

INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY AND POWER QUALITY (ICREPQ'04)

WELCOME TO ICREPQ'04

On behalf of the Steering Committee I want to give you a very warm welcome to ICREPQ'04 and to Barcelona.

Our International Programme Committee has selected a high quality 92 papers (among 123 proposals) from which 83 will be presented at the Conference, 32 at oral sessions and 51 at poster sessions, along the three days of the ICREPQ'04. All of these are the papers included at the final programme. Also it will be presented four invited paper along three plenary sessions.

ICREPQ'04 cover the whole range of problems and solutions concerning specially with renewable energies and power quality and all the papers have directly influence about these two fields of research and practical work.

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

In addition to the technical sessions, a number of social events have been arranged. On Wednesday evening (31st April, 20:30 H) we will be hold a Reception with aperitif and on Thursday (1st April, 21:00 H) the Conference Banquet where we will deliver presents to those companies that collaborate with the organisation of the Conference.

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

Best regards.
Sincerely,

Prof. Manuel Pérez-Donsión
ICREPQ'03 Conference Chairman

OBJETIVES 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'03) will be structured in:

- **Plenary Sessions: in one auditorium for all the participants**
- **Oral Sessions: Renewable Energy and Power Quality simultaneously in two rooms**
- **Posters Sessions: In 45-minute periods during the coffee breaks - Round tables**

1. RENEWABLE ENERGY:

Topics include, but are not limited to:

- Wind Energy, Small Hydro Energy, Solar Energy, Photo-voltaic Energy, Ocean Energy, Geothermal, Biomass,...
- Classical and special electrical generators: Theory, design, analysis, losses, efficiency, heating and cooling, vibration and noise, modelling and simulation, control strategies, protection systems, maintenance, mechanical behaviour, new methods of testing, parallel Operation, stability,...
- Power plants. Distributed generation. Fuel cells. Co-generation. Hybrid Systems. Original solutions,...
- Energy conversion, conservation and energy efficiency. Energy saving policy. Energy storage. Batteries,...
- Energy and the environment. Ecological balance. Ecosystem,...
- Application of the renewable energy. Best practice projects.
- Legislation in the area of renewable energy.
- Biomass combustion techniques. The energy use of agricultural and forest residues. Production and the energy exploitation of bio-gas.
- Interconnection and transport problems.
- Planning and control of the power system take into account the renewable energy.
- Economic analysis of the power system take into account the renewable energy.
- Regulation/deregulation of the power market. Influence of the renewable energy.
- Models and simulation of the power systems. Models and estimation of loads. Software tools.
- Application of the telecommunications, internet, artificial intelligence for the Renewable energy.
- Security assessment and risk analysis in renewable energy.
- Electric vehicles.

2. POWER QUALITY:

Topics include, but are not limited to:

- Power Quality in Distribution.
- Economic Studies of the Power Quality
- Quality of the voltage wave
- Low-frequency conducted disturbances: Voltage deviations, voltage fluctuations (flicker), voltage dips and short interruptions, harmonics transient over-voltages, voltage unbalance (imbalance), temporary power-frequency variations.
- Sources, effects and mitigation methods of electromagnetic disturbances.
- Measurements of the power quality in networks and industrial installations.
- Equipment, procedures and measurement methods. Standards.
- Quality of the voltage wave measurements in the laboratory. Equipment, procedures and measurement methods and text. Laboratories. Standards
- Modelling and simulation of the power quality. Software tools.
- Transmission of the disturbances
- Filtering techniques
- Power factor compensation. Capacitor switching techniques
- Optimisation techniques
- Telecommunication, internet and artificial intelligence applications.
- 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 standards
- Power quality influence in deregulated markets

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SPONSORSHIP

Sincere thanks are expressed to the organisations listed below who have given valuable support to ICREPQ'04:

FECSA endesa
Schneider Electric Española, S.A.
Escola Universitaria d'Enginyeria Tècnica Industrial de Barcelona
AEDIE
SDMO.
Associació/Col·legi d'Enginyer Industrial de Catalunya
Col·legi d'Enginyers Tècnics Industrials de Barcelona

On the other side ICREPQ'04 is associated al FORUM BARCELONA 2004.

SOCIAL EVENTS

- **Reception and Aperitif:** 31^{TS} April at 20:30 H.
- **Conference Banquet:** 1^{TS} of April at 21:00 H.

GENERAL TECHNICAL PROGRAMME ICREPQ'04

Wednesday 31 March 2004									
	ROOM A "SCHNEIDER Electric"			ROOM B "Fecsa endesa"			ROOM C		
	<i>Oral sessions</i>			<i>Oral sessions</i>			<i>Poster sessions</i>		
9:00 – 9:45	Opening ceremony								
9:45 – 11:00	A1			B1					
	299 212	275	287	300 274	231	204			
EXTRA TIME FOR DISCUSSION									
11:00 – 11:45	Posters Session at Room C (Session C1) Coffee Break						206	211	227
							240	245	255
							263	270	272
							277	278	280
							296	303	311
							202	282	
11:45 – 13:00	A2			B2					
	248 295	239	200	243 222	292	308			
EXTRA TIME FOR DISCUSSION									
13:00 – 13:30	Lunch								
15:30 – 16:45	A3			B3					
	207 201	259	289	235 219	249	266			
EXTRA TIME FOR DISCUSSION									
16:45 – 17:30	Poster Session at Room C (Session C2) Coffee Break						313	205	208
							210	230	250
							260	264	265
							267	319	310
							305	241	316
							312	284	
17:30 – 18:45	A4			B4					
	223 281	233	279	225 218	226	283			
EXTRA TIME FOR DISCUSSION									
18:45 – 20:30	FREE TIME								
20:30 -	RECEPTION and aperitif								

Thursday 1 April 2004					
	ROOM B "FECSA endesa"		ROOM C		
	<i>Plenary sessions PL1</i>		<i>Poster sessions</i>		
9:30 – 10:45	PL1	Quality Robust Control Engineering: Theory and Experimental Results on Wind Turbines. Mario García-Sanz. Automatic Control and Computer Science Department. Public University of Navarra. Spain			
EXTRA TIME FOR DISCUSSION					
10:45 – 11:30	Posters Session at Room C (Session C3) Coffee Break		314 320 297 213 215 238	317 309 288 273 262 285	318 301 304 269 257
11:30 – 12:45	PL2	Communication Architectures for Power Distribution Systems and New Tendencies for Intelligent Panels Joaquim Daura, SCHNEIDER Electric.			
EXTRA TIME FOR DISCUSSION					
12:45 – 13:30	Aperitif				
13:30 – 16:00	Lunch				
16:00 – 21:00	FREE TIME				
21:00 -	Conference Banquet				

Friday 2 April 2004	
	ROOM B "Fecsa endesa"
	PLENARY SESSION PE
9:00-11:00	PE1 Distributed Generation of Energy Using Micro Gas Turbines. Polygeneration Systems and Fuel Flexibility. J.C. Bruno, A. Coronas. CREVER. 'Rovira i Virgili' University. Spain.
	PE2 Measurement of Energy and Power Quality in the Spanish Des-regulated Market. Felipe Montajut, CIRCUTOR
	EXTRA TIME FOR DISCUSSION
11:00 – 11:15	Conclusions and time for the next conference
11:15 – 11:45	Coffee Break
13:00 – 15:30	Lunch

Wednesday 31 March 2004

9:00 – 9:45 OPENING CEREMONY

9:45 – 11:00 ORAL SESSION A1

ROOM A “SCHNEIDER Electric”

Chairman: Mario Mañana Canteli

International Reliability Analysis in Distribution Networks.

- 299** A. Sumper, A. Sudrià, F. Ferrer
Centre d’Innovació Tecnològica en Convertidors Estàtics i Accionaments.
Technical University of Catalonia. Spain.

Experimental Validation and Comparisons of Active Filtering Strategies.

- 275** Fernando Pinhabel Marafao, Sigmar Maurer Deckmann.
School of Electrical and Computer Engineering. University of Campinas- Brazil

Controller for Three-phase Four-wire Shunt Active Power Filter by DC-bus Energy Regulation.

- 287** R. Pindado, P. Rodríguez, J. Pou, I. Candela
Research Group of Power Quality and Renewable Energies (QuPER). Technical
University of Catalonia. Spain

Impacts of Renewable Sources on Power Quality in Distribution Systems.

- 212** José Balcells, Jaroslav Dolezal, Josef Tlustý, Viktor Valouch.
Electronics Engineering Dept. Technical University of Catalonia. Spain.

9:45 – 11:00 ORAL SESSION B1

ROOM B “Fecsa Endesa”

Chairman: Anna Kotlanova

Optimal Design of Isolated Network Systems Operated by Renewable Energies with Mixed-integer Optimization Algorithms.

- 300** M..N. Navarro, J.A. Domínguez, J. Jaime.
Department of Electrical Engineering. University of Zaragoza. Spain.

Multipolar Generator for Lower-power Windmills.

- 231** A. Chuchalin, I. Safyannikov, I.Rossammakhin. Department of Electrical
Engineering. Tomsk Polutechnic University. Russia.

- 204 Cogeneration in District Heating Systems.**
Carlos J. Renedo, Jaime Peredo, Alfredo Ortiz, Defín Silió.
Department of Electric and Energy Engineering. University of Cantabria. Spain

- 274 Evolution Towarda a Smart Energy Supply System in the Balearic Islands.**
D. Coll-Mayor, R. Picos, E. García Moreno.
Department of Physics. University of Balearic Islands. Spain.

11:00 – 11:45 POSTER SESSION C1

ROOM C

- 206 Stator and Rotor Current Harmonics in Doubly Fed Machines with Cycloconverter in Rotor Circuit.**
J. Bendl., M. Chomat., L. Schreier.
Institute of Electrical Engineering, Academy of Sciences. Czech Republic.

- 211 Analysis and Comparison Between Different Methods of Current Reference Generation for Active Filters Control.**
S. Stefanescu, M. Chindris, A. Sudria, A. Cziker.
Technical University of Cluj-Napoca, Rumania
Department of Electrical Engineering, UPC, Spain

- 227 Remarks on Load Dependency of the Voltage Quality of a 500 MVA Synchronous Generator with Fractional Slot Windings.**
C. Grabner
Institute of Electrical Machines and Drives, Graz University of Technology.
Graz, Austria.

- 240 Importance of Supply's Quality in Calibration Laboratory.**
M..D. Gutiérrez, F. de la Bodega, E. Loroño, D.M. Larruskain.
Department of Electrical Engineering. University of the Basque Country, Spain H

- 245 Instrumentation Requirements for Automatic Power Quality Analysis and Dissemination.**
A.Espírito Santo, M.R. Calado
Dep. Engenharia Electromecânica, Universidade da Beira Interior, Portugal

- 255 A Novel Frequency and Positive Sequence Detector for Utility Applications and Power Quality Analysis.**
F.P. Marafao, S.M. Deckmann, E.K. Luna.
School of Electrical and Computer Engineering, University of Campinas, Brasil

- 263 Non-Linear and Unbalanced Three-Phase Load Static Compensation with Asymmetrical and Non Sinusoidal Supply.**
Reyes S. Herrera, P. Salmerón.
Electrical Engineering Department, University of Huelva, Spain.

- Power Quality and Digital Protection Relays.**
270 I. Zamora, A.J. Mazón, V. Valverde, E. Torres, A. Dysko.
University of the Basque Country. Spain.
University of Strathclyde, United Kingdom
- Automatic Management of Voltage Sags Recorded in a 25 kV Sbstation**
272 J. Melendez, D. Mascaya, D. Llanos, J. Cobos, J. Sánchez, M. Castro.
University of Girona, Spain.
- Economic Evaluation of Mitigation Methods Against Voltage Dips and Interruptions Based on Stochastic Reliability.**
277 Dirk Van Hertem, Marcel Diddent, Johan Driesen, Ronnie Belmans.
Dep. ESAT/ELECTA, Katholieke Universiteit Leuven.
Electrical Power Systems and Metrology Laborelec, Belgium
- A New Methodology For On-Line Power Quality Assessment.**
278 A. Moussa, M. El-Gammall, E.N. Abdallah, A. Abouelseoud
Dep. Of Electrical Engineering, Alexandria University, Egypt
- Control of a Active Filter Using Dynamic Neural Networks.**
280 J.L. Flores Garrido, P. Salieron Revuelta.
University of Huelva. Spain.
- Energy Meter Behaviour Under Non-Sinusoidal Conditions.**
296 A.Ortiz, M. Lehtinen, M. Mañana, C. Renedo, L.I. Eguiluz.
Dep. of Electrica Engineering, Cantabria University. Spain.
Power System Laboratory, Helsinki University of Technology, Finland.
- Standard Test Protocol to Characterize Adjustable Speed Drive Behavior During Voltage Dips.**
303 M. Teixidó, A. Samper, Q. López, S. Galceran, J. Sánchez.
CITCEA, Dep. Of Electrical Engineering, Technical University of Catalonia.
FECSA-ENDESA, Spain.
- Series Resistance of SnO₂/SiO₂/Si(n) Solar Cells.**
311 A.Checnane, S. Bensmain, B. Benyoucef, J.P. Charles, R. Zerdoum.
Materials and Renewable Energies Laboratory, Tlemcen, Algeria.
LMOPS, SUPELEC, France
- Power Station Based on the Energy of the Sea Waves.**
202 Ratko Isidorovic, Jankp Isidorovic, Nemanja Grubor.
Minel Trafo AD, Mladenovac, Serbia.
- Provision And Costs of Ancillary Services in a Restructured Electricity Market.**
282 A.J.C. Pereira, Z.A. Vale, A. Machado e Moura, J.A. Díaz Pinto.
Instituto Superior de Engenharia. University of Coimbra.
Instituto Superior de Engenharia. University of Porto.
Facultade de Engenharia. University of Porto.

11:45 – 13:00 ORAL SESSIONS A2

ROOM A “SCHNEIDER Electric”

Chairman: A. Sudriá Andreu

- 248** **Analysis of Electrical Signal Disturbances. A New Strategy.**
J.C. Montaña, M. Castilla, A. López, J. Gutiérrez, J.C. Bravo, D. Borrás.
Consejo Superior de Investigaciones Científicas (CSIC), IRNAS.
University of Sevilla, Spain.
- 239** **Analysis Strategy Based on Wavelet Decomposition for Classification of Voltage Sags.**
J. Xargayó, J. Meléndez, J. Colomer
Control Engineering and Intelligent Systems Group. Institute of Informatics and Applications. University of Girona. Spain.
- 200** **Power Quality in a University Campus: The User’s Perspective.**
A. Moreno-Muñoz, M^a.D. Redel, A.L. Prieto, A. Plaza, M. González, J. Luna.
University of Córdoba. Spain.
- 295** **Frequency Measurement Under Non-Sinusoidal Conditions.**
M. Mañana, J.A. Ridríguez, F.J. Sánchez, A. Ortiz, L.I. Eguiluz.
Dep. Of Electrical Engineering. Cantabria University. Spain.

11:45 – 13:00 ORAL SESSIONS B2

ROOM B “Fecsa endesa”

Chairman: Johan Bacher

- 243** **Wind Power System for Domestic Installations.**
I. Mény, P. Enrici, J.J. Huselstein, D. Matt
Laboratoire d’électrotechnique de Montpellier (LEM), France.
- 292** **Reconversion of Traditional Water Extraction Windmills in Mallorca to Produce Electrical Power.**
J. Pascual Tortella.
IDOM Ingeniería Arquitectura y Consultoria, Mallorca, Spain
- 308** **Variable Speed Drive Modelling of Wind Turbine Permanent Magnet Synchronous Generator.**
T. Zouaghi.
Laboratoire des Systèmes Electriques, (L.S.E.), Tunisia.
- 222** **Multi-Agent Based Operation and Control of Isolated Power System with Dispersed Power Sources Including New Energy Storage Device.**
T. Hiyama, T. Nagata, T. Funabashi.

Dep. of Electrical & Computer Engineering, Kumamoto University, Japan.

15:30 – 16:45 ORAL SESSION A3

ROOM A “SCHNEIDER Electric”

Chairman: José María de la Portilla Fernández

- 207 Optimization of the Operation Reliability Level of the Protection System.**
Marian Ciontu, Maria Brojbou
Faculty of Electrical Engineering. University of Craiova.
- 259 Experimental Analysis of the Line Side Behaviour of an Uncontrolled 12-Pulse Rectifier with Capacitive DC-Smoothing Compared to Analytical Analysis.**
Thomas Rechberger
Institute of Electrical Machines and Drives. Graz University of Technology. Austria.
- 289 Harmonic Distortion Analysis of a Micro Gas Turbine Interconnected to the Electricity Grid.**
J.C. Bruno, Ll. Massagués, A. Coronas.
CREVER- Universitat Rovira I Virgili, Spain.
- 201 Current Sensor Based on Rogowski Coil.**
F.J. Arcega, J.A. Artero.
University of Zaragoza. Spain.

15:30 – 16:45 ORAL SESSION B3

ROOM B “Fecsa endesa”

Chairman: Manuel Morán Araya

- 235 Energy Analysis: Absorption Heat Transformer Cycle with a Combing Ejector using Lithium Bromide/Water as Working Fluid.**
A. Pongtornkulpanich, S. Trepá, M. Amornkitbamrung
School of Energy and Materials, King Monkut’s University of Technology.
School of Renewable Energy Technology, Nassuan University. Thailand.
- 249 Detection of Broken Damper Bars of a Turbo Generator by the Field Winding.**
J. Bacher
Institute of Electrical Machines and Drive Technology, E.M.A. University of

Technology Graz. Austria

266 Amplitude Modulation – an Alternative Method of Generating the Converter Output Waveforms.

A. Jan Iwaszkiewicz, B. Jacek Perz.
The Electrotechnical Institute. Poland.

219 Unsymmetrical Failure States in a Small Water Power Station.

Vaclav Bartos, Anna Kotlanova.
University of West Bohemia in Pilsen, Czech Republic.

16:45 – 17:30 POSTER SESSION C2

ROOM C

313 A theoretical Study for Supporting an Autonomous Diesel Power Plant with a Photovoltaic Generator.

M. Sylos Labini, G. Delvecchio, F. Fraccalviere, F. Neri, B. Valenzano.
Dep. Of Electrotechnics and Electronics. Polytechnic of Bari. Italy..

205 Variable Speed Asynchronous Generator.

Vít Brslica.
Military of Electrical Engineering and Electronics. Brno. Czech Republic.

208 Damping Subsynchronous Resonance Oscillations Using A Dynamic Switched Filter-Compensator Scheme.

A.M. Sharaf.
University of New Brunswick. Canada

210 Neutral Currents in Large Public Lighting Networks.

M. Chindris, A. Sudria, A. Cziker, S. Stefanescu.
Technical University of Cluj-Napoca. Romania
ETSIB. Technical University of Catalonia, UPB. Romania.

230 Magnetic Shields for Underground Power Lines.

J.R. Riba Ruiz, X. Alabern Morera.
Technical University of Catalonia, UPC, Spain.

250 The Shielding Effect of the Built in Damper Cage in a Synchronous Machine.

J. Bacher, G. Maier
Institute of Electrical Machines and Drive Technology. University of Technology Graz. Austria.

260 An Overview to Fault Location Methods in Distribution System Based on Single End Measures of Voltage and Current.

J. Mora, J.Meléndez, Marc Vinyoles, J. Sánchez, Manel Castro.

- eXiT Group. University of Girona. Spain
- Fault Location in Electrical Distribution Systems Using PLS and NN.**
264 M.N. Ruiz, J. Meléndes, J.Colomer, J.Sánchez, M.Castro.
eXiT. University of Girona.
ENDESA. Spain.
- Voltage Waveforms Comparison for Different PWM Modulation Strategies.**
265 H. Martín, R. Bargalló.
EUETI. Technical University of Catalonia. UPC.Spain
- Learning power Conditioning Basics at the Technical Engineering School of Barcelona (EUETIB/UPC).**
267 Jordi de la Hoz, Sergi Fillet, Alfredo de Blas.
EUETIB. Technical University of Catalonia (UPC). Spain.
- Multivariable QFT Controllers Design for Heat Exchangers of Solar Systems.**
319 M. Barreras, M. García-Sanz
Automatic Control and Computer Cience Department. Public University of Navarre. Spain.
- Optimization of the Dehydration of Muds in Purifier Station of Residual Waters by Means of the Employment of Photothermic Energy.**
310 A.J. Herrera Torres, A. Espín Estrella.
University of Granada. Spain.
- Fuel Cell Based Distributed Generation Feeding Electrical and Thermal Loads.**
305 S. Meo. G. Paparo, G. Velotto
Italy.
- Output Stabilization of Wind Turbine Generator by Series and Parallel Compensation Using SMES.**
241 T. Senjyu, T. Kinjyo, K. Uezato, H. Fujita, Toshihisa Funabashi.
University of the Ryukyus. Meidensha Corporation.
Chubu Electric Power Co. Japan.
- Intelligent Twin Rotor Indution Motor Drive System for Electric and Hybrid Vehicles with Random Modulation Techniques and with Fixed Switching Frecuency.**
316 Zygmunt Szymanski.
Silesian University of Technology. Poland.
- A Study for Optimizing the Management Strategies of a Hybrid Photovoltaic-Diesel Power Generation System.**
312 M. Sylos Labini, G. Delvecchio, M. Guerra, C. Lofrumento, F. Neri.
University of Bari. Italy.
- 284 **Modelling and Simulation of an Asynchronous Wind Turbine of Squirrel**

Cage.

J. Martínez García, M. García-Gracia, M.P. Comech, D. García García.
CIRCE. University of Zaragoza. Spain

17:30 – 18:45 ORAL SESSION A4

ROOM A “Schneider Electric”

Chairman: Jiri Bendl

223 Inefficiencies in Unbalanced Three-Phase Power Systems. Relationship Between System Asymmetry and Instantaneous Power Waves.

R. Sabater, V. Donderis

Dep. Of Electrical Engineering. Technical University of Valencia. Spain.

233 On the Assessment of Power Quality Characteristics of Grids Connected Wind Energy Conversion Systems.

P. Carneiro, P. Torres, R.M.G. Castro, A.I. Estanqueiro

Electrical Energy Centre. Technical University of Lisbon. Portugal

279 Influence of Unbalanced and Waveform Voltage on the Performance Characteristics of Three-phase Induction Motors.

E. Quispe, G. Gonzalez, J. Aguado.

Grupo de Investigación en Energías GIEN-UAO. Universidad Autónoma de Occidente. Colombia.

281 Control Strategies for Active Power Filters.

F. Barrero, E. Romero, M.i. Milanés.

School of Industrial Engineering. University of Extremadura. Spain.

17:30 – 18:45 ORAL SESSION B4

ROOM B “Fecsa endesa”

Chairman: Francisco Arcega Solsona

225 Generic Aggregated Wind Farm Model for Power System Simulations- Impact of Grid Connection Requirements.

J. Soens, J. Driesen, D. Van Hertem, R. Belmans.

Dep. Of Electrical Engineering, ESAT/ELECTA. K.U.Leuven. Belgium

226 Simulation of a Solar Domestic Water Heating System with Different Collector Efficiencies and Different Volumen Storage Tanks.

D. Silió Salcines, C.Renedo, V. Castañera

University of Cantabria. Spain.

- 218 The Future of the Alternatives Energies: A Forecast Based on Technological Forecasting Techniques.**
J.C. Oliveira Matias, T. Campos Devezas
University of Beira Interior. Portugal

- 283 Validity Range of Wind Turbine Models.**
M.P. Comech, D. García García, M.Sanz, J. Martínez García, M. García-Gracia
CIRCE. University of Zaragoza. Spain.

Thursday 1 April 2003

9:30 – 10:45 PLENARY SESSION PL1

ROOM B “Fecsa endesa”

Chairman: Blas Hermoso Alameda

- Quality Robust Control Engineering: Theory and Experimental Results on Wind Turbines.**
PL1 Mario García-Sanz.
Automatic Control and Computer Science Department. Public University of Navarra. Spain

10:45 – 11:30 POSTER SESSION C3

ROOM C

- 314 Technical and economical Assessment of the Effect of Voltage Sags on Adjustable Speed Drives.**
J.M. Cano, G.A. Orcajo, C.H. Rojas, M.G. Melero, M.F. Cabanas
University of Oviedo. Spain.
- 317 Experimental Study of Power Quality in Wind Farms.**
F. Oliveira, A. Madureira, M.P. Donsión
University of Porto. Portugal. Spain.
University of Vigo. Spain
- 318 Statistical Study of Power Quality in Wind Farms.**

- F. Oliveira, A. Madureira, M.P. Donsi3n
University of Porto. Portugal. Spain.
University of Vigo. Spain
- 309 Damping Subsynchronous Resonance Oscillations Using A Dynamic Switched Filter-Compensator Schme.**
A. M. Sharaf.
University of New Brunswick. Canada.
- 301 Process for the Implantation of Wind Farms in the Basque Country Autonomous Community .**
M. G3mez, M. Gonz3lez, I. Zamora.
University of the Basque Country. Spain.
- 297 Wind Power Applied to the Hydrogen Generation.**
J.J. San Mart3n, I. Mu3oz, J.I. San Mart3n, J.M. Arrieta, I. Mart3n, V. Aperribay, A. P3rez. University of the Basque Country. Spain
- 288 Wind Turbine Generation System Implemented with a Car Alternator for Use in Isolated Locations.**
H. Fern3ndez, A. Mart3nez, V. Guzman, M. Gim3nez.
UNEXPO Vicerrectorado Puerto Ordaz. Venezuela.
University of Zaragoza. Spain
University 'Sim3n Bolivar'. Venezuela.
- 304 Behaviour of the Wind-Turbines Under Lightning Strikes Including Nonlinear Grounding System.**
D. Romero, J. Montany3, A. Cancela.
Dep. Of Electrical Engineering. Technical University of Catalonia. Spain.
- 213 Control Strategy Development for an Inverter Controlled Wave Energy Plant.**
R.G. Alcorn, T.D. Finnigan
Energetech Australia Pty Ltd. Australia.
- 273 Spreadsheet Assisted Overall Design of a Wind Turbine Blade.**
U. Aguirre Llonda, J.J. P3rez Rambla, G. Aguirre Zamalloa.
University of the Basque Country.
Ebro-Cant3brica de Energ3as Renovables (ECERSE). Spain.
- 269 Alternatives to the Frequency Control of an Islander Wind Farm.**
I.Zubia, X. Estolaza, L.M. Bandr3s.
University of the Basque Country. Spain.
- 215 Simple Control Schme of Three-Level PWM Converter Connecting Wind Turbine with Grid.**
M. Malinowski, S. Bernet.
Warsaw University of Technology. Poland.
Technical University of Berlin. Germany.

- Remote Disconnection System for Disgtributed Generation Units.**
262 K.J. Sagastabeitia, Z. Aginako, A.J. Mazón, I. Zamora.
University of the Basque Country. Spain.
- Novel Control System Based in DSPs for 800 kW Wind Power Station.**
257 S. Gallardo, F. Barrero, J.M. Carrasco.
E.S.I.S. University of Seville. Spain.
- The Renewable Energy Course at the Technical Engineering School of Barcelona (EUETIB/UPC).**
238 J. de la Hoz, A. de Blas, R. Bargallo.
Technical University of Catalonia. Spain.
- Influence of the Load Models in the Dynamic Voltage Stability of an Electric Power System.**
285 R.M. Monteiro Pereira, C.M. Machado Ferreira, J.A. Díaz Pinto, F.P. Maciel Barbosa.
Instituto Superior de Engenharia. University of Coimbra.
Facultade de Engenharia. University of Porto.
- Power Losses in Outside-Spin Brushless D.C. Motor.**
320 P. Andrada, M. Torrent, J.I. Perat, B. Blanqué
Technical University of Catalonia. Spain

11:30 – 12:45 PLENARY SESSION PL2

ROOM B “FECSA endesa”

Chairman: Ricard Bosch i Tous

PL2 Communication Architectures for Power Distribution Systems and New Tendencies for Intelligent Panels
Jaoquim Daura, SCHNEIDER Electric.

Friday 2 April 2004

9:00 – 11:00 PLENARY SESSION PE

ROOM B “Fecsa endesa”

Chairman: Rafael Pindado Rico

**PE1 Distributed Generation of Energy Using Micro Gas Turbines.
Polygeneration Systems and Fuel Flexibility.**

J.C. Bruno, A. Coronas.

CREVER. ‘Rovira i Virgili’ University. Spain.

**PE2 Measurement of Energy and Power Quality in the Spanish Des-regulated
Market.**

Felipe Montajut, CIRCUTOR