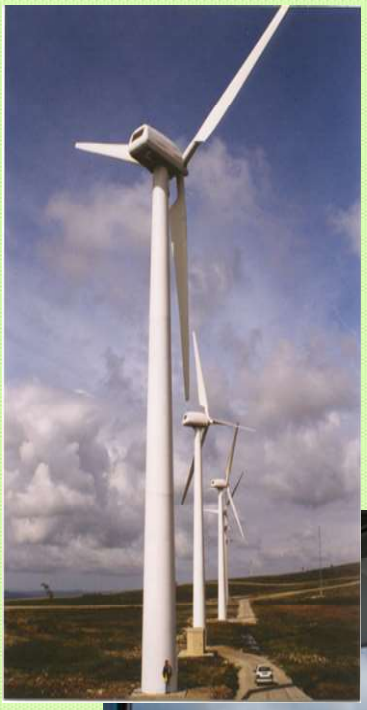
European Association for the Development of Renewable Energy, Environment and Power Quality

ICREPQ'15

INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY

La Coruña, 25 – 27 of March 2015



ON RENEWABLE ENERGY AND POWER QUALITY

(ICREPQ'15)

WELCOME TO ICREPQ'15

On behalf of the Steering Committee and the Local Organizing Committee we want to give you a very warm welcome to ICREPQ'15 and to La Coruña

Our International Programme Committee has selected a high quality 205 papers (among 302 proposals) from which 180 will be presented at the Conference, 60 at oral sessions and 120 at poster sessions (dialogue), during the three days of the conference. All of these papers are included in the final program. Also three keynotes will be presented in plenary sessions. We´ll also organize the round table about: "***Renewable energies. Actual situation. Problems & solutions. New projects. Future Trends. Research..."***

ICREPQ'15 covers the whole range of problems and solutions especially concerning with renewable energies and power quality and all the papers have direct relationship with these two fields of research and practical work.

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

In addition to the technical sessions, a number of social events have been arranged. On Wednesday evening (March 25th) at about 18:45 H (when the sessions of work have finished) we'll can enjoy at PALEXCO of the "Banda de Música de Ferrol" and at 20:00 H we will hold a Civic Reception with one aperitif in "Domus-Casa del Hombre" with the enlivening of "Grupo Cantigas da Terra" and on Thursday (March 26th, 21:00 H) the Conference Dinner in the "Opera Palace" where we´ll can enjoy during the appetizer of the "Coro de la Universidad de La Coruña". On Friday (March 27th) after the Farewell Lunch (15:00 H), we'll enjoy of the cultural visit to different interesting places of La Coruña.

We hope that you will find the conference intellectually stimulating and that you will make many fruitful personal contacts during the conference.

Best regards,

Prof. Manuel Pérez-Donsión
Chairman of the Steering Committee

Prof. Ana Álvarez López
Co-Chairman of the Local Committee

ORGANISED BY:

The International Conference on Renewable Energies and Power Quality (ICREPQ'15), will be organized by:

- European Association for the Development of Renewable Energy, Environment and Power Quality (EA4EPQ)
- University of Vigo
- University of La Coruña

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´15) is structured in:

- **Plenary Sessions:** Presentations of 45 minutes in one room for all the participants
- **Special Oral Sessions and Standard Oral Sessions:** Presentations of about 15 minutes for each paper (12 minutes for the presentation and 3 minutes for questions). Simultaneously in two rooms.
- **Round Table:** ***Renewable energies. Actual situation. Problems & solutions. New projects. Future Trends. Research...***during 90 minutes.
- **Posters Sessions:** In 45-minute periods during the coffee breaks.

1. RENEWABLE ENERGY:

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

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

2. POWER QUALITY:

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

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SPONSORSHIP

Sincere thanks are expressed to the organisations listed below who have given valuable support to ICREPQ'15:

- EA4EPQ
- University of LaCoruña
- University of Vigo
- AEDIE
- Consorcio de Turismo y Congresos de A Coruña
- CIRCUTOR

ICREPQ'15 PROGRAM OF ACTIVITIES

Tuesday March 24th, 2015	
17:00 – 20:00	**Registration "ICREPQ'15 Secretariat"** **Registration and Documentation. It's important that all the participants seize their documentation during this day, but the ICREPQ'15 Secretariat will be open during the three days of the conference, then if you don't arrive on Tuesday 24th you can get your documentation other day.**

Room A: ARAO
Room B: CIRCUTOR
Room C: AEDIE
Plenary sessions PL in Room A (Auditorium ARAO)

Wednesday March 25th, 2015						
9:00 – 12:30	**Registration "ICREPQ'15 Secretariat"**					
10:00 – 10:45	**Opening Ceremony ROOM A "ARAO"**					
10:45 – 11:30	**Posters Session at ROOM C (Session P1) Coffee Break**	*Poster Session **P1***				
		205	214	215	224	227
		235	236	237	243	247
		249	253	254	255	257
		258	263	267	271	273
		294	317	327		
11:30 – 13:00	**ROOM A**			**ROOM B**		
	*Oral Session **A1***			*Oral Session **B1***		
	240	264	280	233	270	286
	312	352		445	518	
	EXTRA TIME FOR DISCUSSION			EXTRA TIME FOR DISCUSSION		
13:00 – 15:00	**Welcome Lunch**					
15:00 – 16:30	*Oral Session **A2***			*Oral Session **B2***		
	245	394	426	221	223	250
	432	465		358	478	
	EXTRA TIME FOR DISCUSSION			EXTRA TIME FOR DISCUSSION		
16:30 – 17:15	**Poster Session at ROOM C (Session P2) Coffee Break**	*Poster Session **P2***				
		278	285	291	298	299
		300	304	305	309	310
		314	318	319	320	323
		325	442	487	490	505
		507	508	511		
17:15 – 18:45	**ROOM A**			**ROOM B**		
	*Oral Session **A3***			*Oral Session **B3***		
	225	282	292	261	336	356
	369	421		380	477	
	EXTRA TIME FOR DISCUSSION			EXTRA TIME FOR DISCUSSION		
20:00	**Welcome Civic Reception Domus - Casa del Hombre**					
Thursday March 26th, 2015						
9:00 – 12:30	**Registration**					

	"ICREPQ'15 Secretariat"					
	ROOM A "ARAO" Plenary Sessions PL1 & PL2					
9:15 – 10:00	**PL1**	Fernando Nuño: "***The potential of Industrial Demand Side Management to accommodate further renewable energy power in Europe"***				
10:00 – 10:45	**PL2**	Luis Rouco ***"Energy storage systems for frequency stability enhancement in small-isolated power systems"***				
	EXTRA TIME FOR DISCUSSION					
10:45– 11:30	**Poster Session at ROOM C (Session P3) Coffee Break**	*Poster Session **P3***				
		284	306	329	332	334
		340	341	342	345	347
		350	353	354	361	364
		370	373	378	382	383
		387	389			
11:30 – 13:00	**ROOM A**			**ROOM B**		
	*Oral Session **A4***			*Oral Session **B4***		
	337	365	368	260	276	297
	434	437		302	460	
	EXTRA TIME FOR DISCUSSION			EXTRA TIME FOR DISCUSSION		
13:00 – 15:00	**Lunch**					
15:00 – 16:15	**ROOM A**			**ROOM B**		
	*Oral Session **A5***			*Oral Session **B5***		
	295	326	410	220	251	322
	417			455		
	EXTRA TIME FOR DISCUSSION			EXTRA TIME FOR DISCUSSION		
16:15 – 17:00	**Poster Session at ROOM C (Session P4) Coffee Break**	*Poster Session **P4***				
		397	399	400	403	406
		407	408	412	414	415
		418	419	420	421	424
		425	430	431	436	437
		513	514			
17:00 - 18:30	**ROOM A**			**ROOM B**		
	*Oral Session **A6***			*Oral Session **B6***		
	281	315	338	363	408	436
	428	438		451	454	
	EXTRA TIME FOR DISCUSSION			EXTRA TIME FOR DISCUSSION		
21:00	**Conference Dinner** (Optional) ***Opera Palace***					

Friday March 27th, 2015	
9:00 – 12:30	**Registration**

	"ICREPQ'15 Secretariat"					
	ROOM A "ARAO" Plenary Session PL3					
9:15-10:00	**PL3**	João P. S. Catalão **"*Smart and Sustainable Insular Electricity Grids: From Forecasting to Operations and Planning*"**				
	EXTRA TIME FOR DISCUSSION					
10:00 – 10:45	**Poster Session at ROOM C (Session P5) Coffee Break**	*Poster Session **P5***				
		229	230	232	274	438
		440	443	450	453	459
		470	475	484	485	494
		495	498	503	515	517
10:45 – 12:15	**ROOM A "ARAO"**					
	Round Table					
	Chairmen: Mohamed El-Sayed, Mario Mañana, Fernando Nuño, Luis Rouco					
	Renewable energies. Actual situation. Problems & solutions. New projects. Future Trends. Research...					
	EXTRA TIME FOR DISCUSSION					
12:15– 13:00	**ROOM A "ARAO"**					
	CLOSING SESSION					
	Conclusions and time for the next conference (ICREPQ'16)					
	Awards for the three best posters					
13:00 – 15:00	**Farewell Lunch**					
15:00 – 18:00	**Excursion for to visit the centre of La Coruña**					

SPECIAL SESSIONS SELECTED FOR ICREPQ'15		
No.	**TITLE**	**CHAIRMEN**
1	Control and integration of wind energy systems	Mario J. Duran Martínez and Mohamed A. H. El-Sayed
2	Microgrids and Smart grids	Gevork B. Gharehpetian and Alfredo Vaccaro
3	Electric vehicles	Pere Andrada
4	Solar Technologies	Silvano Vergura and Gianpaolo Vitale
5	Applications of Multi-Level Converters and Inverters in Power Quality Improvement	P. N. Tekwani
6	Sustainable Energy Mix	Mohamed A.H. El-Sayed
7	Wind Turbines of the Future: Economics, Design & Operation	Hashem Oraee
8	Harmonics and Power Quality	András Dán and Dávid Raisz
9	Ecodesign, regulation standards and efficiency improvement of electric motors	Ramón Bargalló
10	Ocean Energy (Wave, tidal and offshore wind)	Ahmed Zobaa
11	Power Electronics for Renewable Energy Systems	Silvano Vergura and Gianpaolo Vitale
12	Net Zero Energy Building	Antonio Gagliano and Francesco Nocera
13	Economic, Financial and Social aspects of Renewable Energy Penetration	Mihail Predescu
14	Nanotechnology for Renewable Energy	Basma El Zein and Elhadj Dogheche
15	Low & High Temperature Fuel Cells	Etim Ubong
16	Power Quality and Renewable Energy	André Martinez and Shahrokh Saadate
17	Renewable energies for developing countries	Vít BRŠLICA and Alfredo Vaccaro
18	Strategic Energy Planning	Roberto Cesar Betini and Emilio Torrente
19	Model Predictive Control for Power Electronics Converters Dedicated to Renewable Energies systems	Kouzou Abdellah
20	Impacts of renewable energy for industrial development and sustainable economics	Amine Boudghene Stambouli and Samir Flazi

AUTHORS

Oral Presentations

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

Poster Presentations

The posters must be numbered, on the up left corner, with the number of the paper and it will be put, about 15 minutes before of the beginning of the session, on the pin board that you previously can chose and it must be take off 15 minutes after of the end of the session. The author(s) must be stay near the poster during the 45 minutes of the session duration for to answer all the questions that the audience or the chairmen could formulate. The maximum available surface for each poster will be **950 mm x 1500 mm** (width x high). You must select your poster size take into account this maximum available surface (Perhaps an A0 size, **841×1189** mm (width x high), could be apropriate). Put on the pin board separated sheets of the paper are not allowed.

SESSION CHAIRMEN

On behalf of the International Scientific Committee, Steering Committee and the Organising Committee of the ICREPQ'15 and take into account their eminent position in the world of science we have selected 39 session chairmen. It is an honour for us their collaboration for to chair the sessions of ICREPQ'15 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, (35 minutes for presentation and 10 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 25th March, 2015		
10:45-11:30	**POSTER SESSION P1**	José A. Güemes Alonso
		Jin-Hong Kim
		Daniel Gómez Lorente
		Lidiia Kovernikova
11:30-13:00	**ORAL SESSION A1**	Sobhy Abdelkader
	ORAL SESSION B1	Mª. Rosa Alves Duque
13:00-15:00	**Welcome Lunch**	
15:00-16:15	**ORAL SESSION A2**	Przemyslaw Janik
	ORAL SESSION B2	Antonio Bracale
16:15-17:00	**POSTER SESSION P2**	Roberto Getino de la Mano
		José Ignacio San Martín Díaz
		Klemen Dezĕlak
		Anxel Kölling
17:00-18:30	**ORAL SESSION A3**	Mircea Ion Buzdugan
	ORAL SESSION B3	Früh Wolf-Gerrit
Thusday 26th March, 2015		
9:15-10:00	**PLENARY SESSION PL1**	Mario Mañana Canteli
10:00-10:45	**PLENARY SESSION PL2**	Mohamed El-Sayed
10:45-11:30	**POSTER SESSION P3**	Jan Pretorius
		Kary Thanapalan
		Jean-François Toubeau
		Ángel Molina García
11:30-13:00	**ORAL SESSION A4**	Gorazd Stumberger
	ORAL SESSION B4	Pere Andrada
13:00-15:00	**Lunch**	
15:00-16:15	**ORAL SESSION A5**	Aurelian Craciunescu
	ORAL SESSION B5	Andrés Ortiz Salazar
16:15-17:00	**POSTER SESSION P4**	Arnulfo Barroso de Vasconcellos
		Ramón Borras Formoso
		Dorina Ionescu
		Kamel Ghali
17:00-18:30	**ORAL SESSION A6**	Roberto Cesar Betini
	ORAL SESSION B6	Herminio Martínez García
Friday 27th March, 2015		
9:15-10:00	**PLENARY SESSION PL3**	Gianpaolo Vitale
10:00-10:45	**POSTER SESSION P5**	Silvano Vergura
		Masakazu Kato
		Paulo Carvalho
		João P. S. Catalão
10:45-12:15	**ROUND TABLE:** Renewable energies. Actual situation. Problems & solutions. New projects. Future Trends. Research...	Mohamed El-Sayed Mario Mañana Canteli Fernando Nuño Luis Rouco Rodríguez
12:15-13:00	**CLOSING SESSION** **Best posters awards** **Time for present ICREPQ'16**	
13:00-15:00	**Farewell Lunch**	

ICREPQ'15 KEYNOTES

PL1: The potential of Industrial Demand Side Management to accommodate further renewable energy power in Europe

by **Fernando Nuño**. European Copper Institute

Summary: Demand side management has been recently pointed out by the European Commission as the most promising cost-efficient option to achieve a high share of renewables, quantifying its benefits to 60 to 100 billion € per year. Among the various sources of demand response, industry offers a high potential in volume, with straight forward implementation avenues. The Horizon 2020-funded project "IndustRE" is currently exploring innovative business models to supply variable renewable electricity to industrial users with flexibility in their demand, creating a win-win situation. The business models will be adapted to 5 industrial sectors (Chemicals, non-ferrous metals, cold storage, steel, and water treatment) and 6 target countries (Belgium, France, Germany, Italy, Spainand UK). Tools will be developed to facilitate adoption of the business models: Model contracts adapted to the target countries and the different business models and a methodology that assesses the flexibility in industrialunits and its value within the business models.

Short biography of Fernando Nuño

Fernando Nuño is portfolio manager 'Electricity & Energy' at the European Copper Institute (ECI), a non-profit organisation working towards the support and expansion of copper and copper alloys' markets in Europe. His responsibilities at the ECI comprise market research, campaign development and project management. Fernando Nuño is an energy engineer graduated from Burgos and Bilbao Engineering Schools (Spain). He also completed a MoS degree at Institut Français du Pétrole (France). He previously worked as a process engineer of combined heat & power plants and as an analyst at the French Energy Regulatory Commission. His current interests are sustainable energy systems, renewables, and energy markets regulation.

PL2: **Energy storage systems for frequency stability enhancement in small-isolated power systems**

by **Prof. Luis Rouco Rodríguez.** Universidad Pontifica de Comillas. Madrid. Spain

Summary

The most relevant issue in operation of isolated power systems is frequency stability. Frequency stability is concerned with the ability of the generators to supply the loads within acceptable frequency ranges in case of generator tripping. Frequency stability is governed by the kinetic energy stored in the generator-prime mover rotating masses and the prime mover frequency primary regulation. If frequency excursions are not within +/-2.5 Hz range, cascade tripping of the remaining generators can occur because of generator over/under frequency protections tripping. Energy storage systems can contribute to frequency stability enhancement their discharging is governed by a frequency controller. Endesa is leading a research project on testing the state of the art of energy storage systems for several applications (peak-shaving,

voltage control, frequency control) in several power systems of the Canary Islands. Several applications are being investigated.
This keynote will describe two energy storage systems for frequency stability enhancement in small-isolated power systems: a 4MW-6s ultra-capacitor bank installed in La Palma power system and 500 kW-18 s flywheel installed in La Gomera power system.

Short biography of Prof. **Luis Rouco Rodríguez**

Luis Rouco Rodríguez obtained the titles of Industrial Engineer and Doctor Industrial Engineer for the Technical University of Madrid in 1985 and 1990 respectively. He is a Professor of the Technical School of Engineering (ICAI) of the University Pontificia Comillas of Madrid. He has been The Director of the Department of Electrotechnics and Systems in the period 1999-2005. It teaches courses of Electrical Machines in the studies of Industrial Engineer and of Advanced Analysis of Systems of Electric power and of System stability of Electric power in the Program of Postdegree in Electric power School.

He has been The Director of the Specialist's Course in Operation of the Electrical System REE-ICAI in the period 2004-2007 and of the Master in Electrical Technology ENDESA-ICAI in the period 2007-2011. Prof. Rouco Rodríguez develops his activities of research in the Institute of Technological Researh (IIT) where it has supervised numerous projects of research and consultancy for the public Spanish administrations (Department of Education, Department of Promotion, GIF, etc.), the principal electrical Spanish companies like Endesa, Iberdrola, Natural Gas, Electrical Network of Spain, Union Fenosa and Viesgo and other industrial companies as ABB, Iberian AEG of Electricity, Ardanuy Ingeniería, Babcock and Wilcox Española, Hard Felguera, Eliop, Grouped Businessmen, Indra, Initec Energía, To hoist, SEMI, Sener and Assembled Technologies. Also it has developed projects for companies and foreign institutions as Alstom (Switzerland), University of La Plata and CAMMESA (Argentina), RTE-France and INESC - I Carry (Portugal). The areas of work of the Prof. Rouco Rodríguez are the shaped one, analysis, simulation and control of the systems of electric power.

Prof. Rouco Rodríguez has published great number of articles in conferences and national and foreign magazines. Prof. Rouco Rodríguez is member of the IEEE and of CIGRÉ, President of the Spanish Chapter of the Power and Energy Society of the IEEE and member of the Executive Committee of the National Committee of CIGRÉ's Spain. He has been an investigative visitor in Ontario Hydro (Toronto, Canada), MIT (Cambridge, Massachusetts, The United States) and ABB Power Systems (Vasteras, Sweden).

PL3: **Smart and Sustainable Insular Electricity Grids: From Forecasting to Operations and Planning**

by **Prof. João P. S. Catalão**. University of Beira Interior (UBI). Covilha. Portugal

Summary: This Keynote Lecture addresses the effects of large-scale integration of renewable energy sources and demand response on the operation and planning of insular electricity grids, envisaging efficient solutions and tools towards the development of smart and sustainable insular electricity grids, all under the EU-funded FP7 project SiNGULAR.

A large share of the recent renewable energy sources installed capacity has already taken place in insular electricity grids, since these regions are preferable due to their high potential. However, the increasing share of renewable energy sources in the generation mix of insular power systems presents a big challenge in the efficient management of the insular distribution networks, mainly due to the limited predictability and the high variability of renewable generation. In parallel, the smart grid initiative, integrating advanced sensing technologies, intelligent control methods and bi-directional communications into the contemporary electricity grid, provides excellent opportunities for energy efficiency improvements and better integration of distributed generation, including renewable energy sources such as wind, photovoltaic, small hydro, cogeneration and wave energy systems, coexisting with centralized generation units within an active network. The goal is that the integration of highly variable energy resources is maximized, while maintaining security, reliability and quality of supply.

Short biography of Prof. **João P. S. Catalão**

João P. S. Catalão received the M.Sc. degree from the Instituto Superior Técnico (IST), Lisbon, Portugal, in 2003, and the Ph.D. degree and Habilitation for Full Professor ("Agregação") from the University of Beira Interior (UBI), Covilha, Portugal, in 2007 and 2013, respectively.
Currently, he is a Professor at UBI, Director of the Sustainable Energy Systems Lab and Researcher at INESC-ID. He is a Senior Member of IEEE. He is the Primary Coordinator of the EU-funded FP7 project SiNGULAR ("Smart and Sustainable Insular Electricity Grids Under Large- Scale Renewable Integration"), a 5.2 million euro project involving 11 industry partners.

He has authored or coauthored more than 285 publications, including 95 journal papers, 175 conference proceedings papers and 12 book chapters, with an *h*-index of 21 (according to Google Scholar), having supervised more than 25 post-docs, Ph.D. and M.Sc. students. He is the Editor of the book entitled *Electric Power Systems: Advanced Forecasting Techniques and Optimal Generation Scheduling* (Boca Raton, FL, USA: CRC Press, 2012), translated into Chinese in January 2014. Currently, he is editing another book entitled *Smart and Sustainable Power Systems: Operations, Planning and Economics of Insular Electricity Grids* (Boca Raton, FL, USA: CRC Press, 2015). His research interests include power system operations and planning, hydro and thermal scheduling, wind and price forecasting, distributed renewable generation, demand response and smart grids. Prof. Catalão is an Editor of the IEEE TRANSACTIONS ON SMART GRID, an Editor of the IEEE TRANSACTIONS ON SUSTAINABLE ENERGY, and an Associate Editor of the *IET Renewable Power Generation*. He was the Guest Editor-in-Chief for the Special Section on "Real-Time Demand Response" of the IEEE TRANSACTIONS ON SMART GRID, published in December 2012, and he is currently Guest Editor-in-Chief for the Special Section on "Reserve and Flexibility for Handling Variability and Uncertainty of Renewable Generation" of the IEEE TRANSACTIONS ON SUSTAINABLE ENERGY. He is the recipient of the 2011 Scientific Merit Award UBI-FE/Santander Universities and the 2012 Scientific Award UTL/Santander Totta.

Wednesday March 25th 2015

10:00-10:45 OPENING CEREMONY ROOM A "ARAO"

Wednesday March 25th 2015
10:45-11:30 Poster Session P1 – Coffee Break ROOM C "AEDIE"

Chairmen: **José Antonio Güemes Alonso, Jin-Hong Kim, Daniel Gómez Lorente, Lidiia Kovernikova**

205 **Distributed Collector System: Modelling, Control and Optimal Performance**
A. Alsharkawi, J.A. Rossiter
Department of Automatic Control and Systems Engineering, University of Sheffield United Kingdom

214 **On meteorological forecasts for energy management and large historical data: A first look**
Cyril Voyant(1,2), Cédric Join(3,5,6), Michel Fliess(4,5), Marie-Laure Nivet(2), Marc Muselli(2), Christophe Paoli(7)
1. Hôpital de Castelluccio, Unité de Radiothérapie. Ajaccio. France
2. SPE (CNRS, UMR 6134), Università di Corsica Pasquale Paoli. France
3. CRAN (CNRS, UMR 7039), Université de Lorraine, Vandoeuvre-lès-Nancy. France
4. LIX (CNRS, UMR 7161), École polytechnique, Palaiseau. France
5. AL.I.E.N. (ALgèbre pour Identification & Estimation Numériques) Nancy. France
6. Projet NON-A, INRIA Lille – Nord-Europe. France
7. Département de Génie Informatique, Université Galatasaray, Istanbul. Turkey

215 **The influence of motor vehicle emissions on air quality in the largest city of the Brazilian Amazon region**
Cartaxo, Elizabeth(1), Valois, Ilsa(2), Costa, Márcia(2)
1. Departamento de Engenharia Elétrica-DEL Universidade Federal de Sergipe-UFS, São Cristóvão-SE. Brazil
2. Núcleo Interdisciplinar de Energia e Meio Ambiente-NIEMA . Brazil
Faculdade de Tecnologia – Universidade Federal do Amazonas-UFAM. Brazil

224 **Modeling and Analysis of Wave Power Generation using Permanent Magnet Linear Synchronous Generator**
Joon Sung Park(1,3), Jun-Hyuk Choi(1), Gyung-Sun Ham(1), Jong-Su Choi(2), Junbo Yun(3), Ju Lee(3)
1. Intelligent Mechatronics Research Center. Korea Electronics Technology Institute (KETI). Korea
2. Offshore Plant Research Division. Korea Research Institute of Ships & Ocean Engineering (KRISO). Korea
3. Department of Electrical Engineering, Hanyang University, Seoul. Korea

227 **VSC- based HVDC System Capability to Ride Through Faults**
O. Abarrategui, D.M. Larruskain, I. Zamora, V. Valverde, G. Buigues, A. Iturregi
Department of Electrical Engineering, EUITMOP, UPV/EHU. Bilbao. Spain

235 **Use of fractals to improve a proton exchange membrane fuel cell performance**
P. Barbieri(1), G. Benetti(1), E. Mathias(1),M. Klein(1), J. Bottin(1), M. M. Forte(2), P. M. Belchor(1,2)
1. ACET, UNOESC, Joaçaba. Brazil
2. LaPol, UFRGS, Porto Alegre. Brazil

236 **Comparative of heat transfer performance between a parallel serpentine-baffle flow field plate and a parallel flow field plate design in a direct ethanol proton exchange membrane fuel cell**
G. Benetti(1), P. Barbieri(1), E. Mathias(1), J. Bottin(1), M. Klein(1), M. M. Forte(2), P. M. Belchor(1,2)
1. ACET, UNOESC, Joaçaba. Brazil
2. LaPol, UFRGS, Porto Alegre. Brazil

237 **Probabilistic Evaluation Method of Interconnectable Capacity for Wind Power Generation Using Actual Data**
T. Yoshida(1), M. Kato(1), K. Kashima(2)
1. Department of Electrical and Electronic Engineering, Tokyo Denki University Japan
2. Kyoto University, Yoshida-honmachi, Sakyo-ku, Kyoto. Japan

243 **Application of PI-Notch controller in the control of grid side converter to reduce PCC harmonic current for DFIG wind energy system**
Ramon Rodrigues de Souza, Adson Bezerra Moreira, Paulo Sergio Nascimento Filho, Tárcio André dos Santos Barros, Ernesto Ruppert Filho
LEPO/DSE/FEEC/UNICAMP. Brazil

247 **Delivering Energy from PEV batteries: V2G, V2B and V2H approaches**
J. García-Villalobos, I. Zamora, J.I. San Martín, I. Junquera, P. Eguía
Department of Electrical Engineering - University of Basque Country - UPV/EHU. Bilbao. Spain

249 **Photovoltaic powered irrigation system applied to familiar agriculture**
Chilundo, R. J.(1), Carvalho, Paulo C. M.(1), Diniz, M. M. N.(2), Bezerra, A. M. E.(3)
1. Electrical Engineering Department, Federal University of Ceará. Brazil
2. Instituto Joazeiro de Desenvolvimento Sustentável, Fortaleza/CE. Brazil
3. Fitotechny Department , Federal University of Ceará. Brazil

253 **Solar and Wind powered Stand Alone Water Pumping System**
Arruda. M. F. D.(1), Carvalho. P. C. M.(1), Albiero, D. J.(2), Canafistula, F.J.F.(2), Teixeira, A. S.(2)
1. Department of Electrical Engineering, Federal University of Ceará – UFC. Fortaleza/CE. Brazil
2. Department of Agriculture Engineering , Federal University of Ceará – UFC. Fortaleza/CE. Brazil

254 **Efficient reciprocating internal combustion engine operating under a regenerative isobaric expansion based cycle**
R. Ferreiro-García(1), R. Borrás-Formoso(1), J. Carbia-Carril(2)
1. Ind. Eng. Department, E.T.S.N.y M., A Coruña University . Spain
2. Energy and Propulsion Department, E.T.S.N.y M., A Coruña University. Spain

255 **Estimate of Average Energy Generated in a River Basin by Statistical Analysis for Small Hydropower plants**
J. H. I. Ferreira(1), J. A. Malagoli(2), J. R. Camacho(2)
1. Instituto Federal do Triângulo Mineiro. Ituiutaba-MG . Brazil
2. School of Electrical Engineering, Universidade Federal de Uberlândia. Brazil

257 **Technical and economic feasibility of the use of Solar Thermal Energy in Condominiums with Popular Dwellings**
Moraes-Santos, E.C., Souza, T. M., Balestieri, J.A.P.
Department of Energy. UNESP Campus of Guaratinguetá. Brazil

258 **Comparison of the Parameters of Thermal Comfort in a House Built With Green Bricks With a Conventional Construction**
A. O. Esteves(1,2), T. M. Souza(1,2)
1. Department of Electrical Engineering, UNESP. Brazil
2 .Renewable Energies Center – UNESP . Brazil

263 **Model to Maximize Self-consumption of Olive Mills Powered by a Mixed System of Renewable Energies**
O. Rabaza, J. Contreras-Montes, A. Espín-Estrella, D. Gómez-Lorente
Department of Civil Engineering, E.T.S.I.C.C.P., University of Granada. Spain

267 **Hydrokinetic Micro-Power Generation in Small Rivers - a New Approach**
D. Norta(1,2), S. Ramanathan(1) , S. Sachau(1), H.-J. Allelein(2)
1. Reliable Decentral Energy Systems, SnT, Systems Univeristé . Luxembourg
2. Lrst, RWTH Aachen University. Germany

271 **Influence of the reliability of short-term electrical power forecasting for a wind farm on the generation cost per MWh. A case study in the Canary Islands**

Ulises Portero(1), Sergio Velázquez(2), María Miranda(1)
1. School of Industrial and Civil Engineering, University of Las Palmas de Gran Canaria, Canary Islands. Spain
2. Department of Electronics and Automatics Engineering, University of Las Palmas de Gran Canaria, Canary Islands. Spain

273 **The impact of photovoltaic systems on power losses and voltage profiles in a real medium voltage distribution network**

Nevena Srećković, Gorazd Štumberger
University of Maribor, Faculty of Electrical Engineering and Computer Science. Slovenia

294 **A Survey on Innovative Solutions and Projects for the Integration of Renewable Generation in Weak Power Grids**

J.I. San Martin(1), P. Eguia(2), A. Etxegarai(2), E. Torres(2), I. Albizu(1)
1. Department of Electrical Engineering, University of the Basque Country (UPV/EHU). Eibar. Spain
2. Escuela Técnica Superior de Ingeniería de Bilbao. Spain

317 **Requirements for Fault Protection in HVDC Grids**

D.M. Larruskain, O. Abarrategui, I. Zamora, G. Buigues, V. Valverde, A. Iturregi
Department of Electrical Engineering. EUITMOP - UPV/EHU. Bilbao. Spain

327 **Use of Generic Dynamic Models for Photovoltaic Plants**

P. Eguia(1), A. Etxegarai(1), E. Torres(1), J.I. San Martín(2), I. Albizu(2)
Department of Electrical Engineering - University of the Basque Country (UPV/EHU)
1. Escuela Técnica Superior de Ingeniería de Bilbao. Spain
2. Escuela de Ingeniería de Eibar. Spain

Wednesday March 25th 2015
11:30-13:00 Oral Session A1 **ROOM A "ARAO"**

Chairman: **Sobhy Abdelkader**

240 **Shunt Active Power Filter with Selective Harmonics Compensation for LV distribution grid**
F. Belloni, R. Chiumeo, C. Gandolfi
Ricerca sul Sistema Energetico – RSE s.p.a. Milano. Italy

264 **Automated THD Reference System**
M. B. Martins, R. M. Debatin, A. M. R. Franco, M.F.B. Cyrillo
National Institute of Metrology, Quality and Technology - Inmetro, Rio de Janeiro . Brazil

280 **A Comparative Performance Analysis between Saturated Core Voltage Regulators Using Silicon Steel and Amorphous Alloys**
C. S. Chaves(1), J. C. Oliveira(2), J. A. F. Barbosa Jr.(2)
1. Department of Electronic – Federal Institute of Triângulo Mineiro (IFTM) Minas Gerais. Brazil
2. NQEE – Federal University of Uberlândia (UFU) , Minas Gerais. Brazil

312 **A Comparative Analysis between Methodologies for Responsibility Assignment on Harmonic Distortions**
A. C. Santos, J. C. Oliveira, I. N. Santos
Faculty of Electrical Engineering
Federal University of Uberlandia (UFU) Uberlandia. Brazil

352 **Voltage Dip Detection with Half Cycle Window RMS Values and Aggregation of Short Events**
Yun Qin, Gu Ye, V.Cuk, J.F.G.Cobben
Department of Electrical Engineering, Technology University of Eindhoven. The Netherlands

13:00 – 15:00	Welcome Lunch

Wednesday March 25th 2015
11:30-13:00 Oral Session B1 **ROOM B "CIRCUTOR"**

Chairman: **Mª. Rosa Alves Duque**

233 **Utilization of Smart Grid and Renewable Energy toward a Sustainable Future in Saudi Arabia**
Alghanim M.H.(1), Mallick P.K.(2)
1. Energy Systems Engineering, University of Michigan-Dearborn. USA.
2. Mechanical Engineering , University of Michigan-Dearborn. USA

270 **Smart Load Management in Distribution Networks Incorporating Different Load Sectors using PSO**
S.M. El Safty, Amany El Zonkoly, Osama Hebala
Department of Electrical Engineering, College of Engineering and Technology, Arab Academy of Science ,Technology and Maritime Transport. Alexandria. Egypt

286 **Step Size Selection for Tap Changers in Converter Transformers for Line Commutated HVDC Systems**
K. Roggenkamp(1), C. Hahn(2), V. Hussennether(1), A. Chaudhry(1), M. Luther(2)
1. Siemens AG, Energy Management. Erlangen. Germany
2. Chair of Electrical Energy Systems, Friedrich-Alexander-University of Erlangen Nuremberg. Germany

445 **Techno-Economic Design of a Stand-Alone Renewable Energy System**
S. Abdelkader
Electrical Engineering Department, Faculty of engineering, Mansoura University
School of Electronics, Electrical Engineering & Computer Science
Queen's University Belfast. United Kingdom

518 **Virtual Smart Network Cell**
Péter Kádár
Óbuda University, Dept. of Power Systems, Alternative Energy Sources Knowledge Centre. Budapest. Hungary

13:00 – 15:00	Welcome Lunch

Wednesday March 25th 2015
15:00-16:30 Oral Session A2 **ROOM A "ARAO"**

Chairman: **Przemyslaw Janik**

245 **Operation and Protection of Grid Connected Wind Farm**
M. M.A. Mahfouz(1,2), Mohamed A. El-Sayed(3)
1. Department of Electrical Power and Machines, Faculty of Engineering, Helwan University, Cairo. Egypt
2. Department of Electrical Power Engineering Technology, Yanbu Industrial College, Kingdom of Saudi Arabia
3. Department of Electrical Engineering, College of Engineering and Petroleum, Kuwait University. Kuwait

394 **A Comparison of Two Controller Designs for a Hybrid Excitation Synchronous Generator for Wind Applications**
Sandrine Le Ballois, Lionel Vido
SATIE, ENS Cachan, CNRS, Cergy Pontoise University. France

426 **The influence of diesel generators on frequency stability for isolated grids with high wind power penetration**
Georgia Papaioannou, Ignacio Talavera, Jutta Hanson
Department of Electrical Power Supply with Integration of Renewable Energies
Technische Universität Darmstadt. Germany

432 **Electricity generation from tidal power in artificial "albúfera" in the Rio Negro Province, Argentina**
Luis Bertani(1), Carlos Labriola(2), Aiel Marchegiani(3), Orlando Audisio(3), Samuel Troncoso Schenker(2)
1. Department of Geography - Faculty of Human Sciences
2. Department of Electrotecnia – Faculty of Engineering
3. Department of Mechanics – Faculty of Engineering
Universidad Nacional del Comahue, Neuquén, Argentina

465 **Control of Battery Energy Storage System for Wind Turbine based on DFIG during Symmetrical Grid Fault**
T. Riouch(1,2), R. EL-Bachtiri (2), A. Alamery(1) C. Nichita(1)
1. Groupe de Recherche en Electrotechnique et Automatique. GREAH Laboratory, University of Le Havre. France
2. LESSI laboratory, FSDM USMBA University REEPER Group, EST-Fez. Morocco

15:00-16:30 Oral Session B2 **ROOM B "CIRCUTOR"**

Chairman: **Antonio Bracale**

221 **Proposed improvements in wave energy converter of oscillating water column (WEC-OWC)**

R. Borrás-Formoso(1), R. Ferreiro-García(1), A. De Miguel-Catoira(2), F. Miguélez-Pose(3)
1. Department of Industrial Engineering, E.T.S.N.y M., A Coruña University. Spain
2. Department of Energy and Propulsion, E.T.S.N.y M., A Coruña University. Spain
3. Department of Phisics, E.T.S.N.y M., A Coruña University. Spain Spain

223 **Development of 8 MVA class Power Stack for Offshore Wind Power Conversion**

Jin-Hong Kim(1,2), Joon Sung Park(1), Chung-Yuen Won(2)
1. Intelligent Mechatronics Research Center. Korea Electronics Technology Institute (KETI). Korea
2. University of Sungkyunkwan. Korea

250 **Technical and economic assessment of energy from Tidal Currents**

Isabel Páscoa, C. Camus, E. Eusébio
Department of Power Systems Engineering and Automation, I.S.E.L, Instituto Politécnico de Lisboa. Portugal

358 **Offshore wave potential of the Mediterranean Sea**

F. Karathanasi(1,2), T. Soukissian(1), D. Sifnioti(3)
1. Institute of Oceanography. Hellenic Centre for Marine Research Anavyssos. Greece
2. Department of Naval Architecture and Marine Engineering, National Technical University of Athens. Greece
3. Faculty of Geology and Geoenvironment . National and Kapodistrian University of Athens . Greece

478 **Power Supply Issues in E-health Monitoring Applications**

Alan Davidson(1), Neha Mathur(1), Ivan Glesk(1), Arjan Buis(2)
1. Department of Electronic and Electrical Engineering.Faculty of Engineering. University of Strathclyde. Glasgow. United Kingdom
2. Dept. of Biomedical Engineering. Faculty of Engineering University of Strathclyde. Glasgow. United Kingdom

Wednesday March 25th 2015
16:30-17:15 Poster Session P2 – Coffee Break ROOM C "AEDIE"

Chairmen: **Roberto Getino de la Mano, José Ignacio San Martín Díaz, Klemen Dezělak, Anxel Kölling**

278 **A Concept to Increase the Bulk Warm Water Production of Ordinary Direct and Indirect Solar-Thermal Systems in Rural India**
D. Norta(1,2), C. Winkler(1) , Adoni-Team(1)
1. Regionalgruppe Aachen, Ingenieure ohne Grenzen e.V.
2. Engineers Without Borders Luxembourg

285 **A Study on Regeneration Performance Characteristics of an Internally Heated Regenerator in a Liquid Desiccant System**
Ji-Hyun Mun(1), Dong-Soon Jeon(2), Seon-Chang Kim(2), Young-Lyoul Kim(2)
1. Energy System Engineering, Korea University of Science and Technology. Republic of Korea
2. Thermal & Fluid System R&BD Group, Korea Institute of Industrial Technology Republic of Korea

291 **The energy saving effect of incorporating an ATRIUM into a building**
R. Getino-De la Mano, J. L. Falagán Cavero, E. Getino Grande
Departamento de Ingeniería Eléctrica y de Sistemas y Automática.
University of León. Spain

298 **Wideband estimation of the drive torque of a wind turbine using LiDAR measure-ments, blade element momentum theory and Kalman filtering**
N. Ell, M. Stubbe, D. Turschner, H.-P. Beck
Institute for Electrical Power Engineering and Energy Systems, Power Mechatronics
Clausthal University of Technology. Germany

299 **Multi frequency wideband active damping device for compensation of torsional vibration**
M. Stubbe, N. Ell, D. Turschner, H.-P. Beck
Institute for Electrical Power Engineering and Energy Systems, Power Mechatronics
Clausthal University of Technology. Germany

300 **Control of a Power Generation System Based on a Dual Star Induction Generator**
K. Marouani(1), K. Nounou(1), M. Benbouzid(2), B. Tabbache(1), H. Alloui(1)
1. Laboratoire Commande des Machines, Ecole Militaire Polytechnique, Algeria
2. University of Brest, EA 4325, LBMS. France

304 **Investment Analysis for Energy Efficiency Management Systems in Industrial Refrigeration**

T. T. Portela, J. M. S Lafay
Electrical Engineering, UTFPR, Federal Technological University of Parana. Patro Branco, PR . Brasil

305 **Energy Efficiency in Brazil: Policies, Motivators, Barriers**

T. T. Portela, J. M. S Lafay
Electrical Engineering, UTFPR, Federal Technological University of Parana. Patro Branco, PR . Brasil

309 **Review of Technical Requirements for Brazilian Distributions Companies fort he Integration of Distributed Generators - A Comparative Analysis on the Perspective of IEEE-std 1547-2**

J.R.C de Almeida(1), M.J.B.B. Davi(1), C. B. dos Santos(1), F. A. M. Moura(1), J. R. Camacho(2)
1. Department of Electrical Engineering, Universidade Federal do Triângulo Mineiro Uberaba- Minas Gerais. Brazil
2. School of Electrical Engineering,Universidade Federal de Uberlândia, Minas Gerais. Brazil

310 **A Contribution of a Computer Tool Using ATP-EMTP TACS to the Modeling of a Photovoltaic (PV) Module**

C. B. dos Santos(1), J. R. C. de Almeida(1), M. J. B. B. Davi(1), F. A. M. Moura(1), J. R. Camacho(2)
1. Department of Electrical Engineering, UFTM, Universidade Federal do Triângulo Mineiro. ICTE. Uberaba. Brazil
2. Department of Electrical Engineering. UFU, Universidade Federal de Uberlândia. Brazil

314 **Analysis of the Influences of Changes in Gains and Time Constants in a Power Factor Regulator using ATP-EMTP**

M.J.B.B. Davi(1), J.R.C de Almeida(1), C. B. dos Santos(1), F. A. M. Moura(1), M. V. B. Mendonça(1), J.R. Camacho(2)
1. Universidade Federal do Triângulo Mineiro, Electrical Engineering Department, Uberaba, Minas Gerais. Brazil
2. Universidade Federal de Uberlândia, School of Electrical Engineering, Uberlândia, Minas Gerais. Brazil

318 **Comparison of Transmission Technologies with Regard to their Contribution to Power System Stability**

S. Höhn, A. Semerow, M. Luther
Institute of Electrical Energy Systems. University of Erlangen-Nuremberg.Germany

319 **Wind power prediction for onshore wind farms using neural networks**

Bogusław Świątek, Mateusz Dutka
AGH University of Science and Technology. Krakow. Poland

320 **Photovoltaic Maximum Power Point Grid Connected based on Power Conditioning Technique Employing Fuzzy Controller**

M. Bakkar, M. Abdel-Geliel, M. Abo zied
Department Electrical and Control Engineering. AAST, Alexandria, Egypt

323 **Brazilian Automotive Market and Environment: An Analysis of Fighting Measures Measures CO_2 Emission**

Nilcéia Cristina dos Santos(1), Reinaldo Gomes da Silva(2), Manoel Gonçales Filho(3)
1. Faculdade de Tecnologia de Piracicaba "Dep. Roque Trevisan" (FATEC PIRACICABA), CEETPS, Centro Estadual de Educação Tecnológica Paula Souza. Brazil
2. Escola de Engenharia de Piracicaba (EEP), FUMEP, Fundação Municipal de Ensino de Piracicaba. Brazil
3. Universidade Metodista de Piracicaba (UNIMEP). Brazil

325 **Feasible methods to evaluate voltage dips origin**

R. Chiumeo, L. Garbero , F. Malegori, L. Tenti
Ricerca sul sistema energetico- RSE SpA. Milan. Italy

442 **Analysis of the electrical energy intensity under energy efficiency actions**

López Pereiro D.(1), Zaragoza S.(1), Tarrío J.(2), Naya S.(2) and Álvarez A.(3)
1.-Departamento de Ingeniería Industrial II.
2. Departamento de Matemáticas.
3. Departamento de Ingeniería Naval y Oceánica
Universidad de A Coruña. A Coruña. Spain

487 **Calculation of involved energies in thermal plasma at the opening of high voltage breakers**

A. Ziani, H. Moulai, A. Nacer
Laboratory of Electrical and Industrial Systems, FEI, USTHB, Algiers, Algeria.

490 **Assessment of Power Level Variations in a Small PV System**

P. Janik, Z. Waclawek, J. Rezmer
Department of Electrical Engineering. Wroclaw University of Technology. Poland

505 **Phasor Measurement Unit-Based Power Sharing for Optimal Decentralized Controller Design of Inverter-basedMicrogrid**

M. A. Hassan(1,2), M. A. Abido(3,4)
1. Research Institute, Center of Engineering, King Fahd University of Petroleum & Minerals, Dhahran. Saudi Arabia
2. Electrical Engineering Dept., King Fahd University of Petroleum & Minerals, Dhahran. Saudi Arabia
3. Electrical Engineering Dept., Faculty of Engineering, Mansoura University, Mansoura. Egypt
4. Electrical Engineering Dept., Faculty of Engineering, Menoufia University, Shebin El-Kom. Egypt

507 **Balancing of wind farm production via demand response in smart grids**

D. Todorović, Ž. Đurišić
Department of Power systems. Faculty of Electrical Engineering
University of Belgrade .Republic of Serbia

508 **Study of the current performance of the European power transformer fleet**

F. Ortiz, C. Fernández, C. Olmo, J. Carcedo, C. Renedo, F. Delgado
Department of Electrical and Energy Engineering. E.T.S.I.I., Cantabria University
Santander. Spain

511 **Day-ahead Optimal Scheduling of Loads and Dispatchable Resources in a Hybrid AC/DC Microgrid of an Industrial System**

L. Alfieri, G. Carpinelli, D. Proto, G. Russo
Department of Electrical Engineering and of Information Technologies
DIETI, University of Naples "Federico II". Italy

Wednesday March 25th 2015
17:15-18:45 Oral Session A3 **ROOM A "ARAO"**

Chairman: **Mircea Ion Buzdugan**

225 **A review on the water and energy sectors in Algeria: Current, Forecasts, scenario and sustainability issues**
Ait Mimoune Hamiche, Amine Boudghene Stambouli, Samir Flazi
Electrical and Electronics Engineering Faculty
University of Sciences and Technology of Oran, USTO-MB. Algeria

282 **Supervision, Condition Monitoring and Fault Diagnosis System in a Hybrid Renewable Energy Systems (HRES) Laboratory**
E. Ariza(1), A. Correcher (2), C.Vargas(1), F. Morant(2)
1. Instituto de Ingeniería Energética - IIE, Universitat Politècnica de València. Spain
2. Instituto de Automática e Informática Industrial, Universitat Politècnica de València. Spain

292 **Modeling and Simulation of Renewables for Telelabs**
P. Kolhe, B. Bitzer
Department of Automation, South Westphalia University of Applied Sciences Soest. Germany

369 **Friction Expander for the Generation of Electricity (FEGE)**
Axel Kölling(1), Roberto Lisker(2), Udo Hellwig(3), Franz Wildenauer(2)
1. ERK Eckrohrkessel GmbH. Berlin. Germany
2. University of Applied Sciences Wildau. Germany
3. La Mont GmbH. Berlin. Germany

421 **Economic Optimization of a Hybrid Solar-Wind Power Plant in Chile**
José O. Maldifassi(1), Julián Lizama M.(1), Ignacio Mongillo M.(2)
1. School of Engineering and Science. Universidad Adolfo Ibáñez. Viña del Mar Campus. Chile
2. Servicios Logísticos; Arauco S.A.Santiago. Chile

20:00	**Welcome Civic Reception** **Domus - Casa del Hombre**

Wednesday March 25th 2015
17:15-18:45 Oral Session B3 **ROOM B "CIRCUTOR"**

Chairman: **Früh Wolf-Gerrit**

261 **Conceptual framework for an integrated method to optimise sustainability of engineering systems**
A. del Caño, M.P. de la Cruz, J.J. Cartelle, M. Lara
Departamento de Ingeniería Industrial II, Escuela Politécnica Superior, Universidade da Coruña, Ferrol. Spain

336 **Optimal Volume and Slip of a Three Phase Induction Motor using Differential Evolution**
J. A. Malagoli(1), J. H. I. Ferreira(1), J. R. Camacho(1), M. V. Ferreira da Luz(2)
1. Faculty of Electrical Engineering, Federal University of Uberlândia. Brazil
2. Departament of Electrical Engineering, Federal University of Santa Catarina Florianópolis-SC. Brazil

356 **Performance analysis of a new system for speed control in wind turbines**
P. V. Silva, R. F. Pinheiro, A. O. Salazar, J. D. Fernandes
Universidade Federal do Rio Grande do Norte. Campus Universitário Lagoa Nova – Natal, Rio Grande do Norte. Brazil

380 **Analysis of DC/DC converters by mean node voltage method**
Gianpaolo Vitale
National Research Council of Italy, CNR – ISSIA UOS Palermo. Italy

477 **New models related with heating and cooling of an old building in Évora (South of Portugal)**
Mari Rosa Alves Duque
Department of Physics, School of Sciences and Technologies
Évora University. Portugal

20:00	**Welcome Civic Reception** **Domus - Casa del Hombre**

Thursday March 26th 2015
9:15-10:00 Plenary Session PL1 ROOM A "ARAO"

Chairman: **Mario Mañana Canteli**

The potential of Industrial Demand Side Management to accommodate further renewable energy power in Europe
by **Fernando Nuño.** European Copper Institute

10:00-10:45 Plenary Session PL2 ROOM A "ARAO"

Chairman: **Mohamed El-Sayed**

Energy storage systems for frequency stability enhancement in small-isolated power systems
by **Luis Rouco.** Universidad Pontificia de Comillas. Madrid. Spain

Thursday March 26th 2015
10:45-11:30 Poster Session P3 – Coffee Break ROOM C "AEDIE"

Chairmen: **Jan Pretorius, Kary Thanapalan, Jean-François Toubeau, Ángel Molina García**

284 **Dynamic Behavior of Three phase Inductions Motors as Loads in an Electric Power System with Distributed Generation, a Case of Study**
Marcelo Rodrigo García Saquicela, Ernesto Ruppert Filho, José Luis Azcue Puma.
School of Electrical and Computer Engineering, State University of Campinas (UNICAMP), Campinas, SP, Brazil

306 **Capacitorless DC-DC Regulator as a Candidate Topology for Photovoltaic Solar Facilities**
Herminio Martínez-García
Barcelona College of Industrial Engineering (EUETIB)
Department of Electronics Engineering, Technical University of Catalonia (UPC).
BarcelonaTech. Spain

329 **Using Constant Switching Frequency Control in Linear-Assisted DC-DC Switching Converters for Photovoltaic Solar Regulators**
Herminio Martínez-García
Barcelona College of Industrial Engineering (EUETIB)
Department of Electronics Engineering, Technical University of Catalonia (UPC).
BarcelonaTech. Spain

332 Technical and Economic Study to Installing a Photovoltaic System at Roof of Public Building

J. M. Rodrigues, A. J. Alves, E. G. Domingues, W. P. Calixto
Nucleus of Studies and Researches Experimental & Technological
Electrotechnical Department - Federal Institute of Goiás. Brazil

334 Synthesis of porous LSM films on dense YSZ substrates for use in SOFC

D.P. Tarragó, C.F. Malfatti, V.C. Sousa
School of Engineering. Federal University of Rio Grande do Sul. Brazil

340 Proposal for Development of a Fragmented Mobile Substation for Treatment of Seasonal Loads

Arnulfo Barroso de Vasconcellos(1),Jéssica Romeiro de Carvalho(1), Marina Silva Camillo de Carvalho(1), Marllon Welter Schlischting(1), Teresa Irene Ribeiro de Carvalho Malheiro(2), Luciano Vogel Dutra(3), Wagner Gentil(3)
1. Faculty of Architecture, Engineering and Technology, UFMT –Federal University of Mato Grosso – Cuiabá/MT. Brazil
2. Federal Institution of Education, Science and Technology of Mato Grosso – IFMT
3. Utility Energisa/Cemat– Cuiabá/MT. Brazil

341 Influence on a Consumer Unit Power Factor Provided by the Connection of a SHPP in Shunt with the Utility Power

Arnulfo Barroso de Vasconcellos(1), Raul Vitor Arantes Monteiro(1), Jéssica Romeiro de Carvalho(1), Marina Silva Camillo de Carvalho(1), Tisciane Perpétuo e Oliveira(1),Teresa Irene Ribeiro de Carvalho Malheiro(2)
1. Faculty of Architecture, Engineering and Technology, UFMT –Federal University of Mato Grosso – Cuiabá/MT. Brazil
2. Federal Institution of Education, Science and Technology of Mato Grosso – IFMT Brazil

342 The Influence of Reactive Flow by Electronic Loads in Electricity Billing System of a Shopping Mall's Consumer Unit

Arnulfo Barroso de Vasconcellos(1), José Mateus Rondina(1), Jéssica Romeiro de Carvalho(1), Marina Silva Camillo de Carvalho(1), Cátia Sanchez Roboredo(1), Teresa Irene Ribeiro de Carvalho Malheiro(2)
1. Faculty of Architecture, Engineering and Technology, UFMT –Federal University of Mato Grosso – Cuiabá/MT .Brazil
2. Federal Institution of Education, Science and Technology of Mato Grosso – IFMT

345 Deterioration and performance evaluation of photovoltaic modules in a semi-arid climate

M.M.D. Afonso (1), P.C.M. Carvalho,(1),F.L.M. Antunes(1),J.J. Hiluy Filho (2)
1. Department of Electrical Engineering
2. Department of Chemical Engineering
Federal University of Ceará. Brazil

347 Modeling Hybrid Renewable Energy System for Micro Grid

Y. Varetsky, Z. Hanzelka
Department of Power Electronics and Energy Control System
AGH-University of Science & Technology. Krakow. Poland

350 Low Drop-Out Voltage Regulator as a Candidate Topology for Photovoltaic Solar Facilities

Herminio Martínez-García
Barcelona College of Industrial Engineering (EUETIB)
Department of Electronics Engineering
Technical University of Catalonia (UPC). BarcelonaTech. Spain

353 Potential Study of Biomass in the Area of Cartagena (Spain) under the ENERING LIFE+ European Project

J. Serrano(1), J. M. Paredes(1), M. S. García-Cascales(2), J. M. Sánchez-Lozano(3), A. Molina-García(4)
1. Área de Energía. Centro Tecnológico de la Energía y Medio Ambiente(CETENMA). Cartagena. Spain
2. Departamento de Electrónica, Tecnología de Computadoras y Proyectos
3. Centro Universitario de la Defensa. Academia General del Aire
4. Department of Electrical Engineering, Universidad Politécnica de Cartagena. Spain

354 Comparison of Voltage Dip Characterization under Grid-Code Requirements: Application to PV Power Plants

T. García-Sánchez(1), E. Gómez-Lázaro(1), A. Molina-García(2)
1. Institute of Renewable Energy, Universidad de Castilla La Mancha, Albacete. Spain
2. Department of Electrical Engineering, Universidad Politécnica de Cartagena. Spain

361 Photovoltaic Luminaire of Low Cost for Public Streets

Spacek, A. D.(1), Neto, J. M.(1), Clemente,L.G(1), Ando Junior, O. H.(2), Malfatti, F.C.(3)
1. Department of Industrial Automation. ***SATC,*** Beneficent Association of Santa Catarina Coal Industry . Criciúma-Sc. Brazil
2. Departament of Renewable Energies Engineering UNILA, Federal University of Latin American Integration. Foz do Iguaçu-PR. Brazil
3. School of Engineering. UFRGS, Federal University of Rio Grande do Sul. Brazil

364 Frequency Regulation with the Lifespan of EVs Batteries

Yufeng Guo, Yi Jiang , Jilai Yu
School of Electrical Engineering and automation. Harbin Institution of Technology. China

370 **WiFi Data Acquisition System and online monitoring applied to thermoelectric microgeneration modules**

R. I. S. Pereira(1), P. C. M. Carvalho(1), S. C. S. Jucá(2)
1. Electrical Engineering Department (DEE) Federal University of Ceará – UFC. Fortaleza. Brazil
2. Telematics Area. Federal Institute of Ceará – Maracanaú. Brazil

373 **Comparison of Residential Wind and Solar Energy Generation in the Island of Puerto Rico**

Rachid Darbali-Zamora Carlos J. Gómez-Méndez, Andrés J. Díaz-Castillo
Department of Electrical and Computer Engineering
University of Puerto Rico

378 **Design Improvement of Cross Flow Water Turbines using CFD**

M.A. Taborda(1), S. Laín(1), O.D. López(2), Y.U. López(1)
1. Fluid Mechanics Research Group. Energetics and Mechanics Department, Faculty of Engineering, Universidad Autónoma de Occidente. Cali. Colombia
2. Computational Mechanics Research Group, Mechanical Engineering Department, Faculty of Engineering, Universidad de los Andes. Bogotá. Colombia

382 **Calculation of the weighted average efficiency of photovoltaic systems in the Brazilian State of Santa Catarina**

Alexandre Kellermann, Renê Alfonso Reiter, Adriano Péres
Department of Electrical and Telecommunications Engineering
Regional University of Blumenau. Brazil

383 **The position of the maximum erosion points in coal powder pneumatic transport installations, function of the bend radius / pipe diameter ratio**

Dorina Ionescu
Department of Mechanical and Industrial Engineering, School of Engineering – College of Science, Engineering and Technology. South Africa

387 **A criterion for rotational augmentation based on a boundary-layer analysis**

W.-G. Früh(1), A.C.W. Creech(2)
1. Institute of Mechanical, Process and Energy Engineering, School of Engineering and Physical Sciences. Heriot-Watt University. United Kingdom
2. Institute of Energy Systems, School of Engineering, University of Edinburgh. United Kingdom

389 **Vertical Axis Wind Turbines: Current Technologies and Future Trends**

J. Damota (1), I. Lamas (2), A. Couce (1), J. Rodríguez(1)
1. Marine Innovations Research Group. E.U.P. A Coruña University. Spain
2. Thermal Systems and Heat Transfer Research Group.E.P.S. A Coruña University

Thursday March 26th 2015
11:30-13:00 Oral Session A4 **ROOM A "ARAO"**

Chairman: **Gorazd Stumberger**

337 **Harmonic Modeling of Electric Vehicle Chargers in Frequency Domain**
S. Müller(1), J. Meyer(1), P. Schegner(1), S. Djokic(2)
1. Technische Universitaet Dresden. Institute of Electrical Power Systems and High Voltage Engineering. Faculty of Electrical and Computer Engineering. Germany
2. University of Edinburgh. United Kingdom

365 **Assessment of Voltage Dips based on Field Measurements in MV Networks**
L.E. Weldemariam, F. Papathanasiou, V. Cuk, J.F.G. Cobben, W.L. Kling
Department of Electrical Engineering, Eindhoven University of Technology. The Netherlands

368 **Towards a Better Understanding of Harmonics and Power Electronics – New Measurement Results and Analysis Methods for Modern Large-Scale Inverters**
S. Rogalla, F. Ackermann, N. Bihler, G. Dötter, R. Singer, E. Wolf
Department Power Electronics, Fraunhofer Institute for Solar Energy Systems ISE. Freiburg. Germany

434 **Behavior of Mechanically Switched Capacitors with Damping Network (MSCDN) during Energization**
S. Weck, I. Talavera, J. Hanson
Institute of Electrical Power Systems with Integration of Renewable Energies Technical University Darmstadt. Germany

437 **Sensitivity analysis of the Electrical Stresses in Mechanically Switched Capacitors with Damping Network due to Components' Tolerances**
I. Talavera, S. Weck, J. Hanson
Department of Electrical Power Supply with Integration of Renewable Energies Technische Universität Darmstadt . Germany

13:00 – 15:00	**Lunch**

Thursday March 26th 2015
11:30-13:00 Oral Session B4 ROOM "CIRCUTOR"

Chairman: **Pere Andrada**

260 **Indicators for assessing sustainability of power plants: environmental, social, economic and technical aspects**
J.J. Cartelle, M. Lara, M.P. de la Cruz, A. del Caño
Departamento de Ingeniería Industrial II, Escuela Politécnica Superior, Universidade da Coruña, Ferrol. Spain

276 **Characterization of current switching transients for appliance identification**
Yulieth Jimenez(1), Cesar Duarte(1), Johann Petit(1), Jan Meye(2), Peter Schegner(2), Gilberto Carrillo(3)
1.School of Electrical, Electronics and Telecommunications Engineering. Universidad Industrial de Santander – UIS. Bucaramanga. Colombia
2.Institute of Electrical Power Systems and High Voltage Engineering. Technical Universitaet Dresden – TUD. Germany
3.Universidad de Santander - UDES. Bucaramanga. Colombia

297 **Analysis of Energy Saving and Efficiency Action Plan 2008-2012 in Spain for the Residential Sector (Heating, Appliances and Lighting)**
Yolanda Fernández Ribaya, Antonio José Gutiérrez Trashorras, José Pablo Paredes, Jorge Xiberta Bernat
Department of Energy. E.I.M.E.M., Oviedo University. Spain

302 **Sustainable desalination: integration of power supply with renewable energy sources**
M. Marini(1), C. Palomba(2), P. Rizzi(1), E. Casti(1), A Marcia(1), M. Paderi(2)
1. Department of Architecture, Planning and Design. DADU, University of Sassari. Italy
2. Department of Mechanical, Chemical and Materials Engineering, DIMCM, University of Cagliari. Italy

460 **Metaheuristic approach to the Holt-Winters optimal short term load forecast**
E.Eusébio, C. Camus, C. Curvelo
Department of Power Systems Engineering and Automation
ISEL, Instituto Politécnico de Lisboa. Portugal

13:00 – 15:00	Lunch

Thursday March 26th 2015
15:00-16:15 Oral Session A5 **ROOM A "ARAO"**

Chairman: **Aurelian Craciunescu**

295 **Novel approach to concentrating and harvesting solar radiation in hybrid transparent photovoltaic façade's in Southern Africa**
RH Gevers, JHC Pretorius, P Van Rhyn
Department of Electrical and Electronic Engineering, University of Johannesburg, Engineering Faculty. South Africa

326 **Testing new ensemble forecasts of solar irradiance**
J.M. Botana, A. Rodríguez, J.A. Gonzalez
Department of Chemical Engineering
School of Engineering, University of Santiago de Compostela. Spain

410 **Development of a mobile photovoltaic stand-alone energy supply system**
K.K.T. Thanapalan, T.J. Stockley, M.A. Bowkett, J.G. Williams
Centre for Automotive & Power Systems Engineering (CAPSE), Faculty of Computing, Engineering and Science, University of South Wales. United Kingdom

417 **Thermal Performance of a Single Slope Solar Water Still with Enhanced Solar Heating System**
Abdullah M. Al Shabibi, M. Tahat
Department of Mechanical and Industrial Engineering
Sultan Qaboos University. Oman

Thursday March 26th 2015
15:00-16:15 Oral Session B5 **ROOM B "CIRCUTOR"**

Chairman: **Andrés Ortiz Salazar**

220 **Fuzzy Logic Based Maximum Power Point Tracking Using Boost Converter for Solar Photovoltaic System in Kuwait**
Mohamed A. El-Sayed(1), Steven Leeb(2)
1. Department of Electrical Engineering. College of Engineering and Petroleum, Kuwait University. Kuwait
2. Department of Electrical and Computer Engineering . MIT, Cambridge, MA.USA

251 **Renewable Energy in Islands. An Integrated Proposal for Electricity Generation and Transports**
P. Marques, E. Silva, C. Camus, E. Eusébio
Department of Power Systems Engineering and Automation
ISEL, Instituto Politécnico de Lisboa. Portugal

322 **Energetic Use of Landfill Biogas as a Power Energy Source: An Economic Feasibility Study**
Alessandro Nunes Costa, Elder Geraldo Domingues, Daywes Pinheiro Neto, Wesley Calixto Pacheco, Aylton José Alves, Liberato Santos
Nucleus of Studies and Researches Experimental & Technological (NExT)
Federal Institute of Goiás (IFG). Brazil

455 **A Fault Detection method for pitch actuators faults in Wind Turbines**
C. Tutivén, Y. Vidal, L. Acho, J. Rodellar
Universitat Politécnica de Catalunya, Applied Mathematics-III (MA-3) Department, CoDAlab. Barcelona. Spain

Thursday March 26th 2015
16:15-17:00 Poster Session P4 – Coffee Break ROOM C "AEDIE"

Chairmen: **Arnulfo Barroso de Vasconcellos, Ramón Borrás Formoso, Dorina Ionescu, Kamel Ghali**

397 **On-line Managment of Energy Systems**
J. B. Rocha, G. M. Miranda, R. C. Betini
Department of Electrical Engineering
Federal Technological University of Paraná. Brazil

399 **Maximum Power Point Tracking Technique Based on Particle Swarm Optimization Method Applied to a Single-Phase Grid-Tied Photovoltaic System**
F. M. Oliveira, S. A. O. Silva, F. R. Durand , L. P. Sampaio
Federal Technological University of Paraná – UTFPR-CP
Department of Electrical Engineering. Cornélio Procópio-PR. Brazil

400 **Influence of standard sections and time periods on optimization of a distribution network supplied by solar source**
Fergani.S(1), Si Ali.M(1),Flazi.S(1), Boudghene Stambouli.A(2)
1. Department of Electrical Engineering
2. Department of Electronics
University of sciences and the Technology of Oran Mohamed Boudiaf. Oran. Algerie

403 **Observability of a 2-branch Double-Layer-Capacitor**
F. Alonge(1), M. Cirrincione(2), G. Vitale(3), G. Rodonò(1)
1. Department of Energy, Information Engineering and Mathematical models D.E.I.M., University of Palermo. Italy
2. School of Engineering and Physics (SEP), The University of the South Pacific. Fiji Islands
3. Institute on Intelligent Systems and Automation (ISSIA), National Research Council of Italy

406 **Benefits that could be achieved by a proper reactive power generation in small photovoltaic systems operating inside low voltage distribution network**
Katarina Dežan, Ernest Belič, Gorazd Štumberger
University of Maribor. Faculty of Electrical Engineering and Computer Science. Maribor. Slovenia

407 **An Advanced AC-DC Commutator Generator for Hybrid-Solar Vehicles**
Jozef Tutaj(1), Bogdan Fijalkowski(2)
1. Mechatronics Institution. Institute for Automotive Vehicles and Combustion Engines, Department of Mechanical Engineering. Cracow University of Technology. Poland
2. Mechatronics Institution. Institute of Technology
State Higher Vocational School in Novum Sandenc. Poland

408 **New Architecture Proposal for PV Remote Monitoring based on IOT and Cloud Computing**
S. Manzano, D. Guevara, A. Ríos
Facultad de Ingeniería en Sistemas, Electrónica e Industrial .
Universidad Técnica de Ambato. Ecuador

412 **Optimization of total investment cost of solar distribution network**
M.Siali(1), S. Fergani(1), S.Flazi(1), A. Boudghene Stambouli(2)
1. Department of Electrical Engineering
2. Department of Electronics
University of Sciences and Technology of Oran –Mohamed Boudiaf- (USTO-MB-) Oran. Algerie

414 **Analysis of probabilistic properties of harmonic currents of loads connected to high-voltage networks**
L. I. Kovernikova
The Siberia Branch of the Russian Academy of Sciences
Energy Systems Institute. Irkutsk. Russia

415 **A study on the voltage calculation method for ESS operation plan in Hybrid Generation System**
S. Jung, G. Jang
School of Electrical Engineering. Korea University. Seoul. Korea

418 **Displacement ventilation system combined with a novel evaporative cooled ceiling for a typical office in the city of Beirut: performance evaluation**
Mariam Itani, Kamel Ghali, Nesreen Ghaddar
Department of Mechanical Engineering, American University of Beirut. Lebanon

419 Impact of Wind Geographical Correlation in Reliability Assessment Studies Using Sequential Monte Carlo Simulations

F. Vallée(1), J-F. Toubeau(2), Z. De Grève(2), J. Lobry(2)
1. Department of General Physics
2. Department of Electrical Power Engineering
Faculté Polytechnique, University of Mons. Belgium

420 Verification and Implementation of Pseudo-Random-Binary-Sequences for Online Determination of Grid Impedance Spectrum

Udit Tewari(1), Surena Neshvad(2), Daniel Goldbach(1), Jürgen Sachau(2)
1. Faculty of Energy Technology. FH Aachen, Campus Jülich.Germany
2. Interdisciplinary Centre for Security Reliability and Trust (SnT).
University of Luxembourg

421 Economic Optimization of a Hybrid Solar-Wind Power Plant in Chile

José O. Maldifassi(1), Julián Lizama M.(1), Ignacio Mongillo M.(2)
1. School of Engineering and Science. Universidad Adolfo Ibáñez.
Viña del Mar Campus. Chile
2. Servicios Logísticos; Arauco S.A.Santiago. Chile

424 Reduction of energy losses achieved by an optimal reactive power generation in photovoltaic systems installed inside a low voltage distribution network

Ernest Belič, Katarina Dežan, Niko Lukač, Gorazd Štumberger
University of Maribor. Faculty of Electrical Engineering and Computer Science.
Slovenia

425 A new Measure-Correlate-Predict Wind Resource Prediction method

C. Skittides, W.-G. Früh
Institute of Mechanical, Process and Energy Engineering,
School of Engineering and Physical Sciences. Heriot-Watt University.
Riccarton, Edinburgh .United Kingdom

430 Influence of a metallic wall on 245 kV disconnector behaviour during short-circuit test

J. A. Güemes(1), A. M. Iraolagoitia(1), P. Fernández(2)
1. Department of Electrical Engineering
2. Department of Electronic Technology
E.U.I.T.I., University of the Basque Country UPV/EHU. Bilbao. Spain

431 Accumulation small hydro power plant on lake - Slovenian case

L. Somi, K. Deželak, G. Štumberger
Power Laboratory Department
University of Maribor. Faculty of Electrical Engineering and Computer Science.
Slovenia

436 **Hybrid Reluctance Machines with U-Shaped Electromagnets and Permanent Magnets**

P.Andrada(1), B. Blanque(1), E. Martinez(1), M.Torrent(1), O. Rolando Ávila(2), M. Gomila(1), X. Adelantado(2)
1. EPS d'Enginyeria de Vilanova i la Geltrú, Departament d'Enginyeria Elèctrica Universitat Politècnica de Catalunya (UPC). Vilanova i la Geltrú. Spain
2. RAC Rolando, Sucre. Bolivia

437 **Sensitivity analysis of the Electrical Stresses in Mechanically Switched Capacitors with Damping Network due to Components' Tolerances**

I. Talavera, S. Weck, J. Hanson
Department of Electrical Power Supply with Integration of Renewable Energies Technische Universität Darmstadt . Germany

513 **Analysis of a Real Case of Ampacity Management in a 132 kV Network Integrating High Rates of Wind Energy**

A. Madrazo(1), A. González(2), R. Martínez(1), R. Domingo(1), M. Mañana(1), A. Arroyo(1), P.B. Castro(1), D. Silió(1), R. Lecuna(1)
1. Department of Electrical and Energy Engineering, University of Cantabria Santander . Spain
2. E.ON Distribución. Santander. Spain

514 **Preliminary Results of a Power Quality Survey in a Distribution Network Based on No-Gap PQ Meters**

A. González(2), A. Madrazo(1), A. Laso(1), R. Martínez(1), R. Domingo(1), M. Mañana(1), A. Arroyo(1), M.A. Cavia(1)
1. Department of Electrical Engineering, E.T.S.I.I.T., University of Cantabria. Santander. Spain
2 E.ON Distribución. Santander. Spain

Thursday March 26th 2015
17:00-18:30 Oral Session A6 **ROOM A "ARAO"**

Chairman: **Roberto Cesar Betini**

281 **Fault detection and isolation in a photovoltaic system**
M. Muñoz(1), A. Correcher(2), E. Ariza(3), E. García(2), F. Ibañez(3)
1. Grupo de Automática Industrial, Universidad del Cauca. Popayán. Colombia
2. Instituto de Automática e Informática Industrial, Universitat Politècnica de València. Spain
3. Instituto de Ingeniería Energética, Universitat Politècnica de València. Spain

315 **A system for visualization of power-quality and optimization of the charging behavior for electric vehicles**
Y. Wang(1), B. Schwake(2), B. Fischer(1), P. Stroganov(1)
1. Department of informatics, Clausthal University of Technology . Clausthal-Zellerfeld. Germany
2. Institute of Electrical Power Engineering and Energy Systems. Clausthal University of Technology ,Clausthal-Zellerfeld. Germany

338 **EDP Distribução experience in Power Quality permanent monitoring in Portugal**
F. Gonçalves, F. Bastião, A. Lebre, P. Veloso, N. Melo
Department of Quality of Service – Power Quality. EDP Distribuição (EDP Group) Coimbra. Portugal

428 **Probabilistic Study of the Impact on the Network Equipment of Changing Load Profiles in Modern Low Voltage Grids**
J-F. Toubeau(1), V. Klonari(1), Z. De Grève(1), J. Lobry(1), F. Vallée(2)
1. Department of Electrical Engineering
2. Department of General Physics
Faculté Polytechnique, University of Mons. Belgium

438 **Analysis of an Advanced Compounding Strategy based on Reactive Power Flow Measurement in the Medium Voltage Network**
P. Franz, G. Stapff, I. Talavera, J. Hanson
Department of Electrical Power Supply and Integration of Renewable Energies Technische Universität Darmstadt. Germany

21:00	**Conference Dinner** (Optional) *Opera Palace*

Thursday March 26th 2015
17:00-18:30 Oral Session B6 **ROOM B "CIRCUTOR"**

Chairman: **Herminio Martínez García**

363 **Development of a metering system to evaluate power distribution losses**
E. A. Silva(1), O. H. A. Junior(2), A. D. Spacek(1),J.D.Spacek(3), J. M. Neto(1), L. F. Venturini, V. L. Coelho(1), A. A. Tavares(1), M. Sunada(1), J. C. Cutipa-Luque(1)
1. Department of Electrical Engineering. SATC Faculty . Criciúma, SC. Brazil
2. Department of Renewable Energies Engineering. UNILA, Federal University of Latin American Integration. Foz do Iguaçu, PR. Brazil
3. Cooperativa Pioneira de Eletrificação. COOPERA. Brazil

408 **New Architecture Proposal for PV Remote Monitoring based on IOT and Cloud Computing**
S. Manzano, D. Guevara, A. Ríos
Facultad de Ingeniería en Sistemas, Electrónica e Industrial .
Universidad Técnica de Ambato. Ecuador

436 **Hybrid Reluctance Machines with U-Shaped Electromagnets and Permanent Magnets**
P.Andrada(1), B. Blanque(1), E. Martinez(1), M.Torrent(1), O. Rolando Ávila(2), M. Gomila(1), X. Adelantado(2)
1. EPS d'Enginyeria de Vilanova i la Geltrú, Departament d'Enginyeria Elèctrica Universitat Politècnica de Catalunya (UPC). Vilanova i la Geltrú. Spain
2. RAC Rolando, Sucre. Bolivia

451 **Economic cost analysis for biodiesel production from food industry wastewater by oleaginous yeast via direct transesterification**
Jiayin Ling, Renata Alves de Toledo, Yuan Tian, Hojae Shim
Department of Civil and Environmental Engineering. Faculty of Science and Technology. University of Macau. China

454 **The road to nearly zero energy buildings. Case of study: Spain comparison between CTE HE 2006 and 2013 in a simulated**
D. Carmona(1), D. De La Maya(1), A. García(2), L.A. Horrillo(1), A.M. Reyes(1)
1. Escuela de Ingenieros Industriales. Badajoz. Spain
2. Facultad de Ciencias Económicas y Empresariales. Badajoz. Spain

21:00	**Conference Dinner** (Optional) ***Opera Palace***

Friday March 27th 2015
9:15-10:00 Plenary Session PL3 ROOM A "ARAO"

Chairman: **Gianpaolo Vitale**

Smart and Sustainable Insular Electricity Grids: From Forecasting to Operations and Planning
By **Prof. João P. S. Catalão.** University of Beira Interior (UBI). Covilha. Portugal

Friday March 27th 2015
10:00-10:45 Poster Session P5 – Coffee Break ROOM C "AEDIE"

Chairmen: **Silvano Vergura, Masakazu Kato, Paulo Carvalho, João. P.J. Catalão**

229 **Fast Method to the Unit Scheduling of Power Systems with Renewable Power Sources**
G. J. Osório(1), J. M. Lujano-Rojas(1), J. C. O. Matias(1), J. P. S. Catalão(1,2,3)
1. University of Beira Interior. Covilhã. Portugal,
2. INESC-ID, Lisbon. Portugal,
3. IST, University of Lisbon. Portugal

230 **Contribution of the Losses in the Conductors of an Installation in the Use of Electronic Ballasts in Fluorescent Illumination**
J.A. Lobão(1), T. Devezas(2), J.P.S. Catalão(2,3,4)
1 Polytechnic of Guarda. Portugal
2. University of Beira Interior. Covilhã. Portugal
3. INESC-ID, Lisbon. Portugal
4. IST, University of Lisbon. Portugal

232 **Sustainable Energy System of El Hierro Island**
R. Godina (1), E. M. G. Rodrigues (1), J. C. O. Matias(1), J. P. S. Catalão(1,2,3)
1. University of Beira Interior. Covilhã. Portugal,
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274 **Trends in electricity prices and their relation to the competitiveness and efficiency in UE countries**
A. Martínez, S. Valero, E. Velasco, C. Senabre
Electrical Engineering Area, Universidad Miguel Hernández de Elche. Spain

438 **Analysis of an Advanced Compounding Strategy based on Reactive Power Flow Measurement in the Medium Voltage Network**
P. Franz, G. Stapff, I. Talavera, J. Hanson
Department of Electrical Power Supply and Integration of Renewable Energies
Technische Universität Darmstadt. Germany

440 **Robust Control Applied to a Photovoltaic Array Emulator Using Buck Converter**

L. P. Sampaio, S. A. O. Silva
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Department of Electrical Engineering. Cornélio Procópio-PR .Brazil

443 **Analysis of LED lighting for a service ship**

JM. Orbaneja(1), A. Álvarez(1), J. López-Beceiro(2), R. Artiaga(2), B. Álvarez(3)
1. Department of Naval and Oceanic Engineering. E.P.S., A Coruña University Ferrol. Spain
2. Department of Industrial Engineering II. E.P.S., A Coruña University. Ferrol A Coruña. Spain
3. Department of Financial Economy and Accounting. Economy and Business Faculty, A Coruña University. Spain

450 **Study of Induced Voltage by Lightning onTransmission Lines**

Paulo César Álvares Mota, José Roberto Camacho, Marcelo Lynce Ribeiro Chaves
School of Engineering. Federal University of Uberlândia. Brazil

453 **Testing EMC performances of Adjustable Speed Drives**

M. I. Buzdugan, H. Bălan
Technical University of Cluj-Napoca. Romania

459 **Increase of Voltage Quality in Industrial Distribution Systems**

M. Cernan, Z. Muller, J. Tlusty
Department of Electrical Power Engineering
Faculty of Electrical Engineering, Czech Technical University.Prague. Czech Republic

470 **Identification of potential users of photovoltaic conversion**

Do Carmo, D. L., Souza, C. R., Frota, N. M.
Postgraduate Program in Metrology. Metrology for Quality and Innovation. Pontifical University. PUC-Rio, Pontifical Catholic University of Rio de Janeir. Brazil

475 **Three- Phase Planar Actuator´s Reduced Model Validation using Exploratory Coils and Evaluation Applying Somaloy 500 as Core Material**

Neto J. M.(1), Sebastião, L.M(1), Spacek, A.D(1), Ferreira, C.A(1) Ando Junior, O.H(2) , Schaeffer, L.(3)
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2. Department of Renewable Energies Engineering. UNILA, Federal University of Latin American Integration. Brazil
3. School of Engineering. UFRGS, Federal University of Rio Grande do Sul. Porto Alegre-Rs. Brazil

484 **A First Approach on the Fault Impedance Impact on Voltage Sags Studies**

A. C. L. Ramos(1,4), A. J. Batista(2), R. C. Leborgne(3), E. G. Domingues(4), W. P. Calixto(1,4), A. J. Alves(4).
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2. School of Electrical and Computer Engineering, Federal University of Goias
3. Department of Electrical Engineering, Federal University of Rio Grande do Sul
4. Nucleus of Studies Experimental and Technological, Electrotechnical Department- Federal Institute of Goias, Brazil

485 **Fault detection in a three-phase system grid connected using SOGI structure to calculate vector components**

C.X. Rocha(1), J.R. Camacho(1), G.P. Viajante(2)
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2. Department of Industry. IFG, Instituto Federal de Goiás. Brazil

494 **Assessment of biomass potential for Power Production**

E. Mateos(1), J.M. Edeso(2)
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2. Department of Mining and Metallurgical Engineering and Materials Science E.U.I.T.I., University of the Basque Country. Spain

495 **Design and Analysis of Experiments for a PEM Fuel Cell Mathematical Modelling**

A. Crăciunescu, C. L. Popescu, M. O. Popescu, L. Pătularu, M. Predescu
Department of Electrical Engineering. University "Politehnica" of Bucharest. Romania

498 **Smart City, Sustainable Mobility, Home-Work Mobility: data analysis and Actions**

Silvano Vergura
Department of Electrical and information Engineering. Technical University of Bari. Italy

503 **Experimental investigation on saturated critical heat flux of refrigerant R134a at high saturation temperatures**

F. Botticella(1), F. De Rossi(1), R. Mastrullo(2), G.P. Vanoli(1), L. Viscito(2)
1. Department of Engineering. Sannio University. Benevento. Italy
2. Department of Industrial Engineering. Federico II University of Naples. Italy

515 **Energy audit as an input for energy management and energy efficiency improvement in a gypsum manufacturing plant**

H. Bernardo (1,2), F. Oliveira (1,2), L. Serrano (2,3)
1. INESC Coimbra - Institute for Systems Engineering and Computers at Coimbra Coimbra, Portugal.
2. School of Technology and Management, Polytechnic Institute of Leiria Leiria, Portugal
3. ADAI - Association for the Development of Industrial Aerodynamics, LAETA Coimbra, Portugal

517 **Investigation and Understanding the Conditions of Power Transformer Internal Faults using On-line Technique**

E. A. F. Aburaghiega, M. E. Farrag, D. M. Hepburn
School of Engineering & Built Environment, Glasgow Caledonian University United Kingdom

Friday March 27th 2015	
10:45-12:15 Round Table	**ROOM A "ARAO"**

Chairmen: **Mohamed El-Sayed, Mario Mañana, Fernando Nuño, Luis Rouco**

Renewable energies. Actual situation. Problems & solutions. New projects. Future Trends. Research...

Friday March 27th 2015	
12:15-13:00 CLOSING SESSION	**ROOM A "ARAO"**
Conclusions and time for the next conference (ICREPQ'16)	
Awards for the three best posters	

13:00 – 15:00	**Farewell Lunch**

15:00 – 18:00	**Excursion for to visit the centre of La Coruña**