

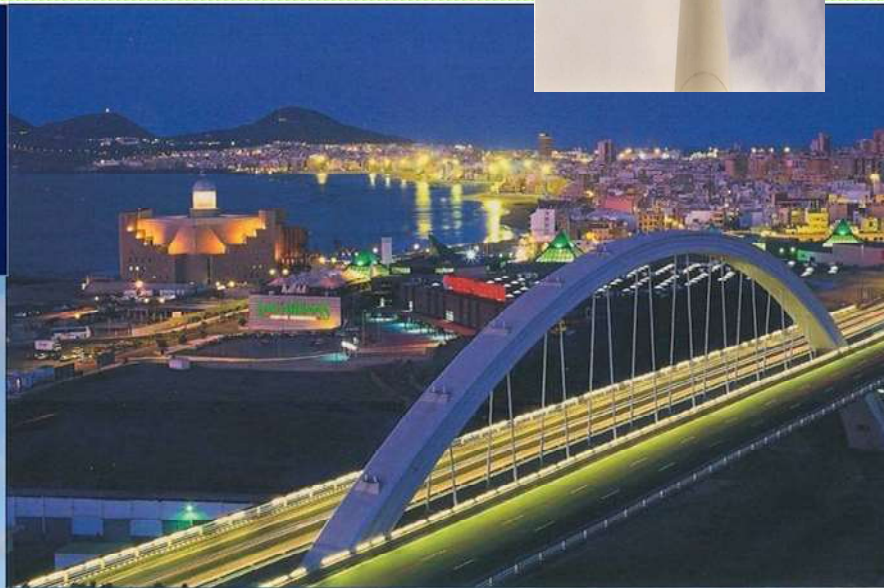
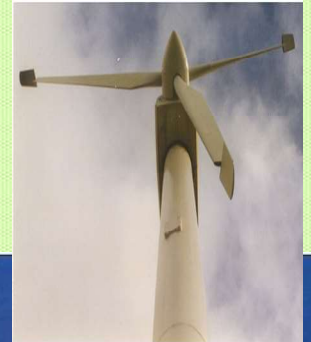


European Association
for the Development of
Renewable Energy,
Environment and
Power Quality

ICREPO'11

INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY

Las Palmas, 13 – 15 of April 2011



INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY AND POWER QUALITY (ICREPQ'11)

WELCOME TO ICREPQ'11

On behalf of the Steering Committee and the Local Organizing Committee we want to give you a very warm welcome to ICREPQ'11 and to Las Palmas de Gran Canaria.

Our International Programme Committee has selected a high quality 328 papers (among 497 proposals) from which 295 will be presented at the Conference, 76 at oral sessions and 219 at poster sessions (dialogue), during the three days of the ICREPQ'11. All of these papers are included in the final programme. Also six special papers will be presented in plenary sessions.

ICREPQ'11 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 Program 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 (April 13th, 19:30 H) we will hold a Civic Reception with an aperitif and typical dances and on Thursday (14th April, 21:00 H) the Conference Dinner in Hotel Santa Catalina, where we will deliver silver plates and diplomas to those companies/institutions that have collaborated with the organisation of the Conference. We'll have all the lunches in a room of the same Canary Islands Convention Centre and on Friday April 15th, after 15:00 H, we'll have organised one excursion to the Vegueta, visiting the Cathedral and other interesting places of the Las Palmas de Gran Canaria.

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 Las Palmas de Gran Canaria and the surrounding area.

Best regards,

Prof. Manuel Pérez-Donsión
Chairman of the Steering Committee

Miguel Martínez Melgarejo
Chairman of the Local Committee

ORGANISED BY:

- European Association for the Development of Renewable Energies, Environment and Power Quality (EA4EPQ)
- University of Vigo
- University of Las Palmas – Cátedra Endesa Red



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'11) 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,...
- 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, stability,...
- Power plants. Distributed generation. Fuel cells. Co-generation. Hybrid Systems. 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 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 taking into account the renewable energy.
- 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 telecommunications, internet, artificial intelligence for the renewable energy.
- Security assessment and risk analysis in renewable energy.
- Electric vehicles.
- Power electronics. Control strategies.
- Sensors and actuators.
- Renewable Energies Teaching.

2. POWER QUALITY:

- Electromagnetic compatibility (EMC).
- Power Quality in Transport and Distribution.
- 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.
- Telecommunication, 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.

STEERING COMMITTEE

Manuel Pérez-Donsión (Chairman)
 Ramón Bargalló-Perpiña
 Manuel Burgos Payán
 Debora Coll-Mayor
 Mario Mañana Canteli
 Mariano Sanz-Badía

LOCAL ORGANIZING COMMITTEE

Miguel Martínez Melgarejo (Chairman)
 Norberto Angulo Rodríguez
 Pedro Cuesta Moreno
 Fabián Déniz Quintana
 Manuel Morán Arraya
 Antonio Pulido Alonso

INTERNATIONAL PROGRAM COMMITTEE

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Bendl, Jiri (Czech Republic)	Martinez, André (France)
Bitzer, Berthold (Germany)	Narsimhulu, Sanke (India)
Boccaletti, Chiara (Italy)	Niememan, Asco (Finland)
Burgos Payan, M. (Spain)	Petkovska, L. (Macedonia)
Brslica, Vit (Czech Republic)	Predescu, Mihai (Romania)
Capolino, G.A. (France)	Redondo Gil, C. (Spain)
Catalão, João (Portugal)	Ribeiro, Hugo (Portugal)
Cortez, Liliana (México)	Robyns Benoit (France)
Driesen, Johan (Belgium)	Roger Folch, J. (Spain)
Donsión, Manuel P. (Spain)	Rusek, Jan (Poland)
Duran, Mario (Spain)	Saadate, S. (France)
Engin Ozdemir (Turkey)	Salmerón-Revuelta, P. (Spain)
Ertan, H.B. (Turkey)	Sanz Badía, M. (Spain)
Fernández Cabanas, M. (Spain)	Shibli, Murad (Arab Emirates)
Figueiredo, J.M.G. (Portugal)	Schlemmer, Erwin (Austria)
Flores, Antonio (Portugal)	Stenzel, Jürgen (Germany)
Fraile Mora, Jesús (Spain)	Stumberger, Gorazd (Slovenia)
Funabashi, Toshihisa (Japan)	Tegopoulos, J.A. (Greece)
Gharehpetian, G.B. (Iran)	Tekwani, P. (India)
Ghita, Constantin (Romania)	Torrente Lujan, E. (Spain)
Göl, Ozdemir (Australia)	Tudorache, Tiberiu (Romania)
Güemes Alonso, J.A. (Spain)	Valouch, V. (Czech Republic)
Iwaszkiewicz, J. (Poland)	Vitale, Gianpaolo (Italy)
Jokinen, T. (Finland)	Zamora Belver, I (Spain)
Jigeng Li (China)	Zobaa, Ahmed (UK)

SPONSORSHIP

Sincere thanks are expressed to the organisations listed below who have given valuable support to ICREPQ'11:

- EA4EPQ (European Association for the Development of Renewable Energies, Environment and Power Quality)
- Cátedra Endesa Red
- University of Las Palmas de Gran Canaria
- University of Vigo
- La Caja de Canarias
- Cabildo de Gran Canaria
- CIRCUTOR
- Ministerio de Ciencia e Innovación
- AEDIE (Asociación Española para el Desarrollo de la Ingeniería Eléctrica)
- Gran Canaria Convention Bureau
- Cabildo de Gran Canaria
- Palacio de Congresos de Canarias. Auditorio "Alfredo Kraus"
- Ayuntamiento de Las Palmas de Gran Canaria

ICREPQ'11 SCHEDULE

Tuesday April 12, 2011							
17:00 – 19:00	Registration “ICREPQ’11 Secretariat”						
Wednesday April 13, 2011							
9:15 – 13:00	Registration “ICREPQ’11 Secretariat”						
10:00 – 10:45	Opening Ceremony ROOM A “Cátedra Endesa-Red”						
10:45 - 11:30	PL1	<i>Renewable for a Sustainable Energetic Mix</i> Maurizio Bezzeccheri. President of Enel Green Power					
EXTRA TIME FOR DISCUSSION							
11:30 – 12:15	Posters Session at ROOM C “La Caja de Canarias” (Session C1) Coffee Break	<i>Poster Session C1</i>					
		209	215	217	218	220	226
		227	230	231	233	236	238
		239	240	241	264	266	267
		277	280	281	282	286	290
		293	295	297	306	307	315
		318	319	320	321	322	324
	325	327	328	356	422	580	
12:15 – 13:00	ROOM A “Cátedra Endesa-Red”						
	PL2	<i>Energy saving potential of cable renovation and economic cable sizing.</i> Fernando Nuño. European Copper Institute (ECI). Leonardo Energy Community					
13:00 – 15:00	Welcome Lunch – Alegranza Room						
15:00 – 16:30	ROOM A “Cátedra Endesa-Red”			ROOM B “Circutor”			
	<i>Oral Session A1</i>			<i>Oral Session B1</i>			
	224	254	270	262	276	278	
	274	285	289	298	301	323	
	EXTRA TIME FOR DISCUSSION						
16:30 – 17:15	Poster Session at ROOM C “La Caja de Canarias” (Session C2) Coffee Break	<i>Poster Session C2</i>					
		330	333	336	339	341	345
		346	347	350	351	353	354
		355	357	359	360	361	364
		371	374	376	380	381	383
		387	389	390	392	393	395
		396	398	399	401	404	407
	414	415	417	418	424	425	
17:15 – 19:00	ROOM A “Cátedra Endesa-Red”			ROOM B “Circutor”			
	<i>Oral Session A2</i>			<i>Oral Session B2</i>			
	305	310	334	314	338	340	
	337	358	419	343	349	362	
	607			437			
EXTRA TIME FOR DISCUSSION							
19:30 – 21:30	Welcome Civic Reception						

Thursday April 14, 2011							
9:15 – 13:00	Registration “ICREPQ’11 Secretariat”						
ROOM A “Cátedra Endesa-Red”							
9:15 – 10:00	PL3	<i>Renewable Energy, Global Warming Problem & Impact of Power Electronics.</i> Prof. Dr. Ahmed F. Zobaa Brunel Institute of Power Systems, School of Engineering and Design, Brunel University,UK					
10:00 – 10:45	PL4	<i>Small Wind Energy Systems. State of the Art and New Challenges</i> Prof. Dr. Mario Mañana. University of Cantabria. Spain					
EXTRA TIME FOR DISCUSSION							
10:45 – 11:30	Poster Session at ROOM C “La Caja de Canarias” (Session C3) Coffee Break	<i>Poster Session C3</i>					
		379	426	428	431	434	436
		438	440	444	445	450	451
		456	459	469	470	474	476
		477	478	479	480	483	484
		485	487	488	492	494	497
		499	501	504	507	510	511
EXTRA TIME FOR DISCUSSION							
11:30 – 13:00	ROOM A “Cátedra Endesa-Red”			ROOM B “Circutor”			
	<i>Oral Session A3</i>			<i>Oral Session B3</i>			
	299	362	366	378	388	404	
	367	370	625	441	509	579	
EXTRA TIME FOR DISCUSSION							
13:00 – 15:00	Lunch – Alegranza Room						
ROOM A “Cátedra Endesa-Red”							
15:00-15:45	PL5	<i>Partnership and Collaborative approaches to forthcoming EU FP7 Calls for research proposals in Renewable Energy</i> Mr. Stephen Silk - Overview. Prof. Sarath B Tennakoon – Wind Energy. Prof. Noel Shammass – Solar Energy. Dr Sacha Oberweis – Biomass Centre for Energy Efficient Systems. Faculty of Computing, Engineering & Technology. Staffordshire University (U.K.)					
15:45 – 17:30	ROOM A “Cátedra Endesa-Red”			ROOM B “Circutor”			
	<i>Oral Session A4</i>			<i>Oral Session B4</i>			
	394	400	405	243	245	421	
	408	410	416	429	446	449	
EXTRA TIME FOR DISCUSSION							
17:30 - 18:15	Poster Session at ROOM C “La Caja de Canarias” (Session C4) Coffee Break	<i>Poster Session C4</i>					
		245	432	453	534	536	537
		538	540	541	546	548	549
		550	552	557	558	560	572
		577	578	582	583	590	591
		593	594	595	597	601	603
		604	606	609	610	612	615
EXTRA TIME FOR DISCUSSION							
18:15 - 19:45	ROOM A “Cátedra Endesa-Red”			ROOM B “Circutor”			
	<i>Oral Session A5</i>			<i>Oral Session B5</i>			
	454	462	463	525	526	528	
EXTRA TIME FOR DISCUSSION							
21:00 - 24:00	Conference Dinner (Optional) <i>Santa Catalina Hotel</i>						

Friday April 15, 2011							
9:15 – 13:00	Registration “ICREPQ’11 Secretariat”						
	ROOM A “Cátedra Endesa-Red” Plenary Sessions PL5						
9:15-10:00	PL6	<i>The Strategic Energy Technology Plan: Financial Instruments</i> Prof. Dr. Andrés Llombart. University of Zaragoza. President of CIRCE Foundation. Spain					
	EXTRA TIME FOR DISCUSSION						
10:00 – 10:45	Poster Session at ROOM C “La Caja de Canarias” (Session C5) Coffee Break	<i>Poster Session C5</i>					
		257	302	312	352	455	496
		562	622	623	628	630	632
		633	637	639	642	643	648
		649	650	651	652	655	656
		658	660	662	668	671	672
		675	676	678	682	683	685
	686	690	693	695	696	697	
10:45 – 12:15	ROOM A “Cátedra Endesa-Red”			ROOM B “Circutor”			
	<i>Oral Session A6</i>			<i>Oral Session B6</i>			
	585	586	587	288	635	646	
	589	598	689	663	674	691	
	EXTRA TIME FOR DISCUSSION						
12:15 – 13:00	ROOM A “Cátedra Endesa-Red”						
	CLOSING SESSION						
	Conclusions and time for the next conference (ICREPQ’12) Awards for the three best posters						
13:00 – 15:00	Farewell Lunch – Alegranza Room						
15:00 - 18:00	Excursion to the Vegueta and other interesting places of the Las Palmas de Gran Canaria						

Room A: *Cátedra Endesa-Red (Atlántico)*
Room B: *Circutor (Lanzarote)*
Room C: *La Caja de Canarias*

Wednesday April 13th, 2011	
10:00 – 10:45	Opening Ceremony ROOM A “Cátedra Endesa-Red”

- 1- Miguel Martínez Melgarejo. Chairman of the Local Organising Committee
- 3- Pablo Casado Reboiro. General Manager of Endesa in Canarias.
- 5- José Regidor García. Rector of Las Palmas de Gran Canaria University
- 4- Jerónimo Saavedra Acebedo. Mayor of Las Palmas de Gran Canaria Council
- 2- Manuel Pérez Donsión. Chairman of the Steering Committee.

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 2003.

Poster Presentations

The poster must be put on the pin board that you previously can chose about 15 minutes before of the beginning of the session and it must be take off 15 minutes after of the end of the session. The author(s) must be stay near the poster along 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 **900 mm x 1.500 mm** (width x high).

SESSION CHAIRMEN

On behalf of the International Program Committee, Steering Committee and the Organising Committee of the ICREPQ'11 and take into account their eminent position in the world of science we have selected 42 session chairmen. It is an honour for us their collaboration for to chair the sessions of ICREPQ'11 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 13th April, 2011		
10:45-11:30	PLENARY SESSION PL1	Gianpaolo Vitale
11:30-12:15	POSTER SESSION C1	José Antonio Güemes
		Yo Yasuda
		Nora Touati MOUNGLA
		Roberto Cesar Betini
		Sergio Herraiz Jaramillo
12:15-13:00	PLENARY SESSION PL2	Gevrok B. Gharehpetian
15:00-16:30	ORAL SESSION A1	Inmaculada Zamora Belver
	ORAL SESSION B1	Mario Mañana Canteli
16:30-17:15	POSTER SESSION C2	Patricio Salmerón Revuelta
		Péter Kiss
		Silvano Vergura
		Chuang Liu
		Noel Shammass
17:15-19:00	ORAL SESSION A2	Viktor Valouch
	ORAL SESSION B2	Luis Rouco Rodríguez
Thursday 14th April, 2011		
9:15-10:00	PLENARY SESSION PL3	Carlos Redondo Gil
10:00-10:45	PLENARY SESSION PL4	Dan Andras
10:45-11:30	POSTER SESSION C3	José A. Dominguez Navarro
		Sergio M. Redondo Faias
		Ahmed Chaib
		Arnold Knott
		Blaise Nsom
11:30-13:00	ORAL SESSION A3	Aurelian Craciunescu
	ORAL SESSION B3	Mircea Ion Buzdugan
15:00-15:45	PLENARY SESSION PL5	Ahmad Pourmovahed
15:45-17:30	ORAL SESSION A4	Aonghus McNabola
	ORAL SESSION B4	Dmitri Vinnikov
17:30-18:15	POSTER SESSION C4	Antonio Bracale
		Manuel Weiland
		Karel Jezernik
		Georgios Adamidis
		Helio Leaes Hey
18:15-19:45	ORAL SESSION A5	Janis Kalnacs
	ORAL SESSION B5	Boban Panajotovic
Friday 15th April, 2011		
9:15-10:00	PLENARY SESSION PL6	Péter Kádár
10:00-10:45	POSTER SESSION C5	José I. San Martín Díaz
		Anssi Mäkinen
		Kanungo Barada Mohanty
		Shin-Won Kang
		Adam Boura
10:45-12:15	ORAL SESSION A6	Ivan Glesk
	ORAL SESSION B6	Antonio Pulido Alonso

Wednesday April 13th 2011

10:00-10:45 OPENING CEREMONY

ROOM A “Cátedra Endesa Red”

10:45-11:30 Plenary Session PL1

ROOM A “Cátedra Endesa Red”

Chairman: Gianpaolo Vitale

Renewable for a Sustainable Energetic Mix

Maurizio Bezzeccheri. President of Enel Green Power

Wednesday April 13th 2011

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

ROOM C “La Caja de Canarias”

Chairmen: José Antonio Güemes, Yo Yasuda, Nora Touati MOUNGLA, Roberto Cesar Betini, Sergio Herraiz Jaramillo

- 209** *Modeling and simulation of power yield in chemical and electrochemical systems*
S. Sieniutycz, P. Kuran
Faculty of Chemical and Process Engineering, Warsaw University of Technology.
Poland
- 215** *Investigation and evaluation of multilevel H-NPC converter for electrically driven trains*
G. Adamidis, N. Alagialoglou, G. Tsengenes
Department of Electrical Engineering and Computer Engineering. Democritus University of Thrace. Greece
- 217** *Development of a small-scale reactor system for bioethanol production from agriculture waste geared towards small industries applications in Malaysia*
M.O. Abdullah(1), S.F.Lim(1), S.F.Salleh(1), T.M. Tai(1), S.L. Leo(1), A.K. Umar(2)
1. Faculty of Engineering. University Malaysia Sarawak. Malaysia
2. Sofia Enterprise Asajava, Sadong Jaya. Malaysia
- 218** *Digital fault locator for double end fed transmission lines*
Roberto Micheletti
Department of Electrical Systems and Automation, University of Pisa. Italy
- 220** *Improving profitability of the network distribution by protecting power transformers with a current limiting technology device*
T. Madiba, M. Siti, A.A. Jimoh
Department of Electrical Engineering, Tshwane University of Technology, Campus of Pretoria. South Africa
- 226** *Assessment of harmonic distortion sources in power networks with capacitor banks*
Reyes S. Herrera, Patricio Salmerón, Salvador P. Litrán
Department of Electrical Engineering, E.T.S.I.Huelva University. Spain
- 227** *Study on split-capacitors applied in positive output super-lift Luo-converters*
Fang Lin Luo
Nanyang Technological University. Singapore

- 230** *A practical comparative evaluation of different active harmonic filter topologies*
 Patricio Salmerón, Salvador P. Litrán, Reyes S. Herrera, J. R. Vázquez
 Departamento de Ingeniería Eléctrica y Térmica. Escuela Politécnica Superior,
 University of Huelva. Spain
- 231** *Hybrid active power filter: design criteria*
 Salvador P. Litrán, Patricio Salmerón, Reyes S. Herrera
 Departamento de Ingeniería Eléctrica y Térmica. Escuela Politécnica Superior,
 Universidad de Huelva. Spain
- 233** *Biodiesel production performance estimation from simple viscosity measurements*
 L. Díaz, M.E. Borges, A. Brito
 Chemical Engineering Department, University of La Laguna. Tenerife. Canary Island.
 Spain
- 236** *Production and characterization of biogas obtained from biomass of aquatic plants*
 Roberto G. Pereira(1), María Cristina D.E. Pereira(2), José G. da Silva(3), Fernando
 Luiz B. de Abreu(3), Valdir de Jesus Lameira(4)
 1. Federal Fluminense University, TEM/PGMEC/MSG. Brazil
 2. UBEE. Rio de Janeiro. Brazil
 3. Federal Fluminense University, PGMEC. Brazil
 4. INESC Coimbra. Portugal
- 238** *Investigation and comparison between international standars for information integration and control of ECSs based on RESs over IP-based networks*
 S. Jaloudi(1), A. Schmelter(1), E. Ortjohann(1), W. Sinsukthavorn(1), N. Alamin(1), P.
 Wirasanti(1), D. Morton(2)
 1. Department of Electrical Engineering, South Westphalia University of Applied
 Sciences. Germany
 2. The University of Bolton. United Kingdom
- 239** *Analysis of interconnected power systems by hybrid calculation*
 E. Ortjohann(1), P. Wirasanti(1), W. Sinsukthavorn(1), S. Jaloudi(1), N. Alamin(1),
 D. Morton(2)
 1. Department of Electrical Engineering, South Westphalia University of Applied
 Sciences. Germany
 2. The University of Bolton. United Kingdom
- 240** *A modified cooling system for stand alone PV greenhouse in remote areas*
 N.M. Ahmed, H.M. Farghally, F.H. Fahmy, A.A. Nafeh
 Electronics Research Institute, Giza. Egypt
- 241** *A viable megawatt-class space power installation under the Rankine cycle*
 Ramón Ferreiro García
 Department of Industrial Engineering. E.T.S.N.M. University of A Coruña. Spain
- 264** *Continuously variable transmission using quadric crank chains and ratchets*
 Toshihiro Yukawa
 Department of Mechanical Engineering, Iwate University. Japan
- 266** *Analysis of behaviour of phase s capacitive tap insulator of interconnection 1, 220 kv, in Jinamar power plant (Island of Gran Canaria, Canary Islands, Spain)*
 José Manuel García Muñoz(1), José Antonio Torres Santana(2), Miguel Martínez
 Melgarejo(2)
 1. Endesa Distribución Eléctrica, S.A. Canary Islands.Spain
 2. University of Las Palmas de Gran Canaria (ULPGC). Spain

- 267** *Comparison of different wind farm layouts for a 25 MW project in the south west of Algeria*
M. Kesraoui, A. Harfouche, D. Acheli
Laboratoire de Recherche Automatique Appliquée. Faculté des Hydrocarbures et de la Chimie, Université M'Hamed Bougara, Boumerdes. Algeria
- 277** *Voltage magnitude state estimation by ANNs with reduction of PMUs*
M. Gholami(1), G.B. Gharehpetian(1), B. Fahimi(2), M.J. Sanjari(1)
1. Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran
2. Electrical Engineering Department, University of Texas at Dallas
- 280** *Analysis of the performance of the photovoltaic array through the exergy efficiency*
M. Calderón(1), A.J. Calderón(1), A. Ramiro(2), J.F. González(2), I. González(1)
1. Department of Electrical Engineering. E.I.I. Extremadura University. Spain
2. Department of Applied Physics. E.I.I. Extremadura University. Spain
- 281** *Selective harmonics elimination PWM with self-balancing DC-link capacitors in five-level inverter*
K. Imarazene(1), H. Chekireb(2), E.M. Berkouk(2)
1. Laboratoire des Systèmes Electriques et Industriels. U.S.T.H.B University. Algeria
2. Laboratoire de Commande des Processus. Department de Génie Electrique. ENP School. Algeria
- 282** *Comparative study of NPC and cascaded converters topologies*
Mamadou Baldé(1), Mamadou Lamine Doumbia(1), Ahmed Chériti(1), Chellali Benachaiba(2)
1. Department of Electrical and Computer Engineering, Université du Québec à Trois-Rivières. Canada
2. Department of Technologies, University Center of Bechar. Algeria
- 286** *A comparison of desing methodologies for journal bearings under pulsatile loads*
C. Herapath, S.M. Barrans, W. Weston
Department of Engineering and Technology, School of Computing and Engineering University of Huddersfield. United Kingdom
- 290** *Feasibility of wind power generation for the reduction of power costs in residential buildings*
Rômulo Monteiro Callado(1,2), João Reinaldo Imbiriba de Rocha Junior(1), Antonio Felisberto P. Amorim(1)
1. Department of Electronic Engineering, Edson Queiroz Foundation. Fortaleza University. Brazil
2. Normatel Engenharia Ltda, Fortaleza. Brazil
- 293** *Analysis, voltage control and experiments on a self excited induction generator*
Birendra Kumar Debta, Kanungo Barada Mohanty
Department of Electrical Engineering, National Institute of Technology, Rourkela. India
- 295** *Validity of the sampling theorem in the analysis of current harmonics in AC/DC converters*
P. Bokoro(1), J. Pretorius(2), M. Case(1)
1. Department of Electrical & Electronic Engineering Technology, University of Johannesburg. South Africa
2. Faculty of Engineering & the Built Environment (FEBE). South Africa
- 297** *Utilization of synthetically generated hourly wind speed data in the optimization of wind-batteries stand-alone systems*
Rodolfo Dufo López, José L. Bernal Agustín, Juan Lujano, José Antonio Domínguez Navarro. Department of Electrical Engineering, Zaragoza University. Spain

- 306** *Interphase power controller application to mitigate transmission network short circuit level*
L. Zahedi(1), Mehdi S. Naderi(2), Mohammad S. Naderi(3), G.B. Gharehpetian(1,2) E. Babaei(4),
1. Electrical Engineering Department, Amirkabir University of Technology (AUT), Tehran. Iran
2. Iran Grid Secure Operation Research Centre (IGSORC) Amirkabir University of Technology (AUT), Tehran. Iran
3. School of Electrical Engineering and Telecommunications, University of New South Wales (UNSW), Sydney. Australia
4. Faculty of Electrical and Computer Engineering, University of Tabriz. Iran
- 307** *New hybrid power filter for power quality improvement in industrial network*
Ivo Pecha(1), Josef Tlustý(2) Z. Müller(2), Viktor Valouch(3)
1. Elektro, Ltd. Bouzov. Czech Republic
2. Department of Electric Power Engineering, Faculty of Electrical Engineering, CTU, Prague. Czech Republic
3. Institute of Thermomechanics, Academy of Sciences of the Czech Republic
- 315** *Simulation and modeling of systems in engineering education for the sustainability. The renewable energy case*
Edmundo Guerra, Yolanda Bolea, Antonio Grau
Automatic Control Department, Technical University of Catalonia, UPC, Barcelona. Spain
- 318** *Global prospective electricity systems generation to the year 2025*
J. Molina, J. Pérez, E. Muela
Department of Electrical Engineering, University of La Salle, Bogotá. Colombia
- 319** *Study and analysis of voltage dips in a adjustable speed drives*
C. Olarte, J. González, J. Pérez
Department of Electrical Engineering, University of La Salle, Bogotá. Colombia
- 320** *Two distinct regions in a pulsed-axisymmetric jet*
Hariyo P.S. Pratomo(1), Klaus Bremhorst(2)
1. Department of Mechanical Engineering, Petra Christian University. Indonesia
2. Department of Mechanical Engineering, University of Queensland. Australia
- 321** *Design and experimental study of a novel two-stage brushless hybrid excitation synchronous machine*
Zhu Shushu, Liu Chuang, Yihao Xu, Ma Yundong
Aero-Power Sci-Tech Center, Nanjing University of Aeronautics and Astronautics, Nanjing. China
- 322** *γ -Stirling engine- The effect of different working gases and pressures*
S. Oberweis, T.T.Al- Shemmeri
Faculty of Computing, Engineering and Technology, Staffordshire University. United Kingdom
- 324** *Dynamic voltage restorer using sliding mode control to improve power quality*
Hadi Ezoji(1), A. Sheikholeslami(2), A. Ghatreh Samani(3), A. Abbasi(1), Masood Shahverdi
1. Mapna Electrical and Control Engineering, Karaj. Iran
2. Electrical & Computer Engineering Department, Babol University of Technology. Iran
3. Department of Electrical Engineering, University of Azad Eslamshahr Branch. Iran

- 325** *Analysis of the electric arc in low voltage circuit breakers*
 A.Iturregui(1), E. Torres(2), I. Zamora(2)
 1. Department of Electrical Engineering, EUITMOP, University of the Basque Country, Barakaldo. Spain
 2. Department of Electrical Engineering, ETSI, University of the Basque Country, Bilbao. Spain
- 327** *Application of new tools in the thermal behavior study of electrical machines*
 P.M. García, V. Moreno, J.J. Molina, A. Olano
 Department of Electrical Engineering, University of the Basque Country, San Sebastián. Spain
- 328** *Synthetic diesel from biomass by fischer-tropsch synthesis*
 A. Sauciuc(1), A. Potetz(2), G. Weber(3), R. Rauch(2), H. Hofbauer(2), L. Dumitrescu(1)
 1. Department of Renewable Energy Systems and Recycling, Transilvania University of Brasov. Romania
 2. Institute of Chemical Engineering, Vienna University of Technology. Austria
 3. Bioenergy2020, Güssing. Austria
- 356** *A photovoltaic power unit providing ancillary services for smart distribution networks*
 A. Filgueira Vizoso(1), L. Piegari(2), P. Tricoli(3)
 1. Industrial Engineering II Department, University of La Coruña, Ferrol. Spain
 2. Department of Electrical Engineering, Politecnico di Milano. Italy
 3. Department of Electrical Engineering, University of Naples Federico II. Italy
- 422** *Buck converter design for photovoltaic generators with supercapacitor energy storage*
 Dariga Meekhun(1), Vincent Boitier(1,2), Jean Marie Dilhac(1,2), Stéphane Petibon(1,2), Corinne Alonso(1,2), Bruno Estibals(1,2)
 1. CNRS; LAAS. Toulouse. France
 2. Université de Toulouse; UPS, INSA, INP,ISAE; LASS. France
- 580** *Analysis of remote islanding detection methods for distributed resources*
 A. Etxegarai, P. Eguía, I. Zamora
 Department of Electrical Engineering, University of the Basque Country. Escuela Técnica Superior de Ingeniería de Bilbao. Spain

Wednesday April 13th 2011

12:15-13:00 Plenary Session PL2

ROOM A “Cátedra Endesa Red”

Chairman: Gevrok B. Gharehpetian

Energy saving potential of cable renovation and economic cable sizing

Fernando Nuño. European Copper Institute (ECI). Leonardo Energy Community

13:00 – 15:00

Welcome Lunch – Alegranza Room

Chairman: Inmaculada Zamora Belver

224 ***Evaluation of incident solar radiation on inclined plane by empirical models at Kuching, Sarawak, Malaysia***

A.Q. Jakhrani(1), A.K. Othman(1), A.R.H. Rigit(1), S.R. Samo(2), L.P. Ling(1), R. Baini(1),

1. Faculty of Engineering, University Malaysia Sarawak. Malaysia

2. Department of Energy & Environment Engineering, Quaid-e-Awam University of Engineering Science & Tech. Nawabshah, Sindh. Pakistan

254 ***Reliability and predictions of power supplied by wind power plants***

Z. Hradílek, T. Šumbera

Department of Electrical Engineering, VŠB- Technical University of Ostrava. Czech Republic

270 ***Energy efficiency and renewable energy solution in telecommunication***

Borislav Odadzic, Boban Panajotovic, Milan Jankovic

Republic Agency for Electronic Communication, Belgrade. Republic of Serbia

274 ***Increasing transmission efficiency with advanced processing***

I. Glesk, M. Nazri M. Warip, I. Andonovic

Department of Electronic and Electrical Engineering, University of Strathclyde. United Kingdom

285 ***Agricultural by-products and waste biomass energy potential in Latvia 2005-2009***

Janis Kalnacs(1), Ruta Bendere(1), Dace Arina(1), Vilis Dubrovskis(2)

1. State Research Institute, Institute of Physical Energetics, Riga. Latvia

2. Latvia University of Agriculture, Jelgava. Latvia

289 ***Performance and efficiency of a bi-fuel bio methane/gasoline vehicle***

Brenda Lemke, Nolan McCann, Ahmad Pourmovahed

Mechanical Engineering Department, Kettering University, Flint, Michigan. U.S.A

Chairman: Mario Mañana Canteli

- 262** *Power quality measurements near DER and disturbing loads*
M. Van Lumig(2), S. Bhattacharyya(1) J.F.G. Cobben(1),W.L. Kling(1)
1. Electrical Power Systems Group, Technical University Eindhoven. The Netherlands
2. Electrical Power Systems, Analysis and Concepts Laborelec NL. The Netherlands
- 276** *A three phase photovoltaic power system connected to the MV network: behaviour during voltage dips*
R. Chiumeo, C. Gandolfi
RSE- Ricerca Sul Sistema Energetico, Milano. Italy
- 278** *Power control strategy for unity power factor*
Karel Jezernik
Faculty of Electrical Engineering and Computer Science, University of Maribor. Slovenia
- 298** *Fault simulation environment for power distribution networks with protection operation*
J. Faig, J. Meléndez, S. Herraiz
Institut d'Informàtica i Aplicacions (IliA) University of Girona. Spain
- 301** *The influence of wind power on the small signal stability of a power system*
T.R. Ayodele, A.A. Jimoh, J.L. Munda, J.T. Agee
Department of Electrical Engineering, Tshwane University of Technology, Pretoria. South Africa
- 323** *The Italian MV network dip performance characterization by contour charts as defined by UIE/CIGRE'/ CIRED WG-C4.110*
R. Chiumeo, C. Gandolfi, L. Garbero, L. Tenti
RSE- Ricerca Sul Sistema Energetico, Milano. Italy

Chairmen: Patricio Salmerón Revuelta, Péter Kiss, Silvano Vergura, Chuang Liu, Noel Shammass

- 330** ***Low speed PM generator for wind turbines applications***
G. Madescu(1), M. Biriescu(2), O. Proștean(2), M. Greconici(2), T. Mihut(3), M. Moț(1)
1. Romanian Academy, Timișoara. Romania
2. “Politehnica” University of Timișoara. Romania
3. Design Department of SC BEGA-Electromotor, Timișoara. Romania
- 333** ***Wind potencial evaluation in the Canary Islands using GIS***
Julieta Schallenberg Rodríguez(1), Jesús Notario del Pino(2)
1. Department of Process Engineering Universidad de Las Palmas de Gran Canaria. Spain
2. Department of Soil Science and Geology, University of La Laguna. Spain
- 336** ***Pilot scheme for the use of low power wind turbines for electricity generation in the Municipality of Las Palmas de Gran Canaria***
Ignacio de la Nuez Pestana(1), Francisco Javier García Latorre(1), Alejandro Ramos Martín(2)
1. Agencia Local Gestora de la Energía de Las Palmas de Gran Canaria. Spain
2. Escuela de Ingenierías Industriales y Civiles, University of Las Palmas de Gran Canaria. Spain
- 339** ***Simulation of a solar cell considering single-diode equivalent circuit model***
E.M.G. Rodrigues(1), R. Melício(1,2), V.M.F. Mendes(3), 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. Lisboa. Portugal
3. Instituto Superior de Engenharia de Lisboa. Portugal
- 345** ***Output power of linear generators under reactive control in regular waves***
Agustín García Santana(1), Dan El Montoya Andrade(2), Antonio de la Villa Jaén(3)
1. Departamento Eléctrico. AG Ingeniería
2. Escuela de Ingeniería Eléctrica, Universidad Central de Venezuela
3. Departamento de Ingeniería Eléctrica, University of Sevilla. Spain
- 346** ***Sizing stand-alone hybrid generation for seasonal irrigation pumping***
Javier Carroquino(1), Rodolfo Dufo López(2), José L. Bernal Agustín(2)
1. C.P.S.-E.U.I.T.Z. University of Zaragoza. Spain
2. Electrical Engineering Department, University of Zaragoza. Spain
- 347** ***Investigation of three-phase thyristor converters under generalized impedance unbalance***
Manuel Weiland, Gerhard Herold
Institute of Electrical Power Systems, University of Erlangen-Nuremberg. Germany
- 350** ***On electric vehicle battery charger modeling***
L. Sainz(1), J.J. Mesas(1), J. Balcells(2)
1. Department of Electrical Engineering. E.T.S.E.I.B, Technical University of Catalonia. Spain
2. Department of Electronics Engineering. E.T.S.E.I.T, Technical University of Catalonia. Spain

- 351** ***Currents physical components (CPC) concept in wind farm harmonic current studies***
L. Sainz(1), J. Cunill Solà(2)
1. Department of Electrical Engineering. E.T.S.E.I.B, Technical University of Catalonia. Spain
2. Department of Electrical Engineering. E.P.S.E.M, Technical University of Catalonia. Spain
- 353** ***Grounding system impedance characterization using FEM***
José M^a Bueno Barrachina, S. Catalán Izquierdo, César S. Cañas Peñuelas
Institute of Electrical Technology, Universidad Politécnica de Valencia. Spain
- 354** ***Visualization of the power waveforms frequency fluctuations with the use of the constant length time window***
Jaroslaw Zygarlicki(1), Janusz Mroczka(2)
1. Department of Electrical, Control and Computer Engineering, Opole University of Technology. Poland
2. Electronic and Photonic Metrology, Wrocław University of Technology. Poland
- 355** ***Short-term hourly load forecasting of a hospital using an artificial neural network***
Daniel Moriñigo Sotelo(1), Oscar Duque Pérez(1), Luís Angel García Escudero(2), Miguel Fernández Temprano(2), Pablo Fraile Llorente(1), Manuel V. Riesco Sanz (1), A.L. Zorita Lamadrid(1)
1. Department of Electrical Engineering. University of Valladolid. Spain
2. Department of Statistics and Operational Research. University of Valladolid. Spain
- 357** ***Overview of the quality of electricity supply in Spain***
R. Muñoz(1), S. Valero(2), D. López(3), C. Senabre(2)
1. Área de Ingeniería Eléctrica, Departamento de Ingeniería de la Construcción y Obras Públicas, University of Alicante. Spain
2. Department of Industrial Systems Engineering. University Miguel Hernández of Elche Spain
3. Electricidad Alsanbo S.A.
- 359** ***Advantages and barriers for the development of the use of renewable energy sources in Latvia***
P. Shipkovs(1,2), G. Kashkarova(1), K. Lebedeva(1), L. Migla(1,2), J. Shipkovs(1), M. Pankars(2)
1. Institute of Physycal Energetics. Latvia
2. Riga Technical University. Latvia
- 360** ***Latvian experience of energy supply in the environment-friendly buildings in biosphere reservation***
P. Shipkovs(1,2), G. Kashkarova(1), L. Migla(1,2), A. Ikaunieks(2), M. Jirgens(1)
1. Institute of Physycal Energetics. Latvia
2. Riga Technical University. Latvia
- 361** ***Investigation of solar collector's in Latvian conditions***
P. Shipkovs(1,2), G. Kashkarova(1), A. Snegirjovs(1,2), M. Vanags(1), K. Lebedeva(1), J. Shipkovs(1), L. Migla(1,2)
1. Institute of Physycal Energetics. Latvia
2. Riga Technical University. Latvia

- 364** *Study on flow characteristic of lubricant in the main Shaft of transmission in commercial vehicle*
 Ji Hun Yun(1), Jeong Se Suh(2), Chung Seob Yi(2), Chul Ki Song(2), In Guk Jeong (1), Joong Hwan Park(3)
 1. Graduate School of Mechanical Engineering, Gyeongsang National University, Jinju, Gyeongnam. Korea
 2. School of Mechanical and Aerospace Engineering, Gyeongsang National University, Jinju, Gyeongnam. Korea
 3. S&T Dynamics, Seongsan-gu, Changwon, Gyeongnam, Korea
- 371** *Simulation model in trnsys of a solar house from Braşov, Romania*
 C. Şerban, E. Eftimie, L. Coste
 Department of Renewable Energy Systems and Recycling, Transilvania University of Braşov. România
- 374** *Empirical model for estimating global solar radiation for Braşov urban area*
 L. Coste, E. Eftimie, C. Şerban
 Department of Renewable Energy Systems and Recycling, Transilvania University of Braşov . România
- 376** *A study on the cooling of electronic component by a flat heat pipe*
 Hamdy Hassan(1), Souad Harmand(2)
 1. Mechanical Engineering Department, Faculty of Engineering, Assuit University. Egypt
 2. UVHC, TEMPO-DF2T. France
- 380** *The application of trust region method to estimate the parameters of photovoltaic modules through the use of single and double exponential models*
 P. Rodrigues(1), J.R. Camacho(1), F.B. Matos(2)
 1. School of Electrical Engineering, Universidade Federal de Uberlândia. Brazil
 2. Informatics Department, Instituto Federal Goiano- Campus Urutaí. Brazil
- 381** *Self-growing colored petri net for offshore wind turbines maintenance systems*
 M. Pérez, A. Correcher, E. García, F. Morant, E. Quiles
 Department of Fault Diagnosis, Industrial Automation Institute (AI2). E.T.S.I.I., Universidad Politécnica de Valencia. Spain
- 383** *Synchronization control of parametric pendulums for wave energy extraction*
 A. Najdecka, V. Vaziri, M. Wiercigroch
 University of Aberdeen, Centre for Applied Dynamics Research, School of Engineering. United Kingdom
- 387** *DC/DC converters as linkages between photovoltaic plants and module integrated multilevel-inverters*
 G. Mehlmann, F. Schirmer, M. Zeuß, G. Herold
 Institute of Electrical Power Systems, University of Erlangen- Nuremberg. Germany
- 389** *Investigation into harmonics of LVDC power distribution system using EMTDC/PSCAD software*
 Andrey Lana, Tero Kaipia, Jarmo Partanen
 Department of Electrical Engineering. Lappeenranta University of Technology. Finland
- 390** *Ground source heat pump on building acclimatization in Coimbra, Portugal*
 L. Coelho(1), J. Garcia(1), A. Almeida(2), N. Tavares(1), R. Cerdeira(1), K. Karytsas(3), D. Mendrinos(3), B. Sanner(4), E. Auzenet(5)
 1. Polytechnic Institute of Setúbal, Escola Superior de Tecnologia de Setúbal. Portugal
 2. Instituto de Sistemas e Robótica, Departamento de Engenharia Electrotécnica- Pólo II Universidade de Coimbra. Portugal
 3. Centre for Renewable Energy Sources
 4. European Geothermal Energy Council (EGEC). 5. CIAT

- 392** *Wave energy and supply chain opportunities*
A. Álvarez(1), C. Anido(2), S. Martín(1), P.B. González(1)
1. UDC Shipbuilding Department, UDC Marine Innovation Group, E.U.P. A Coruña University. Ferrol. Spain
2. UDC Marine Innovation Group, E.U.P. A Coruña University. Ferrol. Spain
- 393** *Theoretical efficiency of a gear based azimuthal tracked photovoltaic platform*
B. Butuc, G. Moldovean, N. Creanga
Department of Renewable Energy Systems and Recycling, Transilvania University of Braşov. Romania
- 395** *New efficient filter design for a heat sink*
J. Kulanayagam(1), J. H. Haggmann(1), K. F. Hoffmann(2), S. Dickmann(1)
1. Institute for Electrical Engineering
2. Institute for Power Electronics
Helmut-Schmidt-University/ University of the Federal Armed Forces Hamburg. Germany
- 396** *Interconnection of a photovoltaic generator (PVG) to a main supply: a simulation study*
Maamar Taleb
Department of Electrical and Electronics Engineering. University of Bahrain
- 398** *Energy storage technologies for electric applications*
J.I. San Martín(1), I. Zamora(2), J.J. San Martín(1), V. Aperribay(1), P. Eguía(2)
1. Department of Electrical Engineering, University of the Basque Country, Escuela de Ingeniería de Eibar. Spain
2. Department of Electrical Engineering, University of the Basque Country, Escuela Técnica Superior de Ingeniería de Bilbao. Spain
- 399** *PEM fuel cells in applications of urban public transport*
I.Zamora(1), J.I. San Martín(2), J. García(1), F.J. Asensio(1), O. Oñederra(1), J.J. San Martín(2), V. Aperribay(2)
1. Department of Electrical Engineering, University of the Basque Country, Escuela Técnica Superior de Ingeniería de Bilbao. Spain
2. Department of Electrical Engineering, University of the Basque Country, Escuela de Ingeniería de Eibar. Spain
- 401** *Battery response analyzer using a high current DC-DC converter as an electronic load*
F. Ibañez, J.M. Echeverría, J.Vadillo, F. Martín, L. Fontán
CEIT and Tecnun (University of Navarra), San Sebastián. Spain
- 404** *Minimum DC link voltages for the generator bridge converter of a SCIG based variable speed wind turbine with fully rated converters*
U.I. Dayaratne(1), S.B. Tennakoon(1), J.S. Knight(2), N.Y.A. Shammass(1)
1. Faculty of Computing, Engineering and Technology, Staffordshire University United Kingdom
2. Converttean Ltd, Kidsgrove. United Kingdom
- 407** *Characterization of solar panels for powering sensor applications*
M. Alves(1), J.M. Dias Pereira(1,2), J.P.S. Catalão(3,4)
1. ESTSetúbal- LabIM/IPS, Setúbal. Portugal
2. Instituto de Telecomunicações, Instituto Superior Técnico, Lisboa. Portugal
3. University of Beira Interior, Covilhã. Portugal
4. Center for Innovation in Electrical and Energy Engineering, Instituto Superior Técnico, Lisboa. Portugal

- 414** *Advances in phase change materials for thermal solar power plants quality*
I.Fernández, C.J. Renedo, S. Pérez, J. Carcedo, M. Mañana
Department of Electrical Engineering, E.T.S.I.I.T. Cantabria University. Spain
- 415** *Time domain variable speed wind energy conversion systems modelling using ATP platform*
F.H. Costa(1), E.B. Alvarenga(1), J.C. Oliveira(1), G.C. Guimarães(1), A.F. Bonelli(2), Z.S. Vítório J(3)
1. Faculty of Electrical Engineering, UFU Federal University of Uberlândia. Brazil
2. LACTEC- Institute of Technology for Development, Centro Politécnico da UFPR, Curitiba, Paraná. Brazil
3. Furnas Centrais Elétricas S.A. Cuiabá-MT. Brazil
- 417** *Design of a sustainable residential microgrid system with DC and AC buses including PHEV and energy storage device*
L. Roggia(1,2), L. Schuch(1), C. Rech(1), H.L. Hey(1), J.R. Pinheiro(1)
1. Power Electronics and Control Research Group GEPOC, DPPEE, PPGEE, Federal University of Santa María. Brazil
2. Federal Institute of Rio Grande do Sul. Brazil
- 418** *A performance analysis of a hydrogenerator in the case of field short-circuit using FEM*
S.E. Dallas, A.N. Safacas, J.C. Kappatou
Department of Electrical and Computer Engineering, University of Patras. Greece
- 424** *Three-dimensional numerical simulation of rear point contact crystalline silicon solar cells*
M. Zanucoli(1), H.W. Guo(2), E. Sangiorgi(1), C. Fiegna(1)
1. ARCES-DEIS, University of Bologna and IUNET, Cesena. Italy
2. APPLIED MATERIALS, Inc. USA
- 425** *Hydrogen production by aluminium corrosion: experimental investigation and mathematical modelling*
C.B. Porciúncula, N.R. Marcilio, I.C. Tessaro, M. Gerchmann
Department of Chemical Engineering, UFRGS, Federal University of Rio Grande do Sul. Brazil

Chairman: Viktor Valouch

- 305** *Quantitative assessment of distributed generation benefits to improve power system indices*
Mehdi S. Naderi(1), Mohammad S. Naderi(2) K. Rahmani(3), G.B. Gharehpetian(1,3), L.Zahedi(3)
1. Iran Grid Secure Operation Research Centre (IGSORC)
3. Department of Electrical Engineering Department, Amirkabir University of Technology. (AUT), Tehran. Iran
2. School of Electrical Engineering and Telecommunications, University of New South Wales (UNSW), Sydney. Australia
- 310** *Design and implementation of renewable hydrogen fuel cell vehicles*
Kary Thanapalan(1), Jonathan Williams(2), Giuliano Premier(1), Alan Guwy(1)
1.Sustainable Environment Research Centre (SERC), Renewable Hydrogen Research & Demonstration Centre, University of Glamorgan. United Kingdom
2.Advanced Energy Systems Centre, Faculty of Advanced Technology, University of Glamorgan.United Kingdom
- 334** *Review on hydrogen production technologies from solar energy*
M.A. Suárez González, A.M. Blanco Marigorta, J.A. Peña Quintana
Department of Process Engineering, University of Las Palmas de Gran Canaria. Spain
- 337** *Status of the development of renewable energy projects in the Republic of Panama*
Sebastiano Giardinella, B. Alberto Baumeister, C. Ysmael da Silva
INELECTRA A PETROTIGER COMPANY. Panama
- 358** *Analysis of a ground-mounted double axis photovoltaic installation in Spain*
D. López(1), R. Muñoz(2), S. Valero(3), C. Senabre(3)
1. Electricidad Alsanbo S.A.
2. Área de Ingeniería Eléctrica, Departamento de Ingeniería de la Construcción y Obras Públicas, University of Alicante. Spain
3. Department of Industrial Systems Engineering. University Miguel Hernández of Elche Spain
- 419** *Model based controller design for hydrogen fuel cell systems*
K.K.T. Thanapalan, G.C. Premier, A.J. Guwy
Sustainable Environment Research Centre (SERC), Renewable Hydrogen Research & Demonstration Centre, University of Glamorgan. United Kingdom
- 607** *Fuzzy multi-agent based voltage and reactive power control*
Bessie Monchusi, Adedayo Yusuff, Josiah Munda, Adisa Jimoh
Department of Electrical Engineering, Tshwane University of Technology, Pretoria. South Africa

Chairman: Luis Rouco Rodríguez

- 314** *Investigating the power quality of an electrical distribution system stressed by non-linear domestic appliances*
 Haroon Farooq(1), Chengke Zhou(1), Malcolm Allan(1), Mohamed Emad Farrag(1), R.A. Khan(2), M. Junaid(2)
 1. School of Engineering & Computing, Glasgow Caledonian University. United Kingdom
 2. Rachna College of Engineering & Technology, Gujranwala. Pakistan
- 338** *Power quality analysis of gas metal arc welding process operating under different drop transfer modes*
 E.F. da Silva(3), J.R. Macedo(1), A. Scotti(2), J.C. de Oliveira(1)
 1. Faculty of Electrical Engineering, Federal University of Uberlândia. Brazil
 2. Faculty of Mechanical Engineering, Federal University of Uberlândia. Brazil
 3. Instituto Federal de Educação, Ciência e Tecnologia de Goiás. Brazil
- 340** *Wavelet based feature extraction for classification of power quality disturbances*
 Sudipta Nath, Priyanjali Mishra
 Department of Electrical Engineering, Netaji Subhash Engineering College, Garia, Kolkata. India
- 343** *Comparison of gabor-wigner transform and SPWVD as tools of harmonic computation*
 M. Szmajda(1), J. Mroczka(2)
 1. Faculty of Electrical Engineering, Automatic Control and Informatics, Opole University of Technology. Poland
 2. Faculty of Electronics, Wrocław University of Technology. Poland
- 349** *Experimental measurements about harmonic current mitigation of electric vehicle battery charges*
 L. Sainz(1), J. Balcells(2)
 1. Department of Electrical Engineering. E.T.S.E.I.B, Technical University of Catalonia. Spain
 2. Department of Electronics Engineering. E.T.S.E.I.T, Technical University of Catalonia. Spain
- 362** *Development and characterization of a multi-platform data acquisition system for power quality metrological certification*
 M. Caciotta, S. Giarnetti, G. Lattanzi Cinquegrani, F. Leccese, D. Trinca
 Department of Electronic Engineering, Roma III University. Italy
- 437** *Power quality improvement using renewable energy*
 Gelu Gurguiatu(1), Ionel Vechiu(2), Toader Munteanu(1)
 1. Department of Control and Electrical Engineering, University "Dunărea de Jos" of Galati. România
 2. ESTIA-Recherche Bidart. France

Thursday April 14th 2011
9:15-10:00 Plenary Session PL3 **ROOM A “Cátedra Endesa Red”**

Chairman: Carlos Redondo Gil

Renewable Energy, Global Warming Problem & Impact of Power Electronics
Prof. Dr. Ahmed F. Zobaa Brunel Institute of Power Systems, School of Engineering and Design, Brunel University, United Kingdom

Thursday April 14th 2011
10:00-10:45 Plenary Session PL4 **ROOM A “Cátedra Endesa Red”**

Chairman: Dan Andras

Small Wind Energy Systems. State of the Art and New Challenges
Prof. Dr. Mario Mañana. University of Cantabria. Spain

Thursday April 14th 2011
10:45-11:30 Poster Session C3 - Coffee Break **ROOM C “La Caja de Canarias”**

Chairmen: José A. Dominguez Navarro, Sergio M. Redondo Faias, Ahmed Chaib, Arnold Knott, Blaise Nsom

- 379** ***Hydrogen production for solar energy storage***
P. Moldrik, Z. Hradilek
Department of Electrical Power Engineering FEI, VSB- Technical University of Ostrava, Poruba. Czech Republic
- 426** ***Induction motor capacitances calculation using FEA for common mode current studies in ATP***
C.S. Chaves(1), J.R. Camacho(1), H.de Paula(2), M.L.R. Chaves(1), E. Saraiva(1)
1. Electromagnetic Transients Laboratory, School of Electrical Engineering, Universidade Federal de Uberlândia-UFU. Brazil
2. Industrial Applications Laboratory, Universidade Federal de Minas Gerais-UFMG. Brazil
- 428** ***Nowcasting of Wind speed using support vector regression. Experiments with time series from Gran Canaria***
I.Espino, M. Hernández
Institute for Intelligent Systems (SIANI), University of Las Palmas de Gran Canaria. Spain
- 431** ***Load management for price-based demand response scheduling- a block scheduling model***
Ding Li, Sudharman K. Jayaweera, Olga Lavrova, Ramiro Jordan
Department of Electrical and Computer Engineering, University of New México, Albuquerque. U.S.A.

- 434** *Research and design of fixed-pitch non-grid-connected wind power system*
Ma Yundong, Wang Junqi, Yang Hong, Hu Zurong
Jiangsu Key Laboratory of New Energy Generation and Power Conversion, Nanjing University of Aeronautics & Astronautics. China
- 436** *Optimisation of concentrator in the solar photonic optoelectronic transformer: comparison of geometrical performance and cost of implementation*
F. Muhammad-Sukki(1), R. Ramirez Iniguez(1), S.G. McMeekin(1), B.G. Stewart(1), B. Clive(2)
1. School of Engineering and Computing, Glasgow Caledonian University. United Kingdom
2. Solar Empower Ltd. England. United Kingdom
- 438** *Human behavior changing based on the simulation of the temperature control of a house*
Radu Bălan, Vlad Mureşan, Radu Donca, A. Bălan, Sergiu Stan
Department of Mechatronics, Technical University of Cluj-Napoca. Romania
- 440** *Piezoresistive sensor for strain measurement on turbine blade with wireless telemetry data acquisition*
P. Kulha, M. Husak
Department of Microelectronics, Czech Technical University, Prague. Czech Republic
- 444** *Dynamic properties of the virtual synchronous machine (VISMA)*
Yong Chen, Ralf Hesse, Dirk Turschner, Hans Peter Beck
Institute of Electrical Power Engineering, Clausthal-Zellerfeld. Germany
- 445** *Performances and acoustic noise of intelligent wind power unit*
K. Kubo(1,3), T. Kanemoto(2)
1. School of Engineering, Kyushu Institute of Tecnology. Japan
3. Research Fellow of the Japan Society for the Promotion of Science. Japan
2. Faculty of Engineering, Kyushu Institute of Tecnology, Kitakyushu. Japan
- 450** *Using ANN to estimate the voltage of unobservable buses when one PMU or its communication fails*
M. Gholami(1), G.B. Gharehpetian(1), B. Fahimi(2), M.J. Sanjari(1)
1. Electrical Engineering Department, Amirkabir University of Technology, Tehran.Iran
2. Electrical Engineering Department, University of Texas at Dallas
- 451** *Voltage state estimation by ANNs with reduction of PMUs*
M. Gholami(1), G.B. Gharehpetian(1), B. Fahimi(2), M.J. Sanjari(1)
1. Electrical Engineering Department, Amirkabir University of Technology, Tehran.Iran
2. Electrical Engineering Department, University of Texas at Dallas
- 456** *Geared linkage driven by linear actuator used for PV platform azimuth orientation*
N.C. Creanga, I. Visa, D.V. Diaconescu, I.S. Hermenean, B.R. Butuc
Department Renewable Energy Systems and Recycling, Transilvania University of Braşov. Romania
- 459** *Concept study of offshore wind and tidal hybrid conversion based on real time simulation*
G. Caraiman(1), C. Nichita(2), V. Mînză(1), B. Dakyio(2), C.H. Jo(3)
1. Department of Electrical Energy Conversion System, University " Dunărea de Jos" of Galati. Romania
2. Group of Research in Electronics and Automatics of Le Havre, University of Le Havre. France
3. Ocean Engineering Laboratory, Inha University, Korea

- 469** *Relationship between interstitial oxygen, substitutional carbon, resistivity and minority carrier lifetime in metallurgical multicrystalline silicon*
 Virginie Mong-The Yen(1), Olivier Palais(1,2), Marcel Pasquinelli(1,2), Daniel Barakel(1,2), Isabelle Périchaud(1,2)
 1. Aix- Marseille University, IM2NP
 2. CNRS,IM2NP (UMR 6242)
 Faculté des Sciences et Techniques, Marseille Cedex. France
- 470** *Design of a monitoring and test system for PV based renewable energy systems*
 S.Berberkic , P.J. Mather, V. Holmes,M. Sibley
 School of Computing and Engineering, University of Huddersfield. United Kingdom
- 474** *A semi-empirical procedure for the evaluation of multi-stage turbine performances*
 D. Barsi, R. Canepa, A. Satta
 DIMSET, University of Genoa. Italy
- 476** *Integrated ZVT cell applied to decentralized multi-string PV system*
 R.C. Beltrame(1), M.I. Desconzi(1), M.L.S. Martins(2), J.R. Pinheiro(1), H.L. Hey(1)
 1. Power Electronics and Control Research Group, Federal University of Santa Maria. Brazil
 2. Power Analysis and Processing Research Group, Federal University of Technology, Paraná. Brazil
- 477** *Proposal for the use of solar heaters in small residences of Curitiba*
 Alysson M. Schuindt, Marcus A. Caldeira, Roberto C.Betini
 Academic Department of Electrotechnique, Federal Technological University of Paraná. Brazil
- 478** *Energy response of a mono-axis tracked solar thermal collector with vacuum tubes*
 V.E. Dombi, I. Visa, D.V. Diaconescu, M.M. Vatasescu, N.I. Tatu
 Department Renewable Energy Systems and Recycling, Transilvania University of Braşov. Romania
- 479** *Photovoltaic stand-alone power generation system with multilevel inverter*
 M.I. Desconzi, R.C. Beltrame, C. Rech, L. Schuch, H.L. Hey
 Power Electronics and Control Research Group, Federal University of Santa Maria. Brazil
- 480** *Optimization with genetic algorithms of PVT system global efficiency*
 G. Fabbri(1), M. Greppi(2), M. Lorenzini(1)
 1. D.I.E.N.C.A. Dipartimento di Ingegneria Energetica, Nucleare e del Controllo Ambientale. Università degli Studi di Bologna. Italy
 2. Università di Bologna Seconda Facoltà di Ingegneria. Italy
- 483** *A single stage DC-DC converter feasible to battery charging from PV panels with high voltage step up capability*
 Paulo P. Praça, Gustavo A.L. Henn, Ranoyca N.A.L.S., Demercil S. Oliveira, Luiz H.S.C. Barreto
 Energy and Control Processing Group- GPEC, Department of Electrical Engineering, Universidade Federal do Ceará. Fortaleza-CE. Brazil
- 484** *Data mining software process used to identify power quality event traces*
 Dan Apetrei(1),Ralf Neurohr(2), Mihaela Albu(2) Petru Postolache(2),Valentin Rascanu(2), Nicolae Golovanov(2), Ioan Silvas(1)
 1. SC Electrica SA. Romania
 2. "Politehnica" University of Bucharest. Romania

- 485 *Annealing of ZnO and SnO₂ transparent conductive oxides***
 K. Lagha (1,2), MS Belkaid(1), M. Pasquinelli(2), D. Barakel(2), L. Escoubas(2)
 1. Laboratoire des Technologies Avancées du Génie Electrique, Université de Tizi-Ouzou
 Algérie
 2. Institut Matériaux Microélectronique Nanosciences de Provenze IM2NP, Université
 d' Aix Marseille. France
- 487 *Energy valuing of forest biomass residues in Bizkaia***
 E. Mateos(1), J.M. González(2), J.M. Eguzkitza(3)
 1. Department of Chemical and Environmental Engineering
 2. Department of English and German Philology
 3. Department of Applied Mathematics
 E.U.I.T.I., University of the Basque Country, Bilbao. Spain
- 488 *The wind energy apply to water pumping in isolated place***
 Juraci Carlos de Castro Nóbrega, Thelmo Silva de Araújo
 Department of Electrical Engineering, U.F.A.M. Amazonas University. Brazil
- 492 *Direct driven axial flux permanent magnet generator for small scale wind power applications***
 A.P. Ferreira(1), A.F. Costa(2)
 1. School of Technology and Management, Polytechnic Institute of Bragança. Portugal
 2. Department of Electrical and Computer Engineering, FEUP, Porto. Portugal
- 494 *A novel method to eliminate negative time period of SVPWM using DSP TMS320F2812***
 Ronad B.F, Naik R.L, Jangamshetti Suresh H.
 Department of Electrical & Electronics Engineering, Basaveshwar Engineering College,
 Bagalkot, Karnataka. India
- 497 *A computational method to optimize energy savings of tension structures set in road tunnels***
 L.M. Gil Martín(1), A. Peña García(2), R. Escribano(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
- 499 *Dual frequency system for power-demanding measurement in the isolated areas***
 A. Boura, M. Husak
 Department of Microelectronics, Faculty of Electrical Engineering, Czech Technical
 University in Prague. Czech Republic
- 501 *Integrated interdisciplinary design. The environment as part of architectural education***
 Marios C. Phocas(1), Aimilios Michael(1), Paris Fokaides(2)
 1. Department of Architecture, Faculty of Engineering, University of Cyprus, Nicosia.
 2. Environmental Fluid Mechanics Laboratory, Department of Civil and Environmental
 Engineering, Faculty of Engineering, University of Cyprus, Nicosia. Cyprus
- 504 *Combinatorial optimization for electric vehicles management***
 Nora Touati-Moungla, Vincent Jost
 LIX, Ecole Polytechnique, Palaiseau Cedex. France
- 507 *Optimized gas pricing policy to have maximally peak shaving***
 A. Sheikhi, M. Khosravi, B. Mozafari, A.M. Ranjbar, A. Hajjam
 Sharif University of Technology, Tehran. Iran

- 510** *An optimal virtual inertia controller to support frequency regulation in autonomous diesel power systems with high penetration of renewables*
Miguel Torres, Luiz A.C. Lopes
Power Electronics and Energy Research Group, Department of Electrical and Computer Engineering, Concórdia University, Montreal, Quebec. Canada
- 511** *Determination losses and estimate life of distribution transformers with three computational, measurement and simulation methods, despite harmonic loads*
M.H. Amrollahi(1), S. Hasani(2)
1. Electrical Engineering Department, Urmia University of Technology, Urmia. Iran
2. West Azerbaijan Power Distribution Company, Urmia. Iran
- 512** *Modeling, simulation and a comparative study between a single-phase switched reluctance machine (6x6) and a three-phase switched reluctance machine*
R.J. Dias, D.A. Andrade, L.G. Cabral, A.W.F.V. Silveira, A.F.V. Silveira, L.C. Gomes, C.A. Bissochi
Laboratório de acionamentos elétricos, Depto de Engenharia Elétrica, Universidade Federal de Uberlândia. Brazil
- 517** *Hysteresis loss in brushless doubly fed induction machines*
M. Ahmadian, B. Jandaghi, H. Oraee
Department of Electrical Engineering, Sharif University of Technology, Tehran. Iran
- 518** *Maximun torque per ampere operation of brushless doubly fed induction machines*
M. Ahmadian, B. Jandaghi, H. Oraee
Department of Electrical Engineering, Sharif University of Technology, Tehran. Iran
- 520** *Numerical study of performance optimization in a proton exchange membrane fuel cell*
Chang-Ming Ling(1), Chun-Hua Min(2), Xiao-Long Ruan(1), Zhang-Jing Zheng(1)
1. School of Engineering, Guangkong Ocean University, Zhanjiang. China
2. School of Energy and Environmental Engineering, Hebei University of Technology, Tianjin. China
- 523** *Thermal design and analysis of a direct-water cooled permanent magnet synchronous generator for high power direct-drive wind turbine applications*
M. Polikarpova, P. Røyttä, S. Semken, J. Nerg, J. Pyrhönen
Department of Electrical Engineering, Lappeenranta University of Technology. Finland
- 527** *Renewable energy policy and market developments in Kosovo*
Nysret Avdiu, Ali Hamiti
Energy Regulatory Office of Kosovo

Chairman: Aurelian Craciunescu

- 299** *Dynamic interaction of renewable hybrid power plant with grid*
Ranjay Das(1), Prabodh Bajpai(1), A.K. Sinha(2)
1. Department of Electrical and Electronics Engineering, Don Bosco College of Engineering and Technology, Assam. India
2. Department of Electrical Engineering, Indian Institute of Technology Kharagpur West Bengal. India
- 362** *Development and characterization of a multi-platform data acquisition system for power quality metrological certification*
M. Caciotta, S. Giarnetti, G. Lattanzi Cinquegrani, F. Leccese, D. Trinca
Department of Electronic Engineering, Roma III University. Italy
- 366** *Computer simulation of power balance of a solar vehicle depending on its parameters and outside factors*
G. Frydrychowicz-Jastrzębska(1), E. Pérez Gómez(2)
1. Poznań University of Technology, Institute of Industrial Electrical and Electronical Engineering. Poznań. Poland
2. Universidad Politécnica de Cartagena. Spain
- 367** *The effect of spatial orientation of solar energy receiver on the energetic gain*
G. Frydrychowicz-Jastrzębska
Poznań University of Technology, Institute of Industrial Electrical and Electronical Engineering. Poznań. Poland
- 370** *Solar radiation increase over a capturing surface considering R_b factor, for Braşov urban area*
C. Şerban, L. Coste
Department of Renewable Energy Systems and Recycling, Transilvania University of Braşov. România
- 625** *An integral and flexibles wireless power monitoring system*
S. Blanc, P. Yuste, A. Lorente, J.J. Serrano
Department of Computer Engineering, Universitat Politècnica de València. Spain

Chairman: Mircea Ion Buzdugan

- 378** *LIFE+ zero Hytechpark: Toward a sustainable building with thermal, photovoltaic and hydrogen technology*
 Natalia Moreno, Alfonso Arnedo, Jesús Simon, Arturo Cabello
 Foundation for the Development of New Hydrogen Technologies in Aragon. Spain
- 388** *Optimal energy storage system control in a smart grid including renewable generation units*
 A.Andreotti, G. Carpinelli, F. Mottola
 Department of Electrical Engineering, University Federico II of Naples. Italy
- 404** *Minimum DC link voltages for the generator bridge converter of a SCIG based variable speed wind turbine with fully rated converters*
 U.I. Dayaratne(1), S.B. Tennakoon(1), J.S. Knight(2), N.Y.A. Shamas(1)
 1. Faculty of Computing, Engineering and Technology, Staffordshire University
 United Kingdom
 2. Convertan Ltd, Kidsgrove. United Kingdom
- 441** *Combustion characteristics of CI engine running with biodiesel blends*
 B. Tesfa, R. Mishra, F. Gu, A. Ball
 Computing and Engineering, University of Huddersfield. United Kingdom
- 509** *Some procedures in mitigating conducted electromagnetic interference*
 M.I. Buzdugan, H. Bălan, T.I. Buzdugan
 Technical University from Cluj-Napoca. Romania
- 579** *Neural networks applications for fault detection on wind turbines*
 R.F. Mesquita Brandão(1), J.A. Bezeza Carvalho(1), F.P. Maciel Barbosa(2)
 1. Department of Electrical Engineering, ISEP, Oporto Polytechnic Institute. Portugal
 2. Department of Electrical Engineering, FEUP & INESC. Oporto University. Portugal

Chairman: Ahmad Pourmovahed

Partnership and Collaborative approaches to forthcoming EU FP7 Calls for research proposals in Renewable Energy

Mr. Stephen Silk - Overview. Prof. Sarath B Tennakoon – Wind Energy. Prof. Noel Shammass – Solar Energy. Dr Sacha Oberweis – Biomass
Centre for Energy Efficient Systems. Faculty of Computing, Engineering & Technology. Staffordshire University (United Kingdom)

Chairman: Aonghus McNabola

- 394** ***Wind and weight induced loads on a gear azimuthal photovoltaic platform***
B. Butuc, G. Moldoveanu, R. Velicu
Department of Renewable Energy Systems and Recycling, Transilvania University of Braşov. Romania
- 400** ***Smart grid: What's news?***
M. Cacciotta, M.D'Addazio, S. Giarnetti, M. Grossoni, F. Leccese
Department of Electronic Engineering, Roma III University. Italy
- 405** ***The effect of surface impurities on photovoltaic panels***
L. Dorobantu, M.O.Popescu, Cl. Popescu, A. Craciunescu
Electrical Engineering Faculty Politehnica University of Bucharest. Romania
- 408** ***Effect of transient flux compensation control on fault ride through of doubly fed induction generator wind turbine***
A.S. Mäkinen, H. Tuusa
Department of Electrical Energy Engineering, Tampere University of Technology. Finland
- 410** ***Geothermal energy heating and hot water for a detached house project in Oviedo (Spain)***
Elena M^a Fernández Rodríguez, Eunice Villicaña Ortiz, Jorge Xiberta Bernat
Department of Energy, E.T.S.I.M.O. Oviedo University. Spain
- 416** ***Comparison of load inverter topologies in a bipolar LVDC-distribution***
Jenni Rekola, Heikki Tuusa
Department of Electrical Energy Engineering, Tampere University of Technology. Finland
- 498** ***A novel 3D TCAD simulation of a thermoelectric couple configured for thermoelectric power generation***
C.A. Gould, N.Y.A. Shammass, S. Grainger, I. Taylor
Faculty of Computing, Engineering and Technology, Staffordshire University. United Kingdom

Chairman: Dmitri Vinnikov

- 243** *Identification of the refrigerant pressure in split-type air conditioners based on harmonic analysis of electricity supply current*
Zeljko Djuric, Milenko Djuric
University of Belgrade, Faculty of Electrical Engineering. Serbia
- 245** *Effects of non-zero phase harmonics on inductions machines and coupled mechanical loads*
Filipe Oliveira (1), Gerardo Peláez (2), Manuel P. Donsión (3), J. Iwaszkiewicz (4), J. Perz (4)
(1) Department of Electrical Engineering. School of Technology and Management. Polytechnic Institute of Leiria. Portugal
Institute for Systems and Computer Engineering at Coimbra. Portugal
(2) Department of Mechanical Engineering. University of Vigo. Spain
(3) Department of Electrical Engineering. University of Vigo. Spain
(4) The Electrotechnical Institute. Gdansk Branch. Poland
- 421** *Testing and evaluation of wind power plant protection system*
M. Kezunovic, B. Matic Cuka
Department of Electrical and Computer Engineering, Texas A & M University. USA
- 429** *Photoabsorption efficiency improvement for photovoltaic solar cells by using the honeycomb nanostructures*
Alexander I. Fedoseyev(1), František Čajko(1,2)
1. CFD Research Corporation, Huntsville, Alabama. USA
2. FMRI Lab; University of Michigan. USA
- 446** *Grid Connection improvements by control strategy selection for wave energy converters*
M. Santos(1), E. Tedeschi(2), P. Ricci(1), M. Molinas(2), J.L. Martín(3)
1. Tecnalía. Zamudio. Spain
2. Department of Electric Power Engineering, Norwegian University of Science and Technology, Trondheim. Norway
3. Department of Electronics and Telecommunications, University of the Basque Country Bilbao. Spain
- 449** *Semiactive control for floating offshore wind turbines subject to aero-hydro dynamic loads*
N. Luo(1), C.L. Bottasso(2), H.R. Karimi(3), M. Zapateiro(4)
1. Institute of Informatics and Applications, University of Girona. Spain
2. Dipartimento di Ingegneria Aerospaziale, Politecnico di Milano. Italy
3. Department of Engineering, Faculty of Engineering and Science, University of Agder, Grimstad. Norway
4. Department of Applied Mathematics III, Universitat Politècnica de Catalunya, Barcelona. Spain
- 452** *Planning of power systems with distributed generation and storage*
C. Ponce Corral(1), H. Bludszuweit(2), J.A. Domínguez Navarro(3)
1. Institute of Engineering and Technology, Universidad Autónoma de Ciudad Juárez. México
2. CIRCE Research Institute, University of Zaragoza. Spain
3. Department of Electrical Engineering, C.P.S. University of Zaragoza. Spain

Chairmen: Antonio Bracale, Manuel Weiland, Karel Jezernik, Georgios Adamidis, Helio Leaes Hey

245 *Effects of non-zero phase harmonics on inductions machines and coupled mechanical loads*

Filipe Oliveira (1), Gerardo Peláez (2), Manuel P. Donsión (3), J. Iwaszkiewicz (4), J. Perz (4)

- (1) Department of Electrical Engineering. School of Technology and Management. Polytechnic Institute of Leiria. Portugal
Institute for Systems and Computer Engineering at Coimbra. Portugal
- (2) Department of Mechanical Engineering. University of Vigo. Spain
- (3) Department of Electrical Engineering. University of Vigo. Spain
- (4) The Electrotechnical Institute. Gdansk Branch. Poland

432 *Modelling and analysis of electromechanical stress in transformers caused by short-circuits*

Rosentino Jr. A.J.P.(1), Saraiva E.(1), Delaiba A.C(1), Guimarães R.(1), Lynce M.(1), De Oliveira J.C.(1), Fernandez Jr.D.(2), Neves W.(2)

1. Faculty of Electrical Engineering, Federal University of Uberlândia. Brazil
2. Center of Electrical Engineering and Computer Science, Electrical Engineering Department, Federal University of Campina Grande. Brazil

453 *Electric vehicles and their effects on low-voltage grids*

J. Teuscher, A. Götz, W. Schufft

Faculty of Electrical Engineering and Information Tecnology, Chemnitz University of Tecnology. Germany

534 *Artificial intelligence techniques for controlling spacecraft power system*

Hanaa T.El-Madany(1), Faten H. Fahmy(1), Ninet M.A. El-Rahman(1), Hassan T. Dorrah(2)

1. Photovoltaic cells Department, Electronics Research Institute, National Research Center Building, Cairo. Egypt
2. Electrical Power & Machines Department, Cairo University. Egypt

536 *Artificial intelligence techniques based on aquaculture solar thermal water heating system control*

Doaa M. Atia(1), Faten H. Fahmy(1), Ninet M. Ahmed(1), Hassen T. Dorrah(2)

1. Fothovolotaic Cell Department, Electronics Research Institute, National Research Center Building, Cairo. Egypt
2. Faculty of Engineering, Department of Electrical Power Machines, Cairo University. Egypt

537 *Losses comparison among carrier-based PWM modulation strategies in three-level neutral-point-clamped inverter*

C.A.dos Santos, F.L.M. Antunes

Energy Processing and Control Group, Departamento de Engenharia Elétrica, Universidade Federal do Ceará, Fortaleza, Brazil

- 538** ***Comparing SCIG and DFIG for wind generating conditions in Macedonia***
Sanja Vitanova, Vlatko Stoilkov, Vladimir Dimcev
Faculty of Electrical Engineering and Information Technology, Skopje. Macedonia
- 540** ***Comparative analysis of a new planetary transmission with deformable element usable in RES***
O. Climescu, R. Săulescu, n C. Jaliu, D.V. Diaconescu, M. Neagoe
Department of Product Design and Robotics, Transilvania University of Braşov. Romania
- 541** ***Novel TiO₂ Microstructures for low cost dye sensitized solar cells***
P. Fuierrer(1), A. Gueye(2), A. Varghese(3), B. Roy(4)
1. Department of Materials & Metallurgical Eng, New Mexico Institute of Mining & Tech, Socorro. USA
2. Pletronics, Inc. Pittsburgh. USA
3. CIRIMAT INP-CNRS, Institute National Polytechnique de Toulouse. France
4. Chemical Engineering Department, New Mexico Institute of Mining & Technology, Socorro. USA
- 546** ***Economic-technical feasibility study of the “Sierra de Tineo” wind farm expansion. Tineo-Principality of Asturias. (Spain)***
Guillermo Laine Cuervo, Yoreley Cancino Solórzano, Jorge Xiberta Bernat
Department of Energy. E.T.S.I.M.O. Oviedo University. Spain
- 548** ***Hydrogen production by means pyrolysis and steam gasification of glycerol***
J.M. Encinar(1), J.F. González(2), G. Martínez(1), N. Sánchez(1), I.M. Sanguino(1)
1. Departamento de Ingeniería Química y Química Física, University of Extremadura. Spain
2. Departamento Física Aplicada, University of Extremadura. Spain
- 549** ***Synthesis and characterization of biodiesel obtained from castor oil transesterification***
J.M. Encinar(1), J.F. González(2), G. Martínez(1), N. Sánchez(1), G.C González(1)
1. Departamento de Ingeniería Química y Química Física, University of Extremadura. Spain
2. Departamento Física Aplicada, University of Extremadura. Spain
- 550** ***Experimental verification of novel bi-directional qZSI based DC/DC converter for short term energy storage systems***
J. Zakis(1), D. Vinnikov(1), I. Roasto(1), L. Ribickis(2)
1. Department of Electrical Drives and Power Electronics, Tallinn University of Technology. Estonia
2. Institute of Industrial Electronics and Electrical Engineering, Riga Technical University Latvia
- 552** ***Rotating electric machine thermal study***
A.I. Chirilă. C. Ghiță, A. Crăciunescu I.D. Deaconu. V. Năvrăpescu, M. Catrinoiu
Department of Electrical Engineering, University Politehnica of Bucharest. Romania
- 557** ***Magnetic field density analysis in switchgears***
J.A. Güemes(1), J. Izagirre(2), L.del Rio(2), J.E. Rodríguez Seco(3), A.M. Iraolagoitia(1), P. Fernández(4)
1. Department of Electrical Engineering, Escuela Universitaria de Ingeniería Técnica Industrial. Bilbao. Spain
2. Ormazabal Corporate Technology. Spain
3. Unidad de Energía, Tecnalia Research & Innovation. Derio. Spain
4. Department of Electronics and Telecommunications. Escuela Universitaria de Ingeniería Técnica Industrial. Bilbao. Spain

- 558** *ULISES: Autonomous mobile robot using ultracapacitors-storage energy system*
J.S. Artal, R. Bandrés, G. Fernández
Department of Electrical Engineering, Escuela de Ingeniería Técnica Industrial.
University of Zaragoza. Spain
- 560** *Preliminary study for the implementation of the “Wave Dragon” in Gran Canaria, Canary Islands, Spain*
A. Miguel Sagaseta de Ilurdoz Cortadellas(1), B. Miguel Angel Guerra Rodríguez(1), C. Raquel Ramos Pereda(2), Pedro D. Cuesta Moreno(3)
1. E.I.I.C., Las Palmas de Gran Canaria University- ULPGC. Spain
2. RALEY Estudios Costeros S.C.P. Las Palmas de Gran Canaria. Spain
3. Department of Mathematics Engineering, E.I.I.C, Las Palmas de Gran Canaria-ULPG. Spain
- 572** *Real heating-value based cost-accounting method with networking capabilities in natural gas distribution systems*
G. Barta, T. Csubák
Department of Control Engineering and Information Technology, Budapest University of Technology and Economics. Hungary
- 577** *Comprehensive utilization of energy in sugar factory using renewable energy sources, maximizing the power cogeneration*
E. Gil Illescas, L.A. Bujedo Nieto, L. Gorostiaga Canepa
Fundación CARTIF, Valladolid. Spain
- 578** *Study of the electrical characteristics of poly (o-toluidine) doped with para-toluene sulphonic acid/n-type silicon heterojunction solar cells*
Hussein F.Hussein(1), Kareema M. Ziadan(2), Aseel K. Hassan(3)
1. Department of Physics, College of Education, University of Basra. Iraq
2. Department of Physics, College of Science, University of Basra. Iraq
3. Material and Engineering Research Institute, Sheffield Hallam University. United Kingdom
- 582** *Increase of the annual energy output in hydraulic powerplants through active flow control*
M.V. Magnoli, R. Schilling
Institute of Fluid Mechanics, Munich University of Technology, Garching. Germany
- 583** *Evaluation of reactive power capability by optimal control of wind-vanadium redox battery stations in electricity market*
Aouss Gabash, Pu Li
Department of Simulation and Optimal Processes, Institute of Automation and Systems Engineering, Ilmenau University of Technology. Germany
- 590** *Stabilized power AC-DC-AC converter using polygon transformer*
Mona F. Moussa, Nermeen Biomy, Yasser G. Dessouky
Arab Academy for Science and Technology, AASTMT, Alexandria. Egypt
- 591** *Design of a trigeneration system for a hospital complex in Gran Canaria*
C.M. González Navarro, A.M. Blanco Marigorta, J.A. Peña Quintana
Department of Process Engineering, University of Las Palmas de Gran Canaria. Spain
- 593** *Dynamic voltage stability of an electric power network with double fed induction wind power generators*
R.M. Monteiro Pereira(1), C. Machado Ferreira(1), F.P. Maciel Barbosa(2)
1. ISEC, College of Engineering of Coimbra/ DEE. Portugal
2. Faculty of Engineering of the University of Porto. Portugal

- 594** *Reliability analysis of residential photovoltaic systems*
 Alfredo Garro, F. Barrara
 Department of Electronics, Computer and System Science, D.E.I.S., University of Calabria, Rende. Italy
- 595** *Comparison between the short-term observed and long-term estimated wind power density using artificial neural networks. A case study*
 S. Velázquez(1), JA Carta(2)
 1. Department of Electronics and Automatics Engineering, University of Las Palmas de Gran Canaria. Spain
 2. Department of Mechanical Engineering, University of Las Palmas de Gran Canaria. Spain
- 597** *Filtering and processing IR images of PV modules*
 S. Vergura, O. Falcone
 Dipartimento di Elettrotecnica ed Elettronica, Politecnico di Bari. Italy
- 601** *The effect of substrate temperature on the active layer for spray-deposition process in organic solar cells*
 Jin-Ju Bae(1), Kyu-Jin Kim(1), Byoung-Ho Kang(1), Se-Hyuk Yeom(1), Dae-Hyuk Kwon(2), Hak-Rin Kim(3), Shin-Won Kang(3)
 1. Department of Electrical Engineering and Computer Science, Kyungpook National University, Daegu. Korea
 2. School of Electronic Information and Communication Engineering, Kyungil University Republic of Korea
 3. School of Electronics Engineering, College of IT Engineering, Daegu. Republic of Korea
- 603** *Is it economically possible repowering wind farms. A general analysis in Spain*
 L. Castro(1), A. Filgueira(1), M^a A. Seijo(1), E. Muñoz(1), L. Piegari(2)
 1. Department of Industrial Engineering II University of A Coruña, Ferrol. Spain
 2. Department of Electrical Engineering. Politecnico di Milano, Milan. Italy
- 604** *Online thevenin's equivalent using local PMU measurements*
 Sobhy M. Abdelkader
 School of Electronics, Electrical Engineering & Computer Science, Queen`s University Belfast. United Kingdom
- 606** *Cell method and modified nodal method in eddy current electromagnetic problems*
 L. Simón Rodríguez, J.M. Monzón Verona
 Department of Electrical Engineering, University of Las Palmas de Gran Canaria. Spain
- 609** *Meat and bone meal as a renewable energy source in cement kilns: investigation of optimum feeding rate*
 W.K.H. Ariyaratne(1), M.C. Melaaen(1), Kristin Eine(2), L.A. Tokheim(1)
 1. Department of Process, Energy & Environmental Technology, Telemark University College, Porsgrunn. Norway
 2. Norcem AS Brevic. Norway
- 610** *Comparative study of biodiesel production from ethanol and babassu oil using mechanical agitation and ultrasounds*
 Eduardo J. Mendes de Paiva, Jayne Carlos S. Barboza, Maria Lucia Caetano Pinto da Silva, Heizir Ferreira de Castro, Domingos Sávio Giordani
 Department of Chemical Engineering, School of Engineering of Lorena, University of São Paulo. Brazil

- 612** *Energy network communications and expandable control mechanisms*
Adam Bedford, Maizura Mokhtar, Xiongwei Liu, Joe Howe
Centre for Energy and Power Management, School of Built and Natural Environment,
University of Central Lancashire, Preston. United Kingdom
- 615** *Optimization of the electric power generated by a brake of water*
E. Martínez Prado, P. Lara Santillán, A. Falces de Andrés, M. Mendoza Villena,
A. Yangüas Peña
Department of Electrical Engineering, E.T.S.I.I. La Rioja University, Logroño. Spain
- 617** *Survey on knowledge based methods to assist fault restoration in power distribution networks*
Youssef Oualmakran(1), Joaquím Meléndez(1), Sergio Herraiz(1), Mercedes López Perea(2), Eloy González(2)
1. Department of Informatics and Applications, Research GroupeXiT, Girona University. Spain
2. Indra Software Labs, Madrid. Spain
- 618** *Effect on rain on vertical axis wind turbines*
B.C.Al(1), C. Klumpner(2), D.B. Hann(1)
1. Energy and Sustainability Division and Electrical Systems and Optics Division, University of Nottingham. United Kingdom
2. Electrical Systems and Optics Division, University of Nottingham. United Kingdom
- 619** *Fault causes analysis in feeders of power distribution networks*
Oscar A. Quiroga, Joaquim Meléndez, Sergio Herraiz
Institute of Informatics and Applications, University of Girona. Spain
- 620** *Notes on the solar map of Asturias*
J.I. Prieto J.C. Martínez García, D. García, R. Santoro
Department of Physics. University of Oviedo, Polytechnic School of Engineering, Gijón. Spain
- 640** *Orientation system of solar panels based on a robot manipulator*
Ahmed Chaïb, Dalila Acheli, Mohamed Kesraoui
Applied Control Laboratory, University of Boumerdes. Algeria

Chairman: Janis Kalnaics

454 *A novel approach to frequency control in an islanded microgrid by load shedding scheduling*

M. Kohansal, M.J. Sanjari, G.B. Gharehpetian
Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran

462 *Sensorless iterative solar tracking in multiple on-grid photovoltaic generators with improved tracking strategy*

Guilherme F. Cittolin, Jéssica V. Mazuroski, Rafael C. Gonçalves, Marcel G. Kroetz, Carlo A.Z. Pece, Winderson E.Santos
Laboratório de Processamento Eletrônico de Energia, Departamento Acadêmico de Eletrotécnica, Universidade Tecnológica Federal do Paraná- UTFPR. Brazil

463 *Computational flow field analysis of a vertical axis wind turbine*

G. Colley, R. Mishra, H.V. Rao, R. Woolhead
Department of Engineering & Technology, Huddersfield University. United Kingdom

465 *Cost estimation of wind farm with battery-supported output power limit operation*

Y. Yasuda(1), T. Funabashi(2)
1. Department of Electrical Engineering and Computer Science, Kansai University. Japan
2. Meidensha Corporation, Shinagawa-Ku, Tokio. Japan

490 *Modeling and power control of wind turbine driving DFIG connected to the utility grid*

Karim Belmokhtar, Mamadou Lamine Doumbia, Kodjo Agbossou
Département of Electrical and Computer Engineering, Université du Québec à Trois-Rivières. Canada

543 *Integrating high levels of wind in island systems: lessons from Hawaii*

Nicholas Miller(1), Devon Manz(1), Harjeer Johal(1), Sebastian Achilles(1), Leon Roose(2), James P. Griffin(3)
1. GE Energy, Schenectady, NY. USA
2. Hawaiian Electric Company, Honolulu, HI. USA
3. University of Hawaii, Hawaii Natural Energy Institute, Honolulu, HI. USA

Chairman: Boban Panajotovic

- 525** *New integrated converter for hydrogen buffer interfacing in distributed energy systems*
 D. Vinnikov, A. Andrijanoviš, I. Roasto, T. Lehtla
 Department of Electrical Drives and Power Electronics, Tallinn University of Technology.
 Estonia
- 526** *Quality of ashes produced in the co-combustion of coal and MBM in a fluidized bed reactor*
 Rui Barbosa(1), N. Lapa(1), Helena Lopes(2), Ibrahim Gulyurtlu(2), Benilde Mendes(1)
 1. UBIA, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa. Caparica.
 Portugal
 2. LNEG, UEZ, Lisboa. Portugal
- 528** *Investigation on the impact of design wind speed and control strategy on the performance of fixed-pitch variable-speed wind turbines*
 Xiongwei Liu(1), Lin Wang(2), Xinzi Tang(1)
 1. School of Computing, Engineering and Physical Sciences, University of Central Lancashire, Preston. United Kingdom
 2. School of Mechanical Engineering, Xiangtan University. China
- 553** *Optimal operation of smart grids including distributed generation units and plug in vehicles*
 A. Bracale(1), P. Caramia(1), D. Proto(2)
 1. Department for Technologies, University Parthenope of Napoli. Italy
 2. Department of Electrical Engineering, University Federico II of Naples. Italy
- 564** *Perspectives of demand-side management in a smart metered environment*
 A. Dán, D. Divényi, B. Hartmann, P. Kiss, D. Raisz, I. Vokony
 Department of Electric Power Engineering, Budapest University of Technology and Economics. Hungary
- 569** *The technical & economic feasibility of energy recovery in water supply networks*
 A. McNabola(1), P. Coughlan(2), A.P. Williams(3)
 1. Department of Civil, Structural & Environmental Engineering, Trinity College, Dublin. Ireland
 2. School of Business, Trinity College, Dublin. Ireland
 3. School of the Environment, Natural Resources and Geography, Bangor University Wales. United Kingdom

Chairman: Péter Kádár

The Strategic Energy Technology Plan: Financial Instruments

Prof. Dr. Andrés Llombart. University of Zaragoza. President of CIRCE Foundation.
Spain

Chairmen: José I. San Martín Díaz, Anssi Mäkinen, Kanungo Barada Mohanty, Shin-Won Kang, Adam Boura

- 257** ***Hybrid single-stage triple pressure level absorption/compression cycle operated by low grade heat sources***
M. Jelinek, A. Levy, I. Borde
Mechanical Engineering Department, Ben-Gurion University of the Negev. Israel
- 302** ***Self-start performance evaluation in Darrieus-type vertical axis wind turbines: Methodology and computational tool applied to symmetrical airfoils***
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 Lisboa. Portugal
- 312** ***Experimental results analysis of the energy conversion efficiency of thermoelectric generators***
Patrícia Richner, Pedro Dinis Gaspar, Luís Carrilho Gonçalves, David Almeida
Electromechanical Engineering Department, Engineering Faculty, University of Beira Interior, Covilhã. Portugal
- 352** ***Spanish microgrids: current problems and future solutions***
G. Fernández(1), M. Trujillo(1), J.F. Sanz(1,2), J. Sallán(1,2)
1. Renewable Energy Integration Group CIRCE Foundation, University of Zaragoza. Spain
2. Electrical Engineering Department , University of Zaragoza. Spain
- 455** ***Solar panels for auger southern observatory:” SPIDERSHADOWS”***
A. López Agüera(1,2), I. Rodríguez Cabo(1,2), D. Rey Rey(1,2), V. Gándara Villagoñiga(1), M. Vázquez García(1), E. Vieites Montes(1)
1. Department of Particle Physics & Galician Institute of High Energy Physics, Sustentable Energetic Applications Group. Santiago de Compostela University. Spain
2. Department of Particle Physics & Galician Institute of High Energy Physics, Astroparticle Group. Santiago de Compostela University. Spain
- 496** ***Grounding system modelling and its impact on computational refunding analysis for equipment damages***
I.N. Gondim(1), J.C.de Oliveira(1), C.E. Tavares(1) , J.A.F. Barbosa(1), M.V.B. Mendonça(2)
1. Faculty of Electrical Engineering, UFU Federal University of Uberlândia. Brazil
2. Department of Electrical Engineering, UnB, University of Brasilia. Brazil

- 562** *A wind speed estimator for windmill systems*
 Fellow Romeo Ortega(1), Fernando Mancilla David(2), Fernando Jaramillo(1)
 (1)Laboratoire des Signaux et Systèmes, Supelec, Gif-sur-Yvette, France
 (2) Department of Electrical Engineering, University of Colorado Denver, USA
- 622** *Control with floating- and fixed- point DSPs of a low-cost flexible platform for a photovoltaics grid-connected system working as an agent in a distributed generation structure*
 Alexis B. Rey-Boué(1), F. Ruz Vila(2), José M. Torrelo(3), Salvador Subiela(3)
 1. Departamento de Electrónica, Tecnología de Computadores y Proyectos, Universidad Politécnica de Cartagena, Murcia. Spain
 2. Departamento de Ingeniería Eléctrica, Universidad Politécnica de Cartagena, Murcia. Spain
 3. Instituto de Tecnología Eléctrica (ITE), Valencia. Spain
- 623** *High frequency modelling of cables in PWM motor drives by using polynomial functions based parameters*
 M.C Di Piazza, A. Ragusa, G. Vitale
 Consiglio Nazionale delle Ricerche, Istituto di Studi sui Sistemi Intelligenti per L'Automazione, (ISSIA-CNR) Palermo. Italy
- 628** *Mechanically stacked solar cells for concentrator photovoltaics*
 Ian Mathews(1), Donagh O'Mahony(1), Weiwei Yu(1), Declan Gordan(1), Nicolas Cordero(1), Brian Corbett(1), Alan P. Morrison(1,2)
 1. Tyndall National Institute UCC, Lee Maltings, Prospect Row, Cork. Ireland
 2. Department of Electrical and Electronic Engineering, University College, Cork. Ireland
- 630** *Parallel-connected legs in a grid-tied inverter system for distributed generation*
 G.J. Capellá(1), J. Pou(1), J.Zaragoza(1), S. Ceballos(2), I. Gabiola(2), E. Robles(2)
 1. Department of Electronical Engineering, Technical University of Catalonia, Terrassa. Spain
 2. Tecnalia Technology Corporation, Energy Unit, Zamudio-Bizkaia. Spain
- 632** *Scheme of a low power wind turbines to variable speed*
 O. Carranza(1), E. Figueres(2), G. Garcerá(2), R. Ortega(1)
 1. Escuela Superior de Cómputo, Instituto Politécnico Nacional. México
 2. Departamento de Ingeniería Electrónica, UPV, Valencia. Spain
- 633** *Prediction system based on domotic weather sensors for the energy production of solar power plants*
 Domingo Benítez, Carlos González Muñoz, José F. Medina
 SIANI University Institute, University of Las Palmas de Gran Canaria. Spain
- 637** *Doubly fed induction generator and convencional synchronous generator based power plants: operation during grid fault*
 M.C Salles(1), A.P. Grilo(2), J.R. Cardoso(1)
 1. LMAG- Laboratory of Applied Electromagnetism, PEA-Polytechnic School, University of São Paulo. Brazil
 2. Engineering, Modelling and Applied Social Science Center, Federal University of ABC, Great São Paulo. Brazil
- 639** *Issues about monitoring the energy performance of a PV plants constellation*
 S. Vergura
 Dipartimento di Elettrotecnica ed Elettronica, Politecnico di Bari. Italy

- 642** *Cornice modular wind collector © for collection and amplification of the vertical wind component in buildings for generation of small wind electric energy*
 J.C. Sáenz Díez Muro(1), J.M. Blanco Barrero(1), E. Jiménez Macías(1), J. Blanco Fernández(2), M. Pérez de la Parte(2)
 1. Department of Electrical Engineering
 2. Department of Mechanical Engineering. E.T.S.I.I., La Rioja University, Logroño. Spain
- 643** *Comparison in the application of the exploitation by optimal head model to hydroelectronic power station in run-of-the-river systems equipped with different types of turbines*
 J.M. Blanco Barrero(1), J.C. Sáenz Díez Muro(1), E. Jiménez Macías(1), J. Blanco Fernández(2), M. Pérez de la Parte(2)
 1. Department of Electrical Engineering
 2. Department of Mechanical Engineering. E.T.S.I.I., La Rioja University, Logroño. Spain
- 648** *Impact of capacitive compensation in a residential low-voltage distribution grid, using ATP-EMTP*
 Amaro F. Antunes(1), José R Baptista(1), José A. Pomilio(2) António M. Moura(3)
 1. Departamento de Engenharias, Universidade de Trás-os-Montes e Alto Douro, Vila Real. Portugal
 2. Departamento de Sistemas e Controle de Energia, Faculdade de Engenharia Elétrica e de Computação, Universidade Estadual de Campinas. Brazil
 3. Departamento Engenharia Electrotécnica e de Computadores, Faculdade de Engenharia da Universidade do Porto. Portugal
- 649** *Analysis of current-bidirectional buck-boost based switch-mode audio amplifier*
 Gert Bolten Maizonave(1), Michael A.E. Andersen(1), Claus Kjaergaard(1), Kristian L. Lund(2), Lars B.R. Hansen(2)
 1. Department of Electrical Engineering, Technical University of Denmark, Lyngby. Denmark
 2. Bang & Olufsen ICEpower a/s. Denmark
- 650** *Isolated bidirectional DC-DC converter for supercapacitor applications*
 Sayed Mohammad Dehghan Dehnavi(1), Gokhan Sen(2), Ole C. Thomsen(2), Michael A.E. Andersen(2), Lars Møller(3)
 1. Power Electronic & Protection Lab. Faculty of Electrical and Computer Engineering, Tarbiat Modares University, Tehran. Iran
 2. Department of Electrical Engineering, Technical University of Denmark
 3. H2 Logic A/S. Denmark
- 651** *On the search of efficient uses for glycerine: steam gasification*
 J.F. González(1), G. Engo(1), S. Román(1), M.C. Rayo(1), F.J. Masa(1), J.M. Encinar(2)
 1. Department of Applied Physics, University of Extremadura. Spain
 2. Department of Chemical Engineering and Physical Chemistry, University of Extremadura, Badajoz. Spain
- 652** *Probabilistic model for distributed generation expansion in distribution power network*
 C.Ponce Corral(1), H. Bludszweit(2), J.A. Domínguez Navarro(3)
 1. Institute of Engineering and Technology, Universidad Autónoma de Ciudad Juárez. México
 2. Electrical Engineering Division, CIRCE Foundation, Zaragoza. Spain
 3. Department of Electrical Engineering, C.P.S., University of Zaragoza. Spain

- 655** *A fast OLTC regulator using semi natural commutation*
Rodolfo Echavarría(1), José Álvarez(1), Armando Flores(1), Benjamín Ortíz(1), Ciro Núñez(2)
1. Universidad Politécnica de Victoria, Departamento de Ingeniería Mecatronica, Tamaulipas. México
2. Universidad Autónoma de San Luís Potosí. Centro de Investigación y Estudios de Posgrado. México
- 656** *Control design of a two degree of freedom combined with repetitive controller applied to a single phase inverter power generation in the context of microgrids*
R. Ortega(1,2), E. Figueres(2), G. Garcerá(2), O. Carranza(1,2), C.L. Trujillo(1,3)
1. Escuela Superior de Cómputo, Instituto Politécnico Nacional. México
2. Departamento de Ingeniería Electrónica, UPV, Valencia. Spain
3. Department of Electronic Engineering, Universidad Distrital Francisco José de Caldas. Bogotá. Colombia
- 658** *On-line cable diagnostic possibilities in an artificial aging environment*
Christian Freitag, Christian Weindl, Ivana Mladenovic
Institute for Electrical Power Systems, University of Erlangen- Nuremberg. Germany
- 660** *Energy consumption and CO₂ emissions evaluation for electric and internal combustion vehicles using a LCA approach*
Sérgio Faias(1,2), Jorge Sousa(1,2) Luís Xavier(3), Pedro Ferreira(3)
1. ISEL. Instituto Superior de Engenharia de Lisboa. Portugal
2. Cle, Center for Innovation in Electrical and Energy Engineering, Technical University of Lisboa. Portugal
3. EDP, Energías de Portugal, Lisboa. Portugal
- 662** *Equipment safety in renewable energies exploitation*
Blaise Nsom(1), Karim Bouchlaghem(1,2)
1. Université de Bretagne Occidentale, LBMS EA. France
2. Unité de Recherche "Energétique et Environmental", Sousse Ibn Khaldoun. Tunisia
- 668** *Estimation of financial performance of investment in grid-connected PV plants benefiting from green certificates scheme-a Romanian case study*
M. Predescu(1), A. Craciunescu(2), M. Faca(3)
1. Renewable Energies Investment Consultant, Bucharest. Romania
2. University Politehnica din Bucuresti. Romania
3. Consiliul Judetean Prahova, Ploiesti. Romania
- 671** *A comparison of transformer HF models and their application to PQ analysis*
C. Capellán, M. Mañana, A. Arroyo, L.M. Muñiz, F. Delgado
Department of Electrical Engineering, E.T.S.I.I.T., University of Cantabria, Santander. Spain
- 672** *Laboratory platform for small wind energy generators*
A. Arroyo(1), M. Mañana(1), L.M. Muñiz(1), C.J. Renedo(1), S. Pérez(1), I. Fernández(1), C. Gómez(2), R. Prieto(2)
1. Department of Electrical Engineering, E.T.S.I.I.T., University of Cantabria, Santander. Spain
2. Instituto de Ingeniería y Tecnología de Cantabria (ITEC), Santander. Spain
- 675** *Optimal dispatch of a multiple energy carrier system equipped with a CCHP*
A. Sheikhi, A.M. Ranjbar, F. Safe
Department of Electrical Engineering, Sharif University of Technology, Tehran. Iran

- 676** *Providing an added-value to biodiesel by-products: pyrolysis of glicerine. Thermogravimetric study and analysis of sulphur emissions*
 J.F. González(1), G. Engo(1), S. Román(1), J.I. Arranz(2), J.M. Encinar(3)
 1. Department of Applied Physics
 2. Department of Mechanical, Energetics and Materials Engineering
 3. Department of Chemistry Engineering and Physical Chemistry, University of Extremadura. Spain
- 678** *Effect of annealing on the physicochemical and optical properties of the APCVD titanium dioxide thin films for photovoltaic applications*
 D. Hocine(1,2), M. Pasquinelli(1), I. Escoubas(1), MS Belkaid(2)
 1. Aix-Marseille University, Institut Matériaux Microélectronique Nanosciences de Provence-IM2NP CNRSNUMR 6242. France
 2. Laboratory of Advanced Technologies of Genie Electrics (LATAGE). Algeria
- 682** *Active balancing circuit for advanced lithium-ion batteries used in photovoltaic application*
 J.F. Reynaud(1,2), C.E. Carrejo(1), O. Gantet(1), P. Aloïsi(1), B. Estibals(1,2), C. Alonso(1,2)
 1. CNRS; LAAS, Toulouse. France
 2. Université de Toulouse; UPS, INSA, INP, ISAE; LAAS. France
- 683** *Control laws to improve efficiency and average life time of an adaptive multi-phases converter dedicated to photovoltaic applications*
 A. Berasategi(1,2,3), Y. El Basri(1,2,3), C. Cabal(1), B. Estibals(1,2), M. Vermeersch(3), C. Alonso(1,2)
 1. CNRS; LAAS, Toulouse. France
 2. Université de Toulouse; UPS, INSA, INP, ISAE; LAAS. France
 3. Department Solar & New Energies, TOTAL S.A.. France
- 685** *Synchronization of a single-phase wind energy generator with the low-voltage utility grid*
 Nader Anani(1), Omar AL-Kharji AL-Ali(1), P. Ponnappalli(1), S.R.AL-Araji(2), M.AL-Qutayri (2)
 1. School of Engineering, Division of Electrical and Electronic Engineering, Manchester Metropolitan University. United Kingdom
 2. College of Engineering, Khalifa University of Science, Tech, and Research. UAE
- 686** *Modernisation of high power laboratory to fulfill the technical and qualitative conditions for tests according to standards in force*
 George Curcanu, Corneliu Chiciu, Constantin Ilinca, Horia Ionescu
 R&D National Institute ICMET-Craiova. Romania
- 690** *Load frequency control using genetic algorithm based PID controller for single area power system*
 M.A. Tamman, M.A. Moustafa, M.A.E.S. Abo Ela, A.E.A. Seif
 Department of Electrical Power and Machines, Faculty of Engineering, Cairo University. Egypt
- 693** *Solar heating coil with automatic two axes sun tracking system*
 S.Abdallah(1), Y. Abdellatif(1), R.O. Badran(2), R. Abu-Mallouh(1)
 1. Applied Sciences University Amman. Jordan
 2. Al-Balqa Applied University Amman. Jordan
- 695** *A step-by-step tracking program for a string of photovoltaic modules*
 N.I. Tatu, C. Alexandru, V.E. Dombi
 Department of Renewable Energy Systems and Recycling, Transilvania University of Braşov. România

- 696** *Mono-axis vs Bi-axis tracking for a string of photovoltaic modules*
 N.I. Tatu, C. Alexandru
 Department of Renewable Energy Systems and Recycling, Transilvania University of Braşov. România
- 697** *A review on existing efficiency indications on sustainable energy*
 R. M.Robles¹, V. Barranco¹, A. M. Castillo², J. M. Ramirez³, and F.R. Lara¹
 1. Department of Electrical Engineering. University of Córdoba. Spain
 2. Department of Economy Applied. University of Córdoba. Spain
 3. EATCO Research Group. University of Córdoba. Spain

Friday April 15th 2011

10:45-12:15 Oral Session A6

ROOM A “Cátedra Endesa Red”

Chairman: Ivan Glesk

- 585** *Smart meter based energy management system*
 Péter Kádár
 Óbuda University, Department of Power Systems, Budapest. Hungary
- 586** *Economic viability of bamboo dust based gasification plant for a paper mill*
 A.K. Sinha, MeghnaBarkakat, Dibakar Nath, Saurav Kumar Sarma, Uday Reddy,
 Abhinav Verma, Kranthi Kiran Ch
 Department of Electrical Engineering, National Institute of Technology Silchar Assam.
 India
- 587** *Creating public awareness of renewable energy by combining of a photovoltaic system and nature*
 Arnold Knott(1), Dorthe Hedensted Lund(2), Thomas Andersen(1)
 1. Technical University of Denmark, DTU Elektro. Denmark
 2. University of Copenhagen, Forest & Landscape, Faculty of Life Sciences. Denmark
- 589** *Energy efficiency in data processing centers: Technical-economic viability study for a trigeneration*
 Carlos Redondo Gil(1,2), Alvaro Fernández González(1)
 1. Castile and León Technological Center for Supercomputing (FCSC) University of León. Spain
 2. Electrical Engineering & Systems Engineering and Automatic Control Department, Faculty of Industrial and Computer Engineering, University of León. Spain
- 598** *Cumulative statistical analysis to monitor the energy performance of PV plants*
 S. Vergura
 Dipartimento di Elettrotecnica ed Elettronica, Politecnico di Bari. Italy
- 689** *Artificial intelligence based approach compared with stochastic modelling for electrical load forecasting*
 A. Seif E.M. Gabr(1), M.A. Moustafa Hassan(2), O.Y. Abul-Haggag(2)
 1. North Cairo for Electrical Distribution Company(NCED), Ministry of Electricity. Egypt
 2. Electrical Power Department, Faculty of Engineering, Cairo University, Giza. Egypt

Friday April 15th 2011

10:45-12:15 Oral Session B6

ROOM B "Circutor"

Chairman: Antonio Pulido Alonso

- 288** *Performance and efficiency of a biogas CHP system utilizing a stirling engine*
Ahmad Pourmovahed, Terance Opperman, Brenda Lemke
Mechanical Engineering Department, Kettering University, Flint, Michigan. U.S.A
- 635** *The implementation of the low voltage ride-through curve on the protection system of a wind power plant*
R.P.S. Leão(1), J.B. Almada(1), P.A. Souza(2), R.J. Cardoso(1), R.F. Sampaio(1), F.K.A. Lima(1), J.G. Silveira(2), L.E.P. Formiga(2)
1. Department of Electrical Engineering, Federal University of Ceará, Fortaleza. Brazil
2. Companhia Energética do Ceará, Fortaleza. Brazil
- 646** *Large scale integration of wind power-influence of geographical allocation*
L.Reichenberg L. Göransson, F. Johnsson, M. Odenberger
1. Department of Energy and Environmental Chalmers University of Technology, Göteborg. Sweden
- 663** *Practical experience with electricity production from unused energy at the water management company*
M. Gono(1), M. Kyncl(1), R. Gono(2)
1. Sm VaK a.s. Ostrava. Czech Republic
2. Department of Electrical Power Engineering, FEECS,VSB, Technical University of Ostrava, Poruba. Czech Republic
- 674** *Increasing penetration of renewals in isolated power systems using energy storage systems*
L. Rouco(1), I. Azpiri(2), I. Gómez de Olea(2), J. Tabernero(1)
1. Unversidad Pontificia de Comillas, Madrid. Spain
2. Iberdrola Renovables, Madrid. Spain
- 691** *Short term wind speed forecasting: comparative study*
E.M. Abd El-Gawad(2), M.A. Mustafa Hassan(1), M.A.M. Hallouda(1), O.Y. Abul-Haggag (1)
1. Elec. Power Department, Faculty of Engineering, Cairo University. Egypt
2. Elec. Power and Machines Department, Faculty of Engineering, Kafr Ellsheikh University. Egypt

Friday April 15th 2011

12:15-13:00 Closing Session

ROOM A "Cátedra Endesa Red"

Conclusions and time for the next conference (ICREPQ'12)

Awards for the three best posters

13:00 – 15:00

Farewell Lunch – *Alegranza Room*

Excursion to the Vegueta and other interesting places of the Las Palmas de Gran Canaria

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Power Quality

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