



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

# ICREPQ'17

## INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY

Malaga, 4 – 6 of April 2017

### PROGRAM OF ACTIVITIES





# INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY AND POWER QUALITY (ICREPQ'17)

## WELCOME TO ICREPQ'17

On behalf of the Steering Committee and the Local Organizing Committee we want to give you a very warm welcome to ICREPQ'17 and to Malaga.

Our International Programme Committee has selected a high quality 208 papers (among 310 proposals) from which 179 will be presented at the Conference, 64 at oral sessions and 115 at poster sessions (dialogue), during the three days of the conference. All of these papers are included in the final program. Also six keynotes will be presented in plenary sessions. We'll also organize one round table about:

**" *Monitoring and networking of future MT and BT. MONICA Project* "**

ICREPQ'17 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 Tuesday evening, April 4<sup>th</sup>, at about 20:30 H, we'll can enjoy the **Welcome Civic Reception** on the **Terrace of the Institutional Building of Malaga University in the town. Av. Cervantes, 2** and on Wednesday, April 5<sup>th</sup>, 20:30 H, the Conference Dinner in the **Real Club Mediterráneo Restaurant. Paseo de la Farola, 18**, where we'll can enjoy of a typical Malagueña dance. On Thursday, April 6<sup>th</sup>, after the Farewell Lunch (15:00 H), we'll enjoy of the cultural visit to different interesting places of Malaga.

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. José Antonio Aguado Sánchez  
Chairman of the Local Committee



## ORGANISED BY:

The International Conference on Renewable Energies and Power Quality (ICREPQ'17), will be organized by:

- European Association for the Development of Renewable Energy, Environment and Power Quality (EA4EPQ)
  - University of Vigo
  - University of Malaga
- and the Technical Co-Sponsorship of the Spanish Chapter of IEEE PES



## 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'17) is structured in:

- **Plenary Sessions:** Presentations of 45 minutes in one room for all the participants
- **Round Table:** six participants and 90 minutes
- **Oral Sessions:** Presentations 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.

## SOCIAL EVENTS

- **Civic Reception: 4<sup>th</sup> of April**
- **Conference Dinner: 5<sup>th</sup> of April**

## VENUE

The International Conference on Renewable Energies and Power Quality (ICREPQ'17) will be held at the University of Malaga. Escuela de Ingenierías Industriales. Edificio de Ingenierías. C/ Doctor Ortiz Ramos s/n. (Campus de Teatinos) 29071. Málaga.



## 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.

## SPONSORSHIP

Sincere thanks are expressed to the organisations listed below who have given valuable support to ICREPQ'17:

- EA4EPQ
- University of Malaga
- University of Vigo
- AEDIE
- CIRCUTOR



## LOCAL ORGANIZING COMMITTEE

José Antonio Aguado. University of Malaga (Chairman)  
Juan Pérez. University of Malaga  
Mario Durán. University of Malaga  
Sebastián de la Torre. University of Malaga  
Sebastián Martín. University of Malaga  
Alicia Triviño. University of Malaga

## STEERING COMMITTEE

Manuel Pérez Donsión (Chairman)

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Ramón Bargalló Perpiña	Mario Mañana Canteli
Manuel Burgos Payan	Miguel Martínez Melgarejo
Francisco Cavallé Sesé	Javier Mazón Sain-Maza
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Bargalló Perpiña, R. (Spain)  
Basma El Zein (Saudi Arabia)  
Bendl, Jiri (Czech Republic)  
Betini, Roberto Cesar (Brasil)  
Biricik, Samet (Cyprus)  
Bitzer, Berthold (Germany)  
Boudghene S., A. (Algeria)  
Bracale, Antonio (Italy)  
Brslica, Vit (Czech Republic)  
Buja, Giuseppe (Italy)  
Burgos Payan, Manuel (Spain)  
Buzdugan, Mircea (Romania)  
Catalão, João (Portugal)  
Chaib, Ahmed (Algeria)  
Cirrincione, M. (Rep. of Fiji)  
Driesen, Johan (Belgium)  
Donsión, M.P. (Spain)  
Duran, M. (Spain)  
El Qarnia, Hamid (Morocco)  
El-Sayed, Mohamed (Kuwait)  
Faias, Sérgio (Portugal)  
Fathollahi Fard, Ali A. (Malaysia)  
Flores, Antonio (Portugal)  
Fraile Mora, Jesús (Spain)  
Früh, Wolf-Gerrit (Germany)  
Funabashi, Toshihisa (Japan)  
Gagliano, Antonio (Italy)  
Gharehpetian, G.B. (Iran)  
Ghita, Constantin (Romania)  
Güemes Alonso, J.A. (Spain)  
Hojae Shim (Macao, China)  
Ionnides, Maria G. (Greece)  
Iwaszkiewicz, J. (Poland)  
Janik, Przemyslaw (Poland)  
Jeong Se Suh (Rep. of Corea)  
Jokinen, T. (Finland)  
Jigeng Li (China)  
Jimoh, Adisa (South Africa)  
Kádár Péter (Hungary)  
Kiss, Péter (Hungary)  
Kouzou Abdellah (Argeria)  
Lee, Poh Seng (Singapore)  
Lemos Antunes, C. (Portugal)  
Levi, Emil (U.K.)  
Llombart Estopiñan, A. (Spain)  
Machado e Moura, A. (Portugal)  
Mañana Canteli, M. (Spain)  
Martinez, André (France)  
Melicio, Rui (Portugal)  
Meyer, Jan (Germany)  
Mlangeni, Melusi (South Africa)  
Narsimhulu, Sanke (India)  
Niemenmaa, Asko (Finland)  
Nocera, Francesco (Italy)  
Oraee, Hashem (Iran)  
Ozdemir, Engin (Turkey)  
Pathan, Habit M. (India)  
Petkovska, L. (Macedonia)  
Popescu, Claudia (Romania)  
Pourmovahed, Ahmad (USA)  
Predescu, Mihai (Romania)  
Quinto Diez, Pedro (Mexico)  
Raisz David (Hungary)  
Salay Naderi, M. (Australia)  
Salmerón-Revuelta, P. (Spain)  
Sashi, Paul (UK)  
Schlemmer, Erwin (Austria)  
Sekhar Dash, S. (India)  
Shipkosv, Peteris (Latvia)  
Sim Kok Swee (Malaysia)  
Souto, José A. (Spain)  
Stenzel, Jürgen (Germany)  
Stumberger, Gorazd (Slovenia)  
Subramanian, C. (India)  
Tahir Çetin Akinci (Turquia)  
Tlustý, Josef (Czech Republic)  
Tudorache, Tiberiu (Romania)  
Turschner, Dirk (Germany)  
Ubong, Etim (USA)  
Vaccaro, Alfredo (Italy)  
Valouch, V. (Czech Republic)  
Vergura, Silvano (Italy)  
Vinnikov, Dmitri (Estonia)  
Vitale, Gianpaolo (Italy)  
Xinzi Tang (China)  
Youssef Errami (Morocco)  
Zamora Belver, I (Spain)  
Zobaa Ahmed (UK)



## ICREPQ'17 SCHEDULE

<b>Monday April 3, 2017</b>						
<b>17:00 – 20:00</b>	<b>Registration “ICREPQ’17 Secretariat”</b> Registration and Documentation. It's important that all the participants seize their documentation during this day, but the ICREPQ'17 Secretariat will be open during the three days of the conference, then if you don't arrive to Malaga on Monday 3, or before, you can get your documentation other day.					
<b>Tuesday April 4, 2017</b>						
<b>9:00 – 12:30</b>	<b>Registration “ICREPQ’17 Secretariat”</b>					
<b>10:00 – 10:45</b>	<b>Opening Ceremony ROOM C “UMA”</b>					
<b>10:45 - 11:30</b>	<b>ROOM C “UMA” Plenary Sessions PL1</b>					
	PL1	<b>"From DO to DSO, new challenges and innovation models", by Jorge Sánchez, Director of Innovation Network Technology of Enel</b>				
EXTRA TIME FOR DISCUSSION						
<b>11:30 – 12:15</b>	<b>Posters Session at ROOM D (Session P1) Coffee Break</b>	<i>Poster Session P1</i>				
		200	203	206	209	210
		218	219	222	223	227
		241	246	249	257	259
		260	262	265	270	272
		275	293	369		
<b>12:15 – 13:00</b>	<b>ROOM C “UMA” Plenary Sessions PL2</b>					
	PL2	<b>"Potential new DSO services from customer new assets on Generation, emobility and storage", by Santiago Cascante, Innovation Projects Responsible of Enel</b>				
EXTRA TIME FOR DISCUSSION						
<b>13:00 – 15:00</b>	<b>Welcome Lunch</b>					
<b>15:00 – 16:30</b>	<b>ROOM C “UMA” Round Table</b>					
	<b>"Monitoring and networking of future MT and BT. MONICA Project"</b> - Susana Carillo. Endesa - Javier Leiva. Endesa - Pedro Cruz. University of Sevilla - Martin Huerta. AYESA - Daniel Morales. Ingelectus- Roberto Martínez. Ormazabal					
	EXTRA TIME FOR DISCUSSION					
<b>16:30 – 17:15</b>	<b>Poster Session at ROOM D (Session P2) Coffee Break</b>	<i>Poster Session P2</i>				
		276	278	280	283	285
		287	289	290	291	302
		303	304	305	312	314
		315	316	318	332	336
		363	410	419		
<b>17:15 – 18:45</b>	<b>ROOM A "AEDIE"</b>			<b>ROOM B "CIRCUTOR"</b>		
	<i>Oral Session A1</i>			<i>Oral Session B1</i>		
	214	267	268	320	326	347
	328	330	428	412	432	460
	EXTRA TIME FOR DISCUSSION			EXTRA TIME FOR DISCUSSION		
<b>20:30 -- 22:00</b>	<b>Welcome Civic Reception</b> <i>Terrace of the Institutional Building of Malaga University in the town Av. Cervantes, 2</i>					



Wednesday April 5, 2017								
9:00 – 12:30	Registration "ICREPQ'17 Secretariat"							
9:00– 9:45	ROOM C "UMA" Plenary Sessions PL3 & PL4							
	PL3: "Feasibility and Risk Assessment of Using Solar Photovoltaic in Green Airports", by Prof. Ahmed F. Zobaa. Brunel University London, U.K.							
9:45 – 10:30	PL4: "Supraharmonics - Future challenges in the frequency range 2-150 kHz", by Dr. Jan Meyer .Technische Universitaet Dresden. Germany							
	EXTRA TIME FOR DISCUSSION							
10:30– 11:15	Poster Session at ROOM D (Session P3) Coffee Break	Poster Session P3						
		207	273	341	343	344		
		345	348	350	352	355		
		356	362	366	367	376		
		380	382	385	387	388		
		391	392	525				
11:15 – 13:00	ROOM A "AEDIE"				ROOM B "CIRCUTOR"			
	Oral Session A2				Oral Session B2			
	256	309	349	358	338	375	438	466
	386	415	452		482	510	518	
	EXTRA TIME FOR DISCUSSION				EXTRA TIME FOR DISCUSSION			
13:00 – 15:00	Lunch							
15:00 --15:45	ROOM C "UMA" Plenary Session PL5							
	"Development Perspectives of Power to Gas (P2G) in Spain", by Prof. Luis Rouco Rodríguez. Universidad Pontificia de Comillas. Madrid							
EXTRA TIME FOR DISCUSSION								
15:45 – 17:15	ROOM A "AEDIE"				ROOM B "CIRCUTOR"			
	Oral Session A3				Oral Session B3			
	238	279	353		252	282	416	
	402	450	473		426	469	490	
	EXTRA TIME FOR DISCUSSION				EXTRA TIME FOR DISCUSSION			
17:15 – 18:00	Poster Session at ROOM D (Session P4) Coffee Break	Poster Session P4						
		296	308	399	400	403		
		405	406	408	409	420		
		421	422	429	433	435		
		439	440	445	449	453		
		457	458	472				
18:00 - 19:30	ROOM A "AEDIE"				ROOM B "CIRCUTOR"			
	Oral Session A4				Oral Session B4			
	212	232	235		299	329	370	
	250	446	475		381	485	488	
EXTRA TIME FOR DISCUSSION				EXTRA TIME FOR DISCUSSION				
20:30 - 23:00	Conference Dinner (Optional)							
		<i>Restaurant</i> <i>Real Club Mediterráneo</i> Paseo de la Farola, 18						

**ROOMS:** Room A: AEDIE (Salón de Grados A). Room B: CIRCUTOR (Salón de Grados B)  
 Room C: University of Málaga "UMA" (Salón de Actos). Room D: Hall





Thursday April 6, 2017										
9:00 – 12:30	Registration "ICREPQ'17 Secretariat"									
9:00 - 9:45	ROOM C "UMA" Plenary Session PL6									
	<b>"Innovation management for renewables", by Prof. Berthold Bitzer.</b> South Westphalia University of Applied Sciences. Germany									
	EXTRA TIME FOR DISCUSSION									
9:45 – 10:30	Poster Session at ROOM D (Session P5) Coffee Break	Poster Session P5								
		286	461	463	467	470				
		480	486	491	493	495				
		497	500	501	503	504				
		507	512	514	515	520				
		521	522	523						
10:30 – 12:15	ROOM A "AEDIE"				ROOM B "CIRCUTOR"					
	Oral Session A5				Oral Session B5					
	220	325	333	397	240	306	323	359		
	418	456	498		395	455	505			
	EXTRA TIME FOR DISCUSSION				EXTRA TIME FOR DISCUSSION					
12:15– 13:00	ROOM C "UMA" CLOSING SESSION									
	Conclusions and time for the next conference (ICREPQ'18)									
	Awards for the three best posters									
13:00 – 15:00	Farewell Lunch									
15:00 – 20:00	Excursion for to visit the centre of Malaga									

SPECIAL SESSIONS SELECTED FOR ICREPQ'17		
No.	TITLE	CHAIRMEN
1	Control and integration of wind energy systems	M.J. Duran Martínez and M. A. H. El-Sayed
2	Microgrids and Smart grids	G. 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
21	FACT (SVC, STATCOM, UPFC, HVDC...)	Manuel Pérez Donsión



## **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 **1000 mm x 2000 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 appropriate). 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'17 and take into account their eminent position in the world of science we have selected 36 session chairmen. It is an honour for us their collaboration for to chair the sessions of ICREPQ'17 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 to their 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 of each of the poster sessions file up one sheet, with punctuations for each of the presented poster in that session and then, take into account these evaluations, the Organizers will deliver during the Closing Session one silver plate and one diploma to the three best posters selected.

## **RE&PQJ**

All the papers presented in the conference will be included in the "**Renewable Energy and Power Quality Journal (RE&PQJ)**" with **ISSN: 2172-038X** and all the papers will have the **DOI (Digital Object Identifier)**.



Chairmen Session distribution

<b>Tuesday 4<sup>th</sup> April, 2017</b>		
<b>HOUR</b>	<b>SESSION</b>	<b>CHAIRMEN</b>
10:45 - 11:30	<b>PLENARY SESSION PL1</b>	José Antonio Aguado Sánchez
11:30 - 12:15	<b>POSTER SESSION P1</b>	José Ignacio San Martín Díaz
		Arnulfo Barroso de Vasconcelos
		Ashoka Bhat
		Bálint Harmann
12:15 - 13:00	<b>PLENARY SESSION PL2</b>	Gevork B. Gharehpetian
13:00 - 15:00	<b>Welcome Lunch</b>	
15:00 - 16:30	<b>ROUND TABLE</b>	
16:30 - 17:15	<b>POSTER SESSION P2</b>	Enrique Alameda Hernández
		José Roberto Camacho
		Lidiia Kovernikova
		Abdullah Alwadie
17:15 - 18:45	<b>ORAL SESSION A1</b>	Pere Andrada Gascon
	<b>ORAL SESSION B1</b>	Constantin Ghita
<b>Wednesday 5<sup>th</sup> April, 2017</b>		
9:00 - 9:45	<b>PLENARY SESSION PL3</b>	Petér Kádár
9:45 - 10:30	<b>PLENARY SESSION PL4</b>	Mohamed El-Sayed
10:30 - 11:15	<b>POSTER SESSION P3</b>	Francisco Pérez Hidalgo
		Francisco Kleber de Araujo
		William Robert
		Cagri Kocaman
11:15 - 13:00	<b>ORAL SESSION A2</b>	Mario Javier Durán Martínez
	<b>ORAL SESSION B2</b>	Milan Belik
13:00 - 15:00	<b>Lunch</b>	
15:00 -- 15:45	<b>PLENARY SESSION PL5</b>	María Jesús Santos Sánchez
15:45 - 17:15	<b>ORAL SESSION A3</b>	Pablo Eguía López
	<b>ORAL SESSION B3</b>	Pedro Cruz Romero
17:15 - 18:00	<b>POSTER SESSION P4</b>	Albert Massaguer
		István Vokony
		Arthur Williams
		Leonardo Sampaio
18:00 - 19:30	<b>ORAL SESSION A4</b>	Herminio Martínez García
	<b>ORAL SESSION B4</b>	Reinaldo Castro Souza
<b>Thursday 6<sup>th</sup> April, 2017</b>		
9:00 - 9:45	<b>PLENARY SESSION PL6</b>	Gianpaolo Vitale
9:45 - 10:30	<b>POSTER SESSION P5</b>	José Antonio Domínguez
		Andreu Moia Pol
		Fabricio Matheus Mousa
		Javier García Villalobos
10:30 - 12:15	<b>ORAL SESSION A5</b>	Mircea Ion Buzdugan
	<b>ORAL SESSION B5</b>	Gorazd Stumberger
10:30 - 12:15	<b>CLOSING SESSION</b> Best poster awards Time for present ICREPQ'18	
13:00 - 15:00	<b>Farewell Lunch</b>	

NOTE: In some cases the Chairman of one Oral Session need to present his own paper in that session, then we suggest that first he present his paper and after that he will chair the other papers that will be presented in the session.



## ICREPQ'17 KEYNOTES

**PL1: "From DO to DSO, new challenges and innovation models"**, by **Jorge Sánchez Cifuentes**, Director of Innovation Network Technology of Enel

### *Jorge Sánchez Cifuentes*

#### **Professional Experience**



Currently I am the Head of Living Labs and Innovation in Network Technology at ENEL, working mainly in DSO technology innovation in Iberia and supporting EV activities at group level.

01/10 to 12/15 Deputy Director of technology and Innovation at Endesa, ENEL Company, responsible for Electric Vehicle development (EV) and special projects,

*We set the Endesa strategy and coordinate all the business lines in Spain and South America in the EV and innovation*

Creating the positioning for Endesa in EVs business developing the technology and our relevant demonstrators. Therefore, we were present in the most relevant forums and has created an equilibrate projects and offerings portfolio.

During this period my team created and leaded relevant consortiums, like ZEM2ALL: 60 million bilateral Japan Spanish initiative to deploy in Malaga the biggest demonstrator for EVs using fast charging and V2G technologies and we are participating in the most important European consortiums related with EVs, like G4V, Green eMotion, ELVIRE, eDash, ZeEUS and Unplugged. In addition, special projects focus on downstream as microgrids in Brasil and Chile with all commercial companies in Endesa scope.

#### **01/05 to 01/10 R&D Deputy Director at Endesa S.A.,**

Member of the Service corporative board and responsible of coordination and execution of Technology and Innovation in Distribution and Commercial areas, were we developed the position on smartgrids and carried out firsts developments as DENISE and Smartcity Malaga consortiums, deals with Smartgrids definition and development of early technology and its demonstration.

#### **10/03 to 01/05 Organization manager at Endesa S.A.,**

Reporting to the Process and organization Director inside Corporative Strategy direction, where I was in charge of several transformation projects as the implementation of new services and purchasing departments or reorganizations of Engineering and ICT departments.

#### **07/02 to 09/03 Revenue assurance Director at Smartcom in Chile**

I was responsible to create the department in coordination with all the departments of the company and execute the methodology to assure the revenue in the completely mobile operator process.

In the first year of operation, this new methodology based on a complete dashboard with 21KPIs allowed Smartcom recover more than one million dollars in fraud and recover more than 40% of cash of this leakages detected.

#### **07/ 00 to 07/02 CIO of Smartcom S.A. en Chile**

From the Smartcom acquisition by Endesa, I was the responsible of ICT technology development, which allowed the company to, grew from less than one hundred thousand customers to more than one and a half millions in two years, completing ICT systems development, changing former systems to new architecture without impact on the business operation.



1992 to 2000 Telefonica R&D Company in several positions mainly in Operation structure and management velopment for Iberia and LATAM market

**1991 and 1992 Technical Director at Transcontinental Telecommunications, SL.**

Start-up dedicated to implement electronic mail, telex and faxes over pone and X.25 data network based on three main nodes in USA, Spain and Germany.

**Qualifications**

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**1998 Master in Business Administration (Executive MBA) by Instituto de Empresa (with honour).**

1991 Telecommunication Engineer master degree by Madrid Polytechnic University.

**Other relevant data**

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Professor From 1989 to 1998, Professor at Salamanca University (artificial intelligent) and Nebrija University (Communication Networks and electronic devices),

Nowadays I am Professor in several master courses, Civil Engineers College, Industrial Organization School, and EOI masters

Publications Some Books, papers, and articles in newspapers, technical magazines, and symposiums like IEEE NOMS 96 and 98, Europto, IEA, International Transports Symposiums ...

Patents: 201230955 (0), "DISPOSITIVO PARA LA CARGA Y DESCARGA DE BATERÍAS DE VEHÍCULOS ELÉCTRICOS". (device for charging and discharging electric vehicles batteries)

201230792 (2), "SISTEMA DE CONTROL DEL PROCESO DE CARGA/DESCARGA DE VEHÍCULOS ELÉCTRICOS, Y PROCEDIMIENTO DE CARGA MEDIANTE DICHO SISTEMA" (Control system for charging and discharging process).

201490141 (4), referente a "SISTEMA MODULAR DE CARGA INDUCTIVA PARA VEHÍCULOS ELÉCTRICOS"

**PL2: "Potential new DSO services from customer new assets on Generation, emobility and storage", by Santiago Cascante,**

Innovation Projects Responsible of Enel

***Santiago Cascante***



Head of Innovation ENDESA Red. Msc Industrial Engineer (UPC), Master in Project Management (URL), Master in Business Administration (EBS-HWU). Broad Professional experience in Energy International Markets collaborating with companies such as Siemens and Schneider Electric before joining ENDESA at the Innovation Department. He was leading the HV Innovation Corporate Model Project Change in the Distribution Business as well as developing cooperation models with National Research Centers and Strategic Alliances and Partnership.

International experiences in e-mobility Innovation Projects and Responsible of testing new business models with technological background. Currently leading the Innovation and Special Projects on Infrastructure and Networks in ENDESA Red. Member of the board of Trustees of IREC (Energy Research Institute). ESADE energy sector new ventures coach as well as member of different professional associations and large speaker experience at several International symposiums.



### **PL3: "Feasibility and Risk Assessment of Using Solar Photovoltaic in Green Airports", by Prof. Ahmed Faheem Zobaa.**

Brunel University London, U.K.

Many airports have become aware of the environmental benefits of using renewable energy resources, and they have focused their efforts on introducing solar photovoltaic (PV) systems on their available free land. Compared to other renewable energy technologies, solar PV arrays are the most suitable technology for airports. Because of the mandatory security requirements at airports, using solar PV is still a complex task because of the possible risks to aviation safety and air transportation systems. Glare due to the reflection of sunlight from the metal parts of a solar PV panel, electromagnetic interference with radar and other navigational aids, wildlife hazards, and the detachment of PV parts are the most common potential risks that could affect aviation safety. In this talk, the feasibility and the risk assessment of using solar photovoltaic in green airports will be presented.

#### ***Ahmed Faheem Zobaa***



Ahmed Faheem Zobaa received the B.Sc.(Hons), M.Sc., and Ph.D. degrees in electrical power and machines from Cairo University, Egypt, in 1992, 1997, and 2002, respectively. From 2007 to 2010, he was a Senior Lecturer in renewable energy at University of Exeter, U.K. He was also an Instructor from 1992 to 1997, a Teaching Assistant from 1997 to 2002, an Assistant Professor from 2003 to 2008, an Associate Professor from 2008 to 2013 at Cairo University where he has also been a Professor (on leave) since December 2013. Currently, he is a Senior Lecturer in power systems, an MSc Course Director and a Full Member of the Institute of Energy Futures at Brunel University London, U.K.

His main areas of expertise are power quality, (marine) renewable energy, smart grids, energy efficiency, and lighting applications.

Dr. Zobaa is an Editor-in-Chief for the *International Journal of Renewable Energy Technology and Technology and Economics of Smart Grids and Sustainable Energy*. He is also an Editorial Board member, Editor, Associate Editor, and Editorial Advisory Board member for many international journals. He is a registered Chartered Engineer, Chartered Energy Engineer, European Engineer, and International Professional Engineer. He is also a registered member of the Engineering Council U.K., Egypt Syndicate of Engineers, and the Egyptian Society of Engineers. He is a Senior Fellow of the Higher Education Academy of U.K. He is a Fellow of the Institution of Engineering and Technology, the Energy Institute of U.K., the Chartered Institution of Building Services Engineers, the Institution of Mechanical Engineers, the Royal Society of Arts, the African Academy of Science, and the Chartered Institute of Educational Assessors. He is a senior member of the Institute of Electrical and Electronics Engineers. Also, He is a member of the International Solar Energy Society, the European Power Electronics and Drives Association, and the IEEE Standards Association.

### **PL4: "Supraharmonics - Future challenges in the frequency range 2-150 kHz", by Dr. Jan Meyer Technische Universitaet Dresden, Germany**

Content will be:

- Basics and character of supraharmonic emission
- Major sources
- Impact and Interferences
- Propagation
- Standardization



### *Jan Meyer*



Jan Meyer is senior academic assistant and team leader of the Power Quality research group at the Institute of Electrical Power Systems and High Voltage Engineering at Technische Universität Dresden, Germany. His research interests include network disturbances and their assessment, especially for harmonics below and above 2 kHz as well as all aspects of the design, implementation and data analysis of large Power Quality monitoring campaigns. He is a member of national and international EMC working groups and is/has been involved in several CIGRE working groups related to EMC and Power Quality (C4.112, C4.24, C4./C6.29,

C4.40 and C4.42). He regularly organizes and presents at national and international seminars and workshops in the field of network disturbances and its assessment.

### **PL5: "Development Perspectives of Power to Gas (P2G) in Spain", by Prof. Luis Rouco Rodríguez.** Universidad Pontificia de Comillas. Madrid.

I. Saboya, L. Rouco and P. Linares

Universidad Pontificia Comillas

P. Cortés, F. Ferragut, M. P. Martínez, F. García and J. Chamberlain

Gas Natural Fenosa

One of the pillars of the European strategy on reductions of CO<sub>2</sub> emissions is the development of renewable energy sources. The distinct feature of some of renewable energy sources (wind, solar) is their intermittent and non-dispatchable nature. Despite of the progress for the increase of penetration of renewable energy sources in power systems, some limitations still exist and Transmission System Operators impose limits to the penetration of renewable energy sources in some scenarios of the power system operation and in some areas of the system as well. It results in curtailments of wind generation.

An alternative to curtailments that it is being paid attention is called "Power to Gas (P2G)". The fundamental idea of P2G is to use the surplus energy, that cannot be incorporated to the power system, to produce hydrogen (H<sub>2</sub>) using an electrolysis process. The hydrogen is reacted with CO<sub>2</sub> to produce methane (CH<sub>4</sub>) that can be injected to the natural gas pipeline network. Hence, natural gas is used as an energy store system.

This lecture will present the results of a study of the development perspectives of P2G in España. The starting point will be the estimation of curtailments of wind energy in future scenarios of the Spanish power system (2020 and 2030).

The CO<sub>2</sub> sources will be identified and the feasibility of connecting them to the gas and electricity networks.

The study will include the economic analysis of different prototype plants

### *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 Research (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 CMMESA (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).

## **PL6: "Innovation management for renewables"**

by **Berthold Bitzer**. South-Westphalia University Applied Sciences. Germany

The systematic planning and control of innovations in industrial companies is often called innovation management. Tools for such a innovation management are used in TRIZ. The Russian acronym TRIZ is named in English TIPS, i.e. theory of inventive problem solving. The presentation will explain the TRIZ method and may detail patterns of evolution of technical systems, like the following eight Patterns of Evolution

- Pattern One: Evolution Toward Increased Ideality
- Pattern Two: Stages of Technology Evolution
- Pattern Three: Non-Uniform Development of System Elements
- Pattern Four: Evolution Toward Increased Dynamism and Controllability
- Pattern Five: Increased Complexity, Then Simplification
- Pattern Six: Evolution with Matching and Mismatching Elements
- Pattern Seven: Evolution Toward the Micro-level and Increased Use of Fields
- Pattern Eight: Evolution Toward Decreased Human Involvement

With the help of a case study the application of TRIZ to renewable and sustainable energy systems is explained.



**Prof. Dr. Ing. Berthold Bitzer**, Germany 1951.

All professional activities are based on research studies in control centers of the biggest German utilities (1977-1980) and industrial projects as consultant and system engineer (AEG/GEI) with SCADA power systems (1981-1984). Since 1984 university research starting with the University of Paderborn and later on in the division Soest, which is since 2001 part of South Westphalia University of Appl. Sc. At all more than 30 years experience can be shown in lecturing and research on the field of power systems. Also memberships of International committees in power systems and co-ordinator and project member of national and EU-funded research projects are helpful for the collaboration.

Some co-operations are funded by the EU-program ERASMUS/LEONARDO. As shown below there is experience with EU projects in the program JOULE/THERMIE/BRITE EURAM and Prof. Bitzer is member of Engineering Organisations such as VDE, IEEE, CIGRE, DAGA and works together in industrial projects with many companies. As Professor of the University of Paderborn and South Westphalia in Germany he has many contacts with German companies, he continuously manages projects in co-operation with industrial partners in the field of rational use of energy as well as energy management systems and facility management. Besides these national research projects he was co-ordinator of an European Research Network on Intelligent





Forecasting System. This project includes twenty academic and industrial active members and furthermore 160 interested members. Over a period of about 10 years he was co-ordinator of an International PhD-program with University of Bolton. Besides these activities in national and international projects he is a founder of the Wrangell-Institut für Umweltgerechte Produktionsautomatisierung at the University division Soest. He was Visiting Professor in the University Auckland in New Zealand with lectures in TRIZ and Intelligent Automation Systems in the year 2005. He holds an honorary doctorate of the University of Bolton since 2009. More details are listed in the CV.

1. **Present Designation:** Professor for Automation technology South-Westphalia University Applied Sciences, Campus Soest
2. **Academic and Professional Qualifications:**

1987	Professor for Automation, University of Paderborn/
1981	Dr.-Ing. Techn. University Darmstadt
1977	Dipl.-Ing. Techn. University Darmstadt
3. **Teaching and Research Experience:** More than 30 Years
4. **Brief Outline of Career History:**

2007-2017	Head of Department, partly MSc course director
2002-2007	Dean of Faculty
1995-1998	Dean of Faculty
1987-	Professor for Automation
1984-1987	Akad. Oberrat, University of Paderborn
1981-1986	System engineer and consultant, AEG-Company
1977-1981	Research assistant, Techn. University Darmstadt
5. **Visiting Assignments:** Visiting professor (Feb 2005- Jul 2005), Faculty of Engineering University of Auckland. New Zealand
6. **Membership:** VDE, IEEE, CIGRE, DAGA
7. **Areas of Interest:**

Power system Automation, i.e. , SCADA in power system operation and control (Artificial intelligence),, power system reliability, distribution system planning, distributed generation and renewable energy sources, grid integration of distributed generation, microgrids and active distribution networks
8. **Contribution to Research and experiences:** National and EU funded projects in the field of power systems, some as co-ordinator over the last 20 years. Supervisor of PhD-projects and research oriented MSc-projects.
9. **Books/Monographs:**

Automatisierung in elektrischen Energieversorgungssystemen, Dr. Alfred Hüthig Verlag, Heidelberg, 1991  
Prozeßvisualisierung mit dem Industrie-PC/Überwachung und Steuern, Vogel-Verlag, Würzburg, 1991.  
Schriftenreihe des WIUP – Shaker Verlag: *Intelligent Forecasting Systems for Refineries and Power Systems* - Proceedings of the 3rd European IFS Workshop  
Intelligente Prognosesysteme für den industriellen Einsatz  
Wissensbasierte Steuerung vernetzter Stoffströme  
Innovation Studio -Design and Development towards Product Service Engineering and Problem Solving  
Product Service Engineering - from Idea Generation to Market Launch  
Product Service Engineering Limitations & Future Needs for SMES  
Innovationsmanagement, Schulung, Demonstratoren für kleine und mittelständische Unternehmen
10. **Publications** (extraction for last years: More than 80 over the years, e.g.  
Simulation of Renewable Energy Parks with Desalination, ICREPQ 2009, University Valencia.  
Optimization of energy parks with biomass plants and water desalination, UPEC 2008, Padua, Italy, September 2008  
Grid Computing for Power and Automation Systems Implementations. UPEC2006, Newcastle-UK, September 2006. IEEE



Grid Computing Excites Power Systems Implementations. Modern Power Systems MPS 2006, Cluj-Napoca, ROMANIA, November 2006

Load Balancing for Distributed and Integrated Power Systems using Grid Computing. ICCEP07, Capri, Italy May 2007. IEEE

Application of the Grid Computing Technology in Electrical Energy Engineering, ETG congress, Regensburg - Germany October 2007. VDE

Grid Computing by Using Multi Agent System Technology in Distributed Power Generator. UPEC 2007. Brighton – UK September 2007, IEEE

GRID Computing Technology Enhances Electrical Power Systems Implementations“, The World Scientific and Engineering Academy and Society “WSEAS” International Conference, University of Cambridge - UK, February 2008. ISSN: 1790-5095

**10. Projects Supervised :**

From EU (Brite/Euram Program, Joule, 5<sup>th</sup> and 6<sup>th</sup> Framework, BMFT(“Energy saving control”, “Realtime expert system for refineries” etc.), Quatro-NRW (“Visualization systems for SME”), technology transfer projects with Industry, e.g. “Grid computing for power systems”

**11. Professional Activities outside the University:**

Steering Committee for UPEC

International Program Committees for conferences (e.g. ICREPQ-INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY, DEMSEE- International Conference on Deregulated Electricity Market Issues in South-Eastern Europe)

**12. Reviewer of:**

i) ICREPQ- INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY

ii) WSEAS- *World Scientific and Engineering Academy and Society*,

iii) Deutsche Bundesstiftung Umwelt

iv) UPEC

**13. Major Workshops/Sessions Organised**

i) EU-Workshops of IFS-Project, INNOPSE-Project

ii) Conference-Sessions in Athens

iii) Workshops in Cairo

iv) Security issues in cloud-based Smart Grid applications

Berthold Bitzer, Enyew Gebretsadik

South Westphalia University of Applied Sciences

Department of Automation Technologies. Germany o

Modeling and Simulation of Renewables for Telelabs, Kolhe

**Sunwater and Beyond**

Buschert, B. Bitzer, “Modeling a solar desalination”, ICREPQ'10 conference, Granada, Spain, March 2010

D. Buschert, B. Bitzer, “Water desalination with evaporation from environmental friendly waste heat source”, UPEC 2011 conference, Germany, South Westphalia University, Campus Soest, September 2011

**Round Table: "Monitoring and networking of future MT and BT.  
MONICA Project"**

- Susana Carillo. Endesa
- Javier Leiva. Endesa
- Pedro Cruz. University of Sevilla
- Martin Huerta. AYESA
- Daniel Morales. Ingelectus
- Roberto Martínez. Ormazabal



<b>10:00 – 10:45</b>	<b>Tuesday April 4<sup>th</sup>, 2017</b> <b>Opening Ceremony ROOM C “UMA”</b>
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<b>10:45-11:30 Plenary Session PL1</b>	<b>ROOM C “UMA”</b>
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Chairman: **José Antonio Aguado Sánchez**

***From DO to DSO, new challenges and innovation models***, by  
**Jorge Sánchez**, Director of Innovation Network Technology of Enel

<b>Tuesday April 4<sup>th</sup>, 2017</b>	<b>ROOM D</b>
<b>11:30-12:15 Poster Session P1 – Coffee Break</b>	<b>ROOM D</b>

Chairmen: **José Ignacio San Martín Díaz, Arnulfo Barroso de Vasconcelos, Ashoka Bhat, Bálint Harmann**

- 200 Commissioning of the Grounding System of Transmission Line of HPS Santo Antônio at High Current Injection Method**  
**Araújo, C. M. B, Trondoli, L.H.P.C.**  
Departamento de Engenharia Elétrica e de Computação - Escola de Engenharia de São Carlos – EESC. Laboratório de Sistemas de Energia Elétrica – LSEE  
Universidade de São Paulo – USP. Brasil
- 203 Implementation of a New Algorithm with Fuzzy Inference in FPGA for Synchronous Generators Wind Turbine Against Loss-of-Field Protection**  
**Araújo, C.M.B**  
Department of Research and Development  
Global Energy Engineering Services and Technology. Sao Paulo. Brazil
- 206 New Mode Transition of H-bridge Bi-directional DC-DC Converter in Distributed Generation System**  
**Yi Lingzhi(1,2), Chen Yu(1,2), C. Ren Xuliang(1,2), D. Xhang Hao(3)**  
1. Key Laboratory of Intelligent Computing & Information Processing (Xiangtan University)  
Hunan Province, Xiangtan. China  
2. Wind power equipment and power conversion 2011 Collaborative Innovation Center  
Hunan Province Xiangtan. China  
3. CSR Zhuzhou Electric Motor CO, LTD, Hunan Province, Zhuzhou, China
- 209 Study of Nanoparticle Fluid Mixtures for Heat Enhancement and Heat Storage in a Cavity**  
**H. Acheheb(1), M.Z. Saghir(2)**  
1. Blida University, Food Department, Faculty of Natural Science and Life. Algeria  
2. Ryerson University, Dept of Mechanical and Industrial Engineering, Toronto  
Canada



- 210 Evaluation of a new Power Quality index, based in Higher Order Statistics**  
**J.M. Sierra-Fernández, J.J. González De La Rosa, A. Agüera-Pérez, J.C. Palomares Salas, O. Florencias- Oliveros**  
1. Department of Automatic and Electronic Engineering, and Computer Architecture and Network. Cadiz University . Escuela Politécnica Superior –Cádiz. Spain  
2. Research Group PAIDI-TIC-168
- 218 Implementation of High Frequency SVM in a Digital System for CSI-SiC Inverter**  
**E. Fernández, A. Paredes V. Sala, L. Romeral**  
Department of Electronics Engineering, Technical University of Catalonia. MCIA Terrassa. Spain
- 219 Control Method of Impedance Network in SiC Power Converters for HEV/EV**  
**E. Fernández, A. Paredes, V. Sala, L. Romeral**  
Department of Electronic Engineering, MCIA Group, Catalonia Technical University, Terrassa. Spain
- 222 Assessing the impact of photovoltaic self-consumption support policies on energy losses**  
**J. García-Villalobos, P. Eguía, E. Torres, A. Etxegarai**  
Department of Electrical Engineering - University of Basque Country - UPV/EHU Bilbao. Spain
- 223 Present and future multiterminal HVDC systems: current status and forthcoming developments**  
**G. Buigues, V. Valverde, A. Etxegarai, P. Eguía, E. Torres**  
Department of Electrical Engineering, Faculty of Engineering of Bilbao, UPV/EHU Bilbao. Spain
- 227 A Three-Phase Grid Synchronization System with Sub and Interharmonics Immunity**  
**Renato Guerreiro Araújo(1), Francisco Kleber A. Lima(1), Ernande Eugênio C. Morais(1), Carlos Gustavo C. Branco(1), Juliana Isabel L. Uchôa(1), José de Ribamar L. Filho(2)**  
1. Department of Electrical Engineering, Federal University of Ceara, UFC Fortaleza, Ceara. Brazil  
2. Eletrobras Distribution Piauí. Research Management, Development and Energy Efficiency. Teresina, PI. Brazil



- 241 Overview of alternative energy in Brazil**  
**A. H. X. da Costa(1), L. G. de M. Vasconcelos(1), J. T. Neto(2), A. O. Salazar(2)**  
1. Department of Electrical Engineering.  
2. Department of Computation and Automation Engineering  
UFRRN - Rio Grande do Norte. Brazil
- 246 Study on Application Usage Scheduling considering Usage Pattern in HEMS**  
**Je-Seok Shin, Dae-Sik Lim, Jin-O Kim**  
Department of Electrical Engineering, Hanyang University, Seongdong-gu. Seoul, South Korea
- 249 Genetic programming to extract features from the whole-sky camera for cloud type classification**  
**J. Huertas(1), J. Rodríguez-Benítez(2), D. Pozo(2), R. Aler(1), Inés M. Galván(1)**  
1. Computer Science Department . EVANNAI, University of Carlos III. Spain  
2. Physics Department. MATRAS, University of Jaén. Spain
- 257 High Performance SiC MOSFETs for Fault Tolerant Applications**  
**C. Onambele(1), A. Mpanda(2), F. Giacchetti(3), M. Elsieid(4)**  
1, 3. Laboratoire MIS (Modélisation, Information et Systèmes)  
Université de Picardie Jules Verne (UPJV)  
1,4. Amiens, France  
2,4. ESIEE Amiens
- 259 Proposal of a Supervisory System for Energy Microgeneration: Case Study Granja Colombari**  
**Otto, R. B.(1,2), Alvarez-Ferreira, L. R. (1,2), Silva, F.P. (1,2), Santos, R. F.(2), Nogueira, C. E. C.(2), De Souza, S. N. M.(2), Frigo, J. P.(3), Ando Junior, O. H.(3)**  
1. Automation and Simulation of Electrical Systems Laboratory (Lasse)  
Itaipu Technological Park (PTI) Foz do Iguaçu – Paraná. Brazil  
2. Programa de Pós-Graduação em Engenharia de Energia na Agricultura - PPGEA UNIOESTE, State University of Western Paraná. Brazil  
3. Department of Renewable Energies UNILA, Federal University of Latin American Integration, Foz do Iguaçu-PR. Brazil
- 260 Harmonic Resonance Mode Analysis in dq Domain**  
**Abel A. Taffese, Elisabetta Tedeschi**  
Department of Electric Power Engineering. Norwegian University of Science of Technology, Trondheim. Norway



- 262 Wind power opportunities for remote mine sites in the Canadian North**  
**Samuel Simard(1), Kostas Fytas(1), Jacek Paraszczak(1), Marcel Laflamme(1), Kodjo Agbossou(2)**  
1. Department of Mining, Metallurgical and Materials Engineering, Laval University, Québec City. Canada  
2. Université du Québec à Trois-Rivières, Québec. Canada
- 265 Income generation of rural community by using solar distillation system**  
**Arslan Afzal(1), Jorge L. Alvarado(2), Anjum Munir(1), Abdul Ghafoor(1)**  
1. Faculty of Agricultural Engineering & Technology, University of Agriculture, Faisalabad-Pakistan  
2. Department of Engineering Technology & Industrial Distribution, Texas A & M University-USA
- 270 Implementation of a Generic Type I Wind Turbine Generator for Power System Stability Studies**  
**R. Villena-Ruiz, A. Lorenzo-Bonache, A. Honrubia-Escribano, E. Gómez-Lázaro**  
Department of Wind Energy and Power Systems. Renewable Energy Research Institute and DIEEAC/EDII-AB, Universidad de Castilla-La Mancha. Spain
- 272 Maximal reactive power compensation using loaded synchronous motors**  
**Ioan Dragoș DEACONU, Aurel Ionuț CHIRILĂ, Constantin GHÎȚĂ, Valentin NĂVRĂPESCU**  
Department of Electrical Machines, Drives and Materials.  
Electrical Engineering Faculty, Universitatea POLITEHNICA din București .  
Romania
- 275 Empirical-Analytical Modelling of the Thermal Performance of a PEMFC-based CHP System**  
**F.J. Asensio(1), J.I. San Martín(1), I. Zamora(2), G. Saldaña(1), I. Martín(3)**  
1. Department of Electrical Engineering  
3. Department of Graphic Expression and Engineering Projects  
Engineering School of Gipuzkoa (Section of Eibar), University of the Basque Country (UPV/EHU)  
2. Department of Electrical Engineering  
Engineering School of Bilbao, University of the Basque Country (UPV/EHU)  
Spain



- 293 Modular and Scalable FACTS Systems for Improving Stability in Distribution and Transmission Networks, Using the Example of a STATCOM System in an Offshore Distribution Network**  
Tobias Funk(1), René Rund(1), Thomas Röseler(1), Tomaz Pfeifer(2)  
1. Maschinenfabrik Reinhausen GmbH Power Quality. Erfurt. Germany  
2. Reinhausen 2e . Ljubljana. Slovenia
- 369 Development of small-scale wind energy systems adaptable to climatic conditions using chattering torque control - PI pitch control and CAES strategy**  
N. Luo(1), T. Pujol(1), L. Pacheco(1), J.R. González(1), J.V. Bramon(2), A. Massaguer(1)  
1. Polytechnic School, University of Girona. Spain  
2. Structural Integrity and Composites, Aerospace Engineering, TU Delft. Netherland.

<b>Tuesday April 4<sup>th</sup>, 2017</b>	
<b>12:15-13:00 Plenary Session PL2</b>	<b>ROOM C “UMA”</b>

Chairman: **Gevork B. Gharehpetian**

***Potential new DSO services from customer new assets on Generation, emobility and storage***, by **Santiago Cascante**, Innovation Projects Responsible of Enel

<b>13:00 – 15:00</b>	<b>Welcome Lunch</b>
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<b>Tuesday April 4<sup>th</sup>, 2017</b>	
<b>15:00-16:30 Round Table</b>	<b>ROOM C “UMA”</b>

***Monitoring and networking of future MT and BT. MONICA Project***

- **Susana Carillo**. Endesa - **Javier Leiva**. Endesa - **Pedro Cruz**. University of Sevilla - **Martin Huerta**. AYESA - **Daniel Morales**. Ingelectus- **Roberto Martínez**. Ormazabal



**Tuesday April 4<sup>th</sup>, 2017**  
**16:30-17:15 Poster Session P2 – Coffee Break** **ROOM D**

Chairmen: **Enrique Alameda Hernández, José Roberto Camacho, Lidia Kovernikova, Abdullah Alwadie**

- 240 A finite element model of an induction motor considering harmonics**  
**F. T. Oliveira (1), M.P. Donsión (2)**  
(1) Polytechnic Institute of Leiria, Portugal and INESCC, Portugal  
(2) Department of Electrical Engineering, University of Vigo, Spain
- 276 Modelling and parameterization of Resistive Superconducting Fault Current Limiters**  
**A. Etxegarai, A. Iturregi, M. Larruskain, I. Zamora, P. Eguia**  
Department of Electrical Engineering, University of Basque Country - UPV/EHU Bilbao. Spain
- 278 The use of Model Predictive Control (MPC) in the optimal distribution of electrical energy in a microgrid located in southeastern of Spain: A case study simulation**  
**César Hernández Hernández(1), Francisco Rodríguez(1), José Carlos Moreno(1), Paulo Renato da Costa Mendes(2), Julio Elías Normey Rico (2)**  
1. Department of Informatics, Agrifood, Campus of International Excellence via A3 CIESOL Reasearch Center on Solar Energy, University of Almeria. Spain  
2. Federal University of Santa Catarina, Florianopolis. Brazil
- 280 The influence of the self-excited induction machine into the electrical grid under inestability situation - Real case measurement**  
**R. Bosch(1), P. Casals(1), A. Serrano(1,2)**  
1. Department of Electrical Engineering  
E.T.S.E.I.B, Polytechnic University of Catalonia. Barcelona. Spain  
2. Eléctrica Serosense Distribuidora. Spain
- 283 Real time simulation applied to the implementation of generic wind turbine models**  
**A. Lorenzo-Bonache, R. Villena-Ruiz, A. Honrubia-Escribano, E. Gómez-Lázaro**  
Department of Wind Energy and Power Systems  
Renewable Energy Research Institute and DIEEAC/EDII-AB  
Universidad de Castilla-La Mancha. Spain





- 285 Optimization Measures for Increased Immunity against High Frequency Disturbances and Reduced Emission in the Range of 2 kHz to 150 kHz Realized on Different LED Lamps**  
**Thomas Wohlfahrt, Christian Waniek, Johanna M.A. Myrzik**  
Institute of Energy Systems, Energy Efficiency and Energy Economics  
TU Dortmund University. Germany
- 287 Study on Voltage Control of Distribution Network Using PV Generation Forecasting**  
**H. Kobayashi(1,2), M. Kato(2)**  
1. Polytechnic University, 2-32-1 Ogawa-nishimachi, Kodaira-shi, Tokyo. Japan  
2. Department of Electrical and Electronic Engineering, Tokyo Denki University. Japan
- 289 Application of Double Fourier Series for Analyzing Harmonic of a Modular Multilevel Converter**  
**Ngoc-Think Quach(1), Sang Heon Chae(1), Min-Hyeok Kang(1), Dong Wan Kim(2), Seung Hun Ko(2), Eel-Hwan Kim(1)**  
1. Department of Electrical Engineering. Jeju National University. Jeju-si Republic of Korea  
2. Research & Development Center, Jeju Energy Corporation, Jeju-si, Republic of Korea
- 290 A Study on Optimal and Stable Strategy of Islanded Microgrid**  
**Min-Hyeok Kang(1), Ngoc-Think Quach(1), Sang Heon Chae(1), Dong Wan Kim(2), Seung Hun Ko(2), Eel-Hwan Kim(1), Seong-Bo Oh(1)**  
1. Department of Electrical Engineering. Jeju National University. Jeju-si Republic of Korea  
2. Research & Development Center, Jeju Energy Corporation, Jeju-si, Republic of Korea
- 291 A Study on Wind Smoothing Control by Using Short-term Average Value through Detecting Wind Power Fluctuation Rate**  
**Sang Heon Chae, Eel-Hwan Kim**  
Department of Electrical Engineering, Jeju National University, Jeju-si, Republic of Korea
- 303 Electrical Characterization of PV Modules employing Supercapacitors – A Scalable Method for Field Metrology**  
**S. Basu Pal(1), K. Das (Bhattacharya)(1), D. Mukherjee(2), D. Paul(3)**  
1. Department of Electrical Engineering Indian Institute of Engineering Science and Technology, Shibpur P.O. Botanic Garden, Shalimar Shibpur Howrah, West Bengal .India  
2. Department of Electronics and Telecommunication Engineering Indian Institute of Engineering Science and Technology, Shibpur P.O. Botanic Garden, Shalimar Shibpur Howrah, West Bengal. India



- 304 Functionalized Graphene and Hexagonal Boron Nitride (hBN) Two-Dimensional Heterosystems for Solar Cell Applications**  
**A.I. Shkrebtii(1), M. Rohlfing(2)**  
1. University of Ontario Institute of Technology, 2000 Simcoe St. N., Oshawa, Ontario.Canada  
2. Institut für Festkörpertheorie, Westfälische Wilhelms-Universität Münster. Germany
- 305 Reabsorption Losses in Luminescent Solar Concentrators: Effect of the Band Gap of Semiconductor Quantum Dots, their Size and Dispersion**  
**A.I. Shkrebtii(1), A.V. Sachenko(2), I.O. Sokolovskyi(2), V.P. Kostylyov(2), M.R. Kulish(2), D.V. Khomenko(2)**  
1. University of Ontario Institute of Technology, 2000 Simcoe St. N., Oshawa, Ontario.Canada  
2. V. Lashkaryov Institute of Semiconductor Physics, NAS of Ukraine, Kyiv. Ukraine
- 312 Home energy management systems and electric vehicles: challenges and opportunities**  
**I. Junquera, J. García-Villalobos, I. Zamora, P. Eguía, J. I. San Martín**  
Department of Electrical Engineering - University of Basque Country – UPV/EHU. Bilbao. Spain
- 314 Reliability applied to the Preventive Maintenance on Wind Farms using Weibull distribution with a Financial Approach**  
Leandro Ribeiro Alves da Silva, Ricardo Ferreira Pinheiro  
Department of Electrical Engineering. MPEE, Universidade Federal do Rio Grande do Norte, Natal. Brazil
- 315 Analysis and computer modelling of a Rate of Change of Frequency Relay for islanding detection in the software ATPDraw**  
**T. S. Menezes, Y. V. Tresso, G. J. Schäffer, F. A. M. Moura, M. V. B. Mendonça, P. H. O. Rezende, M. R. M. Castillo**  
Universidade Federal do Triângulo Mineiro, Electrical Engineering Department, Uberaba- Minas Gerais. Brazil
- 316 Comparative analysis methodologies formulation powers in the frequency domain**  
**G.J. Schäffer, S.L.Modesto, T. S. Menezes, Y. V. Tresso, F. A. M. Moura, M. V. B. Mendonça, P. H. O. Rezende, M. R. M. Castillo**  
Universidade Federal do Triângulo Mineiro, Electrical Engineering Department, Uberaba- Minas Gerais. Brazil



- 318 Soil Resistivity: A Limiting Determinant to Zero-Sequence Currents for Grounded Conductors in South African Low Voltage Networks**  
**Q. Louw , P. Bokoro**  
Department of Electrical and Electronic Engineering Technology  
University of Johannesburg . South Africa
- 332 Voltage Control Areas in Transmission Systems with Distributed Generation**  
**W. R. Faria(1), M. E. De Oliveira(1), E. S. Hoji(2), G. P. Viajante(1)**  
1. Federal Institute of Education, Science and Technology of Goiás at Itumbiara, NUPSE. Brazil  
2. Federal Institute of Education, Science and Technology of São Paulo at Birigui.
- 336 High-voltage Gain DC-DC Boost Converter with Coupled Inductors and Interleaved for a PV System to Supply Data Centers**  
**Katiuscia Lopes dos Santos, Fernando Luiz Marcelo Antunes**  
Department of Electrical Engineering. Federal University of Ceará. Brazil
- 363 Regulatory harmonization in the illumination of sport facilities: a challenge for energy savings and users well-being**  
**R. Amorim(1), V. Molina(2), A. Peña-García(1)**  
1. Department of Civil Engineering  
2. Department of Management  
E.T.S.I. Caminos, Canales y Puertos., University of Granada. Spain
- 410 Experimental analysis of an automotive thermoelectric generator under different engine operating regimes**  
**A. Massaguer(1), E. Massaguer(2), M. Comamala(1), A. Cabot(3), J. Ricart(1), A. Deltell(1)**  
1. Department of Mechanical Engineering and Industrial Construction  
Polytechnic High School, University of Girona. Spain  
2. NABLA Thermoelectrics S.L. Girona. Spain  
3. Institut de Recerca en Energia de Catalunya, Barcelona. Spain
- 419 PV Solar System for Stand Alone Smart Home with DC Supply**  
**M. Nassereddine(1), J. Rizk(2), M. Nagrial(2), A. Hellany(2)**  
1. National Electrical Engineering Consultancy, Sydney. Australia  
2. School of Computing, Engineering & Mathematics. Western Sydney University Penrith. Australia



**Tuesday April 4<sup>th</sup>, 2017**  
**17:15 - 18:45 Oral Session A1** **ROOM A "AEDIE"**

Chairman: **Pere Andrada Gascon**

- 214 A Relevant Inrush Current Limitation Based on SCRs' Smart Control Used in EV Battery Chargers**  
**S. Jacques(1), C. Reymond(1,2), G. Benabdelaziz(2), J.-C. Le Bunetel(1)**  
1. University of Tours (France), Research group on materials, microelectronics, acoustics, and nanotechnology. GREMAN CNRS UMR 7347 Tours. France  
2. Application and System Engineering, STMicroelectronics Tours SAS. France
- 267 Validation of eAircraft battery simulation approach using field measurement data**  
**T. Debreceni(1), P. Szabó(2), G. Gy. Balázs(2), I. Varjasi(1)**  
1. Department of Automation and Applied Informatics, Budapest University of Technology and Economics, Budapest. Hungary  
2. Siemens Zrt. Budapest. Hungary
- 268 Investigation of eAircraft energetic optimization**  
**J. Dorogi(1), T. Debreceni(2), G. Gy. Balázs(1)**  
1. Siemens Zrt., Budapest. Hungary  
2. Department of Automation and Applied Informatics, Budapest University of Technology and Economics, Budapest. Hungary
- 328 Sizing Electric Battery Storage for Electric Racing Motorcycle**  
**A. Rodríguez, J. M. González-González, J. A. Aguado**  
Department of Electrical Engineering. E.T.S.I.I., University of Málaga. Spain
- 330 Battery state-of-charge estimating using Adaptive Extended Kalman Filter with Fuzzy modelling of the nominal battery capacity**  
**A. Boutte(1), F.Lakhdari(2), A. Midoun(2), A.Hayani(1)**  
1. Spacecraft Integration Department "D-AIT" Satellites Development Center "CDS" Oran. Algeria  
2. Laboratory of Power Electronics and Solar Energy "LEPES" University of Sciences and Technology of Oran, U.S.T.O.Oran. Algeria
- 428 Electromagnetic evaluation of an in-wheel double rotor axial-flux switched reluctance motor for electric traction**  
**P. Andrada, E.Martínez, M.Torrent, B.Blanqué**  
GAECE, DEE, EPSEVG.  
Universitat Politècnica de Catalunya UPC-BARCELONATECH,  
Vilanova i la Geltrú, Spain

**20:30 -- 22:00**

**Welcome Civic Reception**  
*Terrace of the Institutional Building of Malaga University*



**Tuesday April 4<sup>th</sup>, 2017**  
**17:15 - 18:45 Oral Session B1** **ROOM B "CIRCUTOR"**

Chairman: **Constantin Ghita**

- 320 Modeling and Control of a Microgrid in Islanding Mode**  
**F. Dulce(1), A. Gauthier(1), A. Pantoja(2)**  
1. Departamento de Ingeniería Eléctrica y Electrónica. Universidad de los Andes Bogotá. Colombia  
2. Departamento de Ingeniería Electrónica. Universidad de Nariño. Pasto. Colombia
- 326 Economic and operational risks in wind energy projects in Latvia**  
**D. Bezrukovs, A. Sauhatas**  
Riga Technical University RTU . Latvia
- 347 Comfort temperature and humidity evaluation of a bioclimatic design building**  
**J. Bello Llorente(1), C. Cabo Landeira(2), A. López-Agüera(2)**  
1. Department of Construction and Civil Engineering. CIFP Someso A Coruña. Spain  
2. Sustainable Energetic Applications Group, Department of Particle Physics Physics Faculty, Santiago de Compostela University. Spain
- 412 Energy efficient improvement of an office building model**  
**Fraga De Cal B.**  
Department of Industrial II Engineering. E.P.S., A Coruña University. Spain
- 432 Renewable Energy Generation Technologies on Urban Scale**  
**A. Barragán(1), P. Arias(2), J. Terrados(3)**  
1. Carrera de Ingeniería Eléctrica. Universidad Politécnica Salesiana. Cuenca. Ecuador  
2. Carrera de Ingeniería Eléctrica. Universidad Católica de Cuenca. Ecuador  
3. Departamento de Ingeniería Gráfica, Diseño y Proyectos Universidad de Jaén. Spain
- 460 Trigeneneration for domestic purposes in isolated areas based on hybrid RES**  
**L. Acevedo(1), J. Uche(1), A. Martinez(1), A.A. Bayod-Rújula(2), A. Del-Amo(3)**  
1. Energy and Environmental Technologies Area. CIRCE Research Institute Zaragoza. Spain  
2. Department of Electrical Engineering. Zaragoza. Spain  
3. ENDEF Company. Zaragoza. Spain

**20:30 -- 22:00**

**Welcome Civic Reception**  
*Terrace of the Institutional Building of Malaga University*



**Wednesday April 5<sup>th</sup>, 2017**  
**9:00 - 9:45 Plenary Session PL3** **ROOM C "UMA"**

Chairman: **Péter Kádár**

***Feasibility and Risk Assessment of Using Solar Photovoltaic in Green Airports***, by Prof. Ahmed F. Zobaa. Brunel University London, U.K.

**Wednesday April 5<sup>th</sup>, 2017**  
**9:45 - 10:30 Plenary Session PL4** **ROOM C "UMA"**

Chairman: **Mohamed El-Sayed**

***Supraharmonics - Future challenges in the frequency range 2-150 kHz***, by Dr. Jan Meyer. Technische Universitaet Dresden. Germany

**Wednesday April 5<sup>th</sup>, 2017**  
**10:30-11:15 Poster Session P3 – Coffee Break** **ROOM D**

Chairmen: **Francisco Pérez Hidalgo, Francisco Kleber de Araujo, William Robert, Cagri Kokaman**

- 207 Multi-Objective Techno-Economic Assessment of Real Life Hydrocarbon Facility Real Power Loss and Power Factor Optimization Using Improved Strength Pareto and Differential Evolutionary Algorithms**  
**M. T. Al-Hajri(1), M. A. Abido(2), M. K. Darwish(3)**  
1. Power Systems, Saudi ARAMCO Oil Company, Dhahran. Kingdom of Saudi Arabia  
2. Electrical Engineering Department, King Fahad University (KFUPM), Dhahran Kingdom of Saudi Arabia  
3. Computer & Electronic Eng. Department, Brunel University, U.K., Uxbridge. United Kingdom
- 273 Parametric analysis of thermal losses on hybrid solar gas-turbine power plants**  
**R.P. Merchán, M.J. Santos, A. Medina, A. Calvo Hernández**  
Department of Applied Physics, Facultad de Ciencias. University of Salamanca. Spain
- 341 Photovoltaic Based Water Desalination System: Design, Realization and Testing**  
**S. Abdelkader, A.Y. Hatata, Abdelwahab Bebars**  
Department of Electrical Engineering. Faculty of Engineering, Mansoura University. Mansoura. Egypt



- 343 Multistage configurations for hybrid thermosolar gas turbine power plants**  
**C. Miguel, R.P. Merchán, M.J. Santos, A. Calvo Hernández, A. Medina**  
Department of Applied Physics. University of Salamanca. Spain
- 344 Corrosion testing of a diesel engine common rail system using various types of biodiesel**  
**A. Alcántara-Carmona, J. Sáez-Bastante, M.P. Dorado**  
Department of Physical Chemistry and Applied Thermodynamics  
E.P.S., University of Córdoba. Spain
- 345 Coordinated allocation of energy efficiency resources with joint generation and transmission expansion planning**  
**Hamidreza Arasteh(1), Vahid Vahidinasab(1), Mohammad Sadegh Sepasian(1), Ahmad Ghader(2)**  
1. Department of Electrical Engineering. Abbaspour School of Engineering, Shahid Beheshti University Tehran. Iran  
2. Electrical and Computer Engineering Department. Tarbiat Modares University Tehran. Iran
- 348 Voltage Behavior in the Switched Reluctance Generator Due to Different Speed Profiles Aimed at Use in Small Wind Turbines**  
**R. Fidelis(2), G. Viajante(1), L. Coutinho(2), E. Nery(1), F. Mendonça(1), D. Andrade(2), M. Escobar(1), L. Miranda(1)**  
1. Federal Institute of Education, Science and Technology Goiás, NUPSE Itumbiara. Brazil  
2. Electric Drives Laboratory, Federal University of Uberlândia. Brazil
- 350 Electrocatalytic performance comparison of Pt/V and Pd/V electrocatalysts for ethanol oxidation reaction**  
**E. L. da Silva(1), A. Cuña(2,1), S. Khan(1), M. Cadorin(1), S. Pianaro(3), R. B. Otto(4), C. F. Malfatti(1)**  
1. LAPEC/PPGE3M, Universidade Federal do Rio Grande do Sul, Porto Alegre/RS Brazil  
2. Cátedra de Fisicoquímica, DETEMA, Facultad de Química, Universidad de la República, Montevideo. Uruguay  
3. Departamento de Engenharia de Materiais, Universidade Estadual de Ponta Grossa. Brazil  
4. Automation and Simulation of Electrical Systems Laboratory (Lasse)- Itaipu Technological Park (PTI) Foz do Iguaçu – Paraná. Brazil



- 352 Methodology to Design and Validate a Sustainable Isolated Solar Photovoltaic System**  
**Yuri. Ulianov López(1), Hugo A. Macias M.S(2)**  
1. Department of Electrical and Mechanic Engineering. Universidad Autónoma de Occidente. Colombia  
2. Department of Electronics and Telecommunications Engineering, Universidad Autónoma de Occidente. Colombia
- 355 Modeling of nonlinear loads in high-voltage network by measured parameters**  
**L.I. Kovernikova(1), Luong Van Chung(2)**  
1. The Siberia Branch of the Russian Academy of Sciences Energy Systems Institute, Irkutsk. Russia  
2. National Research Irkutsk State Technical University Hung Yen. Vietnam
- 356 Photodegradation of Glycerol using Nanostructured TiO<sub>2</sub> Catalyst**  
**E. Coser(1,2), A. Bervian(1), S. Khan(1), A. De León(3), J. Bussi(3), S. A. Pianaro(2), R. B. Otto(4), C. F. Malfatti(1)**  
1. Metallurgical Department (DEMET), Pros-graduation Program in Mining Metallurgical and Materials. Laboratory of Corrosion Research (LAPEC), Federal University of Rio Grande do Sul (UFRGS). Brasil  
2. Department of Materials Engineering (LIMAC), State University of Ponta Grossa (UEPG). Brasil  
3. Surface Physical-chemistry Laboratory /DETEMA, Faculty of Chemistry, University of the Republic Montevideo. Uruguay  
4. Automation and Simulation of Electrical Systems Laboratory (Lasse)- Itaipu Technological Park (PTI) Foz do Iguaçu – Paraná. Brazil
- 362 Hybrid Simulation based on a polynomial functions and the neural networks techniques for electrical arc**  
**A. Ziani, H. Moulai**  
Laboratory of Electrical and Industrial Systems, FEI, USTHB, BP 32 Bab Ezzouar. Algeria
- 366 Power Quality Analysis via Fractional Fourier transform**  
**U. Singh, S. N. Singh**  
Alternate Hydro Energy Center. Indian Institute of Technology Roorkee Uttarakhand. India
- 367 Reduction of CO<sub>2</sub> emissions using RES to recharge EVs: the Spanish case**  
**A. Triviño(1), M. Longo(2), F. Foiadelli(2)**  
1. Department of Electrical Engineering. E.T.S.I.I., Universidad de Málaga Spain  
2. Department of Energy. Politecnico di Milano. Italy





- 376** **CFD Simulation of a Horizontal Axis Hydrokinetic Turbine**  
**L.T. Contreras(1), Y.U. López(2), S. Laín(1)**  
1. Modelling, Analysis & Simulation of Environmental & Industrial Processes (PAI+) Research Group  
2. Energy Research Group  
Energetics and Mechanics Department, Faculty of Engineering, Universidad Autónoma de Occidente. Colombia
- 380** **Design and study of a Flat Plate Oscillating Heat Pipe. Flow Pattern analysis and Heat Transfer Performance**  
**Fraga De Cal B.(1), Vishak SH.(2)**  
1. MEng Mechanical Engineering (A Coruña, Spain). MsC Sustainable Energy Systems (Queen University-London)  
2. Bachelor of Engineering (Bangalore University, India). MsC Sustainable Energy Systems (Queen University-London)
- 382** **A Compact DC-DC converter for offshore Wind Farm Application**  
**S. M. Alagab, S.B. Tennakoon, C.A. Gould**  
School of Engineering, Staffordshire University. United Kingdom
- 385** **Comparative Analysis of Single-Phase Grid-Tied PV Systems with Single and Double Power Conversion Stages**  
**L. P. Sampaio, S. A. O. Silva, M. Miranda**  
Department of Electrical Engineering. Federal University of Technology – UTFPR- Cornélio Procópio – PR - Brazil
- 387** **Effective thermal conductance of thermoelectric generator modules**  
**I. Ruiz(1), M. Borrelli(2), T. Pujol(1), N. Luo(1), L. Pacheco(1), A. Massaguer(1), L. Montoro(1)**  
1. Polytechnic School, University of Girona. Spain  
2. Università degli Studi del Sannio, Benevento. Italy
- 388** **Plate fin heat sink modelling and design considerations for thermoelectric generators**  
**I. T'Jollyn(1), T. Pujol(2), M. De Paepe(1), A. Massaguer(2), L. Montoro(2)**  
1. Department of Flow, Heat and Combustion Mechanics  
Ghent University – Ugent. Belgium  
2. Department of Mechanical Engineering and Industrial Construction  
University of Girona . Spain



- 391 Operation and Maintenance Cost Effect on Optimal Sizing of PV Array and Battery for a Grid-Connected House**  
**M.A Hejazi(1), Ali Khorrami(1), Gevork B. Gharehpetian(2)**  
1. Electrical and Computer Engineering Department, University of Kashan, Kashan. Iran  
2. Electrical Engineering Department, Amirkabir University of Technology, Tehran. Iran
- 392 Power Transformers Mixed Insulation Oil Behaviour by Isothermal Charging Currents Analysis**  
**T. Toudja(1), H. Moulai(1), A. Nacer(1), A. Beldjilali(2), N. Saidi(2), M. Saidi(2)**  
1. Laboratory of Electrical and Industrial Systems. STHB, Algiers. Algeria  
2. Laboratory of Physics Materials. Algiers. Algeria
- 525 Molten salt based nuclear-renewable energy system with thermal storage**  
**G. Maronati, B. Petrovic**  
Georgia Institute of Technology. Atlanta USA

<b>Wednesday April 5<sup>th</sup>, 2017</b>
<b>11:15 - 13:00 Oral Session A2</b> <span style="float: right;"><b>ROOM A "AEDIE"</b></span>

Chairman: **Mario Javier Durán Martínez**

- 256 Power Flow Simulation of Flywheel Energy Storage Systems for Tramways**  
**N. Erd, X. Li, A. Binder**  
Institute of Electrical Energy Conversion, Graduate School of Excellence Energy Science and Engineering. Technische Universität Darmstadt. Germany
- 309 Model Predictive Control of STATCOM for Grid Voltage Regulation**  
**Nima Kadivarian, Mohammad Tavakoli Bina, Mohsen Akbari**  
Department of Electrical Engineering. K.N. Toosi University of Technology  
Tehran. Iran
- 349 Design, Simulation and Performance of a Four Phases Linear Variable Reluctance Motor**  
**B.B. Miranda, J.R. Camacho, A.C.F. Mamede**  
School of Electrical Engineering. UFU – Universidade Federal de Uberlândia.  
Brazil



- 358 An Open-phase Fault Detection Method for Six-phase Induction Motor Drives**  
**N. Rios-Garcia(1), M.J. Duran(1), I. Gonzalez-Prieto(1), C. Martin(2), F. Barrero(2)** 1. Department of Electrical Engineering. E.T.S.I.I., Málaga University . Spain  
2. Department of Electronic Engineering. E.T.S.I, Sevilla University. Spain
- 386 An On-board Energy Storage System for Catenary Free Operation of a Tram**  
**H. M. Al-Ezee(1), S. Tennakoon(1), I. Taylor(1), D. Schedeicker(2), J. Schweickart(2)**  
1. Faculty of Computing, Engineering and Sciences. Staffordshire University. U.K.  
2. NewTL S.A.S. Ernolsheim sur Bruche
- 415 Required power and energy demand determination of the vehicle in a movement for the particular route**  
**Damir Vuljaj, Nikša Čavar, Mario Vražić**  
Department of Electrical Machines, Drives and Automation  
University of Zagreb. Croatia
- 452 On the robustness of a multiperiod energy management system including electric vehicles and V2G operation**  
**A. Jiménez-Marín, J. Pérez-Ruiz**  
Department of Electrical Engineering. Universidad de Málaga. Spain

<b>Wednesday April 5<sup>th</sup>, 2017</b>	
<b>11:15 - 13:00 Oral Session B2</b>	<b>ROOM B "CIRCUTOR"</b>

Chairman: **Milan Belik**

- 338 A Fixed-Frequency Soft-Switched Interleaved 3-Phase AC-to-DC Converter**  
**Y. Du(2), A.K.S. Bhat(1)**  
1. Department of Electrical and Computer Engineering. University of Victoria. Canada  
2. Is now with Rinte pipe Ecomaterial Co., Ltd., Chang Zhou. China
- 375 Simultaneity of consumption and solar energy production of a Hungarian household**  
**Attila Sándor Kazsoki, Bálint Hartmann**  
Department of Electric Power Engineering. Budapest University of Technology and Economics. Hungary



- 438 Weather dependent mathematical model of photovoltaic panels**  
**Milan Belik**  
Department of Power Engineering and Ecology. University of West Bohemia  
Pilsen. Czech Republic
- 466 Design of an Appliance Switch Responding to Solar Energy**  
**Ambalika Pradip Koshti, Arthur Williams**  
Department of Electronics and Electrical Engineering. University of Nottingham.  
United Kingdom
- 482 Study of Flat Plate Solar Collector with an Air Conditioner Radiator as a Heat Absorber for a Domestic Water Heater**  
**Vikas Reddy Chittireddy, Ahmed ElSawy, Stephen Idem**  
College of Engineering, Tennessee Technological University, Cookeville.  
Tennessee. USA
- 510 Analysis of the insertion of solar Photovoltaic generation in large consumers of Rio de Janeiro: A Case Study**  
**Nogueira, P.C.(1), Souza, C. R.(2)**  
1. Civil Engineering Department  
2. Electrical Engineering Department  
PUC-Rio, Pontifical Catholic University of Rio de Janeiro. Brazil
- 518 Solar belt supplies electricity for the World**  
**Péter Kádár**  
Óbuda University. Dept. of Power Systems, Alternative Energy Sources Knowledge  
Centre. Budapest. Hungary

<b>13:00 – 15:00</b>	<b>Welcome Lunch</b>
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<b>Wednesday April 5<sup>th</sup>, 2017</b>	
<b>15:00 - 15:45 Plenary Session PL5</b>	<b>ROOM C “UMA”</b>

Chairman: **Maria Jesús Santos Sánchez**

***Development Perspectives of Power to Gas (P2G) in Spain***, by  
**Prof. Luis Rouco Rodríguez**. Universidad Pontificia de Comillas. Madrid



**Wednesday April 5<sup>th</sup>, 2017**  
**15:45 - 17:15 Oral Session A3** **ROOM A "AEDIE"**

Chairman: **Pablo Eguia López**

- 238 Generation of Electricity using Renewable Energy Resources**  
**Saifur Rahman(1), Alwadie A.(2), Faizan A Khan(3)**  
1,2 Department of EE, Najran University, India  
3. Department of EE, Integral University, Kursi Road, Lucknow. India
- 279 Optimization of Residential Load Consumption during Energy Peaks using Smart Metering**  
**Rovan Refaat El-Razky, Ahmed Ali Daoud, Kamel El-Serafi**  
Department of Electrical Engineering, Faculty of Engineering, Port Said University. Egypt
- 353 A tool for computation of electric losses in wind farms**  
**L. Rouco(1), I. Campos(2), M. Hernández(2), J. C. Pérez Campión(2), I. Gómez de Olea(2)**  
1. Universidad Pontificia Comillas. Madrid. Spain  
2. Iberdrola. Madrid. Spain
- 402 Strategies for Electricity with Zero Carbon Emissions at 2050 using the water Management at Mallorca-Menorca Electric system**  
**Andreu Moià-Pol, Vincent Canals, Víctor Martínez-Moll**  
Energy Engineering Research Group (GREEN) Physics Department, Universitat de les Illes Balears. Spain
- 450 Cost-Benefit Comparison of a Time-of-Use Tariff and Real-Time Pricing of Electricity Associated with Automated HVAC Load Management Strategies in Bank Across Mainland Portugal**  
**L. Pires Klein(1,2), L. Landeck(2), L. Matos(2), I. Torres(2), A. Bernardes(2)**  
1. Sustainable Energy Systems Doctoral Program. MIT Portugal Initiative. University of Coimbra. Portugal  
2. Virtual Power Solutions Iberia. Pedro Nunes Institute (IPN)–Coimbra. Portugal
- 473 Analysis of the Impact of the Crowbar Protection on Short-Circuit Level and Quality Index**  
**Piedy del Mar Agamez Arias(1,2), Marcus Vinicius Alves Nunes(1)**  
1. Tecnology Institute ITEC - Department of Electrical Engineering. Federal do Pará University, Guamá. Brazil  
2. INESC TEC-InstitutodeEngenharia de Sistemas e Computadores. University of Porto. Portugal



**Wednesday April 5<sup>th</sup>, 2017**  
**15:45 - 17:15 Oral Session B3** **ROOM B "CIRCUTOR"**

Chairman: **Pedro Cruz Romero**

- 252** **Supraharmonics Emission Assessment of Multi-level Converters Applied for Photovoltaic Grid-Connected Inverters**  
**T. Busatto, A. Larsson, S. K. Rönnberg, M. H. J. Bollen**  
Electrical Power Engineering, Luleå University of Technology (LTU). Sweden
- 282** **Maximum Power Point Tracker Based Digital One Cycle Control Applied in PV Systems**  
**A. C. Q. B. Leite, A. O. Salazar, J. T. Carvalho**  
LAMP - PETROLEUM MEASUREMENT ASSESSMENT LABORATORY  
UFRN, Universidade Federal do Rio Grande do Norte. Brasil
- 416** **The Newton Raphson Method in the Extraction of Parameters of PV Modules**  
**L. R. D. Reis, J. R. Camacho, D. F. Novacki**  
School of Electrical Engineering. Universidade Federal de Uberlândia (UFU).  
Brazil
- 426** **PWM strategy with harmonics injection and modulated frequency triangular carrier. A review**  
**A. Ruiz-González(1), M. Meco-Gutierrez(1), F.M. Pérez-Hidalgo(1), F. Vargas Merino(1), J. Heredia-Larrubia(2)**  
1. Department of Electrical Engineering. E.T.S.I.I., Málaga University. Spain  
2. Department of Technology Electronic. E.T.S.I.I., Málaga University. Spain
- 469** **Impact of overhead line parameters on the short-term voltage stability and its mitigation devices**  
**J.C. del-Pino-López, M. Tostado-Véliz, P. Cruz-Romero**  
Escuela Técnica Superior de Ingeniería. University of Seville. Spain
- 490** **Approach to the Modeling of LDO-Assisted DC-DC Voltage Linear Regulators**  
**Nasima Sedaghati, Herminio Martínez-García, Jordi Cosp-vilella**  
Eastern Barcelona School of Engineering (Escuela de Ingeniería de Barcelona Este – EEBE). Department of Electronics Engineering. Technical University of Catalonia (UPC). BarcelonaTech. Spain



**Wednesday April 5<sup>th</sup>, 2017**  
**17:15-18:00 Poster Session P4 – Coffee Break** **ROOM D**

Chairmen: **Albert Massaguer, István Vokony, Arthur Williams,**  
**Leonardo Sampaio**

**296 Evaluation of electrical losses in MVAC collector systems in offshore wind farms**

**I. Arrambide, P.M. García, J.J. Ugartemendia, I. Zubia**

Department of Electrical Engineering. Escuela de Ingeniería de Guipúzcoa, University of the Basque Country UPV/EHU. Donostia-San Sebastián. Spain

**308 Superconductivity and their Applications**

**A. Roque(1,2), D. Sousa(2,3), V. Fernão Pires(1,2), E. Margato(4)**

1. Department of Electrical Engineering. ESTSetúbal/Instituto Politécnico de Setúbal. Portugal

2. INESC-ID. Lisboa. Portugal

3. DEEC AC-Energia, Instituto Superior Técnico, Universidade de Lisboa. Portugal

4. CEEI, ISEL-Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa, and INESC-ID. Portugal

**399 The Simulation Analysis for Increasing Output Power in Photovoltaic System by Using Segmented String and Constant Voltage Boost Chopper with MPPT**

**Xiaoyang Li, Teruhisa Kumano**

Electrical Engineering Program at Graduate School of Science and Technology, Meiji University. Japan

**400 Testing and analysis of a fuel cell based stand-alone power system for residential use**

**J. García-Villalobos(1), I. Zamora(1), J. I. San Martín(2), F. J. Asensio(2), I. Junquera(1)**

1. Department of Electrical Engineering. University of the Basque Country (UPV/EHU) - University of Engineering of Bilbao. Spain

2. Department of Electrical Engineering. University of the Basque Country (UPV/EHU) - E.U.I.T.I. of Eibar. Spain

**403 Analysis of Three-Phase Four-Wire Shunt Active Power Filter Topologies Implemented Using Single-Phase Full-Bridge Inverters**

**R. D. Silveira, S. A. O. Silva, L. P. Sampaio**

Federal University of Technology – UTFPR-CP  
Department of Electrical Engineering . Brazil



- 405 Analysis of Radio Signal coverage of a feeder using Radio Mobile Software**  
**Arnulfo Barroso de Vasconcellos(1), Saulo Roberto Sodr  dos Reis(1), Gabriela Pessoa Campos(1), Priscila Costa Nascimento(1), Fabricio Parra Santilio(1), Teresa Irene de Ribeiro de Carvalho Malheiro(2)**  
1. Department of Electrical Engineering. Federal University of Mato Grosso – UFMT. - District Boa Esperana. Cuiab  - MT. Brazil  
2. Federal Institute of Mato Grosso - IFMT. Cuiab  - MT. Brazil
- 406 Analysis of yield and power quality of a Micro Photovoltaic generation power plant**  
**Gabriela Nunes Lopes(1), Gabriela Pessoa Campos(1), Arnulfo Barroso de Vasconcellos(1), Etiane Oliveira Ponciano de Carvalho(1), Teresa Irene de Ribeiro de Carvalho Malheiro(2), Lutero Paes de Barros(3)**  
1. Electrical Engineering Department. Federal University of Mato Grosso - UFMT. Boa Esperana. Cuiab  - MT. Brazil  
2. Federal Institute of Mato Grosso - IFMT. Cuiab  - MT. Brazil  
3. Energisa Mato Grosso. Brazil
- 408 A Contribution for the Diagnosis of Insulation Cables due different conditions of degradation, voltage stress and frequency**  
**F. N. Lima, R. W. D. R. Frana, A. P. Finazzi, B. C. Carvalho, Ariela Zanoni Conejo, Marina Timo de S , Iago de Moura Faria**  
Federal University of Mato Grosso (UFMT), Department of Electrical Engineering– Cuiab . Brazil
- 409 Experiments and Simulations of an Automotive Exhaust Thermoelectric System**  
**A. Massaguer(1), E. Massaguer(1), M. Comamala(1), A. Cabot(2), J.R. Gonz lez(1), A. Deltell(1)**  
1. Department of Mechanical Engineering and Industrial Construction Polytechnic High School, University of Girona. Spain  
2. Institut de Recerca en Energia de Catalunya, Barcelona. Spain
- 420 Power Quality Analysis of a Biogas Micro-Generation Unit; Performance Comparative of Distributed Generation in respect to Brazilian National and International Standards**  
**Ferreira, L. R. A(1), , Otto, R. B.(1,2) , Kitamura, D. S(1)., Scherer, H.V.(1), De Souza, S. N. M.(2), Ando Junior, O. H.(3)**  
1. Automation and Simulation of Electrical Systems Laboratory (Lasse) Itaipu Technological Park (PTI) Foz do Iguacu – Parana. Brazil  
2. Programa de Pos-Graduacao em Engenharia de Energia na Agricultura - PPGEA UNIOESTE, State University of Western Parana. Cascavel-PR. Brazil  
3. Departament of Renewable Energies. UNILA, Federal University of Latin American Integration. Foz do Iguacu-PR. Brazil





- 421 On Sizing of Standalone Hybrid Wind/Solar/Battery Micro-grid System**  
**Umer Akram, Muhammad Khalid, Saifullah Shafiq**  
Electrical Engineering Department, King Fahd University of Petroleum & Minerals (KFUPM). Saudi Arabia
- 422 Utilization of residual heat in Diesel engines, CFD simulation of a thermoelectric generator**  
**L. Montoro, A. Massaguer, E. Massaguer, M. Comamala, R. Fernández, A. Deltell**  
University of Girona. Spain
- 429 Power Control with Static Synchronous Series Compensator for Distribution Network integrating Wind Farm based on DFIGs**  
**O. Aouchenni(1), R. Babouri(1), D. Aouzellag(1), F. Chabour(2), C. Nichita(2)**  
1. Department of Electrical Engineering, Laboratoire de Maitrise des Energies Renouvelables, BEJAIA University. Algeria  
2. Groupe de Recherche en Electrotechnique et Automatique, GREAH Lab, Le Havre University. France
- 433 Non-linear inductor modelling for a DC/DC Buck converter**  
**G. Lullo(1), D. Scirè(1), G. Vitale(2)**  
1. Dipartimento di Energia, ingegneria dell'Informazione, e modelli Matematici Università di Palermo. Italy  
2. Istituto di Studi sui Sistemi Intelligenti per l'Automazione (ISSIA), Consiglio Nazionale delle Ricerche (CNR), Palermo. Italy
- 435 Comparison of li-ion battery ageing models applied in photovoltaic stand-alone systems**  
**R. Dufo-López, S. Marquino Leonar, J.L. Bernal-Agustín**  
Department of Electrical Engineering. EINA, University of Zaragoza. Spain
- 439 Efficiency of auxiliary mounted passive solar systems**  
**Milan Belik**  
Department of Power Engineering and Ecology. University of West Bohemia Pilsen. Czech Republic
- 440 Why some utilities are opposed to the connection of renewable distributed sources in their distribution systems?**  
**Juan Carlos Gómez Targarona, Jorge Arcurio, Jorge Vaschetti, Carlos Coyos, Carlos Ibarlucea, Miguel Piumetto**  
Power Quality Research Group. Córdoba Regional Faculty Technological National University. Argentina



- 445 Drive the switched Reluctance Generator with mesh load Voltage Control**  
**A.C. Assunção(1), A.W.F.V. Silveira(1), A.V.S. Fleury(2), D.A. Andrade(1), G.F. Cardoso(1), J.R. Camacho(1), L.C. Gomes(1)**  
1. Federal University of Uberlandia. Minas Gerais. Brazil  
2. Federal Institute of Education, Science and Technology of Goiás. Brazil
- 449 Pumped-Storage Hydroelectric Power Stations Location in Tenerife Island**  
**M. Martínez, J. Romero, A. Pulido, F. Deniz, J.C. Quintana**  
Department of Electrical Engineering. Las Palmas de Gran Canaria University. Spain
- 453 The Brazilian Automotive Industry and Sustainability**  
**Nilcéia Cristina dos Santos(1), Reinaldo Gomes da Silva(2), Maria Helena Bernardo Myczkowski(1)**  
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
- 457 Convective Heat Loss Analysis of a Cavity Receiver for a Solar Concentrator**  
**O. López(1), A. Arenas(2), A. Baños(1)**  
1. Dpt de Electromagnetismo y Electrónica, University of Murcia. Spain  
2. Dpt. de Informática y Sistemas, University of Murcia. Spain
- 458 Study of the Impact of Introducing Smart Meters in the Spanish Electricity Market**  
**S. Martín, M. Cabral**  
Department of Electrical Engineering. Escuela Politecnica Superior, Universidad de Málaga. Spain
- 472 Cooking with the Sun: Teaching and capaciting about Solar Energy**  
**Juan Bello Llorente**  
Department of Construction and Civil Engineering  
CIFP Someso. A Coruña (Spain)



**Wednesday April 5<sup>th</sup>, 2017**  
**18:00 - 19:30 Oral Session A4** **ROOM A "AEDIE"**

Chairman: **Herminio Martínez García**

- 212 A novel instrument for power quality monitoring based in higher-order statistics: a dynamic triggering index for the smart grid**  
**Olivia Florencias-Oliveros, Agustín Agüera-Pérez, Juan-José González de la Rosa, José-Carlos Palomares-Salas, José-María Sierra-Fernández**  
Research Group PAIDI-TIC-168, Computational Instrumentation and Industrial Electronics (ICEI). Spain  
Department of Automation Engineering, Electronics, Architecture and Computer Networks. Polytechnic School of Algeciras, University of Cádiz. Spain
- 232 A Relevant Fuzzy Logic Algorithm to Better Optimize Electricity Consumption in Individual Housing**  
**S. Bissey, S. Jacques, J.-C. Le Bunetel**  
University of Tours (France), GREMAN CNRS UMR 7347, Tours. France
- 235 Power Hardware In The Loop Realization, Control and Simulation of Synchronous Generator Using Three Phase VSI for Microgrid Studies**  
**B. Ojaghloo, G. B.Gharehpetian**  
Electrical Engineering Department. Amirkabir University of Technology, Tehran. Iran
- 250 A demonstrator tool to provide the network operator with micro-services based on big data and semantic web technologies**  
**E. Bionda(1), F. Belloni(1), R. Chiumeo(1), D. Della Giustina(2), D. Pala(1), G. Proserpio(1), S. Pugliese(2), H. Shadmehr(1), L. Tenti(1)**  
1. Ricerca sul Sistema Energetico – RSE S.p.A. Milano. Italy  
2. Unareti S.p.A. Reti Elettriche , Milano. Italy
- 446 Optimal management of microgrid with renewable generation**  
**J.A. Domínguez-Navarro(1), J.L. Bernal-Agustín(1), R. Dufo-López(1), J.S. Artal-Sevil(1), A.A. Bayod-Rújula(1), J.M. Yusta(1), A. Coronado-Mendoza(2)**  
1. Department of Electrical Engineering. E.I.N.A., University of Zaragoza. Spain  
2. Engineering Department, University of Guadalajara, Tonalá Jalisco, Mexico
- 475 Isolated operation of wind energy system in critical micro-grid**  
**A. Peña Asensio, M. Garcia-Plaza, S. Arnaltes Gómez, J.L. Rodriguez-Amenedo, J. Eloy-García Carrasco, J. Alonso-Martinez**  
Department of Electrical Engineering, Carlos III University, Leganes. Madrid. Spain



**Wednesday April 5<sup>th</sup>, 2017**  
**18:00 - 19:30 Oral Session B4** **ROOM B "CIRCUITOR"**

Chairman: **Reinaldo Castro Souza**

- 299 First Order Integral Sliding Mode Control for Active and Reactive Current of A Multilevel Inverter Based Distributed Generation Unit**  
**A. Elnady(1,2)**  
1. Department of Electrical Engineering. University of Sharjah  
Sharjah- United Arab Emirates  
2. Royal Military College (Adjunct). Electrical and Computer Engineering  
Department.Kingston, Ontario. Canada
- 329 Protection Measures on Wind Turbines against Lightning Strikes**  
**Sokratis Pastromas, E. Pyrgioti**  
High Voltage Laboratory, University of Patras. Greece
- 370 Efficient Utilization of Offshore Wind Energy Generation and Transmission during Normal Speed and Wind Gust through Pitch Control and HVDC Lines**  
**M.A. Mahfouz(1), Mohamed A. El-Sayed(2)**  
1. Department of Electrical Power and Machines, Faculty of Engineering, Helwan University, Cairo. Egypt  
2. Department of Electrical Engineering, College of Engineering and Petroleum, Kuwait University
- 381 Production under feed-in tariffs in Portugal**  
**P. Lourenço, C. Almeida**  
EDP Serviço Universal, SA. Direção Compra de Energia . Coimbra. Portugal
- 385 Comparative Analysis of Single-Phase Grid-Tied PV Systems with Single and Double Power Conversion Stages**  
**L. P. Sampaio, S. A. O. Silva, M. Miranda**  
Department of Electrical Engineering. Federal University of Technology – UTFPR- Cornélio Procópio – PR - Brazil
- 488 Numerical Investigations of a Vertical Axis Wind Turbine with Variable Pitch**  
**F. Frunzulica(1,2), C. Olteanu(3), A. Dumitrache(2) D. Crunteanu(1)**  
1. Department of Aerospace Engineering. POLITEHNICA University of Bucharest Romania  
2. "Gh. Mihoc – C. Iacob" Institute of Mathematical Statistics and Applied Mathematics, Bucharest. Romania  
3. Turbomecanica S.A.Bucharest. Romania



**Thursday April 6<sup>th</sup>, 2017**  
**9:00 - 9:45 Plenary Session PL6** **ROOM C "UMA"**

Chairman: **Gianpaolo Vitale**

***Innovation management for renewables***, by **Prof. Berthold Bitzer**.  
South Westphalia University of Applied Sciences. Germany

**Thursday April 6<sup>th</sup>, 2017**  
**9:45-10:30 Poster Session P5 – Coffee Break** **ROOM D**

Chairmen: **José Antonio Domínguez, Andreu Moia Pol, Fabricio Matheus Mousa, Javier García Villalobos**

**286 A Second Order Sliding Power Control & Resonant Filtering Approach to Mitigate Grid Unbalance Effects on a DOIG Wind Energy Based System**

**F. Valenciaga(1), R. D. Fernández(2), F. Inthamoussou(1)**

1. Grupo de Control Aplicado (GCA), LEICI - Departamento de Electrotecnia, Fac. de Ingenieria. Universidad Nacional de La Plata – CONICET. Argentina
2. Fac. de Ingenieria, Universidad Nacional de la Patagonia San Juan Bosc (UNPSJB) – CONICET. Ciudad Universitaria, Comodoro Rivadavia. Argentina

**461 Profitable small-scale renewable energy systems in agrifood industry and rural areas: demonstration in the wine sector**

**José L. Bernal-Agustín(1), Rodolfo Dufo-López(1), Javier Carroquino-Oñate(1), Jesús S. Artal-Sevil(1), José A. Domínguez-Navarro(1), Ángel A. Bayod-Rújula(1), Jesús Yago-Loscos(2)**

1. Department of Electrical Engineering. EINA. Zaragoza University. Spain
2. Intergia energía sostenible S.L. Zaragoza. Spain

**463 Analysis of the Energy Transmission System Performance after the use of Linear Reactor and Saturated Reactors for Voltage Regulation**

**A. B. Vasconcellos(1), T.I.R.C. Malheiro(2), I.M. Faria(1), G.N.Lopes(1), V.H.F. Brito(1)**

1. Federal University of Mato Grosso (UFMT), Electrical Engineering Department – Cuiabá. Brazil
2. Federal Institution of Education, Science and Technology of Mato Grosso – IFMT– Cuiabá. Brazil



- 467 Analysis of the Advanced Static Var Compensator Performance using ATPDraw**  
**R.M. Martins(1), W. K. A. G. Martins(2), V. H. F. Brito(2), I. M. Faria(2), B. M. Giancesini(2), R. R. Dias(2)**  
1. Federal Institute of education, Science and Technology of Mato Grosso, IFMT, Cuiabá. Brazil  
2. Electrical Engineering Department. Federal University of Mato Grosso (UFMT) Cuiabá. Brazil
- 470 A comparative assessment of different alternatives to repower transmission corridors for the future supergrid**  
**M. Borau-Rumbao, P. Cruz-Romero, A. de-la-Villa-Jaén**  
Department of Electrical Engineering. Escuela Técnica Superior de Ingeniería, Universidad de Sevilla. Spain
- 480 Development of a Software to Monitor the Power Generated by a Photovoltaic Panel**  
**Julián Andrés Serrano, Yecid Muñoz, Hernando González**  
School of Mechatronics Engineering. Universidad Autónoma de Bucaramanga, UNAB Bucaramanga. Colombia
- 486 Seasonality effect on working and prediction of the production of electricity in onshore wind farm**  
**Mateusz Dutka, Bogusław Świątek**  
AGH University of Science and Technology. Krakow. Poland
- 491 Course on Renewable Energies for Energy Engineering Students in the Framework of the European Higher Education Area (EHEA)**  
**Herminio Martínez-García, Jordi Cosp-Vilella**  
Eastern Barcelona School of Engineering (Escuela de Ingeniería de Barcelona Este – EEBE). Department of Electronics Engineering. Technical University of Catalonia (UPC). BarcelonaTech. Spain
- 493 Compensation of Voltage Harmonics for LCL-filtered Inverters in Islanded Microgrids**  
**R. Ghanizadeh(1), M. Ebadian(1), G. B. Gharehpetian(2)**  
1. Department of Electrical and Computer Engineering, University of Birjand. Iran B  
2. Electrical Engineering Department, Amirkabir University of Technology, Tehran.
- 495 Intelligent Transmitter of Field (ITF) Based on Microcontroller for Data Acquisition in PV Solar Plants**  
**Herminio Martínez-García, Encarna García-Vílchez**  
Eastern Barcelona School of Engineering (Escuela de Ingeniería de Barcelona Este – EEBE). Department of Electronics Engineering. Technical University of Catalonia (UPC). BarcelonaTech. Spain



- 497 Forklifts, Automated Guided Vehicles and Horizontal Order Pickers in Industrial Environments. Energy Management of an Active Hybrid Power System based on Batteries, PEM Fuel Cells and Ultracapacitors**  
**J.S. Artal-Sevil, J.L. Bernal-Agustín, R. Dufo-López, J.A. Domínguez-Navarro**  
Department of Electrical Engineering. EINA Escuela de Ingeniería y Arquitectura.  
University of Zaragoza. Spain
- 500 Network Usage Tariff (NUT) structure and vision in Hungary in consideration of renewable generation trends**  
**I. Vokony**  
Department of Electric Power Engineering. Budapest University of Technology and Economics. Hungary
- 501 Nonlinear Control Structure of Grid Connected Modular Multilevel Converters**  
**A. Hajizadeh(1), L.E.Norum(2), A. Ahadpour Shal(3)**  
1. Department of Energy Technology, Aalborg University. Denmark  
2. Department of Electrical Power Engineering. Norwegian University of Science And Technology. Trondheim. Norway  
3. Faculty of Electrical Engineering and Information Technology. RWTH-Aachen University. Germany
- 503 Optimization of Counter Flow Heat Exchanger for Low Grade Waste Heat Recovery using Thermoelectric Generator**  
**Sohel Rana, B. Orr, Arbab Iqbal, A. Akbarzadeh, A. Date**  
Energy Conservation and Renewable Energy, School of Aerospace Mechanical and Manufacturing Engineering, RMIT University. Australia
- 504 The Impact of the Air-Conditioning Systems on the Urban Microclimate of Beirut City**  
**Z. Ghaddar, K. Ghali, N. Ghaddar**  
Department of Mechanical Engineering. FEA, American University of Beirut. Lebanon
- 507 New Control Algorithms for Microgrids Based on Microturbines**  
**I. Leibar, I. Zamora, P. Eguia, J.I. San Martín**  
Department of Electrical Engineering. University of Basque Country - UPV/EHU. Bilbao. Spain
- 512 Design and Prototype of a Micro Hydrokinetic Vertical Turbine**  
**A.M. Ramirez Tovar(1), Y.U. Lopez(2), S. Laín(2)**  
1. Renewable Energy for All-Foundation. Cali, Colombia  
2. Autonoma de Occidente University, Department of Energetic and Mechanic, Cali. Colombia



- 514 Energy efficiency strategies to improve productivity and competitiveness of the EU countries**  
**A. Martínez, S. Valero, C. Senabre, E. Velasco**  
Department of Mechanical and Energy Engineering. E.T.S.I.I., Miguel Hernandez University Elche, Alicante. Spain
- 515 Localization of Voltage Fluctuation Source in Power System - Simulation and Laboratory Study**  
**Mohammad Hasanuzzaman Shawon, Szymon Barczentewicz, Andrzej Bień, Zbigniew Hanzelka**  
Dept. of Power Electronics and Energy Control System. GH University of Science and Technology, Krakow, Poland
- 520 Prospectes of wind power generation in Jordan: the case of street lighting**  
**S. Sawalha**  
Faculty of Engineering Technology. Al-Balqa' Applied University. Amman
- 521 Propulsion Subsystem On Low Cost Electric Vehicles Using Common Large Scale Industrial Equipment**  
**Claudinilson A. Luczkiewicz, César D. Paredes Crovato**  
Department of Electrical Engineering. Universidade Vale do Rio dos Sinos Campus of São Leopoldo – Rio Grande do Sul. Brazil
- 522 Passive Series-Parallel Compensator for Non-sinusoidal Power System**  
**Seong-Jeub Jeon**  
Department of Electronic Engineering. Pukyong National University. Busan. Korea
- 523 Real Time Implementation and Investigating of the 3-phase Induction Motor in Autonomous Microgrid**  
**M. A. Hassan(1), M. A. Abido(2)**  
1. Research Institute, Center of Engineering, King Fahd University of Petroleum & Minerals  
2. Electrical Engineering Dept., King Fahd University of Petroleum & Minerals Dhahran, Saudi Arabia





**Thursday April 6<sup>th</sup>, 2017**  
**10:30 - 12:15 Oral Session A5** **ROOM A "AEDIE"**

Chairman: **Mircea Ion Buzdugan**

- 220 A Series Compensation Device for the LV Power Quality Improvement**  
**F. Belloni, R. Chiumeo, C. Gandolfi, A. Villa**  
Ricerca sul Sistema Energetico – RSE s.p.a. Milano. Italy
- 325 Improving the Summation Law for Harmonic Current Emissions of Parallel Operated PV Inverters by Considering Equivalent Grid Impedance**  
**H.A. Moghadam, F. Ackermann, S. Rogalla**  
Department of Power Electronics. Fraunhofer Institute for Solar Energy Systems ISE. Freiburg. Germany
- 333 A literature survey on power quality disturbances in the frequency range of 2-150 kHz**  
**S. Subhani, V. Cuk, J.F.G. Cobben**  
Department of Electrical Energy Systems. Eindhoven University of Technology Eindhoven. The Netherlands
- 397 About power quality monitoring in residential grids**  
**M. Buzdugan, H. Balan**  
Technical University of Cluj-Napoca. Romania
- 418 Estimating Future Grid Harmonics Due to Changing Harmonic Sources**  
**William Howe, Matthew Rylander**  
Power Quality Research Program (Program 1) Electric Power Research Institute Boulder. USA
- 456 Least-squares versus LMS parametric approaches for power quality events segmentation**  
**Enrique Alameda-Hernandez(1), Fernando Aznar(1), Francisco Gil(2), Antonio Espin(1)**  
1. Área de Ingeniería Eléctrica. Universidad de Granada. Spain.  
2. Área de Ingeniería Eléctrica. Universidad de Almería.. Spain.
- 498 Assessment of Harmonic Contribution of a Photovoltaic Installation Based on Field Measurements**  
**Morteza Pourarab, Jan Meyer, Robert Stiegler**  
Institute of Electrical Power Systems and High Voltage Engineering Technische Universitaet Dresden. Germany



**Thursday April 6<sup>th</sup>, 2017**  
**10:30 - 12:15 Oral Session B5** **ROOM B "CIRCUTOR"**

Chairman: **Gorazd Stumberger**

- 302 Advanced methods of signal processing for Power Quality assessment**  
**Álvaro Jiménez Montero(1,2), Agustín Agüera Pérez(1,2), Juan José González de la Rosa(1,2), José Carlos Palomares Salas(1,2), José María Sierra Fernández(1,2), Olivia Florencias Oliveros (1,2)**  
1. Department of Automation Engineering, Electronics and Computer Architecture. Cádiz University. Spain  
2. Research Group PAIDI-TIC-168: Computational Instrumentation and Industrial Electronics (ICEI), Algeciras-Cádiz, Spain
- 306 Optimization of Recloser Placement in DG-Enhanced Distribution Networks Using a Multi-Objective Optimization Approach**  
**Fabián López, Andrés Pantoja**  
Department of Electronics, Universidad de Nariño, Pasto. Colombia
- 323 Photovoltaic potential assessment and ranking of rooftops segments based on LiDAR data**  
**N. Lukač, B. Žalik, G. Štumberger**  
University of Maribor. Faculty of Electrical Engineering and Computer Science. Slovenia
- 359 Analysis of the Power Quality in Six-phase Induction Motor Drives with Arbitrary Winding Spatial Shifting**  
**J.J. Aciego(1), M.J. Duran(1), I. Gonzalez-Prieto(1), F. Barrero(2)**  
1. Department of Electrical Engineering. E.T.S.I.I., University of Málaga. Spain  
2. Department of Electronic Engineering. University of Sevilla. Spain
- 395 Some Thoughts about Harmonic Limits in Connection Agreements for Wind Power Plants**  
**D. Schwanz, M.H.J. Bollen**  
Electric Power Engineering Group. Luleå University of Technology. Skellefteå .Sweden
- 455 Determining Five Kinds of Power Quality Disturbances by Using Statistical Methods and Wavelet Energy Coefficients**  
**Ç. Kocaman(1), M. Özdemir(2)**  
1. Department of Aeroplane Maintenance and Repair. Ondokuz Mayıs University Samsun. Turkey  
2. Department of Electrical and Electronic Engineering. Ondokuz Mayıs University Turkey

**505 Optimisation of bipolar plate through computational fluid dynamic simulation and modelling using nickle open pore cellular foam material**

**Tabbi Wilberforce(1), Ahmed Al Makky(1), A. Baroutaji(2), Rubal Sambhi(1), A. G. Olabi(1)**

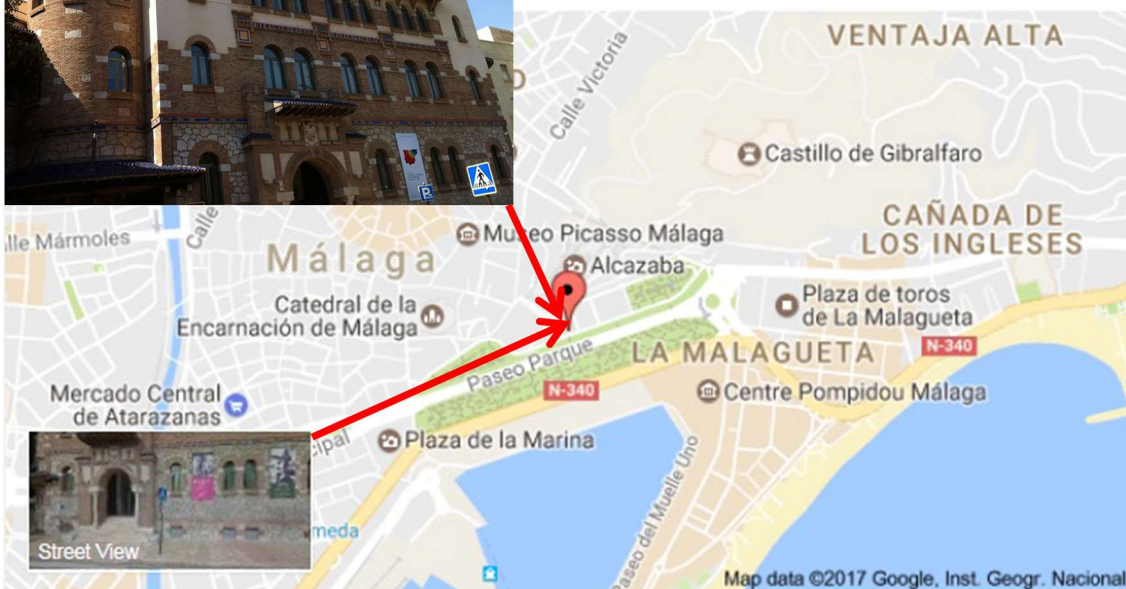
1. Institute of Engineering and Energy Technologies, University of the West of Scotland. United Kingdom
2. Cork Institute of Technology, Department of Process, Energy and Transport Engineering. United Kingdom

	<b>ROOM C “UMA” CLOSING SESSION</b>
<b>12:15– 13:00</b>	<b>Conclusions and time for the next conference (ICREPQ'18)</b>
	<b>Awards for the three best posters</b>
<b>13:00 – 15:00</b>	<b>Farewell Lunch</b>
<b>15:00 – 20:00</b>	<b>Excursion for to visit the centre of Malaga (After lunch a bus pick up to the participants at the excursion)</b>



**CIVIC RECEPTION**

Tuesday, April 4, 20:30 H



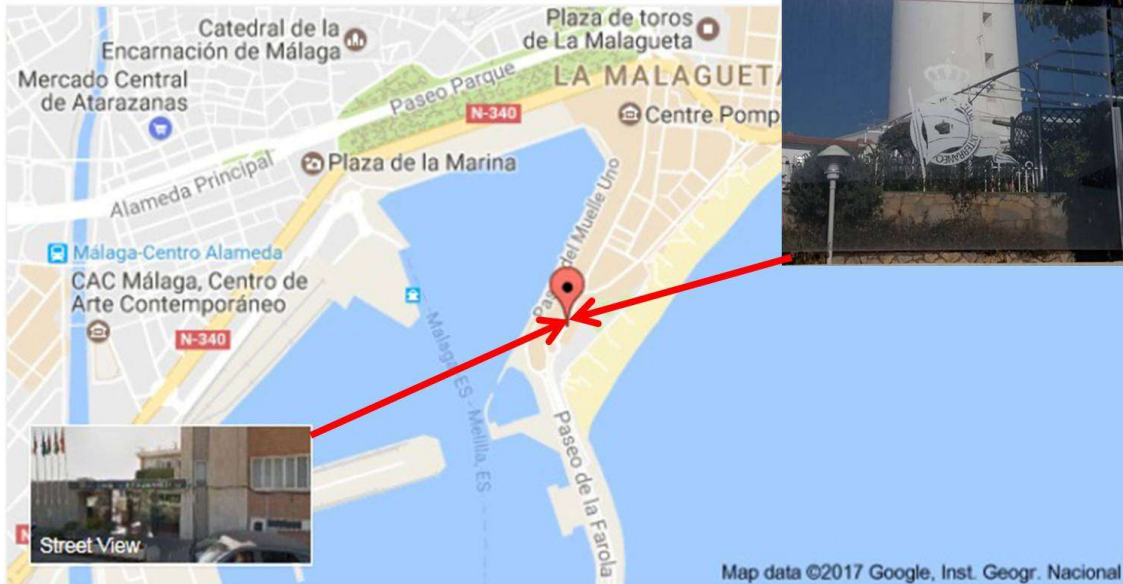
Av. de Cervantes, 2, 29016 Málaga

Cómo llegar



## CONFERENCE DINNER

Wednesday, April 5, 20:30 H



Paseo de la Farola, 18, 29016 Málaga

[Cómo llegar](#)





## ICREPQ'17 Venue

Escuela de Ingenierías Industriales. Edificio de Ingenierías.  
C/ Doctor Ortiz Ramos s/n. (Campus de Teatinos), 29071. Málaga.

### By bus

The building is located in the Extension of the Teatinos Campus. You can get to the core of the campus by bus using lines 8, 11, 22 and 25.

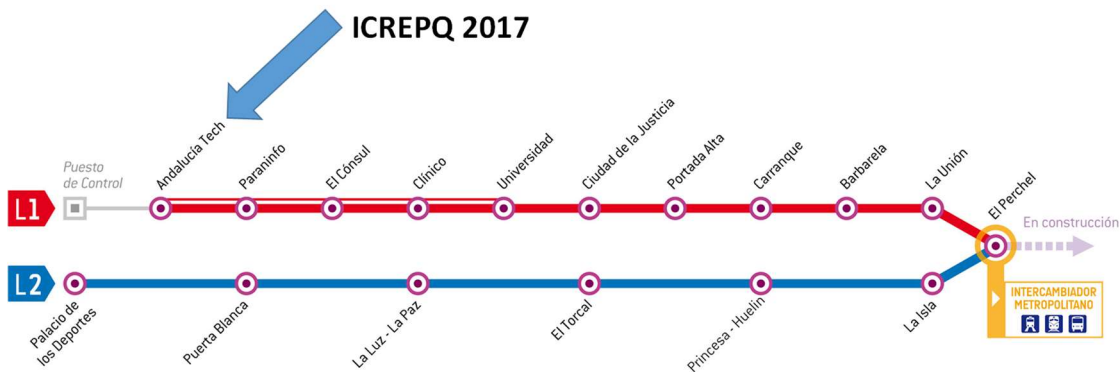
<http://www.uma.es/futuros-alumnos/cms/menu/como-llegar-al-campus-en-bus/>

and then reach the extended campus and the School of Engineering (where the conference is held) using line L and getting off at the 6501 stop.

For more information, please access the website of the [Municipal Transport Company of Málaga](#).

### By underground

If you wish to come by underground from the city center you can take line L1 and get off in “Andalucía Tech” stop (see figure below). The School of Engineering is walking distance from this stop (3 min aprox.). Further information can be found in the website [www.metromalaga.es](http://www.metromalaga.es)



### By taxi

You can alternatively go by taxi. The cost depends on the departure point and traffic but a mean cost from the city centre is around 15 euros.

