



European Association
for the Development of
Renewable Energy,
Environment and
Power Quality

ICREPQ'12

INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY

Santiago de Compostela, 28 – 30 of
March, 2012

PROGRAM OF ACTIVITIES





ON RENEWABLE ENERGY AND POWER QUALITY (ICREPQ'12)

WELCOME TO ICREPQ'12

On behalf of the Steering Committee and the Local Organizing Committee we want to give you a very warm welcome to ICREPQ'12 and to Santiago de Compostela.

Our International Programme Committee has selected a high quality 402 papers (among 670 proposals) from which 354 will be presented at the Conference, 80 at oral sessions and 274 at poster sessions (dialogue), during the three days of the ICREPQ'12. All of these papers are included in the final program. Also five special papers will be presented in plenary sessions.

ICREPQ'12 covers the whole range of problems and solutions especially concerning with renewable energies and power quality and all the papers have direct relation with these two fields of research and practical work.

We would like to thank all the authors, session chairmen, participants without papers and the International Scientific Committee members who have made important contributions by reviewing the proposals.

In addition to the technical sessions, a number of social events have been arranged. On Wednesday evening (March 28th, 19:30 H) we will hold a Civic Reception with an aperitif and on Thursday (March 29th, 19:30 H) the Conference Dinner in the Parador "Hostal dos Reis Catolicos", where we will deliver some silver plates and diplomas to those companies/institutions that have collaborated with the organisation of the Conference. We'll have all the lunches in one room of the same Galicia's Conference and Exhibition (Palacio de Congresos y Exhibiciones de Galicia) and on Friday March 30th, after 15:00 H, we'll have organised one excursion for to visit the Cathedral and other interesting places of Santiago de Compostela.

We hope that you will find the conference intellectually stimulating, that you will make many fruitful personal contacts here and that you will thoroughly enjoy your visit to Santiago de Compostela and the surrounding area.

Best regards,

Prof. Manuel Pérez-Donsión
Co-Chairman of the Local Committee
Chairman of the Steering Committee

Ángeles López Agüera
Co-Chairman of the Local Committee

ORGANISED BY:



The International Conference on Renewable Energies and Power Quality (ICREPQ'12), will be organized by:

- European Association for the Development of Renewable Energy, Environment and Power Quality (EA4EPQ)
- University of Vigo.
- University of Santiago de Compostela



CONFERENCE LANGUAGE

The Conference language is English. All papers and presentations should be made in English.

OBJECTIVES AND TOPICS

The intention of the organisers is to give an opportunity to academics, scientists, engineers, manufacturers and users from all over the world to come together in a pleasant location to discuss recent development in the areas of Renewable Energy and Power Quality.

The International Conference on Renewable Energy and Power Quality (ICREPQ'12) is structured in:

- **Plenary Sessions:** speech of 45 minutes in one room for all the participants
- **Oral Sessions:** speech of about 15 minutes for each paper (12 minutes for the presentation and 3 minutes for questions). Simultaneously in two rooms.
- **Posters Sessions:** In 45-minute periods during the coffee breaks.

1. RENEWABLE ENERGY:

- Wind Energy, Small Hydro Energy, Solar Energy, Photovoltaic Energy, Ocean Energy, Geothermal, Biomass, Cogeneration,...
- Classical and special electrical generators: Theory, design, analysis, losses, efficiency, heating and cooling, vibration and noise, modelling and simulation, control strategies, protection systems, maintenance, mechanical behaviour, new methods of testing, parallel operation, transmission system, stability,...
- Power plants. Distributed generation. Fuel cells. Co-generation. Hybrid Systems. Microgrids. Smart grids. Original solutions,...
- Energy conversion, conservation and energy efficiency.
- Energy saving policy. Energy storage. Batteries....
- Energy and the environment. Ecological balance. Ecosystem,...
- Application of the renewable energy. Best practice projects.
- Legislation in the area of renewable energies.
- Biomass combustion techniques. The energy use of agricultural and forest residues. Production and the energy exploitation of bio-gas. Environment. Social importance...
- Interconnection and transport problems.
- Planning and control of the power system take into account the renewable energy. Stability. Protection...



- Economic analysis of the power system take into account the renewable energy.
- Electricity Market Structures. Regulation/des-regulation of the power market. Influence of the renewable energy.
- Models and simulation of the power systems. Models and estimation of loads. Software tools.
- Application of the communications, internet, artificial intelligence for the renewable energy.
- Security assessment and risk analysis in renewable energy.
- Electric vehicles.
- Electrical Machines & Drives, Power electronics and Control strategies for renewable energy applications.
- Monitoring and Diagnostics of electrical machines & drives, Tools for Diagnostics, Test for Predictive Maintenance in Renewable...
- Sensors and actuators for renewable energy applications.
- Renewable Energies Teaching.

2. POWER QUALITY:

- Electromagnetic compatibility (EMC).
- Power Quality in Transport and Distribution. FACTS
- Economic Studies of the Power Quality.
- Low-frequency conducted disturbances: Voltage deviations, voltage fluctuations/flicker, voltage dips and short interruptions, harmonics and inter-harmonics, transient over-voltages, voltage unbalance (imbalance), temporary power-frequency variations.
- Sources, effects and mitigation methods of the disturbances.
- Measurements of the power quality in networks, industrial installations and Laboratories. Equipment, procedures and measurement methods. Standards.
- Modelling and simulation of the power quality. Software tools.
- Transmission of the disturbances.
- Filtering techniques.
- Power factor compensation. Capacitor switching techniques.
- Optimization techniques.
- Communication, internet and artificial intelligence.
- Permanent monitoring techniques and online diagnosis.
- Intelligent energy delivery systems. Uninterrupted power supplies.
- Expert systems applications.
- Devices, equipment and power systems. Control centres.
- Specific problems and studies cases.
- Power quality influence in deregulated markets.
- High frequency disturbances (radiated).
- Data security and electromagnetic pulses.
- Protection against natural and intentional EMI.

LOCAL ORGANIZING COMMITTEE

Manuel Pérez Donsión. University of Vigo (Co-Chairman)
Ángeles López Agüera. University of Santiago (Co-Chairman)
Juan Pardo Frojan. University of Vigo
Iago Rodríguez Cabo. University of Santiago de Compostela
Filipe T. Soares Oliveira. Polytechnic Institute of Leiria (Portugal)
Esteban Vieites Montes. University of Santiago de Compostela

INTERNATIONAL SCIENTIFIC COMMITTEE

Alexandru, Catalin (Romania)	Kladas, A. (Greece)
Ali, Muhammad (Arab Emirates)	Lee, Poh Seng (Singapore)
Andrada Gascón, P. (Spain)	Lemos Antunes, C. (Portugal)
Andras, Dan (Hungary)	Levi, Emil (U.K.)
Antunes, Fernando LM (Brasil)	Llombart Estopiñan, A. (Spain)
Apetrei, Dan (Romania)	Machado e Moura, A. (Portugal)
Arcega Solsona, F. (Spain)	Mañana Canteli, M. (Spain)
Arnaltes Gómez, S. (Spain)	Martinez, André (France)
Bargallo Perpiña, R. (Spain)	Narsimhulu, Sanke (India)
Basma El Zein (Saudi Arabia)	Niemenmaa, Asko (Finland)
Bendl, Jiri (Czech Republic)	Nocera, Francesco (Italy)
Betini, Roberto Cesar (Brasil)	Oraee, Hashem (Iran)
Biricik, Samet (Cyprus)	Ozdemir, Engin (Turkey)
Bitzer, Berthold (Germany)	Petkovska, L. (Macedonia)
Boccaletti, Chiara (Italy)	Pourmovahed, Ahmad (USA)
Bracale, Antonio (Italy)	Pratomo, Hariyo PS (Indonesia)
Brslica, Vit (Czech Republic)	Predescu, Mihai (Romania)
Burgos Payan, Manuel (Spain)	Redondo Gil, C. (Spain)
Buzdugan, Mircea (Romania)	Ribeiro, Hugo (Portugal)
Chaib, Ahmed (Algeria)	Robyns Benoit (France)
Catalão, João (Portugal)	Rusek, Jan (Poland)
Driesen, Johan (Belgium)	Saadate, S. (France)
Donsión, M.P. (Spain)	Salay Naderi, M. (Australia)
Duran, M. (Spain)	Salmerón Revuelta, P. (Spain)
El Qarnia, Hamid (Morocco)	Sashi, Paul (UK)
El-Sayed, Mohamed (Kuwait)	Sekhar Dash, Subhransu (India)
Ertan, H.B. (Turkey)	Shibli, Murad (Arab Emirates)
Faias, Sergio (Portugal)	Sinha, Ashoke Kumar (India)
Fernández Cabanas, M. (Spain)	Schlemmer, Erwin (Austria)
Figueiredo, J.M.G. (Portugal)	Souto, José A. (Spain)
Flores, Antonio (Portugal)	Stan, Sergiu-Dan (Romania)
Fraile Mora, Jesús (Spain)	Stenzel, Jürgen (Germany)
Funabashi, Toshihisa (Japan)	Stumberger, Gorazd (Slovenia)
Gagliano, Antonio (Italy)	Turschner, Dirk (Germany)
Gharehpetian, G.B. (Iran)	Tegopoulos, J.A. (Greece)
Ghita, Constantin (Romania)	Tekwani, P. (India)
Göl, Ozdemir (Australia)	Tlustý, Josef (Czech Republic)
Güemes Alonso, J.A. (Spain)	Torrente Lujan, E. (Spain)
Iwaskiewicz, J. (Poland)	Tudorache, Tiberiu (Romania)
Jeong Se Suh (Rep. of Korea)	Ubong, Etim (USA)
Jokinen, T. (Finland)	Valouch, V. (Czech Republic)
Jigeng Li (China)	Vergura, Silvano (Italy)
Jimoh, Adisa (South Africa)	Vinnikov, Dmitri (Estonia)
Jyotirmoy Roy (UK)	Vitale, Gianpaolo (Italy)
Kádár Péter (Hungary)	Zamora Belver, I (Spain)
Kiss, Péter (Hungary)	Zobaa Ahmed (UK)

STEERING COMMITTEE



Manuel Pérez Donsión (Chairman)
Ramón Bargalló Perpiña
Manuel Burgos Payan
Francisco Cavallé Sesé
Débora Coll Mayor
Antonio Espín Estrella
Mario Mañana Canteli
Miguel Martínez Melgarejo
Mariano Sanz Badía

SPONSORSHIP

Sincere thanks are expressed to the organisations listed below who have given valuable support to ICREPQ'12:

- EA4EPQ
- University of Vigo
- City Council of Santiago de Compostela
- University of Santiago de Compostela
- ABB
- CIRCUTOR
- Ministerio de Economía y Competitividad
- Sidilab
- Opal-RT
- AEDIE



ICREPQ'12 SCHEDULE

Tuesday March 27, 2012



17:00 – 19:00		Registration “ICREPQ’12 Secretariat”							
Wednesday March 28, 2012									
9:00 – 12:30		Registration “ICREPQ’12 Secretariat”							
10:00 – 10:45		Opening Ceremony ROOM A “ABB”							
10:45 - 11:30		PL1	Carlos de Palacio, ABB Power Systems: “ <i>Solutions for Systems with high Penetration of Renewable Energy: Stabilization, Grid Integration and Contingency</i> ”						
		EXTRA TIME FOR DISCUSSION							
11:30 – 12:15		Posters Session at ROOM C “CIRCUTOR” (Session C1) Coffee Break	Poster Session C1						
			210	212	218	230	233	239	
			240	245	246	247	250	251	
			253	255	258	261	265	267	
			268	271	276	277	283	287	
			288	289	291	293	295	307	
			330	331	339	345	351	372	
			375	378	397	410	411	432	
			440	441	453	458	468	471	
			482	483	545	569	676	710	
825	850								
12:15 – 13:00		ROOM A “ABB”							
		PL2	Jian Sun, Prof. of NY State Center for Future Energy Systems, “ <i>Power Quality in Renewable Energy Systems – Challenges and Opportunities</i> ”						
13:00 – 15:00		Welcome Lunch							
15:00 – 16:30		ROOM A “ABB”			ROOM B “U. de Santiago”				
		Oral Session A1			Oral Session B1				
		225	228	234	200	296	342		
		241	709	865	390	396	781		
		EXTRA TIME FOR DISCUSSION							
16:30 – 17:15		Poster Session at ROOM C “CIRCUTOR” (Session C2) Coffee Break	Poster Session C2						
			298	299	300	301	303	305	
			308	311	314	315	318	320	
			324	329	335	336	338	346	
			349	355	356	364	367	368	
			370	377	382	383	384	385	
			388	392	394	400	414	417	
			420	423	428	434	439	448	
			456	459	460	465	468	471	
			476	479	480	481	498	783	
834	835								
17:15 – 19:00		ROOM A “ABB”			ROOM B “U. de Santiago”				
		Oral Session A2			Oral Session B2				
		260	274	290	310	280	285	292	334
		353	757	811		449	625	820	
		EXTRA TIME FOR DISCUSSION							
19:30		Welcome Civic Reception							
Thursday March 29, 2012									
9:00 – 12:30		Registration “ICREPQ’12 Secretariat”							
		ROOM A “ABB”							

9:00 – 9:45	PL3	Fernando Nuño, Project Manager for Electricity and Energy, European Copper Institute “Copper Rotor Technology for Electric and Hybrid Vehicles”						
9:45 – 10:30	PL4	Noor E. Alam Ahmed, Prof. of the University of New South Wales, Australia, “Novel Development towards Efficient and Cost Effective Wind Energy Generation and Utilization fo Sustainable Environment”						
	EXTRA TIME FOR DISCUSSION							
10:30– 11:15	Poster Session at ROOM C “CIRCUTOR” (Session C3) Coffee Break	Poster Session C3						
		415	421	494	495	498	500	
		503	504	505	508	509	510	
		512	515	517	519	521	523	
		528	530	532	538	542	543	
		553	554	556	557	559	564	
		571	574	578	580	588	589	
		590	593	594	603	609	610	
		619	663	686	698	701	703	
		742	819	828	863	867	868	
11:15 – 13:00	ROOM A“ABB”				ROOM B “U. de Santiago”			
	Oral Session A3				Oral Session B3			
	361	362	393	407	317	484	487	615
	450	514	722		683	759	841	
EXTRA TIME FOR DISCUSSION								
13:00 – 15:00	Lunch							
15:00 – 16:30	ROOM A“ABB”				ROOM B “U. de Santiago”			
	Oral Session A4				Oral Session B4			
	533	565	566		327	461	525	
	597	680	764		546	573	705	
EXTRA TIME FOR DISCUSSION								
16:30 - 17:15	Poster Session at ROOM C “CIRCUTOR” (Session C4) Coffee Break	Poster Session C4						
		286	437	600	611	612	614	
		617	621	623	626	629	634	
		637	638	644	649	651	654	
		659	660	664	671	672	675	
		678	679	682	692	696	697	
		713	715	716	719	723	724	
		727	728	729	733	735	738	
		739	740	741	743	746	747	
		749	750	751	752	753	762	
17:15 - 19:00	ROOM A” ABB”				ROOM B “U. de Santiago”			
	Oral Session A5				Oral Session B5			
	408	469	667	673	547	567	569	695
	688	699	780		702	773	803	
EXTRA TIME FOR DISCUSSION								
19:30	Conference Dinner (Optional) Parador “Hostal dos Reis Catolicos”							

Friday March 30, 2012	
9:00 – 12:30	Registration “ICREPQ’12 Secretariat”



	ROOM A “ABB” Plenary Session PL5							
9:00-9:45	PL5	Subhransu Sekhar Dash, Prof. SRM Engineering College, India “Perfomance Analysis of Multilevel Inverters Using Variable Switching Frequency Carrier Based PWT Techniques”						
		EXTRA TIME FOR DISCUSSION						
9:45 – 10:30	Poster Session at ROOM C “CIRCUTOR” (Session C5) Coffee Break	Poster Session C5						
		215	220	322	326	374	537	
		549	604	607	768	769	775	
		776	786	787	788	789	791	
		792	793	799	802	804	805	
		806	809	812	815	816	818	
		822	823	826	829	830	832	
		833	838	839	840	842	843	
		845	846	847	849	853	854	
		856	858	860	861	870		
10:30 – 12:15	ROOM A “ABB”				ROOM B “U. de Santiago”			
	Oral Session A6				Oral Session B6			
	243	256	433	704	272	312	439	591
	712	714	720		718	770	771	
EXTRA TIME FOR DISCUSSION								
12:15– 13:00	ROOM A “ABB”							
	CLOSING SESSION							
	Conclusions and time for the next conference (ICREPQ’13)							
	Awards for the three best posters							
13:00 – 15:00	Farewell Lunch							
15:00	Excursion for to visit the City of Culture, the Cathedral and other interesting places of Santiago de Compostela							

Room A: ABB
Room B: Universidad de Santiago
Room C: CIRCUTOR

AUTHORS

Oral Presentations



Each speaker of an oral presentation has an available time of 15 minutes (12 minutes for the presentation and 3 minutes for questions) and must be in the session room 10 minutes before of the beginning of the session for to test the audiovisual equipment and for to exchange opinions with the Session Chairman. We suggest that the speakers of one oral presentation prepare their material in Power Point.

Poster Presentations

The posters must be numbered, on the up left corner, with the number of the paper and it will be put, about 15 minutes before of the beginning of the session, on the pin board that you previously can chose and it must be take off 15 minutes after of the end of the session. The author(s) must be stay near the poster during the 45 minutes of the session duration for to answer all the questions that the audience or the chairmen could formulate. The maximum available surface for each poster will be 1200 mm x 1800 mm (width x high). You must select your poster size take into account this maximum available surface (Perhaps an A0 size, 841×1189 mm (width x high), could be apropiate). Put on the pin board separated sheets of the paper are not allowed.

SESSION CHAIRMEN

On behalf of the Steering Committee and the Organising Committee of the ICREPPQ'12 we have selected, take into account their eminent position in the world of science, 42 session chairmen. It is an honor for us their collaboration for to chair the sessions of ICREPPQ'12 and their contribution would be greatly appreciated. We wish to express our warmest thanks.

Traditionally the Chairmen of each Session are independent in organising the Session. Nevertheless it is of special importance that the different session chairmen prepare some questions about the papers of their session in order to get a more dynamic one. Furthermore we expect of the session chairmen the following:

Plenary sessions

Each plenary session should not exceed 45 minutes including presentation and discussion, (40 minutes for presentation and 5 minutes for questions).

Oral sessions

Each oral paper presentation should not exceed 15 minutes including presentation and discussion, (12 minutes for presentation and 3 minutes for questions).

Poster sessions

The author(s) of a poster presentation must be stay near the poster during the 45 minutes of the session duration and in order to get a more dynamic session it is important that along this period of time each of the chairmen of the poster sessions formulate questions to the authors and check that all is OK. The chairmen also file up a sheet with puntuactions for each presented poster and then take into account these evaluations the Organizers will deliver during the Closing Session a present to the three best posters.

Chairmen Session distribution

Wednesday 28 th March, 2012		
10:45-11:30	PLENARY SESSION PL1	Gevork B. Gharehpetian

11:30-12:15	POSTER SESSION C1	José Antonio Güemes
		Josef Tlustý
		Sergio A. Oliveira da Silva
		Vlatko Stoilkov
		Liliana Tenti
12:15-13:00	PLENARY SESSION PL2	Gianpaolo Vitale
15:00-16:30	ORAL SESSION A1	Subhransu Sekhar Dash
	ORAL SESSION B1	Roberto Cesar Betini
16:30-17:15	POSTER SESSION C2	Stephen Carr
		Antonio Pina Martins
		José A. Dominguez Navarro
		Thiago Mota Soares
		Tomas Yebra Vega
17:15-18:45	ORAL SESSION A2	Sieniutycz Stanislaw
	ORAL SESSION B2	Gorazd Stumberger
Thursday 29th March, 2012		
9:15-10:00	PLENARY SESSION PL3	Carlos Redondo Gil
10:00-10:45	PLENARY SESSION PL4	Inmaculada Zamora Belver
10:45-11:30	POSTER SESSION C3	Ramsey Saunders
		Sergio M. Redondo Faias
		José Roberto Camacho
		Mohamed El Sayed
		Byung-Moon Han
11:30-13:00	ORAL SESSION A3	Aurelian Craciunescu
	ORAL SESSION B3	William Weston
15:00-16:30	ORAL SESSION A4	Janis Kalnacs
	ORAL SESSION B4	Pere Andrada Gascon
16:30-17:15	POSTER SESSION C4	Vicente Teixeira Leite
		Antonio Pulido Alonso
		Pavel Kulha
		Motoo Ishikawa
		Francisco Kleber de Araujo
17:15-18:45	ORAL SESSION A5	Berthold Bitzer
	ORAL SESSION B5	Ji-An Wang
Friday 30th March, 2012		
9:15-10:00	PLENARY SESSION PL5	Péter Kádár
10:00-10:45	POSTER SESSION C5	José I. San Martín Díaz
		Przemyslaw Janik
		Lidiia Kovernikova
		Yudong Ma
		Raos Riad Massad
10:45-12:15	ORAL SESSION A6	Augusto Fleury Veloso
	ORAL SESSION B6	Vit Brslica

Wednesday March 28th 2012

10:00-10:45 OPENING CEREMONY

ROOM A “ABB”

10:45-11:30 Plenary Session PL1

ROOM A "ABB"

Chairman: **Gevork B. Gharehpetian**

Solutions for Systems with high Penetration of Renewable Energy: Stabilization, Grid Integration and Contingency

Carlos de Palacio. ABB Power Systems

Wednesday March 28th 2012

11:30-12:15 Poster Session C1 – Coffee Break

ROOM C "CIRCUTOR"

Chairmen: **José Antonio Güemes, Josef Tlustý, Sergio A. Oliveira da Silva, Vlatko Stoikov, Liliana Tenti**

- 210 Self-Extinguishing Faults in MV Cable Networks - Feasibility Study of Fault Prediction**
Fabian Koehler(1), Sjef Cobben(2), Frans Provoost(1)
1. Alliander – The Netherlands
2. Alliander – The Netherlands Eindhoven, University of Technology
- 212 A Novel Power Quality Monitor Placement Method Using Adaptive Quantum-Inspired Binary Particle Swarm Optimization**
A. A. Ibrahim, A. Mohamed, H. Shareef
Department of Electrical, Electronic and Systems Engineering. University Kebangsaan Malaysia
- 218 Dimension and Production of a turbine Type Francis**
Elmo Thiago Lins Côuras Ford(1), Ana Catarina Mendes Barradas(2), José Ubiragi de Lima Mendes(3), Rubens Maribondo do Nascimento(3)
1.Universidade do Porto / Universidade Federal do Rio Grande do Norte.
2.Universidade de Coimbra. Portugal
3.Universidade Federal do Rio Grande do Norte – UFRN. Brazil
- 230 Comparative study of the opportunity to use Renewable Energy Sources to supply Residential Consumers**
F. D. Surianu, I. Borlea, D. Jigoria-Oprea, B. Lustrea
Department of Power Engineering "Politehnica" University of Timisoara. Romania
- 233 Performance analysis of Euro-zone energy companies**
Valdir de J. Lameira(1), Silvano Vergura(2), Osvaldo L. G. Quelhas(3), Roberto G. Pereira(4)
1. Researcher at Energy Economics INESC Coimbra. Portugal
2. Department of Electrotechnics Politecnico di Bari. Italy
3. Federal Fluminense University, TEC/MSG. Brazil
4. Federal Fluminense University, TEM/PGMEC/MSG. Brazil
- 239 Computational Simulation versus Scale Model to determine the Optimal Shape of Tension Structures for the use of Sunlight in Road Tunnels**
L.M. Gil-Martín(1), A. Peña-García(2), R. Escibano(3), A. Espín-Estrella(2)
1. Department of Structural Mechanics. ETSICCP, University of Granada. Spain
2. Department of Civil Engineering. ETSICCP, University of Granada. Spain
3. Department of Graphical Expression in Architecture and Engineering. ETSIE, University of Granada. Spain
- 240 Development of a Monte Carlo simulation tool in order to minimize polluting gases emissions in presence of wind power under cost and load covering constraints**
F. Vallée(1), C. Versèle(2), J. Lobry(2) F. Moïny(1)
1. Department of General Physics Faculté Polytechnique, University of Mons .Belgium
2. Department of Electrical Power Engineering Faculté Polytechnique, University of Mons. Belgium

- 245 Effect of Superconducting Fault Current Limiters on Successful Interruption of Circuit Breakers**
M. Firouzi (1), S. Aslani(1), G. B. Gharehpetian(2), A. Jalilvand (3)
1. Department of Electrical Engineering, Islamic Azad University, Abhar. Iran
2. Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran
3. Electrical Engineering Department, University of Zanjan. Iran
- 246 Frequency Variations of Power System Due to Switching of Renewable Energy Sources**
W. L. Fuchs , E. F. Fuchs
University of Colorado at Boulder Department of Electrical, Computer and Energy Engineering, Boulder, Colorado. USA
- 247 Wind building design**
M, Martínez, A. Pulido, J. Romero, N. Angulo, C. Roca
Department of Electrical Engineering Universidad de Las Palmas de Gran Canaria. Spain
- 250 Control Strategies for a Power Electronic Based Fault Current Limiter (FCL) in No-Fault Operation**
Manuel Weiland, Christoph Hahn, Gerhard Herold
Institute of Electrical Power Systems, University of Erlangen-Nuremberg. Germany
- 251 Control Design for a Power Electronic Based Fault Current Limiter (FCL)**
Christoph Hahn, Manuel Weiland, Gerhard Herold
Institute of Electrical Power Systems of the University of Erlangen-Nuremberg. Germany
- 253 The Sampling Theorem based Methodology for Harmonics Analysis**
P. Bokoro(1), J. Pretorius(2), M. Case(1)
1. Department of Electrical & Electronic Engineering Technology. University of Johannesburg.
2. Department of Electrical & Electronic Engineering Science. University of Johannesburg.
South Africa
- 255 Temperature of Wood Char Particles Burning in a Fluidized Bed Reactor**
N. Tomé, N. Rangel , C. Pinho
CEFT/DEMec, Faculdade de Engenharia, Universidade do Porto. Portugal
- 258 A Simplified Life Cycle Assessment applied to a coupled Solar and Eolic street light**
Jean-Luc Menet
Université Lille Nord de France, ENSIAME, UVHC. France
- 261 Analysis and Energetic Characterization of Low-Power Grid-Connected Photovoltaic Systems**
António P. Martins, Domingos M. Carvalho
Department of Electrical and Computer Engineering, Faculty of Engineering, University of Porto. Portugal
- 265 Educational Architecture: Evaluation of and Proposals for Energy Performance of the Building Envelope**
Aimilios Michael
Department of Architecture, School of Engineering, University of Cyprus. Nicosia
- 267 Innovative Construction Component**
Aimilios Michael (1), Maria Eftychi(2), Flora Bougiatioti(3)
1. Department of Architecture, School of Engineering, University of Cyprus. Nicosia
2. University of Nicosia, Department of Architecture. Cyprus
3. N.T.U.A., Faculty of Architecture, Department of Architectural Technology, Athens. Greece

- 268 Construction Design and Sustainability in Architecture: Integrating Environmental Education in the Architectural Studies**
Aimilios Michael , Marios C. Phocas
Department of Architecture, School of Engineering, University of Cyprus. Nicosia
- 271 Feasibility study of biogas in CHP plant for a pig farm**
F. Patania , A. Gagliano, F. Nocera , A. Galesi
Department of Industrial and Mechanics Engineering D.I.I.M., Catania University. Italy
- 276 Analysis and Characterization of a Square-Wave Modulation Method for Single-Phase Cascaded H-Bridge Multilevel Inverters**
João C. Faria , António P. Martins
Department of Electrical and Computer Engineering Faculty of Engineering University of Porto. Portugal
- 277 Study of Shunt Active Power Filters Applied to Three-Phase Four-Wire Systems**
E. J. Acordi, L. B. G. Campanhol, S. A. O. Silva, C. B. Nascimento , A. Goedel
Department of Electrical Engineering. Federal Technological University of Paraná - UTFPR .Brazil
- 283 A practical model to obtain the energy produced by Grid-Connected Photovoltaic Systems (GCPVS) in different parts of the Spanish geography**
Rafael M. Lamaison, Javier Raventós
Department of Electrical Engineering. U.P.C Politechnical University of Catalonia, Barcelona, Spain
- 287 Strategies to Reduce the Use of Fossil Fuels**
Roberto C. Betini
Departamento Acadêmico de Eletrotécnica - Universidade Tecnológica Federal do Paraná. Curitiba-PR. Brazil
- 288 Renewable energy sources – a promising opportunity for remote mine sites?**
J. Paraszczak , K. Fytas
Department of Mining, Metallurgical and Materials Engineering Université Laval, Quebec City. Canada
- 289 Digital controller for an isolated Step-Up DC-DC converter based on three-phase high-frequency transformer for grid-connected PV applications**
R. D. O. Reiter(1), J. R. Pinheiro(2), A. Peres(1), L. Michels(2), S. V. G. Oliveira(1)
1. Regional University of Blumenau (FURB). Brazil
2. Federal University of Santa Maria (UFSM). Brazil
- 291 Grid-connected PV-systems Joule design using Evolutionary Strategies**
Daniel Gómez-Lorente , Enrique Alameda Hernández, F. Aznar Dols, M.J. Mercado Vargas, A. Espín Estrella
Electrical Eng. Section, Department of Civil Engineering, E.T.S.I.C.C.P, Granada University. Spain
- 293 2D Vibration based MEMS Energy Harvester**
Sehwan Kim, Kukjin Chun
Department of Electrical Engineering and Computer Science Seoul National University. Korea
- 295 Geothermal energy: Present use, Resources and Technology**
M. R. Duque
Department of Physics Évora University. Portugal
- 307 Input Current Distortion and Output Voltage Regulation of the Boost PFC Converter Operating with Different Control Method**
António P. Martins, António M. Cardoso



Department of Electrical and Computer Engineering, Faculty of Engineering, University of Porto.
Portugal

- 330 Signal injection techniques for fault location in distribution networks**
G. Buigues, V. Valverde, I. Zamora, J. Mazón, E. Torres
Department of Electrical Engineering, Faculty of Engineering of Bilbao. University of the Basque Country. Spain
- 331 Study of an Outer-Rotor PMSG for use in Small Wind Applications**
P. M. García, V. Moreno, O. Azurza, I. Arrambide
Department of Electrical Engineering, University of the Basque Country. Donostia- San Sebastian. Spain
- 339 Advanced tools for electricity consumption monitoring**
M. Domínguez, J.J. Fuertes, S. Alonso, M.A. Prada, A. Morán, P. Barrientos
SUPPRESS Research Group, University of León. Escuela de Ingenierías. Spain
- 345 Output DC Voltage Control Strategy for Switched Reluctance Generator**
G.P.Viajante(1), D.A.Andrade(2), A. W. F. V. Silveira(2), M.A.A.Freitas(1), L.C.Gomes(2), V. R. Bernardeli (2), L.G.Cabral(2), M.B. Rêgo
1. Federal Institute of Education, Science and Technology of Goiás. Brazil
2. Federal University of Uberlandia. Brazil
- 351 Ferroresonant Configurations in Power Systems**
V. Valverde, G. Buigues, A. J. Mazón, I. Zamora, I. Albizu
Department of Electrical Engineering. Faculty of Engineering of Bilbao. University of the Basque Country. Spain
- 372 Total integration of renewable and fossil energy aiming to a clean and sustainable energy system**
D.G. Pinatti, R.A. Conte
Department of Materials Engineering. Escola de Engenharia de Lorena, Sao Paulo University. Brazil
- 375 Modelling, Iterative Procedure and Simulation Results for a Monocrystalline Solar Cell**
S. Saraiva(1), R. Melício(1,2), J.C.O. Matias(1), C.M.P. Cabrita(1) J.P.S. Catalão(1,2)
1. University of Beira Interior and CAST. Covilhã. Portugal
2. Center for Innovation in Electrical and Energy Engineering, Instituto Superior Técnico. Lisbon Portugal
- 378 High efficiency energy supply in residential sector using Fuel Cells**
J.I. San Martín(1), I. Zamora(2), J.J. San Martín(1) V. Aperribay(1), P. Eguía(2), F.J. Asension(2), J. Garcia(2)
1. Escuela de Ingeniería de Eibar. Department of Electrical Engineering - University of the Basque Country. Spain
2. Escuela Técnica Superior de Ingeniería de Bilbao. Department of Electrical Engineering- University of the Basque Country. Spain
- 397 Loss-Optimised-Management-Algorithm and the usage in an energy management for low-voltage grids**
J. Teuscher, V. Zeising, W. Schufft
Power Systems and High-Voltage Engineering. Faculty of Electrical Engineering and Information Technology. Chemnitz University of Technology. Germany
- 410 Vertical Axis Wind Turbine Performance Prediction: An Approach to the Double Multiple Streamtube Model**
N.C. Batista(1), R. Melício(1,2), J.C.O. Matias(1), J.P.S. Catalão(1,2)



1. University of Beira Interior. Covilhã .Portugal
 2. Center for Innovation in Electrical and Energy Engineering, Instituto Superior Técnico. Lisbon Portugal
- 411 Analysis of a Single-Phase Line-Interactive UPS System**
R. A. Modesto(1), S. A. O. Silva(1), R. Barriviera(2), M. Kaster(1)
1. Department of Electrical Engineering. Federal Technological University of Paraná, UTFPR. Brazil
2. Department of Electrotechnic. Federal Institute of Paraná – IFPR- CEP.Brazil
- 432 Controllogger: A remote monitoring system for decentralized renewable energy sources**
Fabio T. Brito(1), Sandro C.S. Jucá(1) Paulo C.M. Carvalho(2)
1. Federal Institute of Education, Science and Technology of Ceará I.F.C.E. Brazil
2. Federal University of Ceará U.F, Fortaleza. Brazil
- 440 Separation of common and differential mode conducted emission: Power combiner/splitters**
Dennis Nielsen, Ole Cornelius Thomsen, Michael A.E Andersen
Technical University of Denmark, Department of Electrical Engineering, Lyngby. Denmark
- 441 Renewable Energies Increase, Fossil Fuels Replacement and Nuclear Option Assessment in the Portuguese Energy Mix**
P.T. Flores(1), J.C.O. Matias(1), C.M.P. Cabrita(1), V.M.F. Mendes(2), J.P.S. Catalão(1,3)
1. University of Beira Interior and CAST, Covilhã. Portugal
2. Instituto Superior de Engenharia de Lisboa, Lisbon, Portugal
3. Center for Innovation in Electrical and Energy Engineering, Instituto Superior Técnico. Lisbon. Portugal
- 453 Comparison of methods for implementing virtual synchronous machine on inverters**
Yong Chen, Ralf Hesse, Dirk Turschner, Hans-Peter Beck
Institute of Electrical Power Engineering, Clausthal-Zellerfeld. Germany
- 458 Analysis of an infrared burner working with hybrid fuel: LPG / bio-oil**
Oliveira, Breno Costa Correa(2), Azevedo Neto, Aluisio(1), Fontes, Francisco de Assis Oliveira(2), Barbosa, Cleiton Rubens Formiga(2), Filho, Franklin, Rocha de Azevedo
1. Companhia Potiguar de Gás. POTIGÁS. Brazil
2. Universidade Federal do Rio Grande do Norte – UFRN. Campus Universitário, Lagoa Nova. Brazil
- 468 Remodelling of the heating systems of a sports centre based on life cycle assessment. Part I: Boiler replacement**
I. Oribe García, A. Alonso Vicario, A.M. Macarulla Arenaza
Deusto Institute of Technology – DeustoTech Energy. University of Deusto, Bilbao. Spain
- 471 Proposal of a Power Quality Analyzer for the new Brazilian Distribution Procedures (PRODIST)**
G. S. Wojichowski(1), C. D. P. Crovato(2), R. C. Leborgne(1)
1. Department of Electrical Engineering, Universidade Federal do Rio Grande do Sul. Brazil
2. Feevale University. Rio Grande do Sul. Brazil
- 482 An Approach to Decrease Transient Circulating Current of VSIs in an Islanded Microgrid**
M. Kohansal, G. B. Gharehpetian, M.Aghaei, M. J. Sanjari
Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran
- 483 A Simple Method for Detection of Voltage Sags and their Mitigation using a Dynamic Voltage Restorer**
P.Meena(1), K.Umarao(2), Ravishankar Deekshit(3)



1. Department of Electrical & Electronics Engineering, M.S. College of Engineering, Bangalore. India
2. Department of Electronics & Communication Engineering, RNS Institute of Technology, Bangalore. India
3. Department of Electrical & Electronics Engineering, B.M.S. College of Engineering. Bangalore. India

545 Design and analysis of a Hybrid Drying Using Renewable Technologies

Emérita Delgado(1,2), Juan Peralta(1), Ivan Arboleda(1), A Lopez Agüera(2)

1. Center of Technology Development Sustainable Mechanical Engineering
Escuela Superior Politécnica del Litoral (ESPOL). Ecuador
2. Sustainable Energetic Applications Group. Astroparticle Group. Physics Faculty,
Santiago de Compostela University. Spain

569 Modelling and Validation of the Magnetizing Curve to Represent Saturated Core Reactor Using ATP Simulator

J.A.F. Barbosa Jr, J. C. Oliveira, T. V. Silva, I. N. Gondim, F. P. Santilio, L. N. Velasco
Faculty of Electrical Engineering UFU, Federal University of Uberlândia. Brazil

676 Power output fluctuations in large PV plants

J. Marcos(1), L. Marroyo(1), E. Lorenzo(2), M. García(1)

1. Departamento de Ingeniería Eléctrica y Electrónica, Universidad Pública de Navarra.
Pamplona. Spain
2. Instituto de Energía Solar, Grupo de Sistemas, ETSI Telecomunicación, Madrid. Spain

710 Decision Support in the Investment Analysis on Efficient and Sustainable Electrical Equipment

J.A. Lobão(1), T. Devezas(2), J.P.S. Catalão(2)

1. Polytechnic Institute of Guarda. Portugal
2. University of Beira Interior and CAST, Covilhã. Portugal

825 2.3 MW Biomass Steam Power Plant: Experimental and Thermodynamic Analysis

A. Gimelli(1), A. Luongo(2)

1. DIME – Department of Mechanical and Energy, Univ. degli Studi di Napoli Federico II. Italy
2. Faculty of Engineering, Univ. degli Studi di Napoli Federico II. Italy

850 Optimal orientation procedure of photovoltaic solar systems through the use of a multicellular photovoltaic sensor

J.C. Sáenz-Díez Muro(1), J.M. Blanco Barrero(1), E. Jiménez Macías(1), J. Blanco Fernández(2),
Eduardo Martínez Cámara(2), M. Pérez de la Parte(2)

1. Department of Electrical Engineering E.T.S.I.I., La Rioja University, Logroño. Spain
2. Department of Mechanical Engineering, E.T.S.I.I., La Rioja University, Logroño. Spain

Wednesday March 28th 2012

12:15-13:00 Plenary Session PL2

ROOM A “ABB”

Chairman: **Gianpaolo Vitale**

Power Quality in Renewable Energy Systems – Challenges and Opportunities

Jian Sun. Prof. of NY State Center for Future Energy Systems

13:00 – 15:00

Welcome Lunch

Wednesday March 28th 2012

15:00-16:30 Oral Session A1

ROOM A “ABB”



Chairman: **Shubhransu Sekhar Dash**

- 225** **SMART GRID framework for Pakistan” Perception to practicality**
Arjumand Samad
Electrical Engineering Department NED University of Engineering and Technology. Pakistan
- 228** **Investigation of the stall delay of a 5kW horizontal axis wind turbine using numerical method**
Hsiao Mun Lee, Leok Poh Chua
School of Mechanical & Aerospace Engineering Nanyang Technological University. Singapore
- 234** **Energy conservation using high-efficiency electric motors**
Sergio Roberto Jardim, Gilmar Barreto
State University of Campinas - UNICAMP, School of Electrical and Computer Engineering – FEEC.
Department of Machine Components and Smart Systems - DMCSI Brazil
- 241** **CFD simulations for investigating the wake states of a new class of tidal turbine**
Muluaem G. Gebreslassie, Gavin R. Tabor, Michael R. Belmont
College of Engineering, Mathematics and Physical Sciences. University of Exeter.
United Kingdom
- 709** **Carbon Emission Comparison between Natural Gas and Electric Resistance for Water Heating**
Gabriel Cury Martins de Oliveira(1), Ricardo Abranches Felix Cardoso Junior(2)
1. Environmental Engineer , Lagoa – Macaé/RJ. Brazil
2. Agricultural and Environmental Engineering Department, Universidade Federal Fluminense (UFF). São Domingos-Niterói/RJ. Brazil
- 865** **The Reliability Investigation on ACSR Splice Connector Systems Used in Overhead Power Transmission Lines**
Jy-An John Wang, Hao Jiang, Fei Ren
Oak Ridge National Laboratory, Oak Ridge. USA

Wednesday March 28th 2012

15:00-16:30 Oral Session B1

ROOM B “Univ. de Santiago”



Chairman: **Roberto Cesar Betini**

- 200 General Properties of Approaches Maximizing Power Yield in Thermo-Chemical Systems**
Stanislaw Sieniutycz
Faculty of Chemical and Process Engineering at Warsaw TU. Poland
- 296 An extended EMC study of an electrical powertrain for transportation systems**
B. Chand, J. Kehie, S. Dickmann
Faculty of Electrical Engineering, Helmut-Schmidt-University / University of the Federal Armed Forces Hamburg. Germany
- 342 Voltage Dip Immunity of Equipment and Installations Messages to stakeholders**
M. Bollen(1), S. Cundeva(2), R. Neumann(3), J. Gordon(4), S. Djokic(5), K. Stockman(6), G. Ethier(7), K. van Reussel(8)
1. Luleå University of Technology, Skellefteå, Sweden
2. Sts Cyril and Methodius University, Faculty of Electrical Engineering and IT, Skopje, Macedonia
3. Qualitrol, Belfast. United Kingdom
4. Endesa. Sevilla. Spain
5. University of Edinburg. United Kingdom
6. Hogeschool West Vlaanderen, Kortrijk. Belgium
7. Hydro Quebec, Montreal. Canada
8. KU Leuven. Belgium
- 390 Power Quality Analyzer implemented with Matlab and Data Acquisition Toolbox**
Omar Pinzón Ardila
Universidad Pontificia Bolivariana, Bucaramanga, Santander. Colombia
- 396 An optimization approach to calculation of passive filter parameters based on particle swarm optimization**
L. I. Kovernikova(1), Nguyen Chi Thanh
1. The Siberia Branch of the Russian Academy of Sciences. Energy Systems Institute. Irkutsk Russia
2. Irkutsk State Technical University, Hanoy. Vietnam
- 781 A Matrix converter-interfaced PM Generator System with Active Filtering Capabilities**
Nathalie Holtsmark, Marta Molinas
Department of Electric Power Engineering, Norwegian University of Science and Technology Trondheim. Norway

Wednesday March 28th 2012 16:30-17:15 Poster Session C2 – Coffee Break	ROOM C “CIRCUTOR”
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Chairmen: **Stephen Carr, Antonio Pina Martins, Dominguez Navarro, Thiago Mota Soares, Tomas Yebra Vega**

- 298 Power Control of a Wind Energy Conversion System based on a Doubly Fed Induction Generator using RST and Sliding Mode Controllers**
A. Belabbes(1), B. Hamane(2), M. Bouhamida(1), A. Draou(2)
1. Department of Electrical Engineering L.D.E.E Laboratory, University Mohamed Boudiaf, Oran. Algeria
2. Department of Electrical Engineering, Hail University, Hail. Saudi Arabia
- 299 Development of Solar Powered Boat for Maximum Energy Efficiency**
Juraci Carlos de Castro Nóbrega(1,2), Andrej Rossling(2)
1. Department of Electrical Engineering U.F.A.M., Amazonas University. Brazil
2. ANAST – Naval Architecture Research Unit., Liège University. Belgium
- 300 Pressurized concentrated solar power receiver designed to operate with closed Brayton cycles**
R. Ferreira Garcia(1), R. Borrás Formoso(1), A. DeMiguel Catoira(2), J. Romero Gomez(2)
1. Department of Industrial Engineering .E.T.S.N.M., A Coruña University. Spain
2. Department of Energy and Propulsion. E.T.S.N.M., A Coruña University. Spain
- 301 An efficient parabolic dish engine based on Rankine cycle**
R. Ferreira Garcia(1), J. Carbia Carril(2), A. DeMiguel Catoira(2), J. Romero Gomez(2)
1. Department of Industrial Engineering .E.T.S.N.M., A Coruña University. Spain
2. Department of Energy and Propulsion. E.T.S.N.M., A Coruña University. Spain
- 303 Accuracy Improvement in One-day Ahead Wind Power Output Prediction by Computational Fluid Dynamics Calculation**
T. Kumano
Department of Electronics & Bioinformatics. School of Science and Technology, Meiji University. Japan
- 305 Electrical losses in multi-MW wind energy conversion systems**
A. Madariaga(1), C. J. Martinez de Ilarduya(1), S. Ceballos(2), I. Martinez de Alegria(1), J.L. Martin(1)
1. Engineering Faculty of Bilbao, University of the Basque Country, Bilbao. Spain
2. Tecnalia Research & Innovation. Parque Tecnológico de Bizkaia, Derio. Spain
- 308 Permanent magnet wind generators: control strategies to manage voltage unbalances**
F. Belloni, R. Chiumeo, C. Gandolfi
RSE – Ricerca sul Sistema Energetico, Milano. Italy
- 311 An ensemble-in-time forecast of solar irradiance**
D. Díaz, J.A. Souto, A. Rodríguez, S. Saavedra, J.J. Casares
Department of Chemical Engineering. School of Engineering. University of Santiago de Compostela. Spain
- 314 Flicker Emission Analysis of a Wind Farm**
Diego Sebastián Giacosa Berriel, Gabriela Bonessi Menoni, Tomás Di Lavello Mussi, Diego Nieves Martín
Planning and Distribution Studies, UTE, Montevideo. República Oriental del Uruguay
- 315 Extending the Lifetime of Power Transformers by using Fault Current Limiting Devices in the Network Distribution**
T. Madiba, A. A. Jimoh, W.M. Siti, B. Numbi
Department of Electrical Engineering. Tshwane University of Technology

Faculty of Engineering and the Built Environment, Pretoria. Republic of South Africa

- 318 Voltage Dip Measurements along MV lines vs Primary Substations Measurements**
F. Belloni, C. Chiappa, R. Chiameo, L. Garbero, F. Malegori, L. Tenti
RSE - Ricerca sul Sistema Energetico, Milano. Italy
- 320 Low Cost Dynamic Voltage Restorer**
M. E. C. Brito(1), M. C. Cavalcanti(2), L. R. Limongi(2), F. A. S. Neves(2)
1. Department of Planning of Automation and Systems, Utility Company of Pernambuco (CELPE) Recife, PE. Brazil
2. Department of Electrical Engineering, Federal University of Pernambuco (UFPE). Recife, PE. Brazil
- 324 Development of Multifunctional Platform for Education, Research and Promotion of Renewable Energy Sources**
V. Stoilkov, D. Dimitrov, M. Stankovski, H. Spasevska
Faculty of Electrical Engineering and Information Technologies, Sts Cyril and Methodius University in Skopje. Macedonia
- 329 Modelling and Simulation of a Unified Power System Incorporating Large Scale Wind Farms via Open Source Code Package**
A. S. Alwadie, A. M. Abdel-Hamid
Department of Electrical Engineering, Faculty of Engineering, Najran University. Saudi Arabia
- 335 Characteristics of Twin-Runner Darreus Water-Turbines for Tidal Current Power Generation**
K. Hiraki(1), R. Wakita(1), T. Kanemoto(1), M. Takao(2), R. Yagami(3)
1. Department of Mechanical and Control Engineering. Kyushu Institute of Technology, Sensui, Tobata, Kitakyushu, Fukuoka. Japan
2. Matsue College of Technology, Nishi-ikuma, Matsue, Shimane. Japan
3. Kitakyushu National College of Technology, Kitakyushu, Fukuoka, Japan
- 336 Reduction of pipe wall erosion by creating a vortex flow in anthracite powder pneumatic transport for power plants**
Dorina Ionescu
Department of Mechanical Engineering Technology, Faculty of Engineering, University of Johannesburg. South Africa
- 338 Optimal Power Tracker for Stand-Alone Photovoltaic system using Artificial Neural Network (ANN) and Particle Swarm Optimisation (PSO)**
B.C. Kok, H.H. Goh, H.G. Chua
Department of Electrical Power Engineering, Faculty of Electrical and Electronic Engineering. Universiti Tun Hussein Onn Malaysia
- 346 Space Vector Fundamental Frequency Modulation Compared with the Selective Harmonic Elimination Method**
G. Mehlmann, R. Wendt, G. Herold
Institute of Electrical Power Systems University of Erlangen-Nuremberg. Germany
- 349 Increasing the Efficiency of Solar Cells by Combining Silicon- and Dye Sensitized Devices**
B. Ohms, A. Kleine, U. Hilleringmann
Department of Electrical Engineering. University of Paderborn. Germany
- 355 Effect of Biomass Composition on Combustion Characteristics and Energy Quality**
I. Barmina(1), A. Lickrastina(1), M. Zake(1), A. Arshanitsa(2), V. Solodovnik, (2)G. Telysheva(2)
1. Institute of Physics, University of Latvia

2. Latvian State Institute of Wood Chemistry.Latvia

- 356 Application to optimize the geometry of a parallel kinematics sun tracker**
M. de Simón-Martín(1), C. Alonso-Tristán(1), M. Díez-Mediavilla(1),
M. A. de Francisco Iribarren(2) , R. Santamaría Sánchez(2)
1. Department of Electromechanical Engineering. E.P.S., Burgos University. Spain
2. Department of Mathematics .E.I.I.I., Leon University. Spain
- 364 Determine of the tracking system's trajectory considering the electric drive losses**
S. Seme, G. Štumberger
University of Marivor. Faculty of Electrical Engineering and Computer Science. Slovenia
- 367 Economic Dispatch of Microgrids**
Julio R. Martinez, Eliane A. Fadigas
University of São Paulo. Brazil
- 368 Impact of High Penetration Level of Grid-Connected Photovoltaic Systems on the UK Low Voltage Distribution Network**
S. Ali, N. Pearsall , G. Putrus
School of Computing, Engineering and Information Sciences. Northumbria University.
United Kingdom
- 370 Calibration of a Virtual Instrument for Power Quality Monitoring**
I. Iljazi(1), L. Arsov(2), M. Cundeva-Blajer(2), A. Abazi(1)
1. South Eastern European University-Tetovo Iliindenska b.b., Tetovo, R. Macedonia
2. Ss. Cyril and Methodius University, Faculty of Electrical Engineering and Information Technologies. Macedonia
- 377 Development of Diagnosis System for Rolling Bearings Faults on Real Time Based on FPGA**
M. Kasiwagi(1) Cesar da Costa(2), Mauro Hugo Mathias(1)
1. Faculty of Engineering - Department of Mechanical. UNESP-Universidade Estadual Paulista Julio de Mesquita Filho, São Paulo. Brazil
2. IFSP-Federal Institute of Science Education and Technology. São Paulo – Brazil
- 382 The Use of Capacity Planning for Energy Efficiency**
Luiz A. Pepplow, Paulo V. Trautman, Roberto C. Betini
Academic Department of Electrotechnique . Federal Technological University of Paraná Curitiba – PR. Brazil
- 383 Analysis of Newton-Like Extremum Seeking Control in Photovoltaic Panels**
H. Zazo, R. Leyva,E. del Castillo
Department of Electronic, Electrical and Automatic Control Engineering
University Rovira i Virgili Tarragona. Spain
- 384 Technological improvement with solar assistance for starch extraction**
P. A. Buriticá Henao, P. A. Gómez Aldana, G. O. Porras Rey
Department of Mechanical Engineering . Universidad de los Andes. Colombia
- 385 Research On 400Hz Input Multi-Level PFC Techniques**
A. Xiaolan Ji, B. Yundong Ma , C. Di Xu
College of Automation Engineering. Nanjing University of Aeronautics and Astronautics.
P.R. China
- 388 Performance Improvement of a Heat Pump Assisted Solar Water Heating System**
Ruchi Shukla(1), K. Sumathy(1), Samee Ullah Khan(2)
1. Department of Mechanical Engineering. North Dakota State University. USA



2. NDSU-CIIT Green Computing and Connections Laboratory, North Dakota State University Fargo, North Dakota. USA
- 392 Insulated Gate Bipolar Transistor Failure Analysis in Overvoltage Condition**
B.C. Kok, M.S. Looi, H.H. Goh
Department of Electrical Power Engineering, Faculty of Electrical and Electronic Engineering.
Universiti Tun Hussein Onn Malaysia
- 394 Satellite actuator balancing based on the disturbance measurement table data**
Dong-Ik Cheon, Eun-Jeong Jang, Hwa-Suk Oh
Department of Aerospace and Mechanical Engineering. Korea Aerospace University. Korea
- 400 A Parallel Approach for Real-Time Power Flow in Distribution Networks**
Rafael G. Milbradt(1), Luciane N. Canha(1), Paulo R. Pereira(2), Alzenira R. Abaide(1), Lukas Neusser(1), Sandro R. Schmaedecke(2), Lidia M. Garcia(1)
1. UFSM – Federal University of Santa Maria, RS. Brazil
2. CEEE-D - State Company of Electric Power Distribution of Rio Grande do Sul. Porto Alegre, RS. Brazil
- 414 Greenhouse Gases Emissions by Energy Production and Waste Disposal**
Dace Arina, Janis Kalnacs, Alexandr Murashow, Daina Grigale
State Research Institute “Institute of Physical Energetics”. Latvia
- 417 Comparison of PV Cell Temperature Estimation by Different Thermal Power Exchange Calculation Methods**
M. Bardhi(1), G. Grandi(1), G. M. Tina(2)
1. Department of Electrical Engineering .D.I.E., University of Bologna. Italy
2. Department of Electric, Electronic and Informatics Engineering, D.I.E.E.I., University of Catania. Italy
- 420 Voltage inverter with push-pull topology to inject energy into electrical systems with modulation spwm**
Silva. Emerson. C.M, Treviso.Carlos.H.G
Department of Electrical Engineering at the State University of Londrina. Brazil
- 423 Development of 500[kWh] Lithium-Ion Battery Energy Storage System with 2[MVA] Power Conditioning System for Utility Interconnection**
Kwang-Seob Kim(1), Byung-Ki Kwon(1), Dong-Seok Hyun(2)
1. R&D Center of POSCO ICT, Seoul. Korea
2. Department of Electrical Engineering, Hanyang University, Seoul. Korea
- 428 Research on Control Strategies of a Stand-alone Photovoltaic System**
Qiu Bin , Ma Yundong
Jiangsu Key Laboratory of New Energy Generation and Power Conversion
Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu Province. China
- 434 Stability Support of Autonomous Networks with Dispersed Generation Using Rotary Ride Through Systems**
J.C. Soriano(1), P. Karaliolios(1), E. Beermann(2), J.F.G. Cobben(1), W.L. Kling(1)
1. Department of Electrical Engineering . Electrical Energy Systems, University of Technology Eindhoven. The Netherlands
2. HITEC Power Protection. The Netherlands
- 439 Advanced Universal Power Quality Conditioning Systems for Stabilizing Micro-Grid's Frequency**
B. Rahmani , M. Tavakoli Bina

Electrical Engineering Faculty, K. N. Toosi University of Technology, Tehran. Iran

448 A Direct Torque Control Method for CSC Based PMSG Wind Energy Conversion Systems

Nazanin Abdolghani, Jafar Milimonfared, G. B. Gharehpetian
Amirkabir University of Technology, Tehran Polytechnic. Iran
Center of Excellence in Power Systems, Tehran. Iran

456 Medium-voltage distribution feeders in open-loop and closed-loop arrangement

G. Štumberger(1), K. Deželak(1), M. Rošer(2), R. Škof(2) T. Kastelic(3)
1. University of Maribor. Faculty of Electrical Engineering and Computer Science, Maribor. Slovenia
2. Elektro Celje d.d. Celje. Slovenia
3. Elektro Primorska d.d. Nova Gorica. Slovenia

459 Energy Production & Consumption – Next 25Years & Counting!

Cyril Okhio(1), Razvan C. Panaitescu(2), Agustin Asgill(1), Florian Misoc(1), Scott Tippens(1), Taofeek Orekan(1), Denzell Barnett(1)
1. Southern Polytechnic State University, Marietta, GA. USA
2. SIEMENS

460 Determining Maximum Impedance Limits At A Point of Connection For Different Current Capacity Installations

S. Bhattacharyya, Y. Cai, J.F.G. Cobben
Department of Electrical Engineering, Technical University of Eindhoven. The Netherlands

465 A Computational and Experimental Performance Analysis of an Electromagnetic Voltage Regulator Proposal throughout Controlled Series Voltage Injection

F. P. Santilio, T. V. da Silva, J. C. de Oliveira, J. A. F. Barbosa Jr.
Faculty of Electrical Engineering, Federal University of Uberlândia, Minas Gerais. Brazil

468 Remodelling of the heating systems of a sports centre based on life cycle assessment. Part I: Boiler replacement

I. Oribe García, A. Alonso Vicario, A.M. Macarulla Arenaza
Deusto Institute of Technology – DeustoTech Energy. University of Deusto, Bilbao. Spain

471 Proposal of a Power Quality Analyzer for the new Brazilian Distribution Procedures (PRODIST)

G. S. Wojichowski(1), C. D. P. Crovato(2), R. C. Leborgne(1)
1. Department of Electrical Engineering, Universidade Federal do Rio Grande do Sul. Brazil
2. Feevale University. Rio Grande do Sul. Brazil

476 Fabrication and Experimental findings of a Solar Rice Cooker

S. Mahavar, M. Verma, P. Rajawat, P. Dashora
Department of Physics. University of Rajasthan, Rajasthan. India

479 Very short-term load forecast, for demand side management, in absence of historical data

Neusser, Lukas; Canha, Luciane N.; Abaide, Alzenira; Finger, Maicon
Centro de Estudos em Energia e Meio Ambiente. Universidade Federal de Santa Maria. Brazil

480 Design and Simulation of Supercapacitor Energy Storage System

Mustafa Al-Ramadhan, Mohammad Abido
King Fahad University of Petroleum and Minerals, Dhahran. Arabia Saudi

481 Influence of small solar power plants on power quality

S. Seme, J. Voh, J. Voršič,
University of Maribor Faculty of Electrical Engineering and Computer Science. Slovenia



- 498 RTDS Implementation of the Optimal Design of Grid-connected Microgrids Using Particle Swarm Optimization**
M. A. Hassan, M. A. Abido
Department of Electrical Engineering, King Fahd University of Petroleum & Minerals. Saudi Arabia
- 783 Design and Construction of Radio-Controlled Glider with Renewable Energy Capabilities**
Matan Tubul, Shai Stamker, Etan Fisher
Shamoon College of Engineering (SCE), Beer-Sheva. Israel
- 834 Seamless disconnection and reconnection transients for Micro-Grids**
J. Rocabert, A. Luna, I. Candela, P. Rodriguez
Electrical Engineering Department, Technical University of Catalonia (UPC) Terrassa. Spain
- 835 Solar Energy Laboratory: Summary of Ten Years Continuous Experiences**
D. Dimitrov, V. Stoilkov, A. Iliev
Faculty of Electrical Engineering and Information Technologies, Sts Cyril and Methodius University in Skopje. Macedonia



17:15-19:00 Oral Session A2

ROOM A “ABB”

Chairman: **Sieniutycz Stanislaw**

- 260 Experimental and theoretical analysis of thermal solar collector systems for DHW in Northern Italy**
Arboit, M. (2); Toniolo, J. (1); Ghafoor, A. (1); Fracastoro, G.V. (1)
1. Department of Energetics, Politecnico di Torino. Italy
2. Instituto de Ciencias Humanas, Sociales y Ambientales (INCIHUSA—CONICET), Mendoza. Argentina
- 274 Comparison of Multicarrier PWM Strategies for Five-level Z-Source Diode-Clamped Inverter for On-Grid Renewable Energies Applications**
M. Nasiri, G. B. Gharehpetian, J. Milimonfared
Electrical Engineering Department Amirkabir University of Technology Tehran. Iran
- 290 Frequency Stability Analysis of a Dynamic Wind Park in an Integrated Power Grid**
L. Thurner, S. Liu
Department of Electrical and Computer Engineering, University of Kaiserslautern. Germany
- 310 Low-cost Online System for Detecting Unburned Fuel in a Large Industrial Biomass-fired Boiler**
M. Liukkonen(1), J. Huhtinen(1), E. Hälikkä(2), T. Hiltunen(2) Y. Hiltunen(1)
1. Department of Environmental Science University of Eastern .Finland
2. Foster Wheeler Ltd. Varkaus. Finland
- 353 Development of Energy Saving Mechanism for Renewable Hydrogen Vehicles**
K.K.T. Thanapalan(1,2), F. Zhang(2), A.D. Procter(2), S.J.W. Carr(2), Premier(1,2), A.J. Guwy(2) J. Maddy(2)
1. Faculty of Advanced Technology. University of Glamorgan. United Kingdom
2. Sustainable Environment Research Centre (SERC) Renewable Hydrogen Research & Demonstration Centre. University of Glamorgan. United Kingdom
- 757 Multifunctional Single-Phase Single-Stage Grid Connected PV System**
A. Helal(1), A. Nour(2), I. El-Mohr (1)
1. Department of Electrical and Control Engineering. Arab Academy for Science, Technology and Maritime Transport, Alexandria. Egypt
2. Faros University, Alexandria. Egypt
- 811 Performance Analysis of SOFC Systems Integrated with Steam Reforming of Different Renewable Fuels**
D. Saebea(1), S. Authayanun(1), Y. Patcharavorachot(2), W. Paengjuntuek(3), A. Arpornwichanop(1)
1. Department of chemical engineering, Faculty of Engineering, Chulalongkorn University, Bangkok. Thailand
2. School of Chemical Engineering, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok. Thailand
3. Department of Chemical Engineering, Faculty of Engineering, Thammasat University. Thailand

19:30 –

Welcome Civic Reception

Wednesday March 28th 2012

17:15-19:00 Oral Session B2

ROOM B “Univ. de Santiago”



Chairman: **Gorazd Stumberger**

- 280 Impact of Multiple Inverter Based Distributed Generation Units on Harmonic Resonance**
A. F. A. Kadir, A. Mohamed, H. Shareef, M.Z.C. Wanik
Department of Electrical Engineering. Faculty of Engineering & Built Environment, University
Kebangsaan Malaysia, Selangor. Malaysia
- 285 Modeling and Reactive Power Control of Wind and Fuel Cell Technologies in Distribution Networks**
M. M. A. Mahfouz(1), Mohamed A. H. El-Sayed(2)
1. Electrical Power and Machines Dept. Electrical Engineering Department Helwan University.
Egypt
2. Electrical Engineering Department, Kuwait University. Kuwait
- 292 Performance analysis of two industrial dryers (cross flow and rotary) for ligno-cellulosic biomass desiccation**
Nadia Cairo, Gianpiero Colangelo, Giuseppe Starace
Università del Salento Dipartimento di Ingegneria dell'Innovazione, Lecce. Italy
- 334 New Solutions for the Use of Solar Cooling in Hot and Humid Weather Conditions**
I. Lafuenti, G. Colangelo, M. Milanese, A. de Risi
Università del Salento. Dipartimento di Ingegneria dell'Innovazione. Lecce. Italy
- 449 Dynamic Modeling and Analysis of Fuel Cell Powered Electric Vehicle**
Osama A. El-Naseem, Mohamed A. El-Sayed
Electrical Engineering Department, Kuwait University. Kuwait
- 625 Requirements for a modern PQ and DFR monitoring system. PQ monitoring case study in Portugal**
Fernando Pimenta(1), Robert Neumann(2)
1. QEnergia, Sintra. Portugal
2. Product Manager Power Quality Qualitrol, Belfast. United Kingdom
- 820 Flicker assessment performance of an Electrical Power Standard**
J. Bruna, J. M. Castell, D. Cervero, M. A. García, J.J. Melero
CIRCE – University of Zaragoza, Zaragoza. Spain

19:30 –

Welcome Civic Reception

Thursday March 29th 2012

9:00-9:45 Plenary Session PL3

ROOM A “ABB”



Chairman: **Carlos Redondo Gil**

Copper Rotor Technology for Electric and Hybrid Vehicles

Fernando Nuño. Project Manager for Electricity and Energy, European Copper Institute

9:45-10:30 Plenary Session PL4

ROOM A “ABB”

Chairman: **Inmaculada Zamora Belver**

Novel Development towards Efficient and Cost Effective Wind Energy Generation and Utilization for Sustainable Environment

Noor E. Alam Ahmed. Prof. of the University of New South Wales. Australia

Thursday March 29th 2012

10:30-11:15 Poster Session C3 – Coffee Break

ROOM C “CIRCUTOR”

Chairmen: **Ramsey Saunders, Sergio M. Redondo Faias, José Roberto Camacho, Mohamed El Sayed, Byung-Moon Han**

- 415 Wind Farm and System Modelling Evaluation in Harmonic Propagation Studies**
G. A. Mendonça(1), H. A. Pereira(1,2)S. R. Silva(1)
1. Electrical Engineering . Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil
2. Department of Electrical Engineering. Universidade Federal de Viçosa. Brazil
- 421 High Voltage Live Works: Comparative Safe Distance Approach Calculation**
S. Belkhir(1), H. Moulai(1), T. Ainouche(1), F. Soukeur(2)
1. Laboratory of Electrical and Industrial Systems, FEI, USTHB. Algeria
2. National Power Grid Manager (GRTESONELGAZ), Algiers. Algeria
- 494 Determination of Controllers Constraints for Frequency Stability in an Islanded Microgrid**
M. Kohansal, G. B. Gharehpetian, M. Abedi, M. J. Sanjari
Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran
- 495 Droop Controller Limitation for Voltage Stability in an Islanded Microgrid**
M. Kohansal, G. B. Gharehpetian, M. Abedi, M. J. Sanjari,
Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran
- 498 RTDS Implementation of the Optimal Design of Grid-connected Microgrids Using Particle Swarm Optimization**
M. A. Hassan, M. A. Abido
Department of Electrical Engineering, King Fahd University of Petroleum & Minerals. Saudi Arabia
- 500 Saturated Induction Machine Modelling Based on High Frequency Signal Injection**
S. Damkhi, MS. Naït-Saïd, N. Naït-Saïd
Department of Electrical Engineering, Batna University, LSP-IE Batna Laboratory. Algeria
- 503 Introducing the Solar Radiation Atlas of Galicia, the ultimate resource to assess and exploit solar radiation in Galicia (NW Spain)**



A. Pettazzi, S. Salsón
MeteoGalicía, Galician Weather Service
Consellería de Medio Ambiente, Territorio e Infraestruturas - Xunta de Galicia.
Santiago de Compostela. Spain

504 Coupling digital terrain to radiative transfer model to assess surface solar radiation at high resolution scale: validation of GIS module r.sun in Galicia

A. Pettazzi, S. Salsón
MeteoGalicía, Galician Weather Service
Consellería de Medio Ambiente, Territorio e Infraestruturas - Xunta de Galicia
Santiago de Compostela. Spain

505 Merging remote sensing data with in-situ measurements of global solar radiation: the right path to estimate the solar resource in Galicia

A. Pettazzi, S. Salsón
MeteoGalicía, Galician Weather Service
Consellería de Medio Ambiente, Territorio e Infraestruturas - Xunta de Galicia
Santiago de Compostela. Spain

508 Modelling of Photovoltaic Generators Based on a Linearized Equivalent Circuit

Andreas D. Theocharis(1,2), Eleftheria C. Pyrgioti(2) Ioannis A. Naxakis(2)
1. Department of Electrical Engineering Technological and Educational Institute of Patras, Greece
2. Department of Electrical and Computer Engineering. University of Patras. Greece

509 Advanced Superconducting Power Conditioning System for Effective Use of Renewable Energy

T. Shintomi(1), Y. Makida(2), T. Hamajima(3), S. Tsuda(3), D. Miyagi(3), T. Takao(4), N. Tanoue(4), N. Ota(4), K. Munakata(5), M. Kajiwara(5)
1. Advanced Research Institute for the Science and Humanities, Nihon University, Tokyo. Japan
2. Institute of Particle and Nuclear Studies, High Energy Accelerator Research Organization. Japan
3. Electrical Communication Engineering Department, Graduate School, Tohoku University. Japan
4. Department of Engineering and Applied Sciences, Sophia University. Japan
5. Iwatani Corporation, Osaka. Japan

510 Design parameters independent on the type of platform in floating offshore wind farms

L. Castro - Santos, Sara Ferreiro González, Alba Martínez López, V. Díaz-Casas
Grupo Integrado de Ingeniería. University of A Coruña. Ferrol. Spain

512 Assessment of Financial Losses Due to Voltage Sags Using Optimal Monitoring Schemes

M. Avendaño-Mora(1), J.V. Milanović (1), Manuel Madrigal Martínez(2)
1. School of Electrical and Electronic Engineering. University of Manchester. United Kingdom
2. P. G. I. I. E. Instituto Tecnológico de Morelia. México

514 Centralized control of a Wave Energy Farm

M. Santos, F. Salcedo, E. Tedeschi, E. Robles, J.L. Villate
Energy Unit. TECNALIA. Derio. Spain

515 Biogas Production Potential from Reeds

Vilis Dubrovski, Valters Kazulis
Latvia University of Agriculture. Latvia

517 Neural-Networks and Synchronous Reference Frame Applied in the Harmonic Compensation with a Three-Phase Parallel Active Power Filter

L. B. G. Campanhol(1), A. Goedtel(1), S. A. O. Silva(1) C. F. Nascimento(2)

1. Department of Electrical Engineering, UTFPR, Federal University of Technology, Parana. Brazil
2. Center of Engineering (CECS). UFABC, Federal University of ABC. Sao Paulo. Brazil

519 Performance Analysis of Methods at Estimating Insulated Cables Degradation

L. N. Velasco(1), A. Reis(1), J. C. Oliveira(1), L. C. G. Freitas(1), A. P. Finazzi(2), F. N. Lima(2), H.C. Martins(3), W. J. Araújo(3), J. M. Borges(3)

1. Federal University of Uberlândia (UFU), Faculty of Electrical Engineering ,Uberlândia. Brazil
2. Federal University of Mato Grosso (UFMT), Electrical Engineering Department, Cuiabá. Brazil
3. Companhia Energética de Minas Gerais (CEMIG), Belo Horizonte. Brazil

521 La_{0,6}Sr_{0,4}CoO₃ Coating on AISI 430 Ferritic Stainless Steel for Application in ITSOFC Interconnects

M. Korb(1), I. D. Savaris(1), E. E. Feistauer(2), L. S. Barreto(2), V. C. Sousa(3), I. L. Müller(1) C. Malfatti(1)

1. Departamento de Metalurgia (DEMET), Laboratório de Pesquisa em Corrosão (LAPEC). Universidade Federal do Rio Grande do Sul (UFRGS). Brazil
2. Núcleo de Ciência e Engenharia de Materiais. Universidade Federal de Sergipe (UFS). Brazil
3. Departamento de Materiais (DEMAT), Laboratório de Biomateriais (Labiomat), Universidade Federal do Rio Grande do Sul (UFRGS). Brazil

523 Voltage Forecasting in a Very Short Time Through the Application of Nebulous Systems

Enoque Dutra Garcia(1), Luciane N. Canha(2), Alzenira R. Abaide(2), P.R. Pereira Silva(1) Rafael G. Milbradt(1)

1. Electrical Engineer of CERTAJA ENERGIA. Taquari, RS. Brazil. Electrical Engineering In UFSM
2. Electrical Engineering - PPGEE, Center for Energy and Environment – CEEMA, Federal University of Santa Maria. UFSM. Brazil

528 Air flow prediction and evaluation of ventilation Effectiveness with different zonal configurations

N. Guerfala(1), H. Fellouah(1), A. Daoud(2), N. Galanis(1)

1. Department of Mechanical Engineering. Université de Sherbrooke, Québec. Canada
2. Institut de Recherche d'Hydro-Québec, Laboratoire des Technologies de l'Énergie (LTE), Shawinigan, Québec. Canada.

530 Comparative Evaluation of AC-DC Converters for Input Current Harmonics: A Study

A.K. Mishra M. R. Ramteke H. M. Suryawanshi
Visvesvaraya National Institute of Technology, Nagpur. India

532 Modeling of equivalent grids through vulnerability studies for analysis of power systems with wind producers

C.B.M. Oliveira(1), J.T.de Oliveira(1) M.F.de Medeiros Jr.(2)

1. Department of Computing and Automation Engineering. UFRN, Federal University of Rio Grande do Norte, Mirassol, Natal. Brazil
2. Department of Electrical Engineering. UFRN, Federal University of Rio Grande do Norte. Mirassol, Natal. Brazil

538 Physico-chemical properties of transformer mineral oils submitted to moisture and electrical discharges

T. Toudja(1), A. Nacer(1) , H. Moulai(1) , I. Khelfane (2), A. Debche (3)

1. Laboratory of Electrical and Industrial Systems, FEI, BP 32, University of Sciences and

Technology Houari Boumediene, Algiers. Algeria

2. Centre of Research and Development on Electricity and Gas, SONELGAZ. Algeria
3. Electricity Transmission Power-Grid, SONELGAZ, Algiers. Algeria

542 Islanding detection of synchronous distributed generators

A. Etxegarai(1), I. Zamora(1), P. Eguia(1), L. Valverde(2)

1. Department of Electrical Engineering - University of the Basque Country
Escuela Técnica Superior de Ingeniería de Bilbao. Spain
2. Department of Electrical Engineering EUITMOP, University of the Basque Country
Barakaldo. Spain

543 A Mathematical Method of Energy Resources Flows Data Validating using the State Estimation Theory

Vladislav O. Samoylenko, Andrew V. Pazderin

Department of Automated Electrical Systems, Boris Yeltzin Ural Federal University Ekaterinburg. Russia

553 Voltage margin control for offshore multi-use platform integration

V.Mier(1), P.G. Casielles(1), J.Coto(1), L.Zeni(2)

1. Department of Electrical Engineering, E.P.I., Oviedo University, Gijón. Spain
2. Vestas Wind Systems and Technical University of Denmark. Denmark

554 Determining Optimal Breakpoints in Urban Power Networks with Genetic Algorithm

S.E.Kokin(1), S.A.Dmitriev(2) A.I.Halyasmaa(1)

1. Department of Automated Electric Systems, Ural Energy Institute,
Ural Federal University named after 1st Russian president B.N.Yeltsin, Yekaterinburg, Russia
2. Department of Automated Electric Systems, Ural Energy Institute,
Ural Federal University named after 1st Russian president B.N.Yeltsin, Yekaterinburg, Russia

556 Iran's Participatory Power Market Regarding Distributed Generation from Renewable Sources: A Case Study

A.M. Motavaselian(1), A.R. Faghieh Khorasani(2)

1. Yazd Pars-ris Company. Iran
2. Department of Mechanical Engineering, Faculty of Engineering, Yazd University. Iran

557 In-field monitoring and numerical parametric analysis of a small size adsorption solar cooling plant in Italy

M. Simonetti(1), L. Degiorgis(1), G.V. Fracastoro(1), A. Ghafoor(1) M. E. Arboit(2)

1. Department of Energy DEN, Polytechnic of Turin, Turin. Italy
2. INCIHUSA Conicet Mendoza, Mendoza, Argentina

559 Performance Assessment of an Aeolian Roof for the Exploitation of Wind Power in Urban Areas

S. Carcangiu, A. Montisci

Department of Electrical and Electronic Engineering, University of Cagliari. Italy

564 A Novel Scheme to Protect Distribution Networks in Presence of Inverter-Based Distributed Generation

E. Ebrahimi, G. B. Gharehpetian, J. Milimonfared

Department of Electrical Engineering, Amirkabir University of Technology, Tehran. Iran

571 Multi-objective Optimization of Microgrid Frequency and Energy Storage Capacity

M. Kohansal, G. B. Gharehpetian, M. Rahmatian, M. J. Sanjari

Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran

- 574 Stochastic modelling of EV charging at charging stations**
Csaba Farkas, László Prikler
Department of Electric Power Engineering. Budapest University of Technology and Economics.
Hungary
- 578 A Computational Contribution in order to Study Cogeneration Power Plants**
F. A. M. Moura(1), J. R. Camacho(2), G. C. Guimarães(2), M. L. R. Chaves(2)
1. Department of Electrical Engineering, UFTM, Universidade Federal do Triângulo Mineiro,
Uberlândia. Brazil
2. Department of Electrical Engineering, UFU, Universidade Federal de Uberlândia. Brazil
- 580 Poultry litter: great potential for electrical energy generation in Brazil**
Baldin. V, Frozza. J. F, Lafay. J. S
PGPEE - Post Graduate Program in Electrical Engineering of UTFPR - Federal Technological
University of Parana. Brazil
- 588 Simulating shadow effect on PV panels**
L. Dorobantu, M.O. Popescu, Cl. Popescu, A. Craciunescu
Electrical Engineering Faculty, Politehnica University of Bucharest. Romania
- 589 Power System Monitoring using Phasor Measurements**
P. Chusovitín, A. Pazderin
Automated power systems department of the Ural Energy Institute. Russia
- 590 Evaluation of the Harmonic Impact in an Electrical System Using Polynomial-Regression Method**
Thiago Mota Soares, Maria Emília de Lima Tostes
Universidade Federal do Pará, Guamá, Belém-Brasil
- 593 Development of a Quality Management System for Electric Power applied to Small Wind Turbines**
Ando Junior, O. H.(1,2); Oliveira, M. O.(2,3); Neto, J. M.(1); Spacek, A.D.(1); Leborgne, R. C.B.(2),
Bretas, A. S.(2)
1. Electrical Engineering Department, SATC, Beneficent Association of Santa Catarina
Coal Industry, Criciúma-Sc. Brazil
2. Electrical Engineering Department, UFRGS, Federal University of Rio Grande do Sul,
Porto Alegre-Rs. Brazil
3. Energy Study Center to Development-CEED, UNaM, National University of Misiones, Oberá,
Mnes. Argentina
- 594 Use of the Newton's Method to Rotor-Resistance Control of Wind Turbine Generators**
A. F. Bastos(1), E. F. Cota(1), S. R. Silva(2), H. A. Pereira(1,2)
1. Department of Electrical Engineering, Universidade Federal de Viçosa. Brazil
2. Graduate Program in Electrical Engineering – Universidade Federal de Minas Gerais
Belo Horizonte, MG. Brazil
- 603 Development of PtNi and PtSnNi/C Nanocatalysts for Energy Conversion form Ethanol Electrooxidation**
P. Correa(1), E. Leal da Silva(1), R. Figueira(2), C. Radtke(3), B. Moreno(4), E. Chinarro(4), C.
Malfatti(1)
1. Departamento de Metalurgia (DEMET), Laboratório de Pesquisas em Corrosão (LAPEC)

- Universidade Federal do Rio Grande do Sul (UFRGS). Brazil
2. Instituto de Geociências, Laboratório de Difractometria de Raios-X, Universidade Federal do Rio Grande do Sul (UFRGS). Brazil
 3. Instituto de Química. Universidade Federal do Rio Grande do Sul (UFRGS). Brazil
 4. Instituto de Cerámica y Vidrio (ICV). Universidad Autónoma de Madrid. Spain
- 609 Uncertainty Budget Analysis and its role in Microbial Fuel Cell Parameter Characterization**
Miguel C.J. Andrews, D.P. Sharma, H.P.S. Missan
Department of Physics, University of the West Indies. Augustine. Trinidad
- 610 Energy system aspect in Brazil**
C. A. V. Carneiro(1,2), J. C. S. Oliveira(1), A. B. Caldeira(1)
 1. Mechanical and Materials Engineering Department, IME, Military Institute of Engineering, Rio de Janeiro. Brazil
 2. Mechanical Engineering Department. COPPE/UFRJ, Federal University of Rio de Janeiro. Brazil
- 619 Utility of Acoustic Detection in Hydraulic Machinery**
G. Ciaravino, L. Ciaravino
Department of Hydraulic, Geotechnical and Environmental Engineering
University of Naples Federico II. Naples. Italy
- 663 Energetic, economic and environmental sustainability of integrated techniques for energy production in buildings using hydrogen as storage system**
C. Marino, A. Nucara, M. Pietrafesa, A. Pudano, M. Tripodi
Department of Informatics, Mathematics, Electronics and Transportation Systems
Mediterranea University of Reggio Calabria. Italy
- 686 Effects of the Mutual inductance on the Switched Reluctance Machines**
A. Fleury(1,3), R. J. Dias(1), W. R. H. Araújo(1), A. W. F. V. Silveira(2), D. A. Andrade(2), G. C. Ribeiro(3)
 1. Pontifícia Universidade Católica de Goiás. Brazil
 2. Universidade Federal de Uberlândia. Brazil
 3. Universidade Estadual de Goiás. Brasil
- 698 Two Control Strategies for Aggregated Wind Turbine Model with Permanent Magnet Synchronous Generator**
M. J. Mercado-Vargas(1), Fujin Deng(2), O. Rabaza(1), E. Alameda-Hernandez(1), Zhe Chen(2)
 1. Section of Electrical Engineering. Department of Civil Engineering Granada University. Spain
 2. Department of Energy Technology, Aalborg University. Denmark
- 701 Energy production estimating of photovoltaic systems**
Gábor Ádám, Kristóf Baksai-Szabó, Péter Kiss
Department of Electrical Engineering, Budapest University of Technology and Economics. Hungary
- 703 Impact of Compact Fluorescent Lamps on the Excessive Transmission Line Losses**
K. Deželak, P. Sukič G. Štumberger
University of Maribor. Faculty of Electrical Engineering and Computer Science, Maribor. Slovenia
- 742 Control of Multilevel Current Converter**
A. Leszek Wolski, B. Jan Iwaszkiewicz
The Electrotechnical Institute, Gdansk. Poland
- 819 A novel tool for voltage event characterization based on the Wavelet theory**
J. Bruna(1), J.J. Melero(1), J. Díaz de Aguilar(2), M.L. Romero(2)
 1. CIRCE – University of Zaragoza, Zaragoza. Spain



2. CEM (Centro Español de Metrología), Madrid. Spain

828 Complete methodology on generating realistic wind speed profiles based on measurements

C. Gavriluta(1), S. Spataru(2), I. Mosincat(2), C. Citro(1), I. Candela(1), P. Rodriguez(1)

1. Renewable Electrical Energy Systems (SEER), Technical University of Catalonia. Barcelona. Spain

2. PV-MG research group, Aalborg University, Department of Energy Technology. Denmark

863 A High Efficiency Photovoltaic Conversion Chain based on a Four-Switch Buck-Boost Converter

M. Orellana(1,2), B. Estibals(1,2), A. Cid Pastor(3), Y. El Basri(2,4), L. Seguier(1), C. Alonso(1,2).

1 CNRS; LAAS; Toulouse, France.

2 Universite de Toulouse; UPS, INSA, INP, ISAE; LAAS, Toulouse. France.

3 Departament d'Enginyeria Electronica, Electrica i Automatica - Universitat Rovira i Virgili de Tarragona. Spain

4 TOTAL S.A, Dept. solar & New Energies Tour Coupole -Courbevoie. France

867 New aspects regarding the modernisation of High Power Laboratory of ICMET-Craiova to attain the technical and qualitative level corresponding to European Union requirements

George Curcanu, Constantin Ilinca, Corneliu Chiciu

R&D National Institute ICMET-Craiova. Romania

868 Power Quality impact of a small wind energy conversion system connected to the LV grid

A. Arroyo, M. Mañana, L.M. Muñiz, R. Martínez, C. Capellan

Department of Electrical Engineering, E.T.S.I.I.T. University of Cantabria, Santander. Spain

Thursday March 29th 2012

11:15-13:00 Oral Session A3

ROOM A “ABB”



Chairman: **Aurelian Craciunescu**

- 361 Rural electrification based on renewable energies. A Review**
Olatz Azurza, Iñaki Arranbide, Itziar Zubia
Department of Electrical Engineering. EUPD, University of the Basque Country
Donostia-San Sebastián. Spain
- 362 Voltage Regulation in Low Voltage Distribution Networks with Embedded Photovoltaic Microgeneration**
Marcelo Pais, M.E. Almeida, Rui Castro
Centre for Innovation in Electrical and Energy Engineering (Cie3) IST – Technical University of Lisbon, Portugal
- 393 Optimal Allocation of Mega-solar Power Station using Integrated Input and Output-oriented models in Data Envelopment Analysis**
S. Yokota, T. Kumano
School of Science and Technology. Meiji University, Kawasaki. Japan
- 407 Energy Storage for Active Network Management on Electricity Distribution Networks with Wind Power**
Stephen Carr(1), Giuliano C. Premier(2), Richard M. Dinsdale(1), Alan J. Guwy(1), Jon Maddy(1)
1. Sustainable Environment Research Centre (SERC). Faculty of Health, Sport and Science, University of Glamorgan. United Kingdom
2. Sustainable Environment Research Centre (SERC). Faculty of Advanced Technology, University of Glamorgan. United Kingdom
- 450 An autonomous photovoltaic system sizing program for office applications in Africa**
Bert Herteleer(1), Jan Cappelle(1), Johan Driesen(3)
1. Catholic University College Ghent. Belgium
2. Catholic University College Ghent. Belgium
3. Katholieke Universiteit Leuven, ESAT-ELECTA, Heverlee. Belgium
- 514 Centralized control of a Wave Energy Farm**
M. Santos, F. Salcedo, E. Tedeschi, E. Robles, J.L. Villate
Energy Unit. TECNALIA. Derio. Spain
- 722 Real-Time Hardware Simulator for Grid-Tied PMSG Wind Power System**
B. Han, J. Jeong
Department of Electrical Engineering, Myongji University, Seoul. Korea

13:00 – 15:00

Lunch

Thursday March 29th 2012

11:15-13:00 Oral Session B3

ROOM B “Univ. de Santiago”

Chairman: **Mircea Ion Buzdugan**

317 Survey of Inductance Curves in Switched Reluctance Machines Using Finite Elements

M. B. Rego, L. C. Gomes, A. B. F. Neves, A. W. F. V. Silveira, E. A. A. Coelho

Laboratory of Electrical Drives (L.A.C.E.)

F.E.E.L.T., Universidade Federal de Uberlândia. Brazil

484 A Current Sharing Using Switched-Capacitor ZVS Driver for Power LEDs

P. H. A. Miranda(1), E. M. Sá Jr.(1), F. L. M. Antunes(2)

1. Federal Institute Education, Science and Technology of Ceará – IFCE. Brasil

2. Federal University of Ceará – UFC, Group of Energy Processing and Control – GPEC
Fortaleza – CE. Brazil

487 Ecoaldeas or Self-Sustainable Communities and renewable energy solutions (SSC). First approach Ecuador and Mexico

A.López Agüera(1,2), J. Domingues Azevedo(1,5), I. Rodríguez Cabo(1,2), D. Rey Rey(1,2), V. Gándara Villadoniga(1), E. Vieites Montes(1,2), J Peralta(1,3), I. Sosa(1,4), J. Guerra(5), M. Alguacil(6)

1. Department of Particle Physics & Galician Institute of High Energy Physics. Sustentable Energetic Applications Group. Physics Faculty, Santiago de Compostela University. Spain

2. Department of Particle Physics & Galician Institute of High Energy Physics. Astroparticle Group. Physics Faculty, Santiago de Compostela University. Spain

3. Escuela Superior Politecnica del Litoral. Centro de Desarrollo Tecnológico Sustentable. Guayaquil, Ecuador.

4. Instituto Tecnológico de Sonora. Ciudad Obregón, Sonora. México.

5. Escuela de Arquitectura, Universidad Católica del Norte Antofagasta. Chile

6. Universidad Nacional de Cuyo. Instituto de la Energía. Centro Universitario Mendoza. Argentina

615 Fuzzy Logic Controller Based Perturb and Observe Maximum Power Point Tracking

A. Al Nabulsi, R. Dhaouadi

College of Engineering, American University of Sharjah. United Arab Emirates

683 Dealing with the Very Small: First Steps of a Picohydro Demonstration Project in an University Campus

Vicente Leite, Tomás de Figueiredo, Tiago Pinheiro, Ângela Ferreira, José Batista

Polytechnic Institute of Bragança. Portugal

759 Analysis and evaluation of energy efficiency of a shrinkwrap-packer

M. Rinaldi, G. Ferretti, R. Montanari, E. Bottani, G. Vignali, F. Solari, M. Armenzoni, D. Marchini

Department of Industrial Engineering, University of Parma. Italy

841 Development of bioclimatic chart for passive building design in muscat-oman

N. Al-Azri, Y. Zurigat, N. Al-Rawahi

Department of Mechanical and Industrial Engineering. Sultan Qaboos University, Musca. Oman

13:00 – 15:00

Lunch

Thursday March 29th 2012

15:00-16:30 Oral Session A4

ROOM A “ABB”



Chairman: **Janis Kalnacs**

- 533 Enhanced recovery of light-induced degradation on the micromorph solar cells by reverse bias**
H.-C. Sun(1), J. Y. Chen(1), Y.-J. Yang(1), T.-M. Chao(1), W.-D. Chen(1), C. W. Liu(1,2), W.-Y. Lin(2), C.-C. Bi(3), C. -H. Yeh(3)
1. Department of Electrical Engineering and Graduate Institute of Electronic Engineering, National Taiwan University
2. Graduate Institute of Electronics Engineering, Graduate Institute of Photonics and Optoelectronics, Department of Electrical Engineering, Center for Condensed Matter Sciences and Center for Emerging Material and Advanced Devices, National Taiwan University, Taipei, Taiwan, and National Nano Device Laboratories, Hsinchu, Taiwan
3. NexPower Technology Corporation, Taichung, Taiwan
- 565 Low-Cost Instrument for Tracing Current-Voltage Characteristics of Photovoltaic Modules**
Vicente Leite(1), José Batista(1), Faustino Chenlo(2) João L. Afonso(3)
1. Polytechnic Institute of Bragança, School of Technology and Management, Bragança, Portugal
2. CIEMAT, Research Centre for Energy, Environment and Technology, Madrid, Spain
3. Centro Algoritmi, Univ. Minho, Department of Industrial Electronics Guimarães, Portugal
- 566 Application of Trigeneration to a Multi-Unit Residential Building in Canada**
D. Allaire-Tanguay(1), N. Galanis(1), R. Sunyé(2)
1. Department of Mechanical Engineering, Université de Sherbrooke, Sherbrooke QC, Canada
2. Canmet ENERGY, Natural Resources Canada, Varfennes, Canada
- 597 Voltage-induced stresses during Low-Voltage Ride Through (LVRT) in the drive train of wind turbines with DFIG**
Jan Wenske(1), Ulrich Beckert(2)
1. Fraunhofer Institut für Windenergie und Energiesystemtechn, IWES, Bremerhaven, Germany
2. Institut für Elektrotechnik, TU Bergakademie Freiberg, Germany
- 680 The Strategic Importance of the Electric Transmission in a System Based on Primary Renewable Source**
T. H.V. Silveira(1), A.A. Bertoni(1), D.M. Silva(1), L.C. Fonseca(1), A. F. V. Silveira(1,3), A.W.F.V. Silveira(2)
1. Academic of Department of Electrical Engineering – PUC-Go. Brazil
2. FEELT-UFU, Brazil
3. UEG. Goiânia, Brazil
- 764 Evaluation of Short-cycle Power Output Fluctuation of High-Penetration Photovoltaic Power Generation Systems using Multi-Points Insolation Data**
Takeyoshi Kato(1), Shinsuke Kumazawa(1), Yasuo Suzuoki(1), Nobuhiko Honda(2), Masakazu Koaizawa(2), Shinichi Nishino(2)
1. Department of Electrical Engineering and Computer Science, Nagoya University, Japan
2. Electric Power Research & Development Center, Chubu Electric Power Co., Inc. Japan

Thursday March 29th 2012

15:00-16:30 Oral Session B4

ROOM B “Univ. de Santiago”



Chairman: **Pere Andrada Gascón**

- 327 Characterization of spray atomization and heat transfer for a swirl nozzle**
Xie Jinlong, Zhao Rui, Fei Duan, Wong Teck Neng
School of Mechanical & Aerospace Engineering. Nanyang Technological University. Singapore
- 461 2D Analytical Calculation of the Open Circuit Electromagnetic Field Distribution in an Axial Flux Slotted Permanent Magnet Machine using Fourier Analysis**
J. M. Pérez García, F. A. Frechoso Escudero
Departament of Electrical Engineering, Escuela de Ingenierías Industriales. E.I.I.
University of Valladolid. Spain
- 525 Fuzzy Coordinated Control of TCSCs to Improve Power System Stability**
A. Ghafouri(1), G. B. Gharehpetian(2), J. Milimonfared(2)
1. Islamic Azad University-Sari Branch, Sari. Iran
2. Amirkabir University of Technology, Electrical Engineering Department, Tehran. Iran
- 546 Reimbursement Procedure due to Electrical Damages: the Subject Relevance, Juridical Fundamentals, Agency Standards, Analysis Procedures and Trends**
I. N. Gondim(1), P. H. O. Rezende(1), J. C. Oliveira(1), J.R.Macedo Jr(1) A. C. O. Salomão(2), N. Kagan(2)
1. Federal University of Uberlândia, Faculty of Electrical Engineering, Uberlândia. MG. Brazil
2. University of São Paulo, Polytechnic School, Department of Power Engineering and Electrical Automation, São Paulo. SP. Brazil
- 573 Economic impact of non dispatchable generation on the cost of energy supply and on the adjustment services**
Ingrid Oliveros Pantoja(1), Máximo López Toledo(2)
1. Universidad del Norte, Barranquilla. Colombia
2. Escuela Técnica Superior de Ingenieros Industriales, Madrid. Spain
- 705 Practical Aspects of Performance Tests on Power Quality Analyzers**
J. R. Macedo Jr., I. N. Gondim, J. A. F. Barbosa Jr., C. E. Tavares, A. J. P. Rosentino Jr.
Faculty of Electrical Engineering UFU, Federal University of Uberlândia. Brazil

Thursday March 29th 2012

16:30-17:15 Poster Session C4 – Coffee Break

ROOM C “CIRCUTOR”

Chairmen: **Vicente Teixeira Leite, Janus Mroczka, Pavel Kulha, Motoo Ishikawa, Francisco Kleber de Araujo**

- 286 ENERCARE**
Miguel Lagares Lemos, Enrique Jiménez Domingo, Ángel Lagares Lemos, Juan Miguel Gómez Berbis
Computer Science Department, Universidad Carlos III de Madrid. Spain
- 437 Efficiency analyze Borehole Heat Exchangers (BHEs) of the research geothermal polygon placed at VŠB-Technical University of Ostrava**
P. Bujok(1), V.K. Chistyakov(2), M. Klempa(1), I.A. Straupnik(2)
1. VŠB – Technical University of Ostrava. Czech Republic
2. Saint – Petersburg State Mining University .Saint-Petersburg.Russian Federation
- 600 Energy Reductions in the Pulp-and-Paper Industry by Upgrading Conventional Pumping Systems through the Installation of VFDs – A Case Study**
António Bonifácio(1,2), Pedro Coelho(2), Inácio Fonseca(1), Fernando Lopes(1,3)
1. Department of Electrical Engineering, Instituto Superior de Engenharia de Coimbra. Portugal
2. Soporcel,SA – Maintenance Management Direction. Figueira da Foz. Portugal
3. Telecommunications Institut - Pólo II da Universidade de Coimbra. Portugal
- 611 Renewable Energy in Residential Buildings Analysis of different micro-generation systems**
M. Rodrigues(1), M. Valdez(1) D. Coelho(1,2)
1. ISEC - College of Engineering of Coimbra. Portugal
2. INESC Coimbra. Portugal
- 612 Efficient space heating in a Portuguese Public Building Replacement of a Liquefied Petroleum Gas Boiler by Heat Pump**
D. Costa(1), L. Pedro(1) D. Coelho(1,2)
1. ISEC - College of Engineering of Coimbra. Portugal
2. INESC Coimbra. Portugal
- 614 Some Power Quality Issues in Hospital Facilities**
M. I. Buzdugan, H. Bălan
Technical University from Cluj-Napoca. Romania
- 617 The Effect on Emissions of using Alternative Fuels in Turbo-Charged Diesel Engines**
S.Hudson, C.Stubbs, W.Weston
Department of Engineering and Technology, School of Computing and Engineering
University of Huddersfield. United Kingdom
- 621 Simulation and optimization of control parameters in energy hybrid filter**
Damian Mazur
Electrical Engineering and Informatics Institute, Rzeszow University of Technology, Rezeszow. Poland
- 623 Analysis of Generalized Non-Active Power Theory for Compensation of Non-Periodic Disturbances**
Josef Tlustý(1), Jan Svec(1), Josep Balcells Sendra(2), Viktor Valouch(3)
1. Department of Electric Power, Engineering. Faculty of Electrical Engineering, CTU Prague, Czech Republic
2. Department of Electronic Engineering, Universitat Politècnica de Catalunya, Terrassa, Spain
3. Institute of Thermomechanics, Prague. Academy of Sciences of the Czech Republic.
- 626 Risk assessment and lightning protection for PV systems and solar power plants**
Roberto Pomponi(1), Riccardo Tommasini(2)
1. IEEC TC 81 member
2. Department of Electrical Engineering, Polytechnic of Turin, Torino. Italy

- 629 Development of Biomass Utilization in Latvia**
P.Shipkovs(1,2), G.Kashkarova(1), K.Lebedeva(1) L.Migla(1, 2)
1. Energy Resources Laboratory, Institute of Physical Energetics, Riga. Latvia
2. Riga Technical University. Riga. Latvia
- 634 Impact of Distributed Generation on Fault Locating Methods in Distribution Networks**
E. Ebrahimi, A. J. Ghanizadeh, M. Rahmatian, G. B. Gharehpetian
Department of Electrical Engineering, Amirkabir University of Technology, Tehran. Iran
- 637 Smart Structural Control Strategies for Offshore Wind Power Generation with Floating Wind Turbines**
Ningsu Luo(1), Lluís Pacheco(2), Yolanda Vidal(3), Hui Li(4)
1. Institute of Informatics and Applications, University of Girona, Girona. Spain
2. Institute of Informatics and Applications, University of Girona, Girona. Spain
3. Department of Applied Mathematics III, UPC – Barcelona Tech, Barcelona. Spain
4. School of Civil Engineering, Harbin Institute of Technology, Harbin. China
- 638 Biomass CHP Technical and Economic Assessment applied to a Sawmill Plant**
Nuno Gonçalves(1), Sérgio Faías(1,2), Jorge Sousa(1,2)
1. ISEL, Lisbon Engineering Superior Institute. Portugal
2. Center for Innovation in Electrical and Energy Engineering, Lisboa. Portugal
- 644 Thermal optimization the width of light absorbing plate of sheet-tube solar absorbers for preheating of feed water in combined solarfuel systems of hot water supply**
N.R.Avezova(1), R.R.Avezov(1), A.L.Aguera(2), J.S.Akhatov(1), K.A.Samiev(1)
1. PhysicalTechnical Institute, SPA “PhysicsSun”, Tashkent.Uzbekistan
2. Department of Particle Physics & Galician Institute of High Energy Physics, Sustainable Energetic Applications Group, University of Santiago de Compostela.Spain
- 649 Developing a Platform for Energy Efficiency Monitoring**
J. Lourenço(1), N. Neves(1,2), F. Reis(2) N. Valente(1,2)
1. Research and Development Center, CIDISPGaia, Instituto Superior Politécnico Gaia Vila Nova de Gaia. Portugal
2. Wideskills – Inovação, Projectos e Soluções, Lda.Vila Nova de Gaia. Portugal
- 651 Investigating University Personnel Computers (PC) Produced Harmonics Effect on line Currents**
M. H. Shwehdi(1), F. S. AL-Ismaïl(2)
1. Electrical Engineering Department, King Faisal University. Saudi Arabia
2. King Fahad University of Petroleum &Minerals. Saudi Arabia
- 654 Estimation of power components for non-sinusoidal currents and voltages regarded as power quality indices**
P. Janik, Z. Waclawek
Department of Electrical Engineering, Wroclaw University of Technology. Wroclaw, Poland
- 659 Electric field analysis in warning light for power lines of high voltage**
J.A.Güemes(1), A. Iraolagoitia(1), P. Fernández(2), J. Sánchez(3)
1. Department of Electrical Engineering, E.U.I.T.I. University of the Basque Country. Spain
2. Electronics and Telecommunications Department. E.U.I.T.I. University of the Basque Country. Spain
3. Research and Development Department, Saprem, Izurdiaga-Izurzun. Spain
- 660 Fuzzy Logic Based Power Management Strategy for Plug-in Hybrid Electric Vehicles with Parallel Configuration**
Hasan Alipour, Behzad Asaei, Ghias Farivar
School of Electrical & Computer Engineering, University of Tehran. Iran

- 664 Minimization of torque ripple in switched reluctance motor drives using direct instantaneous torque control**
J. Castro, P. Andrada, B. Blanqué
Electronically Commutated Drives Group (GAECE), Departament d'Enginyeria Elèctrica (DEE), Escola Politècnica Superior d'Enginyeria de Vilanova i la Geltrú (EPSEVG). Universitat Politècnica de Catalunya (UPC). BARCELONATECH, Vilanova i la Geltrú, Barcelona. Spain
- 671 Impedance-Based Methods for Detection of Voltage Sag Sources**
Boštjan Polajžer, Gorazd Štumberger, Drago Dolinar
University of Maribor. Faculty of Electrical Engineering and Computer Science, Maribor. Slovenia
- 672 Matlab based Model of 40-MW Concentrating Solar Power Plant**
Silvano Vergura, Virginio Di Fronzo
Department of Electrotechnics. Politecnico di Bari. Italy
- 675 Estimation of Power System Harmonics and Interharmonics in the Presence of Aperiodic Components**
M.A. Zorrozuza(1), J. Lazaro(2), J.F. Miñambres(1), B. Larrea(2), M.Sanchez(2)
1. Department of Electrical Engineering E.T.S.I., Basque Country University (UPV/EHU)
2. Department of Applied Mathematics E.T.S.I., Basque Country University (UPV/EHU). Bilbao. Spain
- 678 Coastal Sea Power. A proposal for Exploitation Wave Energy**
R. Borrás(1), R. Ferreira(1), F. Miguelez(2), R. Rodríguez(3)
1.UDC, Industrial Engineering Department, ETSNyM-Universidad de A Coruña. Spain
2.UDC, Physics Department, ETSNyM-Universidad de A Coruña. Spain
3.UDC, Energy and Propulsion Department, ETSNyM-Universidad de A Coruña. Spain
- 679 Energy self-sufficiency and sustainable development in a closed mountain area**
M. De Carli(1), S. Graci(1), Y. Natalini(1), Luigi Tonus(2), Paola Agostini(2)
1. DFT - Dipartimento di Fisica Tecnica, University of Padua. Italy
2. Province of Belluno, Provincial Planning and Energy Management Office. Belluno. Italy
- 682 Effect of Differential Mass Flow Rate on the Thermal Performance of Double Duct Packed Bed Solar Air Heaters**
Prashant Kumar
Department of Mechanical Engineering. National Institute of Technology, Hamirpur. India
- 692 Minimalistic approach of a complex and flexible teaching laboratory for photovoltaic energy conversion: experience from courses at the Kasetsart University in Bangkok and at GPEsolar (Technical University Berlin)**
Thomas Dittrich
Helmholtz Center Berlin for Materials and Energy, Hahn-Meitner-Platz. Berlin. Germany
- 696 The Hot Spot phenomena in Shadowed ENR System**
H. Benis, H. Ben cheikh el hocine, A. Bouden, M.Marir-Benabbas
Laboratoire de Modélisation de Dispositifs à Énergie Renouvelable et Nanométries, Université Mentouri Constantine, Faculté des Sciences de L'ingénieur
Département d'Électronique. Alger
- 697 Texturization of Silicon Wafers for Solar Cells by Anisotropic Etching with Sodium Silicate Solutions**
C.L. Su(1), C.H. Hsu(2), K.H. Lan(2), R. Leron(1), A. Soriano(3), M.H. Li(1)
1. R & D Center for Membrane Technology and Department of Chemical Engineering. Chung Yuan Christian University. Taiwan
2. OMG (Asia) Electronics Chemical Company, Ltd. Taiwan

3. School of Chemical Engineering and Chemistry, Mapua Institute of Technology, Manila.
Philippines

713 A New Control Method for Operation of D-STATCOM Under the Unbalanced Conditions

H. Molavi, M.M. Ardehali, G. B. Gharehpetian, M. J. Sanjari, E. Ebrahimi
Department of Electrical Engineering, Amirkabir University of Technology, Tehran. Iran

715 Evaluation of two simple wind power forecasting methods applied to a long-term wind record from Scotland

W.-G. Früh
School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, Scotland.
United Kingdom

716 Investigating two configurations of a heat exchanger in an Indirect Heating Integrated Collector Storage Solar Water Heater System (IHICSSWHS)

R. Mossad, M. AL-Khaffajy
Faculty of Engineering and Surveying, University of Southern Queensland. Australia

719 Solar and wind generation to power medical facilities in Haiti

William Hafner-Burton, Peter Nelson, Ahmed ElSawy
Department of Manufacturing and Industrial Technology, Tennessee Technological
UniversityTennessee. USA

723 Highly-Efficient Power-Conditioning System for Grid-Tied Fuel Cell Power Generation

B. Han, J. Lee
Department of Electrical Engineering, Myongji University, Seoul. Korea

724 The Use of Digital Signal Processing Card in Active Power Filter Design To Mitigate Harmonic Distortion

Daniel Rohi, Limboto Limantara, David Wailanduw, Resmana L, Stephanus Ananda, Yusak Tanoto
Electrical Engineering Department, Faculty of Industrial Technology, Petra Christian University,
Surabaya. Indonesia

727 Influence of the photovoltaic generation in a small distribution network

E. Tarancón Andrés(1), L.A. Fernández Jiménez(2), E. García Garrido(2), A. Falces de Andrés(2),
P. Lara Santillán(2), P. Zorzano Santamaria(2)
1. Department of Mechanical Engineering. E.T.S.I.I., La Rioja University. Logroño. Spain
2. Department of Electrical Engineering. E.T.S.I.I., La Rioja University. Logroño. Spain

728 An Improved Bayesian-based Approach for Short Term Photovoltaic Power Forecasting in Smart Grids

A. Bracale(1), P. Caramia(1), U.De Martinis(2), A. R. Di Fazio(3)
1. Department for Technologies, University Parthenope of Napoli, Centro Direzionale di Napoli. Italy
2. Department of Electrical Engineering, University Federico II of Napoli. Italy
3. Department DAEIMI. University of Cassino. Italy

729 Analysis of the impact of charging of Plug-in Hybrid and Electric Vehicles in Spain

J. Fraile-Ardanuy(1), S. Martínez(2), B. Artaloytia(1), D. Ramírez(2), M. Fuentes(1), C. Sánchez(1)
1. Department of Special Technologies Applied to Telecommunications, E.T.S.I.T.,
Universidad Politécnica de Madrid. Spain
2. Department of Electrical Engineering E.T.S.I.I., Universidad Politécnica de Madrid. Spain

733 Specific Energy Concept Applied to Electronic Equipment in Industrial Processes Having Distributed Generation

Gómez, Juan Carlos(1), Morcos, Medhat M(2)
1. Rio Cuarto National University, Engineering School, IPSEP. Argentina
2. Kansas State University, Electrical Engineering Department, Manhattan, Kansas. USA

- 735 Power Line Tower Lightning Surge Impedance Computation, a Comparison of Analytical and Finite Element Methods.**
P. C. A. Mota(1), M. L. R. Chaves(1), J. R. Camacho(2)
1. Power Systems Transients Laboratory
2. Center for Research and Extension in Alternative Energy, School of Electrical Engineering, Universidade Federal de Uberlândia. Brazil
- 738 Evaluation of the Wire-Guard and Grounding Arrangements in Overhead Distribution Feeders Performance Against Lightning**
Roberto J. Cabral(1), Daniel S. Gazzana(1), Roberto C. Leborgne(1), Arturo S. Bretãs(1), Guilherme A. D. Dias(1), Marcos Telló(2)
1. Department of Electrical Engineering Federal University of Rio Grande do Sul- UFRGS. Porto Alegre. Brazil
2. State Company of Electrical Energy – CEEE D. Porto Alegre. Brazil
- 739 DFIG using its FACTS Features through the Grid Side Converter in Grid-Connected Wind Power Application**
F. K. A. Lima(1), D. V. P. Shimoda(1), J. B. Almada(1), M. I. B. V. Silva(1), H. M. Oliveira Filho(1), J. L. Dantas(1)
1. Energy Processing and Control Group – GPEC. Department of Electrical Engineering -DEE Federal University of Ceara – UFC. Brazil
2. Federal Institute Education, Science and Technology of Ceara – IFCE. Brazil
- 740 Wind Turbines under Power-Grid Partial Islanding**
F. K. A. Lima(1), H. M. Oliveira Filho(1), J. B. Almada(1), M. I. B. V. Silva(1), D. V. P. Shimoda(1), J. L. Dantas(2)
1. Energy Processing and Control Group – GPEC. Department of Electrical Engineering -DEE. Federal University of Ceara-UFC. Brazil
2. Federal Institute Education, Science and Technology of Ceara – IFCE, Fortaleza. Brazil
- 741 Obtaining Microalgae Biomass in a Small Scale Reactor**
Leonardo García(1), Xavier Álvarez(1), Kenya Bravo(1), Juan Peralta(2), Alfredo Barriga(2)
1. Universidad de Guayaquil. Ecuador
2. Centro de Desarrollo Tecnológico Sustentable. Escuela Superior Politécnica del Litoral. Guayaquil. Ecuador
- 743 Discussions on the Instantaneous Reactive Power Theory Terms in the General Case Based on the Symmetric Component**
Kouzou A(1,2,3,4), Abu Rub H(2), Sk Moin Ahmed(2), Mahmoudi M.O(3), Boucherit M.S(3), Kennel R(4)
1. Electrical Department, Djelfa University. Algeria
2. Department of Electrical & Computer Engg. Texas A&M University at Qatar.
3. LCP, National Polytechnic School, El Harrach, Algiers. Algeria
4. Institute for Electrical Drive Systems and Power Electronics, TUM, Munich. Germany
5. Department of Electrical Engineering, Qatar University. Qatar
6. Department of Electrical Engineering, Aligarh Muslim University. India
- 746 Harmonic Resonance Study for Wind Power Plant**
K.N Md Hasan(1,2), Kalle Rauma(2), Alvaro Luna(1), J. Ignacio Candela(1), P.Rodriguez(1)
1. Technical University of Catalonia, Terrassa. Spain
2. Aalto University, School of Electrical Engineering. Finland
- 747 Converter with Wide Input Voltage Range Applied to Solid State Lighting Based on HV9930**
R. A. Lodo, E. A. A. Coelho, F. V. R. Da Silva, A.W.F.V. Silveira, L. C. G. Freitas, J. B. Vieira Jr.
Universidade Federal de Uberlândia (UFU). Faculdade de Engenharia Elétrica (FEELT)
Núcleo de Pesquisa em Eletrônica de Potência (NUPEP). Uberlândia. Brazil



- 749 Reactive Power- and Voltage Regulation in Micro Grids**
Istvan Vokony, Andras Dan
Department Electric Power Engineering, Budapest University of Technology and Economics.
Budapest. Hungary
- 750 Experimental DTC of an Induction Motor Applied to Optimize a Tracking System**
B. Mokhtari(1), A. Ameer(1), M.F. Benkhoris(2), L. Mokrani(1), B. Azoui(3),
1. LEDMaSeD Laboratory, Electrical Engineering Depart., Laghouat University, Laghouat. Algeria
2. CRTT, IREENA, Saint Nazaire, Polytech'Nantes. France
3. LEB Laboratory, Electrical Engineering Department, Batna University. Algeria
- 751 Parameter Identification of a PV Source Dynamic Model with Piecewise-Linear Circuit-Based Approach**
M. C. Di Piazza, M. Luna, G. Vitale
Consiglio Nazionale delle Ricerche, Istituto di Studi sui Sistemi Intelligenti per l'Automazione,
(ISSIA – CNR), Palermo. Italy
- 752 High Frequency Model of PV Systems for the Evaluation of Ground Currents**
M. C. Di Piazza(1), F. Viola(2), G. Vitale(1)
1. Consiglio Nazionale delle Ricerche, CNR – ISSIA UOS Palermo. Italy
2. Università degli Studi di Palermo – DIEETCAM. Italy
- 753 Study of the behavior of polyvinylidene fluoride (PVDF) under the action of electric field using semi-empirical methods (PM3)**
Elson C. Santos(1), Rafael M. E. Santo(2), Danilo C. Pedrelli(2), Julio C.N. Aires(2), Teodorico C. Ramalho(3), Gunar V.S. Mota(4), Antonio M.J.C. Neto(2)
1. Faculdade de Engenharia Mecânica- ITEC, Universidade Federal do Pará, Belém, Brazil
2. Faculdade de Física-ICEN, Universidade Federal do Pará, Belém. Brazil
3. Universidade Federal de Lavras, Campus Universitário – UFLA, Dept. de Química. Lavras-MG. Brazil
4. Faculdade de Ciências Naturais -ICEN, Universidade Federal do Pará, Belém. Brazil
- 762 Prediction of specific fuel consumption in turbocharged diesel engines under partial load performance**
Lesme Corredor Martínez, Andrea Escobar Porto, Iván Portnoy De La Ossa, Eduardo Vélez Pareja
Mechanical Engineering Department, Universidad Del Norte, Barranquilla. Colombia
- 765 Efficiency Analysis of Single-Phase Photovoltaic Transformer-less Inverters**
M. Martino(1), C. Citro(2), K. Rouzbehi(2), P. Rodriguez(2)
1. Department of Energy Technology at Aalborg University. Danmark
2. Electrical Department at University Politechnique of Catalunya. Spain

Thursday March 29th 2012

17:15-19:00 Oral Session A5

ROOM A “ABB”



Chairman: **Berthold Bitzer**

408 Optimal Hydrogen Storage and Demand on Electricity Distribution Networks with Excess Wind Power

Stephen Carr(1), Giuliano C. Premier(2), Richard M. Dinsdale(1), Alan J. Guwy(1), Jon Maddy(1)

1. Sustainable Environment Research Centre (SERC)

Faculty of Health, Sport and Science, University of Glamorgan . United Kingdom

2. Sustainable Environment Research Centre (SERC)

Faculty of Advanced Technology, University of Glamorgan. United Kingdom

469 Remodelling of the heating systems of a sports center based on life cycle assessment. Part II: Solar hybrid system

I. Oribe García, A.M. Macarulla Arenaza, A. Alonso Vicario

Deusto Institute of Technology – DeustoTech Energy. University of Deusto, Bilbao. Spain

667 Cloud Computing for Renewable Power Systems

Mussie Geberslassie, Berthold Bitzer

South Westphalia University of Applied Sciences, Soest. Germany

673 EOLMAP: A web tool to assess the wind resource over Spain

R. Lorente Plazas, J.P. Montávez, S. Jerez, J. J. Gómez Navarro, P. Jiménez Guerrero, P. A.

Jiménez, J.A. García Valero, F. Gomáriz Castillo, F. Alonso Sarria

Department of Physics, Murcia University. Spain

688 Operation of the Brazilian Renewable Energy System

A. Bertoni(1), G. Elias(1), A. Silveira(2), A. Fleury(1,3), T. Silveira(1)

1. Pontifical Catholic University of Goiás – PUC-Go. Brazil

2. UFU. Brazil

3. UEG. Goiânia. Brazil

699 Wind turbines maintenance management based on FTA and BDD

F.P. García Márquez(1), J.M. Pinar Pérez(1) M. Papaelias(2) , R. Ruiz Hermosa(1)

1. Ingenium Research Group, E.T.S.I.I., Castilla-La Mancha University, Ciudad Real. Spain

2. Engineering and Physical Sciences College, University of Birmingham. United Kingdom

780 Sizing and Control of the Electric Power Take Off for a Buoy Type Point Absorber Wave Energy Converter

V.C. Tai(1), P.C. See(1), S. Merle(2), M. Molinas(1)

1. Department of Electric Power Engineering, Norwegian University of Technology and Science, Trondheim. Norway

2. Ecole Nationale Supérieure d'Electronique, d'Electrotechnique, d'Informatique, d'Hydraulique et des Telecommunications (ENSEEHT).Toulouse Cadex . France

19:30 –

Conference Dinner (Optional)
Parador “Hostal dos Reis Catolicos”

Thursday March 29th 2012

17:15-19:00 Oral Session B5

ROOM B “Univ. de Santiago”



Chairman: **Ji-An Wang**

547 A proposal for Computational Refunding Analysis based on real time disturbances measurements

I. N. Gondim, C. E. Tavares, J. A. F. Barbosa Jr. , J. C. Oliveira, A. Oliveira, P. H. O. Rezende
Federal University of Uberlandia, Faculty of Electrical Engineering, Uberlândia. MG. Brazil

567 VERCampus – Live Park of Renewable Energies

Vicente Leite, José Batista, Orlando Rodrigues
Polytechnic Institute of Bragança, Bragança. Portugal

569 Modelling and Validation of the Magnetizing Curve to Represent Saturated Core Reactor Using ATP Simulator

J.A.F. Barbosa Jr, J. C. Oliveira, T. V. Silva, I. N. Gondim, F. P. Santilio, L. N. Velasco
Faculty of Electrical Engineering UFU, Federal University of Ubêrlandia. Brazil

695 Analysis of Cu(In, Ga)Se₂ Efficiency Gap Between Module and Cell

W.-W. Hsu(1), S.-W. Tan(1), W. -S. Ho(1), C. W. Liu(1, 2, 3)

1. Department of Electrical Engineering and Graduate Institute of Electronics Engineering, National Taiwan University, Taipei. Taiwan
2. Department of Electrical Engineering, and Graduate Institute of Photonics and Optoelectronics, National Taiwan, University, Taipei. Taiwan
3. National Nano Device Labs, Hsinchu. Taiwan

702 Design and Analysis of HT-PEMFC Systems with Different Fuel Processors for Stationary Applications

S. Authayanun(1), M. Mamlouk(2), K. Scott(2), A. Arpornwichanop(1)

1. Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok. Thailand
2. School of Chemical Engineering and Advanced Materials (CEAM), Newcastle University. United Kingdom

773 Modeling and Dynamic Analysis of Gearless Variable-Speed Permanent Magnet Synchronous Generator Based Wind Energy Conversion System

M. I. Marei , H. S. K. El-Goharey

Electrical Power and Machines Department, Faculty of Engineering, Ain Shams University, Abbassya, Cairo. Egypt

803 Using Renewable Energy Sources in the Province of Manitoba

T. Molinski(1), T. Yebra(2), A.M. Gole(2)

1. Section Head Emerging Energy Systems, Manitowa Hydro, Winnipeg, MB, Canada
2. Department of Electrical Engineering. Engineering Information and Technology Complex. University of Manitoba, Winnipeg, MB. Canada

19:30 –

Conference Dinner (Optional)
Parador “Hostal dos Reis Catolicos”

Friday March 30th 2012

9:00-9:45 Plenary Session PL5

ROOM A “ABB”

Chairman: **Péter Kádár**

Performance Analysis of Multilevel Inverters Using Variable Switching Frequency Carrier Based PWT Techniques

Subhransu Sekhar Dash. Professor of SRM Engineering College. India

Friday March 30th 2012
9:45-10:30 Poster Session C5 – Coffee Break **ROOM C “CIRCUTOR”**

Chairmen: José I. San Martín Díaz, Przemyslaw Janik, Lidiia Kovernikova, Yudong Ma, Raos Riad Massad

- 215 Experimental study of thermal and vibrational behaviour of an induction motor**
D. García(1), F. T. Oliveira(1,2,3), G. Peláez(4), M.P. Donsión(1)
1. Department of Electrical Engineering, EII, University of Vigo. Spain
2. Department of Electrical Engineering, School of Technology and Management, Polytechnic Institute of Leiria. Portugal
3. Institute for Systems and Computers Engineering at Coimbra. Portugal
4. Department of Mechanical Engineering, EII, University of Vigo. Spain
- 220 Adjustment in the Least Square Meaning of a Neural Model for Electric Arc Quenching in High Voltage Circuit Breakers**
A. Ziani, H. Moulai
Laboratory of Electrical and Industrial Systems, FEI, USTHB. Algiers
- 322 Numerical analysis of a modified evacuated tubes solar collector**
A. I. Sato, V. L. Scalon, A. Padilha
Department of Mechanical Engineering, Universidade Estadual Paulista “Júlio de Mesquita Filho” Campus of Bauru-SP. Brazil
- 326 Virtual Instrumentation Applied to Calculation of Electrical Power Quantities in Single-Phase Systems**
L. B. G. Campanhol, S. A. O. Silva, A. Goedel
Department of Electrical Engineering. Federal Technological University of Paraná – UTFPR. Brazil
- 374 SRG Load Voltage Control Strategy Based on Turn- Off Angle Modifying**
A. W. F. V. Silveira(2), A. Fleury(1,3), D. A. Andrade(2), Gomes, L. C(2), W. R. H. Araújo(1), H. de Paula(4), R. J. Dias(1)
1. Pontifícia Universidade Católica de Goiás. Brazil
2. Universidade Federal de Uberlândia. Brazil
3. Universidade Estadual de Goiás. Brazil
4. Universidade Federal de Minas Gerais. Brazil
- 537 Demand Charge Under Nonsinusoidal Conditions**
E. C. Sousa(1), S. F. de Paula Silva(1), A.W.F.V. Silveira(1), L.C.Gomes(1), A.Fleury(2)
1. UFU-FEELT, School of Electrical Engineering .UFU, Federal University of Uberlândia Minas Gerais. Brazil
2. PUC-GO and UEG, Santa Mônica, Uberlândia, Minas Gerais. Brazil
- 549 Batteries comparison for an optimal accumulation performance on PV isolated systems**
A.Daniel Rey Rey(1,2),A. López Aguera(1) ,I.Rodriguez Cabo(1), E. Vieites Montes(1), J. Demetino(2), I. Pepe(2)
1. Laboratorio de Aplicaciones Energetica Sostenibles, Departamento de Física de Partículas, University of Santiago de Compostela. Spain
2. Laboratório de Propriedades Óticas Instituto de Física, Universidade Federal da Bahia. Brazil

- 604 A Contribution to Isolated and Grid-Connected Photovoltaic Systems under Shadow Conditions**
A. F. Cupertino, J. T. de Resende, B.M Silveira, A.O.R. Vilela, H.A Pereira
Department of Electrical Engineering, Universidade Federal de Viçosa, Minas Gerais. Brazil
- 607 Estimating the estate of charge of lead-acid batteries**
G. G. Demetino(1), I.M. Pepe(2), V. L. Filardi(1), L. C. S. Soares Júnior(2), C. E. T. Silva(1), G. P. Guedes(3), J.G. Lima Brasília(3), D. Rey Rey(4), A. L. Aguera(4), J.C. Anjos(5)
1. PPGM-Programa de pós-graduação em Mecatrônica. Laboratório de Propriedades Óticas, Instituto de Física, Universidade Federal da Bahia. Brazil
2. Laboratório de Propriedades Óticas, Instituto de Física, Universidade Federal da Bahia. Brazil
3. Laboratório de Instrumentação e Energia Solar. Departamento de Física, Universidade Estadual de Feira de Santana. Brazil
4. Laboratorio de Aplicaciones Energetica Sostenibles. Departamento de Física de Partículas, Universidad de Santiago de Compostela. Spain
5. Centro Brasileiro de Pesquisas Físicas. Rio de Janeiro. Brazil
- 768 DFT-based controller for sag and harmonic mitigation with a series-connected compensator**
Javier Roldán Pérez, Juan Luis Zamora Macho, Aurelio García Cerrada
ICAI-Universidad Pontificia Comillas, Madrid. Spain
- 769 Obtaining and Characterization of Biodiesel Water Emulsion**
J. Aponte(1), L. Llano(2), V. Prada(1), A. Martinez(3)
1. Department of Mechatronic Engineering; U.M.N.G., Military Nueva Granada University. Bogotá. Colombia
2. Department of Civil Engineering; U.M.N.G., Military Nueva Granada University. Bogotá. Colombia
3. Department of Chemistry; U.M.N.G., Military Nueva Granada University. Bogotá. Colombia
- 775 DC-DC high gain converter applied to renewable energy with new proposed to MPPT search**
A. Freitas(1), F. Antunes(1), E. Mineiro(2), A. Lima(3), A. Gadelha(1) F. Gualter(1)
1. Department of Electrical Engineering Federal University of Ceará. Brazil
2. IFCE – Instituto Federal de Educação, Ciência e Tecnologia do Ceará
3. Department of Electrical Engineering, Federal University of Ceará. Brazil
- 776 Operating conditions on the performances of SOFC fuelled with methane**
A Musa, A Agina, M Talbi
Department of Marine Engineering, Faculty of Engineering, Tripoli University. Libya
- 786 Analysis of the reconstruction of load curves in an urban Low Voltage substation**
M. Mendoza(1), P. Zorzano(1), A. Falces(1), E. Tarancón(2), E. Zorzano(1), P. Lara(1)
1. Department of Electrical Engineering, E.T.S.I.I., University of La Rioja, Logroño. Spain
2. Department of Mechanical Engineering, E.T.S.I.I., University of La Rioja, Logroño. Spain
- 787 Modeling and Controller Design of Non Ideal Z-Source Converter**
M. A. Ismeil(1,3), A. Kouzou(2,3), Ralph Kennel(3), A. A. Ibrahim(1), M. Orabi(1), M. E. Ahmed(1)
1. Electrical Department, Faculty of Engineering, South Valley University, Aswan. Egypt
2. Electrical Department, Djelfa University. Algeria
3. Department of Electrical Drive Systems and Power Electronics, Technical University of Munich. Germany
- 788 Gossip Sensor Networks for Power Quality Monitoring in Smart Grids**
S. L. Ullo, A. Vaccaro
Engineering Department, University of Sannio, Benevento. Italy
- 789 A comprehensive energetic analysis of a hybrid motorization of small/medium boats**
L. Corredor, L. Baracaldo, L. Jaramillo, J. Gutiérrez, D. Jiménez

Department of Mechanical Engineering, Universidad Del Norte, Barranquilla. Colombia

791 Biomass Electricity Generation Using Industry Poultry Waste

M. O. Oliveira(1,2), R. Somariva(3), O. H. Ando Junior(3), J. M. Neto(3), A. S. Bretãs(2)

1. Energy Study Center to Development-CEED, UNaM, National University of Misiones, Oberá_Mnes, Argentina
2. School of Engineering, UFRGS, Federal University of Rio Grande do Sul. Porto Alegre-RS. Brazil
3. Department of Electrical Engineering, SATC, Beneficent Association of Santa Catarina Coal Industry, Criciúma, SC.Brazil

792 Viability Study for Use of Rice Husk in Electricity Generation by Biomass

M. O. Oliveira(2,3), J. M. Neto(1), M. C. Inocencio(1), O. H. Ando Junior(1), A. S. Bretas(2), O.E. Perrone(3)

1. Electrical Engineering Department, SATC, Beneficent Association of Santa Catarina Coal Industry, Criciúma-SC. Brazil
2. Electrical Engineering Department, UFRGS, Federal University of Rio Grande do Sul, Porto Alegre-Rs. Brazil
3. Energy Study Center to Development-CEED, UNaM, National University of Misiones, Oberá_Mnes. Argentina

793 Design and Analysis of Brushless Self-Excited Three-Phase Synchronous Generator

M. O. Oliveira(1,2), A. S. Bretãs(1), F. H. García(1), L. Valantus(2), H. E. Muñoz(2), O.E. Perrone(2), J.H. Reversat(2)

1. Electrical Engineering Department, UFRGS, Federal University of Rio Grande do Sul, Porto Alegre-Rs. Brazil
2. Energy Study Center to Development-CEED, UNaM, National University of Misiones, Oberá_Mnes. Argentina

799 Power Flow Solution on Multi-Terminal HVDC Systems: Supergid Case

F. Gonzalez-Longatt(1), J. Roldan(2), C. Charalambous(3)

1. School of Electrical and Electronic Engineering, The University of Manchester. United Kingdom
2. Escuela Superior de Ingenieros, Universidad de Sevilla. Spain
3. Department of Electrical and Computer Engineering, University of Cyprus, Nicosia.Cyprus

802 Fluent Restoration Modelling Applied to a Real Power System Using Colored Petri Nets

K.M. Canuto(1), G.C. Barroso(2), M.P. Sales Neto(1), R.F. Sampaio(2), R.P.S. Leão(2) E.B. Medeiros(1)

1. Energy Company of Ceará – COELCE. Fortaleza-CE. Brazil
2. Federal University of Ceará, Fortaleza-CE. Brazil

804 Battery state-of-charge estimating using Adaptative Extended Kalman Filter with Fuzzy modelling of the nominal battery capacity

A. Boutte(1), A. Midoun(2)

1. Space instrumentation department "DIS". Space Techniques Center, C.T.S. Arzew. Algeria
2. Laboratory of power electronics and solar energy "LEPES". University of Sciences and Technology of Oran, U.S.T.O. Algeria

805 Selection of domotic systems by AHP based rules weights calculations on models of Fuzzy Rules

R. Sáenz López, E. Jiménez Macías

Department of Electrical Engineering, E.T.S.I.I., University of La Rioja, Logroño. Spain

806 Renewable Energies in Vocational Training

María Otero Prego(1), Juan Ignacio Latorre Biel(2), Emilio Jiménez Macías(3)

1. University of La Rioja, Department of Mechanical Engineering, E.T.S.I.I., Logroño. Spain
2. Public University of Navarre. Department of Mechanical Engineering, Energy and Materials. Tudela, Spain
3. University of La Rioja, Electrical Engineering Department, E.T.S.I.I., Logroño. Spain

- 809 Phase-Modulus Diagram of Instantaneous Current's Space Phasor as Diagnosis Tool of Induction Motor Stator Winding**
Aurelian Crăciunescu, Gloria Ciumbulea, Media Marius
Electrical Engineering Faculty, University "Politehnica" of Bucharest. Romania
- 812 Developing a Dynamic Smart Grid Model**
Istvan Vokony, Bálint Hartmann, Andras Dan
Department of Electric Engineering, Budapest University. Hungary
- 815 FEM Thermomechanical Simulation of Low Power LED Lamp for Energy Efficient Light Sources**
P. Kulha, J. Jakovenko, J. Formanek
Department of microelectronics, Faculty of Electrical Engineering, Czech Technical University in Prague. Czech Republic
- 816 External Magnetic Fields of Powerful Generators**
Mikhail Roytgarts
Deputy Chief Designer of Turbogenerators, Turbogenerator Design Department, OJSC "Power Machines", Saint Petersburg. Russia
- 818 Dimming Compatibility of 60W Replacement LED Lamps with Legacy Dimming Infrastructure**
A. Boura, M. Husak
Department of Microelectronics, Faculty of Electrical Engineering, Czech Technical University in Prague. Czech Republic
- 822 Optimization of energy consumption in HPC centers: Energy Efficiency Project of Castile and Leon Supercomputing Center - FCSCCL**
A. Redondo Gil(1), A. Ruiz-Falcó(1,2), J.M. Martínez(1)
1. Castile and León Technological Center for Supercomputing (FCSCCL), Edificio CRAI-TIC, University of León. Spain
2. Catón, S.L. Granada. Spain
- 823 Use of the Power Line Communication System (PLC) at Low Voltage (0.4 kV) Noisy Electrical Networks – Introducing a New Concept at Power Quality**
István Szén, Ervin Racz
Institute of Power Engineering, Kandó Kálmán Faculty of Electrical Engineering, Óbuda University Budapest. Hungary
- 826 Advanced PLL structures for grid synchronization in distributed generation**
A. Luna(1), C.Citro(1), C.Gavriluta(1), J.Hermoso, I.Candela(1), P.Rodriguez(1)
1. Department of Electrical Engineering SEER, Technical University of Catalonia. Terrassa. Spain
- 829 Validation of power factor regulation of a wind turbine**
P. Lara, E. Zorzano, E. García, M. Mendoza, A. Falces, A. Fernández
Department of Electrical Engineering, E.T.S.I.I., University of La Rioja, Logroño. Spain
- 830 Simulink Based Model of PV Plant**
Silvano Vergura
Department of Electrotechnics, Politecnico di Bari, Italy
- 832 A reactor for rapid water disinfection in rural areas and post disaster situations**
S. Ali Shah, R. Saunders
Department of Physics, The University of the West Indies. Trinidad and Tobago
- 833 Solar kiln drying of tropical hardwoods using a system with a slagbed acting as roughened absorber and heating storage medium**



R. Clarke, R. Saunders
Department of Physics, University of the West Indies. Trinidad and Tobago

- 838 Autonomous mobile robot with hybrid PEMfuel-cell and ultracapacitors energy system. Dedalo 2.0**
Artal, J.S.; Dominguez, J.A.; Caraballo, J.
Department of Electrical Engineering. Escuela de Ingeniería y Arquitectura, EINA.
University of. Zaragoza. Spain
- 839 Performance measurements of car engine based MicroCHP test device**
Péter Kádár
Óbuda University, Dept. of Power Systems, Budapest. Hungary
- 840 Development of Molybdenum trioxide (MoO₃) by spin coating method for photovoltaic application**
L.Chibane(1), MS.Belkaid(1), M.Pasquinelli(2), H. Derbal-Habak(2), J-J. Simon(2), D. Hocine(2), O.Boundia(2)
1. Laboratory of Advanced Technologies of Genie Electrics (LATAGE), Faculty of Electrical and Computer Engineering, Mouloud Mammeri University (UMMTO). Algeria
2. Aix-Marseille University, Institut Matériaux Microélectronique Nanosciences de Provence, Marseille Cedex. France
- 842 The Study on Renewable Energy from Ventilation Recuperation**
V. Bršlica
Department of Electrical Engineering, Faculty of Military Technology, University of Defence, Brno. Czech Republic
- 843 A Novel Direct Torque Control Scheme for PMSM for Improving Quality in Torque and Flux**
Azeddine Draou(1), Kada Hartani(2)
1. Electrical Engineering Department, University of Hail, Hail. Saudi Arabia
2. Electrical Engineering Department, University Dr. Moulay Tahar of Saida. Algeria
- 845 Analysis of the Effect of Defects for Fatigue Life of Composite Wind Turbine Blades Using FEM Data**
U.I.K. Galappaththi, A.M. De Silva, M Macdonald, O. Adewale
School of Engineering and Built Environment, Glasgow Caledonian University. United Kingdom
- 846 Comparison of Multi-Resonant- and Hysteresis Band Controllers used in Current Control Loop of Shunt Active Power Filter**
Rastislav Ravlanin, Pavol Spanik, Branislav Dobrucky
Department of Mechatronics and Electronics, University of Zilina. Slovakia
- 847 3% absolute efficiency gain on multicrystalline silicon solar cells by TiO₂ antireflection coatings derived by APCVD process**
D. Hocine(1), MS. Belkaid(1), M. Pasquinelli(2), L. Escoubas(2), J.J. Simon(2), G. Rivière(2), A. Moussi(3)
1. Laboratory of Advanced Technologies of Electrical Engineering (LATAGE)
Mouloud Mammeri University (UMMTO). Algeria
2. Aix-Marseille University, Institut Matériaux Microélectronique Nanosciences de Provence – Campus de Saint-Jérôme, Marseille. France
3.-Laboratoire des Cellules Photovoltaïques, Unité de développement de la Technologie du Silicium. Algeria
- 849 Design Features and Performance Data of a New 400 kWel Biomass Gasification Power Plant of Downdraft Type**
Daniele Accornero, Alessandro Nilberto, Ferruccio Pittaluga
DIMSET/SCL – Savona Combustion Laboratory, Department DIMSET – University of Genova. Italy



- 853 Parametric Analysis of the Optimal CO content in A High Temperature PBI membrane**
Etim U. Ubong(1), Uwem Ubong(2)
1. Center for Fuel Cell Systems Research & Powertrain Integrations, Kettering University. USA.
2. Department of Chemistry, Akwalborn State University of Technology. Nigeria
- 854 Grid connection transients of small hydropower generator**
D. A. Górski, J. Wiśniewski, W. Koczara
Department of Electrical Engineering, Warsaw University of Technology, Warsaw. Poland
- 856 Design of a Solar Harvester System for a Wireless Sensor Network Deployed for Large Aircraft In-Flight Tests**
D. Meekhun(1,2), V Boitier(1,2), J.M. Dilhac(1,2)
1. CNRS ; LAAS ; Toulouse. France
2. Université de Toulouse ; UPS, INSA, INP, ISAE ; LAAS; Toulouse. France
- 858 A Gasification System for the Disposal of Industrial Waste and Energy Generation: Experimentation and Thermodynamic Analysis**
A. Gimelli(1), A.Luongo(2), A.Amoresano(1)
1. DIME – Department of Mechanical and Energy, Univ. degli Studi di Napoli Federico II. Italy
2. Faculty of Engineering, Univ. degli Studi di Napoli Federico II. Italy
- 860 Evolutionary algorithm application to medium voltage power sytem restoration**
J. Csátár, A. Dán, I. Vokony
Department of Electric Power Engineering, Budapest University of Technology and Economics, Budapest. Hungary
- 861 Improved wind forecasting with wavelets**
J.A. Domínguez-Navarro(1,2), J.S.Artal(1), H. Bludswiet(2), J.L. Bernal-Agustín(1), R. Dufo(1)
1. Department of Electrical Engineering, E.I.N.A., Zaragoza University, Zaragoza. Spain
2. Circe Foundation, Campus Río Ebro, Zaragoza. Spain
- 870 Biogas for Electricity Production in Agricultural Facilities: A Case Study**
Bruno Teixeira, Teresa Nogueira , R. F. Mesquita Brandão
Institute of Engineering, Polytechnic Institute of Porto, Porto. Portugal

Friday March 30th 2012

10:30-12:15 Oral Session A6

ROOM A “ABB”

Chairman: **Augusto Fleury Veloso**



- 243 Energy and Greenhouse Gas Analysis for Biogas Power Plants**
Wolfgang Bauer(1), Stefan Bauer(2), Thomas Bauer(1)
1. Department of Physics and Astronomy, Michigan State University. USA
2. CPM Biogas GmbH & Co KG, Nidderau, Germany
- 256 A theoretical study on third generation photovoltaic technology: dye-sensitized solar cells**
J. Gong, K. Sumathy
Department of Mechanical Engineering North Dakota State University.U.S.A
- 433 An optimization power method for Photovoltaic array by tracking Maximum Average Current through Diode of Boost Converter**
X.L. Dang(1), E. Hoang(1), M. Petit(2), H.T. Pham(3), H. Ben Ahmed(4)
1. SATIE, ENS de Cachan, CNRS, UniverSud. France
2. Department of Energy, Supélec, Campus de Gif-sur_Yvette. France
3. Department of Power System, Hanoi University of Technology, Hanoi. Vietnam
4. SATIE-Brittany Branch, ENS de Cachan-Ker Lann Campus. France
- 704 Hybrid solution for photovoltaic and photothermal conversion**
K. Znajdek, M. Sibiński
Department of Semiconductor and Optoelectronic Devices, Technical University of Lodz. Poland
- 712 Inertia and Governor Ramp Rate Constrained Economic Dispatch to Assess Primary Frequency Response Adequacy**
Hector Chavez, Ross Baldick
Department of Electrical and Computer Engineering.The University of Texas at Austin.USA
- 714 Assessment and modelling of the waste heat availability from gas turbine based CHP systems for ORC system**
E. Firdaus(1), K. Saaed(1), D. Bryant(2), M. Jones(1), S. Biggs (3), B. Bahawodin(1)
1. Computing Engineering and Mathematics, University of Brighton. United Kingdom
2. Heatcatcher Ltd, Uckfield. United Kingdom
3. Efficient Air Ltd, Uckfield. United Kingdom
- 720 Performance study on solar assisted heat pump water heater using CO₂ in a transcritical cycle**
M. Raisul Islam(1), K. Sumathy(1), J. Gong(1), Samee Ullah Khan(2)
1. Department of Mechanical Engineering, North Dakota State University. Fargo. USA
2. NDSU-CIIT Green Computing and Connections Laboratory. North Dakota State University. Fargo. USA

Friday March 30th 2012

10:30-12:15 Oral Session B6

ROOM B “Univ. de Santiago”

Chairman: **Vit Brslica**



- 272 Performance of Power-Line-Signaling Based Detection Algorithms for Islanding Protection of Distributed Generators in Interharmonic Polluted Systems**
H. Jouybari-Moghaddam, G. B. Gharehpetian S. H. Hosseini
Department of Electrical Engineering Amirkabir University of Technology Tehran.Iran
- 312 Controlled power distributed photovoltaic system using solar energy forecast**
D. Diaz(1), J.A. Souto(1), A. Rodríguez(1), S. Saavedra(1), J.J. Casares(1), A. García-Loureiro(2), R. Varela(3), M.J. Rodríguez-Legarreta(3), J. Rodríguez-Aneiros(3)
1. Department of Chemical Engineering. School of Engineering, University of Santiago de Compostela. Spain
2. Department of Electronics and Computer Science. University of Santiago de Compostela. Spain
3. CIS-Galicia, Ferrol. Spain
- 439 Advanced Universal Power Quality Conditioning Systems for Stabilizing Micro-Grid's Frequency**
B. Rahmani, M. Tavakoli Bina
Electrical Engineering Faculty, K. N. Toosi University of Technology, Tehran. Iran
- 591 Ageing estimation for the batteries of the Pierre Auger Observatory**
A. López Agüera(1,2), I. Rodríguez Cabo(1,2), D. Rey Rey(1,2)
Department of Particle Physics & Galician Institute of High Energy Physics.
1. Sustentable Energetic Applications Group
2. Astroparticle Group. Physics Faculty, Santiago of Compostela University. Spain
- 718 Pre- Feasibility Study Landfill Biogas for Electricity in Colombia**
Borzychowski Robert(1), Csontos Kinga(1), González María A.(1) Rojas-Solórzano Luis(2)
1. International Masters in Management and Engineering of Environment & Energy (ME3): École des Mines de Nantes; Royal Institute of Technology, Stockholm; Universidad Politécnica de Madrid; Queen's University Belfast; Budapest, University of Technology and Economics
2. Universidad Simón Bolívar. Venezuela
- 770 Pre-Feasibility Analysis of a Desalination Plant Powered by Renewable Energy in Thira, Greece**
Antonio E. Alanís-Noyola(1), Ashreeta Prasanna(1), Thibault Rannou(1), Luis Rojas-Solórzano(2)
1. Department of Environmental and Energy Engineering. Ecole des Mines de Nantes. France
2. Universidad Simón Bolívar, Department of Energy Conversion and Transport. Caracas. Venezuela
- 771 Limiting Ramp Rate of Wind Power Output using a Battery Based on the Variance Gamma Process**
D. Lee, R. Baldick
Department of Electrical Engineering. University of Texas at Austin. USA

12:15– 13:00	ROOM A “ABB”
	CLOSING SESSION
	Conclusions and time for the next conference (ICREPQ'13)



	Awards for the three best posters
13:00 – 15:00	Farewell Lunch
15:00	Excursion for to visit the City of Culture, the Cathedral and other interesting places of Santiago de Compostela



European Association for the
Development of Renewable
Energies, Environment and
Power Quality