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IEEE
Industrial and Commercial
Power Systems
Technical Conference

May 1 - 5, 2011

Hyatt Regency

Newport Beach, California, USA

<http://sites.ieee.org/icps2011/>

Sponsored by
IEEE Industry Applications Society

Conference Location:

Hyatt Regency Newport Beach

1107 Jamboree Road,
Newport Beach, California, USA 92660
Tel: +1 949 729 1234 Fax: +1 949 644 1552

Directions:

From Orange County/John Wayne Airport (5 miles):

Exit airport to MacArthur Blvd., turn right. Continue 1 mile. Turn right on Jamboree Rd. Travel 3 miles south. Hotel is on right.

From Los Angeles Int'l Airport (50 miles):

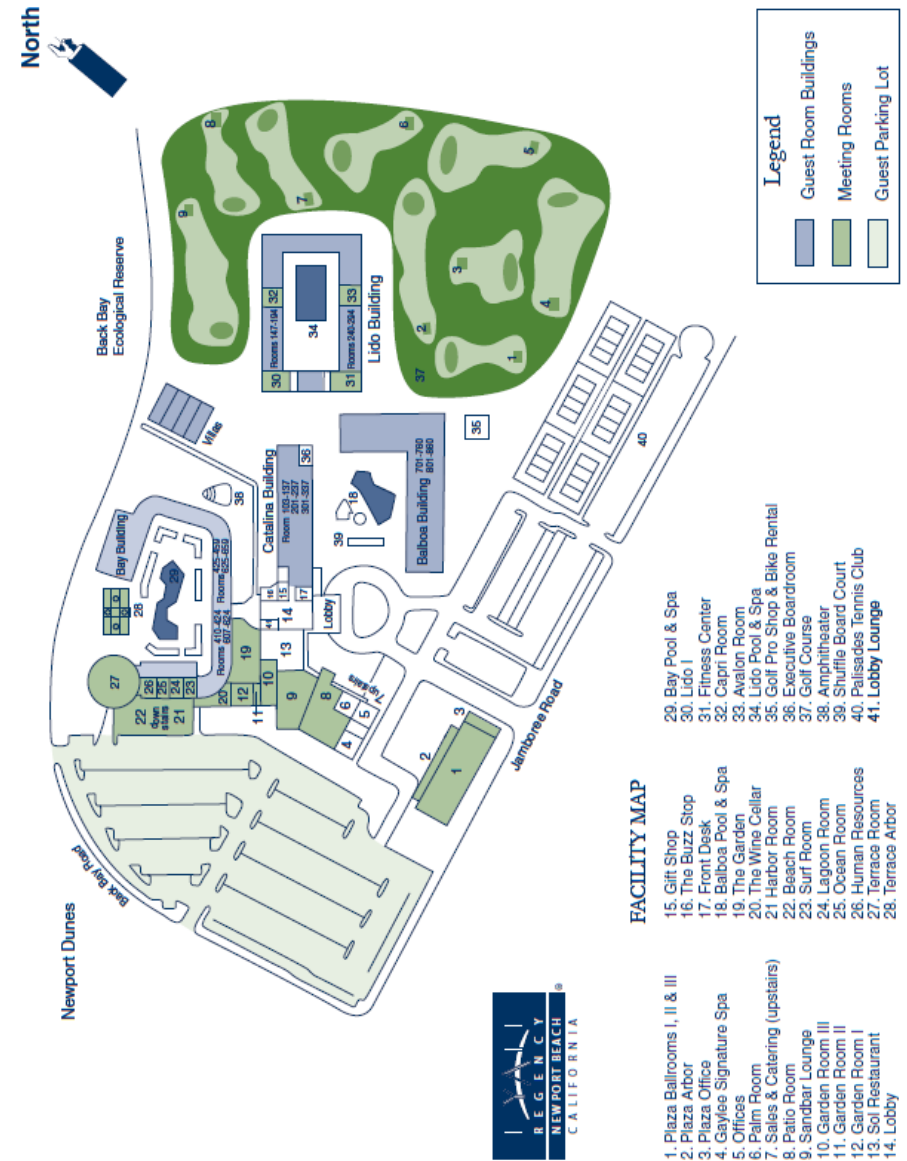
Take 405 South (or 5 South to 55 South) to 73 South. Exit Jamboree Rd. and turn right. Travel 3 miles south. Hotel is on right.

From the San Diego area:

Take 5 North to 405 North. Exit Jamboree Rd. Turn left. Travel 5 miles south. Hotel is on right.

From the Palm Springs Area:

Take I-10 West to CA-60 towards Los Angeles. Take CA-91 south becoming CA-91 West. Take CA-55 South. Take CA-73 South towards San Diego. Exit Jamboree Road and turn right. Hotel on right in approximately 3 miles



<u>Author</u>	<u>Paper Name</u>
Lopopolo, John	2010-PSEC-553
Luna, Ray	2011-PSPC-051
MacFarlane, Bill G	2011-PSEC-019
Mitolo, Massimo	2010-PSEC-562
Mozina, Charles	2011-PSPC-012
Ostojic, Pero	2011-PSPC-020
Panetta, Sergio	2010-PSEC-552
Papallo, Tom	2011-PSPC-015
Parise, Giuseppe	2010-PSEC-562, 563, 564, 565
Parise, Luigi	2010-PSEC-562, 563, 565
Park, John	2010-PSEC-559
Patel, Suhag	2011-PSPC-020, 021, 025, 051
Paul, Dev	2010-PSEC-552
Reggio Anna	2010-PSEC-564
Sanders, Melvin	2011-CSC-022
Schuerger, Robert	2011-CSC-023
Shi, Jie	2010-ESC-523
Shipp, David	2011-PSEC-019
Siu, Sonny	2010-PSEC-553
Su, Chun-Lien	2010-ESC-522
Sui, Huibin	2010-ESC-526
Sutherland, Peter	2010-PSPC-021, 552
Valdes, Marcelo	2010- PSPC-015, PSEC-559
Vico, Jakov	2011-PSPC-020
Wester, Craig	2011-PSPC-020
Wu, Yuan Kang	2010-ESC-528
Yang, Yongping	2010-ESC-523

Schedule at a Glance						
Time	Sunday	Monday	Tuesday	Wednesday	Thursday	
8:00 AM		Plenary Session (Terrace)				
9:00 AM		Working Group and Committee Meetings (Beach, Harbor, Ocean, Lagoon)	Technical Paper presentations (Garden 1 & III)	Technical Paper presentations (Garden 1 & III)	Tutorials (Beach & Harbor)	
10:00 AM						
11:00 AM						
12:00 PM		Lunch break	Lunch break	Awards Luncheon (Terrace)	Lunch break	
1:00 PM						
2:00 PM	TBCC and Working Group Meetings (Garden 1)	Working Group and Committee Meetings (Beach, Harbor, Ocean, Lagoon)	Technical Paper presentations (Garden 1 & III)	Technical Paper presentations (Garden 1 & III)	Tutorials (Beach & Harbor)	
3:00 PM						
4:00 PM						
5:00 PM		ETAP Hospitality Suite* (Plaza Arbor)				*Compliments of ETAP, not provided by IEEE I&CPS Conference
6:00 PM	Sunday Welcome Reception (Plaza Arbor)		Tuesday Evening Dinner (Villa Nova Restaurant)			
7:00 PM						

General Information

Hotel room reservations can be made at:

https://resweb.passkey.com/Resweb.do?mode=welcome_ei_new&eventID=2699360

Hyatt Regency information can be obtained by visiting their website at

<http://www.newportbeach.hyatt.com/hyatt/hotels/index.jsp>

and/or calling the telephone number given above.

The hotel has a shuttle that picks up and drops off guests once an hour at Orange County/John Wayne Airport.

Registration:

On-line registration is available at:

<http://sites.ieee.org/icps2011/>

Registration for Conference will take place at the following locations and times:

Date	Time	Location
Sunday, May 1 st	1:00 to 5:00 PM	Lobby veranda
Monday, May 2 nd	7:00 AM to 4:00 PM	Terrace Room
Tuesday, May 3 rd	7:00 AM to 1:00 PM	Lobby veranda
Wednesday, May 4 th	7:00 AM to 1:00 PM	Lobby veranda

Conference Proceedings:

All registrants for the technical program are entitled to one copy of the Conference Proceedings on CD, which you will receive in your registration packet. Additional copies of the proceedings on CD will be available for sale during the conference at the Registration Desk.

<u>Author</u>	<u>Paper Name</u>
Allock, Dave	2011-PSPC-020
Anthony, Michael	2011-CSC-023
Arno, Robert	2010-CSC-023
Beirne, Mark	2010-CSC-023
Cai, Shang-Jhe	2010-ESC-528
Cardinal, Paul	2010-PSEC-554
Chang, Shun-Yi	2010-ESC-527
Chen, C.S	2010-ESC-524, 525
Chuang, Hung-Shiang	2010-ESC-527
Chuang, Ying-Chun	2010-ESC-527, 528, 529
Chuang, H.J.	2010-ESC-525
Claydon, Glenn	2010-PSEC-559
De Angelis, Maurizio	2010-PSEC-564
Dionise, Thomas J.	2011-PSEC-019
Hesla, Erling	2010-PSEC-560
Hoerauf, Rob	2011-PSPC-011
Hsu, C.T.	2010-ESC-525
Huang, Chi-Jen	2010-ESC-529
Hunt, Richard	2011-PSPC-025, 051
Ilochonwu, Obinna	2010-PSEC-557, 558
Ju, Y.J.	2010-ESC-525
Ke, Yu Lung	2010-ESC-527, 528, 529
Keimel, Chris	2010-PSEC-559
Ku, T. T.	2010-ESC-524, 525
Lee,Wei-Jen	2010-ESC-523, 526
Li,Bo	2010-PSEC-559
Liang, Xiaodong	2010-PSEC-557, 558
Lim, Jeffrey	2010-PSEC-557, 558
Lin, C.H.	2010-ESC-524
Liu, Yongqian	2010-ESC-523
Lorch, Visuth	2011-PSEC-019

I&CPS 2011 Conference Committee

Conference Chair	Robert Schuerger, HP Critical Facility Services
Treasurer	Keith Johnson, Eaton Corp. Thomas Doyle, Jacobs Engineering
Facilities Chair	Annette Malekandrasians, Worley Parsons Prabu Shankar, P2S Engineering
Publicity	Robert Ryan, General Electric
Registration	Steve Schinko, Eaton Corp.
Vendor Support	Randy Denton, CH2M Hill
Web Services	Russell Hunter, Computer
Conference Record	Yigit Bulut, HP Critical Facility Services
Conference Program	Thomas Langer, Parsons Brinckirhoff
Conference Volunteers	John Jacobs, Carollo Engineers Gary Stephens, AECOM Bill Brownell, GE (retired) Jim Easton, UCSD Charles Cai, SCE Ron Takiguchi, City of Santa Monica

Sunday Welcome Reception – 6:00 to 8:00 PM – Plaza Arbor

Take this opportunity to see old friends and make new ones as the conference hosts a light supper buffet, beer and wine. Attendee or Companion badges required along with Sunday Reception ticket (included with full conference or companion registration).

The I&CPS would like to give special thanks to **Eaton Corporation, General Electric and HP Critical Facilities Services** for their financial support of this event.

Tuesday Evening Social Event – 6:30 PM-9:00 PM – Villa Nova Restaurant, 3131 W. Coast Hwy, Newport Beach, CA 92663

Meet in front of the hotel starting a 6:00 PM on Tuesday evening to catch the bus that will take you to Villa Nova Restaurant, for fine Italian dining on the water in Newport Beach. Attendee or Companion badges required along with Tuesday Dinner ticket (included with full conference or companion registration).

Wednesday Awards Luncheon – 11:45 to 1:45 PM – Terrace Room

Join us for the luncheon in which the IEEE I&CPS Department presents the awards for prize papers, the I&CPS Department Achievement Award, the IEEE Richard Harold Kaufmann Award and the special recognition of a new IEEE Fellow. Wednesday luncheon ticket (included with full conference registration).

IEEE and Conference Orientation Plenary Session

Monday – 8:00 to 9:00 AM – Terrace Room

A short orientation session will be held to familiarize attendees with the IEEE, I&CPS Department and the technical conference. The session will provide an understanding of the various groups within the IEEE, the working group meetings for standards, types of technical sessions, committee meetings, and social events. At the end of the session, the attendees should be able to navigate confidently through the conference and obtain maximum value from their experiences.

Authors' Breakfasts – 7:00A.M to 8:00 A.M – Garden II

The Authors' Breakfast is provided **Tuesday and Wednesday** in Garden II for those authors who are presenting a paper that day. The breakfast will be used by the session Chair to coordinate the technical session with the presenters.

Information for Presenters

Audio Visual Equipment will consist of a projector set up for Power Point type presentations. No provisions will be provided for overheads or slides.

ETAP Hospitality Suite*

Tuesday – 5:00 PM to 10:00 PM – Plaza Arbor

*Compliments of ETAP, not part of IEEE I&CPS Conference

Officers and Chairs

Industry Applications Society

President	Bruno Lequesne, Eaton
President Elect	Blake Lloyd, Iris Power LP Vice President
Treasurer	Donald Zinger
Past President	Thomas A. Nondahl, Rockwell

Industrial and Commercial Power Systems Department

Chair	T. David Mills, Savannah River Nuclear Solutions, LLC
Vice Chair – Technical	Peter Sutherland, GE
Vice Chair – Papers	Wei-Jen Lee, University of Texas Arlington
Secretary	Andrew Hernandez, Delphi World Headquarters
Past Chair	Tom Baldwin, INL/Florida State University

Technical Committee Chairs

Codes and Standards	Steven Townsend,
Power Systems Engineering	Massimo Mitola, Chu & Gassmann Engineering
Power Systems Protection	Rob Hoerauf
Energy Systems	Joseph Weber, Emerson-ASCO
Rural Electric Power	Mike Williams, Blue Grass Energy

Thursday, May 5, 2011 1:00 pm – 5:00 pm Beach Room

Tutorial 4: Fundamentals of Micro-Processor Based Relay Protection

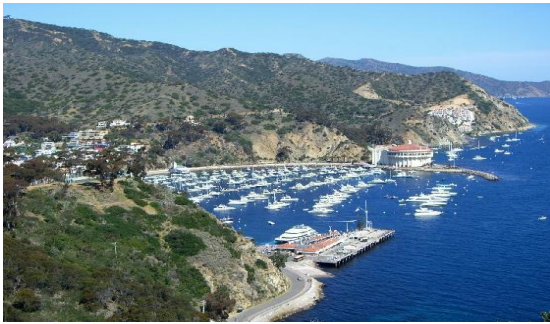
Presenter: Suhag Patel, P.E., GE – Multilin

This tutorial will cover Micro-processor based protective relays provide tremendous versatility. A single relay can provide all of the protective functions that previously would require a panel full of individual relays. But with the added versatility comes added complexity. Which functions should be used for a specific application? The tutorial will provide an overview of the common protective functions available and the purpose for having each of these functions. It will then provide examples of which functions would be appropriate for common applications, such as protecting a transformer, motor and distribution feeder.

Working Groups and Committee Meetings				
Sunday		Monday		
Room		Terrace Room	Ocean Room	Lagoon Room
8:00 AM Room		Plenary Session on IEEE Standards Revision process, etc.		
9:00 AM		Harbor Room TBCC Grounding (P3003) WG Meeting	Beach Room TBCC Protection and Coordination (P3004) WG Meeting	Ocean Room TBCC Emerg. & Standby PS (P3005) WG Meeting
10:00 AM		TBCC Grounding (P3003) WG Meeting	TBCC Power Systems Design (P3001) WG Meeting	ES Main Committee Meeting
11:00 AM		PSE Operational Procedures SC Meeting	TBCC Power Systems Analysis (P3002) WG Meeting	PSE Maintenance, Operations, & Safety SC Meeting
12:00 PM		Lunch		
Room		Beach Room	Ocean Room	Lagoon Room
1:00 PM	Garden I PSP Generator Grounding Protection WG Meeting	Harbor Room TBCC Reliability (P3006) WG Meeting	Beach Room TBCC Protection and Coordination (P3004) WG Meeting	Ocean Room PSP Surge Protection SC Meeting
2:00 PM	TBCC Main Meeting	TBCC Power Systems Reliability SC meeting	PSE Power Systems Analysis SC Meeting	PSP Low Voltage Protection SC Meeting
3:00 PM	TBCC Base Book (P3000) WG Meeting	PSE Grounding SC Meeting	PSE Power Systems Design SC Meeting	PSP Medium Voltage Protection SC Meeting
4:00 PM	TBCC Base Book (P3000) WG Meeting	PSE Power Quality SC Meeting Room	SCC-18 Meeting	PSE Emergency & Standby Power Systems SC Meeting
5:00 PM			TBCC Main Meeting - Summary of WG progress	I&CPS Meetings & Conferences Committee Meeting
				PSP Main Committee Meeting Room
				PSE Main Committee Meeting
				PSE Executive Committee Meeting

Companion and guest programs

Monday, May 2nd – Catalina Island



Day trip the Catalina Island Santa Catalina Island, often called Catalina Island, or just Catalina, is a rocky

island off the coast of the U.S. state of California. The island is 22 miles (35 km) long and eight miles (13 km) across at its greatest width.

Meet in front of the hotel at 8:00 AM on Monday morning to catch the van that will take you to Balboa Pavilion, 400 Main Street, Newport Beach, CA 92661. The van will also pick you back up at Balboa Pavilion around 5:45 PM to return you to the Hyatt Regency.

Points of Interest within Walking Distance:

Balboa Island - Discover the delights of island life on foot, bicycle, or even rollerblades (for rent at several shops) on nearby Balboa Island. Ride the car ferry across to the Fun Zone (containing a Ferris Wheel, bumper cars, carousel, trampoline bungee and arcades) or shop in charming, one-of-a-kind boutiques in the village. 5 minutes travel / 1 mile.

Thursday, May 5, 2011 1:00 – 5:00 pm Harbor Room

Tutorial 3: Grounding and Ground Fault Protection of Medium Voltage Industrial Generators

Presenters: David Shipp, PE; Eaton Electrical (Cutler-Hammer) with Chuck Mozina, PE; Beckwith Electric

This tutorial will cover major and significant changes are occurring in the recommended practices for grounding of medium voltage industrial generators. This tutorial is intended to make those who own and operate industrial medium voltage generators aware of these changes and the fact that currently accepted practice will result in unacceptable generator damage for stator ground faults. The grounding changes discussed in the tutorial are being driven by in-service events where generators protected according to established practice (as outline in IAS standards) have suffered catastrophic generator ground fault damage. These events resulted in an extensive investigation by a Working Group of the IAS resulting in major recommendations in generator grounding to reduce damage and repair time. These recommendations are now being implemented into ANSI/IEEE C37.101 and C37.102 standards. The tutorial discusses the results of the Working Group investigation. Specifically, it addresses: typical generator grounding practices and ground fault protection methods, damage mechanism during stator ground faults, user examples of stator ground fault damage, a new grounding method called hybrid grounding, installation experience with hybrid grounding, impact of grounding changes on system protection.

Thursday, May 5, 2011 **8 am – 12:00 noon Beach Room**

Tutorial 2: Electrical Systems Switching Procedures Considerations in Safety, Reliability and Software Applications

Presenters: Erling Hesla, Giuseppe Parise, Rasheek M. Rifaat, and senior representatives of software suppliers

This tutorial will cover:

- General review of lockout tagout (LO/TO) procedures for industrial electrical systems. Structure switching programs to meet safety mandates.
- Safety during system operation and maintenance and includes detailed discussion on important operational procedures, especially for non-automatic operations.
- Introduces computer based tools to assist in such important tasks with examples using current software to solve switching configuration problems.
- Studies of integrity procedures consider load flow and short circuits analysis

Newport Bay Ecological Reserve - Take guided walking and water tours or explore the Bay on your own. 5 minutes travel / walk to the back of the resort property.

Other Points of Interests:

Laguna Beach
Knott's Berry Farm
Orange County Performing Arts
University of California Irvine
Richard Nixon Library
Edison Field (Angels Baseball)
Honda Center (Mighty Ducks Hockey)
Boating,
Disneyland®
Beaches
Newport at Your Feet Tours

Other Areas of Attractions:

Orange County Museum of Art - 1 km / 0.6 mi
Fashion Island - 1.2 km / 0.8 mi
Balboa Pavilion - 2.1 km / 1.3 mi
Newport Pier - 4 km / 2.5 mi
Bren Events Center - 5.3 km / 3.3 mi
University of California-Irvine - 5.4 km / 3.3 m
Huntington State Beach - 8.4 km / 5.2 mi
Disneyland - 21.8 km / 13.5 mi
SNA-John Wayne Airport - 7.4 km / 4.6 mi

Shopping:

Balboa Island Shops – Marine Ave., Cape Cod-style gift shops, galleries, and restaurants. 80 - 100 retailers – 3 minutes travel / 1 mile

Fashion Island – 200 specialty shops, a Venetian carousel, movie theater, Neiman Marcus, Bloomingdale's Home Store, Juicy Couture, Kate Spade, Fleming's Prime Steakhouse & Wine Bar, Chip & Pepper and Dean & DeLuca – 3 minutes travel / 2 miles

South Coast Plaza – Bloomingdales, Macy's, Nordstrom, Saks Fifth Avenue and Sears – 11 minutes travel / 7 miles

Irvine Spectrum Center – Nordstrom, Target and Macy's, along with more than 120 stores, IMAX theater – 17 minutes travel / 11 miles Anaheim

Garden Walk – 55 stores - restaurants, shops, bowling, movie theaters - IMAX) Located just steps from Disneyland – 25 minutes travel / 19 miles

Tutorials

Thursday, May 5, 2011 8 am – 12:00 noon Harbor Room

Tutorial 1: MV Transformer Failure Due to Circuit Breaker Induced Switching Transients

Presenter: David Shipp, PE – Eaton Electrical (Cutler-Hammer)

This tutorial will cover switching transients associated with circuit breakers have been observed for many years. Recently this phenomenon has been attributed to a significant number of transformer failures involving primary circuit breaker switching. These transformer failures had common contributing factors such as 1) primary vacuum or SF-6 breaker, 2) short cable or bus connection to transformer, and 3) application involving dry-type or cast coil transformers and some liquid filled. This paper will review these recent transformer failures due to primary circuit breaker switching transients to show the severity of damage caused by the voltage surge and discuss the common contributing factors. Next, switching transient simulations in the electromagnetic transients program (EMTP) will give case studies which illustrate how breaker characteristics of current chopping and re-strike combine with critical circuit characteristics to cause transformer failure.

Wednesday - May 4th - afternoon		
Room	Garden I	Garden III
1140 - 1400	Awards Luncheon (Terrace Room)	
	Session 7 – Power System Protection Organizer: Rasheek Rifaat Chair: Rob Hoerauf	Session 8 - Codes/ Standards/ Power System Engineering Organizer: D. Mohla Chair: S. Towsen
1400 - 1405	Introduction & Announcements	Introduction & Announcements
1405 - 1450	2011-PSPC-020 Protection and control of low voltage motors used in industrial applications Vico, Jakov; Allcock, Dave; Wester, Craig; Ostojic, Pero; Patel, Suhag	2010-PSEC-565 Microsystem Criteria in Branch Circuits Design Parise, Giuseppe, Parise, Luigi
	Break	
1510 - 1555	2011-PSPC-051 Protection of Remotely Located Motors Hunt, Richard; Luna, Ray; Patel, Suhag	2011-CSC-023 Reliability Engineering Applied to Critical Operations Power Systems Anthony, Michael; Arno, Robert; Beirne, Mark; Saba, Patrick Saad; Schuerger, Robert
	2011-PSPC-015 Traditional Time Current Curves (TCC) Are Not Enough, Adding I ² T Considerations Valdes, Marcelo; Papallo, Tom	2011-CSC-022 NFPA 780 Standard for the Installation of Lightning Protection Systems 2011 Edition Sanders, Melvin

Tuesday - May 3rd - Morning		
Room	Garden I	Garden III
	Session 1 - Energy Systems Organizer: Joe Webber Chair: Wei-Jen Lee	Session 2 - Power Systems Engineering Organizer: Massimo Mitolo Chair: Massimo Mitolo
0800 - 0805	Introduction & Announcements	Introduction & Announcements
0805 - 0850	2010-ESC-526 An AMI Based Measurement and Control System in Smart Distribution Grid Sui, Huibin; Lee, Wei-Jen	2010-PSEC-560 User Specifications for operational and switching procedures, a WG Report Hesla, Erling
	2010-ESC-525 Design of Tie Line Tripping and Load Shedding Scheme for Distribution Microgrid Systems with Wind Power Generation Chen, C.S.; Hsu, C.T.; Lin, C.H.; Ku, T.T.; Chuang, H.J.; Ju, Y.J.	2011-PSEC-019 Transformer failure due to circuit breaker induced switching transients Shipp, David; Dionise, Thomas; Lorch, Visuth; MacFarlane, Bill
0940 - 1000	Break	
1000 - 1045	2010-ESC-527 Development of Battery Float Charge Technique Using Parallel-Loaded Resonant Converter at Discontinuous Conduction Operation Chuang, Ying-Chun; Chuang, Hung-Shiang; Ke, Yu-Lung; Chang, Shun-Yi	2010-PSEC-562 Grounding System in Marinas: the Micro-System approach Parise, Giuseppe; Mitolo, Massimo; Parise, Luigi
	2010-ESC-523 Short-term Wind Power Prediction Based on Wavelet-Support Vector Machine and Statistic Characteristics Analysis Shi, Jie	2010-PSEC-563 Branch Circuits Ecodesign Parise, Giuseppe; Parise, Luigi
1140 - 1255	Lunch	

Tuesday - May 3rd - Afternoon		
Room	Garden I	Garden III
	Session 3 - Power Systems Protection Organizer: Rasheek Rifaat Chair: Rasheek Rifaat	Session 4 - Power Systems Engineering Organizer: Massimo Mitolo Chair: Peter Sutherland
1300 - 1305	Introduction & Announcements	Introduction & Announcements
1305 - 1350	2011-PSPC-025 Dimensioning CTS for Small Generator Differential Protection Hunt, Richard; Patel Suhag	2010-PSEC-554 IEC Grounding Terminology Related to Typical North American Installations Cardinal, Paul
	2011-PSPC-012 Improvements in Protection and Commissioning of Digital Transformer Relays at Medium Voltage Industrial Facilities Mozina, Charles	2010-PSEC-557 Influence of Reactors on Input Harmonics of Variable Frequency Drives Liang, Xiaodong; Ilochonwu, Obinna; Lim, Jeffrey
1440 - 1500	Break	
1500 - 1545	2011-PSPC-011 Unexpected Changes to the Protection of a 4160 V Motor Hoerauf, Rob	2010-PSEC-558 Power System Optimization for Industrial Facilities Using Power Studies Liang, Xiaodong; Lim, Jeffrey; Ilochonwu, Obinna
	2011-PSPC-021 Investigations of transformer connections and relay settings for temporary generator step up unit Sutherland, Peter; Parra, Carlos	2010-PSEC-555 Implementation of Active Filter circuit with Boost Converter in Power System Huang, Chi-Jen

Wednesday - May 4th - morning		
Room	Garden I	Garden III
	Session 5 - Energy Systems Organizer: Wei-Jen Lee Chair: Joseph Weber	Session 6 - Power Systems Engineering Organizer: Massimo Mitolo Chair: Kent Saylor
0800 - 0805	Introduction & Announcements	Introduction & Announcements
0805 - 0850	2010-ESC-524 Design of Phase Identification System to Support Three-Phase Loading Balance of Distribution Feeders Chen, C.S.; Ku, T.T.; Lin, C.H.	2010-PSEC-552 A Novel Method of Measuring Inherent Power System Charging Current Paul, Dev; Sutherland, Peter; Panetta, Sergio
	2010-ESC-522 Load Estimation in Industrial Power Systems for Expansion Planning Su, Chun-Lien	2010-PSEC-553 Compatibility, Sizing and Design Considerations for Generators and UPSs in Tiers I, II, III & IV Topologies Siu, Sonny; Lopopolo, John
0940 - 1000	Break	
1000 - 1045	2010-ESC-528 Photovoltaic Energy Battery Charger with a Series-Parallel Load Resonant Converter Ke, Yu-Lung; Chuang, Ying-Chun; Wu, Yuan-Kang; Cai, Shang-Jhe	2010-PSEC-564 A Darwinian Evolution Of Electrical Power Systems Design For Preventing Seismic Risks In Sensitive Buildings Parise, Giuseppe; De Angelis, Maurizio; Reggio Anna
	2010-ESC-529 Design of Closed-Loop Buck-Boost Converter for LED Driver Circuit Chuang, Ying-Chun; Huang, Chi-Jen; Ke, Yu-Lung	2010-PSEC-559 Micro-ElectroMechanical-System (MEMS) Based Switches for Power Applications Valdes, Marcelo; Keimel, Chris; Clayton, Glenn; Li, Bo; Park, John