Prevent Oscillatory Voltage Instability	B. Khaki, B. Mozafari

Session 2.6 - Motion Control II

Chairs: Nicola Olarescu and Duarte Sousa

Time: 11:35 – 13:15 Room: Caparica B

Paper	Title	Authors
179	Constant Power Electronic Gear for Electrical Vehicle	Hugo Pestana, Carlos Ferreira, Hugo Ribeiro, Pedro Matos
61	Multidrive Control for Milling Rotary Tables with Flexible Reduction Stages	Oliver Zirn, Andreas Fink
141	PID Controlled Synchronous Motor for Power Factor Correction	Ramazan Bayindir, Ilhami Colak, Ersan Kabalci, Alper Gorgun
215	Dynamic Behaviour of DC motor-based Photovoltaic Pumping Systems under Searching MPPT Algorithms	M. A. Elgendy, B. Zahawi, D. J. Atkinson, D. Giaouris
44	A Modified Design of PID Controller For DC Motor Drives Using Particle Swarm Optimization PSO	Adel A. A. El-Gammal, Adel A. El-Samahy

Session 2.7 - Power Systems II

Chair: Humberto Jorge

Time: 15:55 – 17:35 Room: Almada

Paper	Title	Authors
126	Enhancement of Power System Transient Stability and Power Quality using Superconducting Fault Current Limiters	M.E. Almeida, C.S. Rocha, J.A. Dente, P.J. Costa Branco
203	Power House I/O Curves Considering Head Dependency	S. J. P. S. Mariano, M. A. B. D. Coimbra, M. R. A. Calado Ferreira, L.A.F.M.
191	The Design and Optimization of a Photovoltaic Tracking Mechanism	Catalin Alexandru
163	Determination of Harmonic Load Characteristics in Distribution Networks of Cities	A. Vahidnia, A. Dastfan, M. Banejad
35	Traveling Wave Fault Location Scheme For Jing-Jin Dedicated Passenger Line Electric Railway Traction System	Xia MingChao, Wu MingLi
70	Multi-Index Nonlinear Coordinated Control for Battery Energy Storage System and Generator Excitation	Xiacong Li, Lingyi Kong, Liying Liao, Bo Li and zhongyong wang

Session 2.8 - Reliability and Fault Tolerance

Chair: Hubert Razik

Time: 15:55 – 17:35 Room: Caparica B

Paper	Title	Authors
143	Supply Current Polar Chart Analysis of SRM Drives Under Normal and Faulty Operating Conditions	Natália S. Gameiro, A. J. Marques Cardoso
123	Control under normal and fault tolerant operation of multiphase SMPM synchronous machines with mechanically and magnetically decoupled phases	F. Baudart, F. Labrique, E. Matagne, D. Telteu, P. Alexandre
187	Reliability Analysis of Power Substation with Common Cause Failure	Yoong-Tae Byeon, Kiryang Kwon, Jin-O Kim
106	Application of Data Mining on Fault Detection and Prediction in Boiler of Power Plant Using Artificial Neural Network	Elyas Rakhshani, Iman Sariri, Kumars Rouzbehi
33	Simplified Transient Model of Transformer based on Geometrical Dimensions used in Power Network Analysis and Fault Detection Studies	Ebrahim Rahimpour, Mehdi Bigdeli

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Session 3.1 - Wind Technologies II

Chair: Rui Castro

Time: 9:55 – 11:35 Room: Costa Azul

Paper	Title	Authors
129	Dynamic Stability of Wind Turbines with Permanent Magnet Machines and Power-Electronic Converters	R. Melício, V.M.F. Mendes, J.P.S. Catalão
41	Wind turbine concentrator design based on moist air phase change	J. A. Orosa, E. J. García-Bustelo, J. A. Pérez
160	Alternative Protection System for Wind Turbines with Doubly Fed Induction Generator	Iker Esandi, Xabier Juankorena, Jesús López, Luis Marroyo
161	Method to Enable Variable Speed Wind Turbine Primary Regulation	Xabier Juankorena, Iker Esandi, Jesús López, Luis Marroyo
166	Modeling and Control of a Doubly Fed Induction Generator (DFIG) Based Wind Conversion System	T. Ghennam, E.M.Berkouk, B.François

Session 3.2 - Electrical Machines Design II

Chair: Adel Elgammal

Time: 9:55 – 11:35 Room: Almada

Paper	Title	Authors
197	Conventional and HTS disc motor with pole variation control	D. Inácio, S. Inácio, J. Pina, S. Valtchev, M. Ventim Neves, J. F. A. Martins, A. Leão Rodrigues
172	On the Modeling of Poly-Phase Electric Machines through Vector-Space Decomposition: Theoretical Considerations	Alberto Tessarolo
173	On the Modeling of Poly-Phase Electric Machines through Vector-Space Decomposition: Numeric Application Cases	Alberto Tessarolo
196	A New Modeling of Matlab Transformer for Accurate Simulation of Ferroresonance	Pouria G. Khorasani, Ali Deihimi
3	Influence of Skin Effect on Torque of Cylindrical Eddy Current Brake	Sharifaddin Sharif, Kourosh Sharif

Session 3.3 - FACTS

Chair: Volker Staudt

Time: 9:55 – 11:35 Room: Caparica B

Paper	Title	Authors
107	Application of Linear Observer on Control of Subsynchronous Oscillations Using TCSC	I. Mohammad Hoseiny Naveh, Elyas Rakhshani, Reza Heidari
39	A Robust Controller for DSTATCOM	P. Harsha Vardhana, B. Kalyan Kumar, Mahesh Kumar
37	Minimization of VA Loading of Unified Power Quality Conditioner (UPQC)	G. Siva Kumar, P. Harsha Vardhana, B. Kalyan Kumar, Mahesh Kumar Mishra
31	Capacitor Voltage Balancing in Neutral Clamped Inverters for DSTATCOM Application submission information	Srikanthan Sridharan, Mahesh Kumar Mishra, Kalyan Kumar Boddeti, Srinivas Bhaskar Karanki
26	Comparative Study of Proportional and TS Fuzzy Controlled GCSC for SSR Mitigation	Hossein Ali Mohammadpour, Seyyed Mohammad Hosein Mirhoseini, Abbas Shoulaie

Session 3.4 - Multilevel Power Converters

Chair: Pierre Lefranc

Time: 11:35 – 13:15 Room: Almada

Paper	Title	Authors
122	Neutral-Point Voltage Balancing in Three-Phase NPC Converters Using Multicarrier PWM Control	Ivo Pereira, António Martins
102	The Design Analysis of a 5-Level Cascaded Voltage Source Inverter with Low THD	Ilhami Colak, Ersan Kabalci, Ramazan Bayindir, Seref Sagiroglu
133	An advanced three phase five level PWM rectifier	Youssef Ounejjar, Kamal Al-Haddad, Luc-André Grégoire
97	Analysis of Implementation Possibilities and Benefits of Three-Level Half-Bridge NPC Topology in Static Auxiliary Converters for Rolling Stock	Tanel Jalakas, Dmitri Vinnikov and Indrek Roasto
87	Simulation and Evaluation of Control Methods for the Rolling Stock Static Auxiliary Converter Based on Three-Level NPC Inverter Topology	Dmitri Vinnikov, Indrek Roasto and Valery Vodovozov

Session 3.5 - Motion Control III

Chair: Vitor Pires

Time: 11:35 – 13:15 Room: Caparica B

Paper	Title	Authors
98	Neural Networks Based Power Flow Control of the Doubly Fed Induction Generator	Orlando Soares, Henrique Gonçalves, António Martins, Adriano Carvalho
151	A New Open-Loop Control Method for Stepping Motor Driving	Pedro Sousa, Stanimir Valtchev, Mário V. Neves, Amadeu L. Rodrigues
121	Real time Implementation of Backstepping Controller in Indirect field oriented control of Induction motor drive	F. Mehazzem, A. Reama, Y. Hamam, H. Benalla
155	Novel Switched Reluctance Machine Synthesis Algorithm Based on Voltage PAM Control Strategy for Machine Design Optimization	Ali Deihimi
51	MRAS-ANN Based Sensorless Speed Control For Direct Torque Controlled Induction Motor Drive	Y. Sayouti, A. Abbou, M. Akherraz, H. Mahmoudi

Session 3.6 - Education

Chair: Jorge Esteves

Time: 15:55 – 17:35 Room: Almada

Paper	Title	Authors
170	Modeling for Computer Simulation as a Tool for the Teaching of Transient Power Systems	L. Sousa Martins, Dulce Costa, J. F. Martins, V. Fernão Pires
209	Power Electronics Didactic Modules for Direct Current Machine Control	Armando Cordeiro, Daniel Foito, Manuel Guerreiro
177	TESE - A Tool for Teaching Semiconductor Theory	Rogério Santos, Rui Chibante, Armando Araújo, Adriano Carvalho
58	The learning process implementation of the Marine Engineer's Thermodynamics by the EES software according to European studies	J. A. Orosa, J. R. Calvo
117	Web-based Experiment introducing Power Quality and Active Filters	Volker Staudt, Andreas Steimel, Pavol Bauer, Stefan Menzner

Session 3.7 - Load Forecasting

Chair: Ibrahim Elamin

Time: 15:55 – 17:35 Room: Caparica B

Paper	Title	Authors
165	Short-term Load Forecasting using information obtained from Low Voltage Load Profiles	João M. C. Sousa, Luís M. P. Neves, Humberto M. M. Jorge
118	A STLF in distribution systems - A short comparative study between ANFIS Neuro-Fuzzy and ANN approaches - part I	P. J. Santos, S. Rafael, P. Lobato, A. J. Pires
100	A STLF in distribution systems - A short comparative study between ANFIS Neuro-Fuzzy and ANN approaches - part II	S. Rafael, P. Santos, P. Lobato, A. J. Pires
20	One day ahead load forecasting for electricity market of Iran by ANN	A. Azadeh, S. F. Ghaderi, B. Pourvalikhhan Nokhandan
189	Artificial Neural Networks and Regression Approaches Comparison for Forecasting Iran's Annual Electricity Load	A. Ghanbari, A. Naghavi, S. F. Ghaderi, M. Sabaghian

Session 3.8 - Fault Diagnosis

Chairs: Francis Labrique and António Marques Cardoso

Time: 15:55 – 17:35 Room: Costa azul

Paper	Title	Authors
50	The use of particle swarm optimisation for the tracking of Induction motor faulty lines	Hubert Razik, Mauricio Corrêa, Edison da Silva
192	Online efficiency diagnostic method of three phase asynchronous machines	Johann Peter Bacher
46	Using a Sinosoidal PWM to Estimate the ESR of Aluminum Electrolytic Capacitors	Acácio M. R. Amaral, A. J. Marques Cardoso
140	Development of a Novel Single Chip solution for a Motor Protection Relay	Srivats Shukla, D. N. Vishwakarma

NOTES

Sessions at a Glance

Room	Wednesday						Thursday					Friday				
	9:00	9:20	10:45	13:55	14:55	16:50	8:30	9:55	11:35	14:55	15:55	8:30	9:55	11:35	14:55	15:55
	9:20	10:20	12:25	14:55	16:35	18:30	9:30	11:35	13:15	15:55	17:35	9:30	11:35	13:15	15:55	17:35
Costa Azul	OS	KL 1.1	S 1.2	KL 1.2	S 1.4	S 1.8	KL 2.1	S 2.2	S 2.4	KL 2.2	IS 1	KL 3.1	S 3.1	IS 2	KL 3.2	S 3.8
Almada			S 1.1		S 1.5	S 1.7		S 2.1	S 2.5		S 2.7		S 3.2	S 3.4		S 3.6
Caparica B			S 1.3		S 1.6			S 2.3	S 2.6		S 2.8		S 3.3	S 3.5		S 3.7
Cristo Rei												CA542				

OS Opening Session**Keynote Lectures**

- KL 1.1** New trends and Topologies in High Power Applications: Multilevel Solutions for High Power
KL 1.2 Advanced Microgrids as a Component for Active Management of Distribution Networks
KL 2.1 Power Electronics for Renewable Energy Systems
KL 2.2 Distributed and Lumped-Parameters Formulation of Electromechanical Systems
KL 3.1 Special Neural Network Architectures for Easy Electronic Implementations
KL 3.2 Modelling and Design of Ground Electrodes

Invited Sessions

- IS 1** European Network for Supercapacitors Session, High Performance Energy Storages for Mobile and Stationary Applications
IS 2 Quality of Supply Regulation. An European Perspective

Sessions

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| S 1.1 Power Electronics Applications I | S 2.5 Power Systems Control |
| S 1.2 Electrical Machines Design I | S 2.6 Motion Control II |
| S 1.3 Power System Computation Techniques | S 2.7 Power Systems II |
| S 1.4 Motion Control I | S 2.8 Reliability and Fault Tolerance |
| S 1.5 Power Converter Control | S 3.1 Wind Technologies II |
| S 1.6 Wind Technologies I | S 3.2 Electrical Machines Design II |
| S 1.7 Hybrid Systems | S 3.3 FACTS |
| S 1.8 Power Systems I | S 3.4 Multilevel Power Converters |
| S 2.1 Power Electronics Applications II | S 3.5 Motion Control III |
| S 2.2 Power Quality Issues | S 3.6 Education |
| S 2.3 Switched Reluctance Machines | S 3.7 Load Forecasting |
| S 2.4 Energy Storage | S 3.8 Fault Diagnosis |

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