

NEW ORLEANS

2010

2010

Transmission and Distribution
Conference and Exposition

Smart Solutions for a Changing World

April 19-22, 2010

Ernest N. Morial Convention Center
New Orleans, Louisiana



Housing and Registration
Available Online at:

www.ieeet-d.org



Technical Program



Smart Solutions for a Changing World

The ultimate world class event for transmission and distribution professionals in April 2010. This year's event follows a record-breaking performance and attendance at McCormick Place in Chicago in 2008.

We are pleased to offer special emphasis subjects throughout the entire conference including a focus on the Smart Grid and its impact on our industry and the economies of the world.

Dear Colleague:

It is our privilege to offer you this personal invitation to attend and participate in the single most significant power-delivery professional educational event of 2010. **The IEEE PES Transmission and Distribution Conference and Exposition** comes home to the city of New Orleans, April 19-22, 2010—a city blessed with a tradition of magical sights and sounds, a rich and romantic history that will captivate you and move your emotions from dawn 'til dusk.

The 2010 IEEE PES Transmission and Distribution Conference and Exposition in New Orleans is designed and organized to provide the international power-delivery community with the information and detail necessary to manage technology and business solutions now and in the decades ahead.

The Smart Grid, cyber security, cap and trade, the impact of stimulus spending on the electric utility industry, renewable energy sources, energy storage, improvements in transmission and distribution reliability and power quality and end-user electrical system design and operation are just a few of the topics being talked about today throughout the worldwide electric utility industry. The 2010 Transmission and Distribution Conference and Exposition, April 19-22 in New Orleans, Louisiana will address how these and other issues affect utilities before, during and after the big event next year.

Our expert professionals, educators, exhibiting companies and the local organizing committee, the *Crescent City Currents*, have taken great care to craft a diverse program for the 2010 conference that will broaden your knowledge of the power-delivery industry regardless of what vertical market you may practice in. *We are pleased to inform our 2010 New Orleans Conference registrants that the attendee fees will not increase from our 2008 T and D Conference and Exposition that was held in Chicago.*

IEEE PES Commitment to New Orleans

In 2005 Hurricane Katrina forced T and D to move from New Orleans. Following the hurricane the IEEE PES made a commitment to bring back the Conference to the City as soon as possible. It is truly a pleasure to be back in the "Big Easy" and honor that commitment.

Since Hurricane Katrina hit in 2005, New Orleans has made a steady and continuous recovery. Although some residents and businesses have relocated, the majority of businesses and residents have stayed in the area, rebuilt their homes and businesses and kept a vibrant and colorful southern tradition alive and strong. The 2010 event will be held in the Morial Convention Center on the Mississippi riverfront. The convention center and hotels are located in the Central



St. Louis Cathedral, Photographer: Richard Nowitz, Courtesy: NOCVB.

Business District and the world famous French Quarter area. This area was minimally impacted by the hurricane.

The Attendees

The 2010 event will draw attendees from domestic and overseas based power-delivery companies and organizations, including: investor-owned utilities, municipal electric utilities, rural electrics, Federal power agencies, publicly-owned electrics, renewable energy source companies such as wind, solar, geothermal power companies, consulting engineering companies, line and substation construction companies, independent power producers, wholesalers, and distributors of electric utility equipment, manufacturers, commercial and industrial facility engineers and energy managers, state and Federal regulatory agencies and research facilities, energy service companies, marketing companies and universities and colleges.

As an attendee you will have an opportunity to meet with executives and general managers, directors and department heads, project managers, engineering and operating managers, engineering colleagues, and researchers from around the world who are interested in improving their operating methods and procedures.

The Exposition & Technical Tours

Not only will your participation allow you to interact with attendees from around the world, but you will be exposed to the latest innovations and technologies from the most informed manufacturers and services providers across the broad spectrum of product categories.

From the most advanced IT and automation systems to other related suppliers and service companies, every manufacturer who has something to offer will be at this year's event to showcase their products. Hundreds of exhibitors from around the world will present and exhibit their best technological offerings.

To complement your knowledge building experience, attendees are invited to get on board any number of

Technical Tours that will visit some of the area's most advanced technological sites and facilities, including: Entergy's Gretna Transmission Operations Center near downtown New Orleans, the Laser Interferometer Gravitational Wave Observatory (LIGO), the Static Var Compensator at Ninemile, the Army Corps of Engineers Hurricane Protection Project and the NASA/UNO Michoud Assembly Facility.

If you would like to leave your mark on the City of New Orleans and further the recovery effort, consider signing up for the St. Bernard Project. The St. Bernard Project has helped restore the homes and lives of New Orleanians whose homes were devastated in the wake of Hurricane Katrina.

Companions can make reservations for many of New Orleans' places of interest with www.neworleanssteamboat.com/IEEE/intro.htm. We want to encourage you to get out and visit one of the city's many fascinating sites, including some of the historic plantations in the area, the Garden District, the House of Blues or if you have the interest,

perhaps you might want to take in a New Orleans cooking demonstration or tour the Louisiana Marsh.

It all begins on Monday April 19, with a full day of tutorials followed by the conference reception, a *Celebration on the River*. Join your colleagues from around the world at this very special evening. This is an experience that will have you keyed with an enthusiasm for a conference like no other.

The local committee here in New Orleans, our host utility, Entergy, and the hundreds of volunteers who are engaged in developing a truly unique forum invite and welcome you to the Big Easy April 19-22, 2010.



Mark McCulla
General Chair



Tommy Mayne
North America T and D Chair

2010 Local Organizing Committee Members

Not Pictured: Nancy Needel, *Housing and Hotels*, Cindy Goeffert, *Finance*, Carole Kulinski, *Registration*, Dr. Dimitrios Charalampidis, John Wilson, Dean Ruiz, Leo Holzenthal, Ittiphong, Leevongwat, Russ Trahan, *Collegiate Program*, Earl Vedros, *Volunteers*, Sylvia James, *International*, Bennie Daigle, *Industrial Relations*, Thomas E. Slack, *VIPs*, Rosie Garrett, *Committee Administrative Assistant*, Catherine N. Salvaggio, Charles Scheffler, Mary Claire Peterson, John Wilson, John Meredith and Jason Stamp, *Technical Program Committee*.



Mark McCulla
General Chair



Tommy Mayne
*North American
T&D Chair*



Barbara Powell
Exhibits



Francis Grosz
Technical Program



Dr. Edit Kaminsky
*Bourgeois
Technical Program*



Melonie Hall
Finance



Ed Myers
Finance



Greg Thurnher
*Technical Tours &
Registration*



E. C. Aertker
Registration



Erick Aertker
Vendor Liaison



Rowland James
*Super Sessions &
Technical Tours*



Sharma Kolluri
*International &
Super Sessions*



Stephen D. Bourg
Collegiate Program



Barry LeCerf
*Marketing &
Promotion*



Richard Miller
Arrangements



Suzanne Miller
Arrangements



Ken Spann
Volunteers



Bob Gonzalez
Vendor Liaison



Keith Kliebert
VIPs



Michelle Bourg
VIPs



Jeanne Hedrick
Web Master



Al Rotz
*IEEE PES President
2010-2011*



Wanda Reeder
*IEEE PES Immediate
Past President 2008-
2009*



Judd Putnam
*PES Vice President
Meetings & Activities*



Pat Ryan
*IEEE PES Executive
Director*

Schedule of Events

Monday, April 19

8:00 am-5:00 pm
Tutorial Sessions-Offered to attendees as an in-depth knowledge building experience.
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

- DNP3 Fundamentals
- DNP3 In the Real World
- Fundamentals of Wind Energy
- Smart Distribution Grid and the Advanced Integrated Distribution Management System (IDMS)
- Gas Insulated Substations and Lines
- Static VAR Compensators
- Secondary Network Design and Operation
- Breaker Failure Protection Guide

Technical Tour Schedule

7:45 am-5:00 pm
St. Bernard Project: Rebuilding the homes and lives of New Orleanian Families

9:00 am-11:30 am
Entergy's Transmission Static Var Compensator at Nine Mile Plant

1:30 pm-3:30 pm
Entergy's Gretna Transmission Operations Center-Near Downtown New Orleans

Companions and International Visitors

8:00 am-5:00 pm
Companion Hospitality Room
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-5:00 pm
International Visitors Center Open
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

6:00 pm-9:00 pm
CONFERENCE RECEPTION
Celebration on the River-Naturally Nawlins
Buses departing hotels at 5:30 pm and returning until 10:00 pm

Companion Tours

Book and reserve your space at www.neworleanssteamboat.com/IEEE/intro.htm

Tuesday, April 20

8:00 am-9:45 am
OPENING SESSION
Auditorium Second Level
Ernest N. Morial Convention Ctr.

8:00 am-5:00 pm
Plain Talk Courses for the Non-Power Engineering Professional-Part 1-The Grid
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

10:00 am-5:00 pm
Exposition Halls Open (Halls F, G, H, I, J)
Ernest N. Morial Convention Ctr.

11:30 am-1:00 pm
Luncheon in the Exposition Halls
Ernest N. Morial Convention Ctr.

12:00 noon-2:00 pm
Student Poster Sessions
Poster Session Area (Hall F)
Ernest N. Morial Convention Ctr.

1:00 pm-4:15 pm
Super Session 1
Energy Storage and the Integration of Renewables
(includes 15 minute break at 3 pm)
Auditorium, Second Level
Ernest N. Morial Convention Ctr.

10:15 am-12:15 pm
1:00 pm-3:00 pm
3:15 pm-5:15 pm
Technical Poster Sessions (Hall F)
Panel Sessions, Second and Third Level Meeting Rooms
Ernest N. Morial Convention Ctr.

1:00 pm-3:00 pm
3:15 pm-5:15 pm
Education Track -Topics of Interest for Transmission and Distribution Professionals
Third Level Meeting Rooms
Ernest N. Morial Convention Ctr.

1:00 pm-3:00 pm
Engineering Ethics
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

Technical Tour Schedule

1:30 pm-4:00 pm
Entergy's Transmission Static Var Compensator at Nine Mile Plant

Companions and International Visitors

8:00 am-5:00 pm
Companion Hospitality Room and Fashion Show
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

7:00 am-5:00 pm
International Visitors Center Open
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

Companion Tours

Book and reserve your space at www.neworleanssteamboat.com/IEEE/intro.htm

Wednesday, April 21

8:00 am - 5:00 pm
Smart Grid Day At T and D
(See pgs.9 and 11)

Attendees are invited to focused sessions on Smart Grid Technology and Innovation throughout the day. See www.ieeet-d.org for Smart Grid Day registration details.

8:00 am-10:00 am
Engineering Ethics Encore
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-10:00 am
10:15 am-12:15 pm
1:00 pm-3:00 pm
3:15 pm-5:15 pm
Technical Poster Sessions (Hall F)
Panel Sessions, Second and Third Level Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-10:00 am
10:15 am-12:15 pm
1:00 pm-3:00 pm
3:15 pm-5:15 pm
Education Track -Topics of Interest for Transmission and Distribution Professionals
Third Level Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-5:00 pm
Plain Talk Courses for the Non-Power Engineering Professional-Part 2-Delivering Power to the Customer
Meeting Rooms
Ernest N. Morial Convention Ctr.

8:30 am-10:30 am
Super Session 2-The Smart Grid
Auditorium, Second Level
Ernest N. Morial Convention Ctr.

9:30 am-5:00 pm
Exhibitor Info Sessions
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

10:00 am-6:00 pm
Exposition Halls Open (Halls F, G, H, I, J)
Ernest N. Morial Convention Ctr.

9:00 am-11:00 am
Student Job Fair
Exposition Halls (Hall F)
Ernest N. Morial Convention Ctr.

11:30 am-1:00 pm
Collegiate/GOLD/Industry Luncheon
Exposition Halls (TBD)
Ernest N. Morial Convention Ctr.

1:00 pm-3:00 pm
Super Session 3
Cyber Security of T&D Control System Assets
Auditorium, Second Level
Ernest N. Morial Convention Ctr.

4:30 pm-6:00 pm
Networking Reception
Exposition Halls
Ernest N. Morial Convention Ctr.

Technical Tour Schedule

9:00 am-11:30 am
Entergy's Gretna Transmission Operations Center

8:00 am -1:00 pm
Army Corps of Engineers Hurricane Protection Tour

Companion Tours
Book and reserve your space at www.neworleanssteamboat.com/IEEE/intro.htm

Companions and International Visitors

8:00 am-5:00 pm
Companion Hospitality Room
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-5:00 pm
International Visitors Center Open
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

Thursday, April 22

8:00 am-10:00 am
10:15 am-12:15 pm
1:00 pm-3:00 pm
Technical Poster Sessions (Hall F) Panel Sessions, Second and Third Level Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-10:00 am
10:15 am-12:15 pm
1:00 pm-3:00 pm
Education Track-Topics of Interest for Transmission and Distribution Professionals
Third Floor Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-5:00 pm
Plain Talk Courses for the Non-Power Engineering Professional-Part 3- Power Systems Basics
Meeting Rooms
Ernest N. Morial Convention Ctr.

10:15 am-12:15 pm
Super Session 4
Cap and Trade and Its Impact on the Electric Utility Industry
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

9:30 am-2:00 pm
Exhibitor Info Sessions
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

10:00 am-3:00 pm
Exposition Halls Open (Halls F, G, H, I, J)
Ernest N. Morial Convention Ctr.

1:00 pm-3:00 pm
Special Interest Sessions
These sessions are focused on in depth issues that are timely and have a high level of interest to attendees.
Second and Third Level Meeting Rooms
Ernest N. Morial Convention Ctr.

2:30 pm-4:00 pm
Closing Celebration & Reception
[See you in Orlando, Florida in 2012](#)
Ernest N. Morial Convention Ctr.

Technical Tour Schedule

9:00 am-3:00 pm
Laser Interferometer Gravitational Wave Observatory (LIGO)

9:00 am-1:00 pm
NASA UNO/Michoud Assembly Facility

Companions and International Visitors

8:00 am-12:00 noon
Companion Hospitality Room Fashion Show
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

8:00 am-5:00 pm
International Visitors Center Open
Second Level Meeting Rooms
Ernest N. Morial Convention Ctr.

Important Schedule Notes

Companion Hospitality Room

Please note for your convenience and comfort the companions' hospitality room at the Ernest N. Morial Convention Center will be open from 8:00 am-5:00 pm on Monday, April 19, 8:00 am-5:00 pm on Tuesday, April 20 and Wednesday, April 21 and from 8:00 am-12:00 noon on April 22. You are required to wear your companion registration badge for admittance to the hospitality room.

Bus Schedule

Free conference and exposition shuttle buses will operate approximately every 20 minutes during peak times between designated conference hotels and Ernest N. Morial Convention Center on the following schedule. Schedules will be posted in each hotel.

Monday, April 19, 7:00 am-5:30 pm Wednesday, April 21, 7:00 am-6:45 pm
Tuesday, April 20, 7:00 am-6:00 pm Thursday, April 22, 7:00 am-6:30 pm

Opening Conference Reception Shuttle Bus

In addition, a free shuttle will operate between designated conference hotels and the Aquarium beginning at 5:30 pm and returning until 10:00 pm on Monday, April 19.

Please check the website at www.ieeet-d.org for updates to the schedule.

TECHNICAL PROGRAM AT A GLANCE

Time	Monday April 19	Tuesday April 20	Wednesday April 21 (Smart Grid Day)			Thursday April 22				
8 AM - 00:15:30:45	Tutorials (CEUs awarded)	Opening Plenary	Smart Grid Opening	Educa-tional Tracks and Ethics	Panel Sessions	Poster Paper Sessions	Special Interest Session	Educa-tional Tracks	Panel Sessions	Poster Paper Sessions
9 AM - 00:15:30:45			Super Session 2: Smart Grid							
10 AM - 00:15:30:45			Break	Break	Break	Break				
11 AM - 00:15:30:45	Tutorials (CEUs awarded)	Poster Paper Sessions	Transmission and Distribution Optimization	Educa-tional Tracks	Panel Sessions	Poster Paper Sessions	Super Session 4: Cap and Trade	Educa-tional Tracks	Poster Paper Sessions	Exhibits
12 M - 00:15:30:45			Break							
1 PM - 00:15:30:45			Lunch (on your own)	Lunch in Exhibit Hall	Lunch (on your own)			Lunch (on your own)		
2 PM - 00:15:30:45	Tutorials (CEUs awarded)	Super Session 1: Energy Storage & Integra-tion of Renewables	Educa-tional Tracks and Ethics	Panel Sessions	Poster Paper Sessions	Super Session 3: Cyber-Security of T&D Control Systems Assets	Educa-tional Track	Panel Sessions	Poster Paper Sessions	Exhibits
3 PM - 00:15:30:45		Break								
4 PM - 00:15:30:45		Super Session 1 (continued)	Educa-tional Tracks	Panel Sessions	Poster Paper Sessions	Current Topics in Smart Grid Technology	Educa-tional Track	Panel Sessions	Poster Paper Sessions	
5 PM - 00:15:30:45			SG wrapup							Network-ing Reception
6 to 9 PM	Conference reception									Closing Celebration

Explanation of Panel and Poster Session Numbering

Each Technical Program Session is assigned a unique identifying number. For Panel and Poster Sessions, this number is composed of a two or three letter code identifying the sponsoring Technical Committee, a sequence number, two letters identifying the day, and a number identifying the time block during the day. A "P" is appended for Panel sessions.

The Committee identifiers are:

- ACE Power System Analysis, Computing, and Economics Committee
- ED Energy Development and Power Generation Committee
- EM Electric Machinery Committee
- ET Emerging Technologies Coordinating Committee
- IC Insulated Conductors Committee
- IG Intelligent Grid Coordinating Committee
- MS Marine Systems Committee
- PSC Power Systems Communications Committee
- PSD Power System Dynamic Performance Committee
- PSI Power System Implementation and Measurements Committee
- PSO Power Systems Operations Committee
- PSP Power System Planning and Implementation Committee

- PSR Power System Relaying Committee
- SG Switchgear Committee
- SPD Surge Protective Devices Committee
- SS Substations Committee
- TD Transmission and Distribution Committee
- TR Transformers Committee
- WP Wind Power Coordinating Committee

The Time Block identifiers are:

- 1 8:00 AM – 10:00 AM
- 2 10:15 AM – 12:15 PM
- 3 1:00 PM – 3:00 PM
- 4 3:15 PM – 5:15 PM

Important Notes:

- See page 7 (next page) for a detailed grid and numbering of Panel and Poster Sessions, Educational Tracks and Engineering Ethics.
- See page 11 for complete details of the Technical Program beginning with this year's program focusing on the Smart Grid and continuing with this year's planned Super Sessions (page 12), Tutorials (page 13), Engineering Ethics (page 15), Educations Tracks (page 15), Panel Sessions (page 17) and Poster Sessions (page 25).

TECHNICAL PROGRAM AT A GLANCE

Panel and Poster Sessions, Educational Tracks and Engineering Ethics

		Panel Sessions				Poster Paper Sessions					Educational Tracks		
Day	Time	Room 1	Room 2	Room 3	Room 4						Fundamentals	Advanced	
Tuesday	8:00-10:00												
	10:15-12:15					SG01Tu2	TD01Tu2	TR01Tu2	PSD01Tu2				
	1:00-3:00	TD02Tu3P		PSO01Tu3P	WP01Tu3P	ED01Tu3	IC01Tu3	TR02Tu3			ES01	EE01	
	3:15-5:15	TD03Tu4P	ACE01Tu4P		WP02Tu4P	EM01Tu4	TD04Tu4	PSP01Tu4	ET01Tu4	SS01Tu4		ES02	ES09
Wednesday	8:00-10:00	TD05Wd1P	ACE02Wd1P		PSC01Wd1P	PSR01Wd1	MS01Wd1	IG01Wd1			EE02	ES10	
	10:15-12:15	TD06Wd2P	PSD02Wd2P	PSP02Wd2P	PSC02Wd2P	ACE03Wd2	TD07Wd2	IG02Wd2	SPD01Wd2			ES03	ES11
	1:00-3:00	TD08Wd3P		PSO02Wd3P	PSC03Wd3P	ACE04Wd3	TD09Wd3	TD10Wd3	SS02Wd3	SS03Wd3	SS04Wd3	ES04	ES12
	3:15-5:15		PSD03Wd4P	PSP03Wd4P	ED02Wd4P	ACE05Wd4	TD11Wd4	PSO03Wd4	PSI01Wd4	PSC04Wd4		ES05	ES13
Thursday	8:00-10:00	TD12Th1P				ACE06Th1	TD13Th1	PSP04Th1			ES06	ES14	
	10:15-12:15					ACE07Th2	TD14Th2	PSO04Th2	PSD04Th2			ES07	ES15
	1:00-3:00										ES08	ES16	

Smart Solutions for a Changing World Conference Highlights

Monday, April 19, 2010, 6:00 pm-9:00 pm

Conference Reception

Join your colleagues from around the world for a
Celebration on the River

Tuesday, April 20, 2010, 8:00 am-9:45 am

Opening General Session

Auditorium, Second Level

Ernest N. Morial Convention Center

This year's Opening General Session of the 2010 IEEE PES Transmission and Distribution Conference and Exposition will focus on a major issue(s) confronting the worldwide power-delivery industry in 2010 and beyond. Throughout the Opening Session expert speakers will offer their perspectives from where they sit as participants in the power-delivery industry.



Super Sessions (Tuesday-Thursday)

Ernest N. Morial Convention Center

Super Session 1

Energy Storage and the Integration of Renewables

Tuesday, April 20, 2010

1:00 pm-4:15 pm

(includes 15 minute break at 3 pm)

Super Session 2

Smart Grid

Wednesday, April 21, 2010

8:30 am-10:30 am

Super Session 3

*Cyber Security of T&D Control
System Assets*

Wednesday, April 21, 2010

1:00 pm-3:00 pm

Super Session 4

*Cap and Trade and Its Impact on the Electric
Utility Industry*

Thursday, April 22, 2010

10:15 am-12:15 pm

Technical Panel Sessions

Tuesday April 20-Thursday, April 22, 2010
(Ongoing)

Technical panel sessions are scheduled each day of the conference from Tuesday, April 20 to Thursday, April 22.

Panel sessions are an important and integral part of the technical program. Dozens of panel sessions have been organized by the various PES technical committees and will be chaired by recognized experts in the field. **Limited to registered full conference attendees only.**

Poster Sessions

Tuesday April 20-Thursday, April 22, 2010
(Ongoing)

A popular feature of the previous Transmission and Distribution Conference and Exposition events is Poster Sessions. Poster Sessions will be presented from Tuesday, April 20 to Thursday, April 22.

Special Interest Sessions

These sessions are focused on in-depth issues that are timely and have a high level of interest to attendees. Attendees should check online at the event web site www.ieeet-d.org for regular updates to this segment of the technical program.

Educational Tracks

Tuesday April 20-Thursday April 22, 2010

Two educational tracks are offered focusing on power systems fundamentals and other current hot topics. The subjects will be taught by university professors and experts in the field. Limited to registrants with the Educational Track option.



Smart Grid Day at T & D

8:00 am-5:15 pm, Wednesday, April 21

Development of a smart grid is becoming a household term not only in the U.S. but all over the world. Development of smart electrical grid has become a key element in the present administration's plan in lowering energy costs for consumers, achieving energy independence, and reducing greenhouse gas emissions. According to the definition by Department of Energy, a smart grid integrates advanced sensing technologies, control methods and integrated communications into the existing electricity grid. Although smart grid presents opportunities for utilities and consumers to benefit from the efficient management of energy, there are some major challenges facing the smart grid area and these concerns must be addressed prior to effective deployment of the smart grid technologies. (See further details on page 11.)

Exhibitor Info Sessions

As an attendee, be sure to schedule a time to attend the exhibitor info-sessions. These one hour sessions provide you the opportunity to gather information and ask questions of the experts as they demonstrate and explain new and exciting dimensions of their business in an uninterrupted setting.

Continuing Education and Professional Development

Continuing professional education for licensed engineers is measured in Professional Development Hours (PDH) in some parts of the U.S. A PDH is one contact hour of instruction. Currently, thirty states mandate Professional Development Hours to maintain P.E. licensure, each with varying requirements. CEUs readily translate into PDHs (1 CEU=10 PDHs), though PDHs do not convert automatically to CEUs. Please check the schedule of courses at the 2010 Conference for the CEU and PDH credits offered. Watch for updates at www.ieeet-d.org.

Conference Proceedings

All conference technical poster and panel session papers will be placed in the conference proceedings and provided on a CD-ROM to all full conference registrants, free of charge. Additional copies will be available for a fee.

Special Short Courses

Plain Talk Courses for the Non-Power Engineering Professional

Tuesday-Thursday

8:00 am-5:00 pm each day

Second Floor Meeting Rooms

Ernest N. Morial Convention Center

A special separate registration is required for this course, although full conference registration is not required. The focus of this course is to provide a thorough found-

ation in electric power systems planning, operations and economics and various regulatory frameworks. Basic electrical terminology and concepts are explained in simple to understand terms with regards to design, construction, operations and maintenance of power plants, substations and transmission and distribution lines. Basic electrical safety concepts are included.

The Grid

Tuesday, April 20, 8 a.m.-5 p.m.

The Grid—The Interconnected Electric Bulk Power System

Delivering Power to the Customers

Wednesday, April 21, 8 a.m.-5 p.m.

Delivering Power to Customers—Understanding the Planning and Operations of Today's Distribution System: Substations and Radial Lines

Power System Basics

Thursday, April 22, 8 a.m.-5 p.m.

Power System Basics—Understanding the Electrical Utility Operation Inside & Out

Save the Time and Date!

Networking Reception

Wednesday, April 21, 4:30 pm - 6:00 pm

Exposition Hall, Ernest M. Morial Convention Center

In the constantly evolving power-delivery industry every moment you can spend with a colleague from around the world is important. Our networking reception is perfectly designed to bring together a multitude of national and international product specialists, experts and industry leaders for a relaxing get-to-know-you gathering. You can interact with and meet new acquaintances and renew



previous ones at the Networking reception which will be held at the Ernest N. Morial Convention Center on Wednesday at 4:30 pm to 6:00 pm.

International Visitors Center

The IEEE PES is an international organization with a desire to attract a worldwide audience of electric utility professionals and associates to the 2010 event. During the Conference and Exposition, international attendees are invited to visit the International Visitors Center located on the Second Level at the Ernest N. Morial Convention Center.

Visitors to the Center will be welcomed by a representative of the conference and exposition committee who will assist international attendees with planning their visit to the Conference and Exposition and New Orleans. Translators will be available to answer and assist with travel questions.

Advance Registration

Attendees are now able to access our web site at www.ieeet-d.org and click on the registration button, complete the form and pay by credit card. We are pleased to inform our 2010 New Orleans conference registrants that the attendee fees will not increase from our 2008 T and D Conference that was held in Chicago.

All conference participants are urged to register in advance. Registration badges are required to board conference shuttle buses and to attend the Conference Opening Reception.

On Site Registration Hours

On site registration will be located at the Ernest N. Morial Convention Center. The schedule of operation is as follows:

Monday, April 19

7:00 am-5:00 pm

Tuesday, April 20

7:00 am-5:00 pm

Wednesday, April 21

7:00 am-5:00 pm

Thursday, April 22

8:00 am-12:00 noon

Housing Information

We offer a wide-range of hotels with rates for every budget. All the official hotels are within walking distance or will have IEEE PES shuttle service to the convention center.

On Peak is the official housing authority and will

begin taking reservations for the IEEE PES Transmission and Distribution Conference and Exposition – October 19, 2009.

We urge you to make housing reservations online at www.ieeet-d.org.

Closing Ceremony and Reception

Orlando, Florida in 2012! It's worth the trip.

Join us on Thursday afternoon at 2:30-4:00 pm as we lay to rest our 2010 Conference and Exposition in New Orleans and look to 2012 for the next big celebration in one of America's best convention cities—Orlando, Florida. We'll say goodbye to all the people we've met and talked with during the week.



We will be ready to point the way to the next Transmission and Distribution Conference and Exposition and enjoy a small sampling of what Orlando has to offer as our Orlando host and welcoming committee provides all of us with an idea of the traditions that make the city a great destination.

Lake Eola Park is a popular destination in the downtown area. Photo Courtesy of the Orlando CVB.®

Collegiate/GOLD Activities Connect Students and Recent Graduates with the Experts in the Industry

The future engineers of the electric power industry who are enrolled and studying at colleges and universities will have an opportunity to present papers they have prepared under the supervision of a sponsoring professor. Universities are invited to submit student papers on any topic related to new developments in power delivery and operations.

The participating student and author of each paper is required to be either an undergraduate or graduate student at the time of the conference.

The papers and presentations will be judged and evaluated by a panel of engineers from the industry and institutions of higher learning.

A special collegiate luncheon from 11:30 am - 1:00 pm and job fair from 9:00 am - 11:00 am are scheduled for Wednesday, April 21. Student Poster Sessions are scheduled on Tuesday, April 20, between 12:00 noon and 2:00 pm in the Exposition Hall (Hall F). All of these activities will provide an excellent opportunity for students to network with industry professionals as well as other students. S-PAC (Student-Professional Awareness Conference) sessions will be scheduled during the student activities program. Please check the website at www.ieeet-d.org for updates.

Students are reminded that conference badges will be required for all conference functions including entry into the exhibit area. Watch for further information on the conference web site.

All inquiries about the collegiate program should be addressed in e-mail format to:

Steve Bourg

sdbourg@ieee.org



Technical Program

Smart Solutions for a Changing World...

Providing Answers to Complex Problems Through a Professional/Research Environment

It's your new reality. Electric utilities and their associated industries are more connected and the pace of engineering, operations and management is faster than ever before. In order to survive and prosper in a changing marketplace, innovative power and utility professionals know they must have new solutions to the complex problems that they will be confronted with in the future.

The 2010 IEEE PES Transmission and Distribution Conference and Exposition features an extensive program with information you can take back and apply to your job.

As an attendee you will:

- Learn the latest technical developments that increase electric utility efficiency, reliability and profitability.
- Improve both individual and utility performance and operation.
- Acquire new skills that will help you to survive and compete in the evolving power-delivery industry.
- Maximize the return on your education and training investment.
- Learn about the latest trends in T & D research.
- Meet with leading technical experts.
- View the newest products and technologies.
- Get acquainted with industry peers.

Smart Grid Day at T & D

Wednesday, April 21, 2010, 8:00 am- 5:15 pm

"Smart Grid" is becoming a household term not only in the US but all over the world. Development of a "smart" technology to promote and coordinate more efficient electricity usage has become a key element in the plan to lower energy costs for consumers, achieve energy independence, and reduce greenhouse gas emissions. A Smart Grid, as defined by the US Department of Energy, integrates advanced sensing technologies, control methods and integrated communications into the existing electricity grid. Although Smart Grid technology presents opportunities for utilities and consumers to benefit from the efficient management of energy, significant challenges need to be addressed to integrate and deploy these innovative technologies.

The IEEE PES is committed to lead the effort to coordinate and develop the necessary expertise, standards, and application of Smart Grid technologies.

8:00 am – 8:30 am

Smart Grid Day Opening: John McDonald

PES approach and plans for the coordination of addressing Smart Grid technologies and applications.

8:30 am – 10:30 am

Smart Grid Overview Super Session

Moderator: Sharma Kolluri, *Entergy Corporation*

Session Summary: This session will explore the impact of "Smart Grid" technology in lowering energy costs for consumers, achieving energy independence, and automating the electric grid, and will also address the major challenges and concerns in deployment of smart grid technologies. The session will examine the following areas: smart grid technologies for enabling power delivery, smart grid applications, smart grid implementation plan, and costs and benefits of smart grid technologies.

PANELISTS

Arshad Mansoor, Vice President, *EPRI*

Damir Novosel, President, *Quanta Technology*

Kannan Tinnium, Manager, *General Electric Company*

Don Cortez, Vice President, *Center Point Energy*

10:30 am – 10:45 am: Break

10:45 am – 12:00 pm

Transmission and Distribution Optimization

- Synchrophasors/WAMS
- EMS Application Software Impacts
- Renewables Integration
- Advanced DMS Architecture
- Network Model from GIS Applications
- DMS Integration with other Systems (OMS)

12:00 pm – 1:00 pm: Lunch on your own

1:00 pm to 3:00 pm

Cyber Security of T & D Control System Assets Super Session

Chair/Moderator: Dave Norton, CISSP, Policy Consultant – Critical Infrastructure Protection, *Entergy Transmission*

Session Summary: Recently, challenges in ensuring the security of cyber control systems used to operate the nation's civilian critical electric power infrastructure have been brought to light both by the government and media alike. While use of advanced networked-computing technologies can deliver significant tangible benefits for both operating and financial efficiencies, such benefits can only be realized if cyber security is appreciated as an enabling prerequisite. New strategic efforts are now underway aimed at markedly improving both the functional sophistication and cyber security of control systems throughout the electric infrastructure.

This session initially will overview basic concepts, issues, and means for securing networked control systems used for grid management, to set the stage for deeper treatment of needs, directions, and emerging state of the art technologies

for securely operating the grid of the future – from generation, to transmission and distribution, to advanced metering infrastructure. In addition, this session will highlight R&D and proof of concept initiatives now afoot, identify areas where additional work is needed, and report on the current status of industry standards development activities aimed at guiding improvements to electric sector control systems security. Come join a panel of experts for a discussion of these vital topics. Questions and comments from the audience will be encouraged.

PANELISTS:

Jeff Dagle, PE, Chief Electrical Engineer, Energy Technology Development, *Pacific Northwest National Laboratory*
Keith Stouffer, Manager, Industrial Control Systems Security Program, *National Institute of Standards and Technology*
Darren Reece Highfill, Security Architect, *Southern California Edison*

3:00 pm – 3:15: BREAK

3:15 pm – 5:15 pm

Current Topics in Smart Grid Technology

Demand Optimization

- Consumer Segmentation
- Smart Meters/AMI Integration
- DMS Demand Response Application Software
- Home Energy Management System

Asset Optimization

- Intelligent Sensors
- Monitoring & Diagnostics
- Centralized Monitoring Systems
- Expert Analytics Software

Standards

- NIST SGIP
- IEEE
- IEC

8:00 am – 5:15 pm

Regular T&D Panel and Poster Sessions on Smart Grid Day

8:00 am – 10:00 am

IG02Wd1 – *Intelligent Grid Coordinating Committee (Poster Session)*

PSC01Wd1P – *Cyber Security for the Smart Grid (Panel Session)*

10:15 am – 12:15 pm

PSC02Wd2P – *Communications Systems for the Smart Grid 1 (Panel Session)*

TD06Wd2P – *Integrating AMI and Advanced Sensor Data with Distribution Automation (Panel Session)*

1:00 pm – 3:00 pm

ED02Wd3P – *Smart Grid Issues (Panel Session)*

PSC03Wd3P – *Communications Systems for the Smart Grid 2 (Panel Session)*

TD09Wd3 – *Transmission and Distribution Poster Session*

3:15 pm – 5:15 pm

PSC04Wd4 – *Communications Systems for the Smart Grid (Poster Session)*

PSP03Wd3P – *Advanced Metering Infrastructure as an Enabler of Demand Response (Panel Session)*

Super Sessions

SS01: Energy Storage and the Integration of Renewables

Tuesday, April 20, 1:00 PM – 4:15 PM

(includes 15 minute break at 3:00 pm)

Chair/Moderator: Larry Dickerman, KEMA

Session Summary: To reduce our country's dependence on foreign oil and to improve our environment by producing more "green power" efforts are being made to better utilize energy sources that are inexpensive and environmentally friendly. In parallel, advanced methods of storing this energy are being developed for the economical dispatch and to assist in integration of this renewable energy.

Is energy storage required for States to meet their renewable energy goals? Between traditional storage systems and emerging technologies, how can storage help our country install greater amounts of renewable generation?

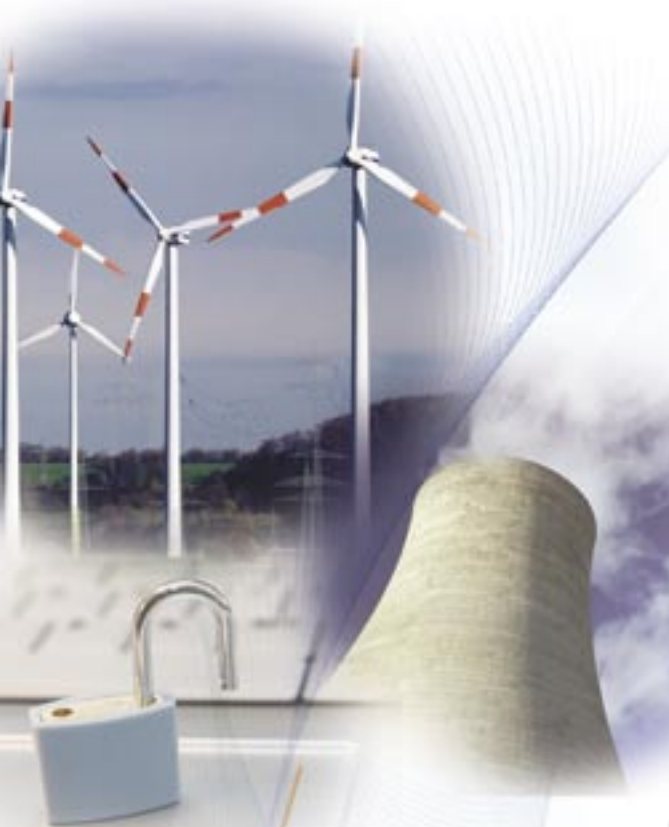
The session will discuss the sources of renewable energy, challenges we face in the deployment of these technologies, and possible storage methods to meet these challenges. Come join a panel of experts for a discussion of these vital topics. Questions and comments from the audience will be encouraged.

PANELISTS:

Mike Gravely, California Energy Commission, Office Manager, *Energy Systems Research Office*

Sakis Meliopoulos, Ph.D., Professor, *Georgia Tech University*

J. Calvin Crowder, President, *Electric Transmission Texas, LLC*



Imre Gyuk, Ph.D., Depart of Energy, *Office of Electricity Delivery and Energy Reliability, Storage Lead*
Chris Shelton, President, *AES Storage*
Kenneth Lutz, Ph.D., *IEEE/AAAS Congressional Fellow, Office of Senator Ron Wyden*

SS02: Smart Grid

Wednesday, April 21, 8:30 AM – 10:30 PM

Chair/Moderator: Sharma Kolluri, *Entergy Corporation*

Session Summary: This session will explore the impact of “Smart Grid” technology in lowering energy costs for consumers, achieving energy independence, and automating the electric grid, and will also address the major challenges and concerns in deployment of smart grid technologies. The session will examine the following areas: smart grid technologies for enabling power delivery, smart grid applications, smart grid implementation plan, and costs and benefits of smart grid technologies.

PANELISTS:

Arshad Mansoor, Vice President, *EPRI*
Damir Novosel, President, *Quanta Technology*
Kannan Tinnium, Manager, *General Electric Company*
Don Cortez, Vice President, *Center Point Energy*

SS03: Cyber Security of T&D Control Systems Assets

Wednesday, April 21, 1:00 PM – 3:00 PM

Chair/Moderator: Dave Norton, CISSP, Policy Consultant – *Critical Infrastructure Protection, Entergy Transmission*

Session Summary: Recently, challenges in ensuring the security of cyber control systems used to operate the nation’s civilian critical electric power infrastructure have been brought to light both by the government and media alike. While use of advanced networked-computing technologies can deliver significant tangible benefits for both operating and financial efficiencies, such benefits can only be realized if cyber security is appreciated as an enabling prerequisite. New strategic efforts are now underway aimed at markedly improving both the functional sophistication and cyber security of control systems throughout the electric infrastructure.

This session initially will overview basic concepts, issues, and means for securing networked control systems used for grid management, to set the stage for deeper treatment of needs, directions, and emerging state of the art technologies for securely operating the grid of the future – from generation, to transmission and distribution, to advanced metering infrastructure. In addition, this session will highlight R&D and proof of concept initiatives now afoot, identify areas where additional work is needed, and report on the current status of industry standards development activities aimed at guiding improvements to electric sector control systems security. Come join a panel of experts for a discussion of these vital topics. Questions and comments from the audience will be encouraged.

PANELISTS:

Jeff Dagle, PE, Chief Electrical Engineer, *Energy Technology Development, Pacific Northwest National Laboratory*
Keith Stouffer, Manager, *Industrial Control Systems Security Program, National Institute of Standards and Technology*

Darren Reece Highfill, Security Architect, *Southern California Edison*

SS04: Cap and Trade and its Impact on the Electric Utility Industry

Thursday, April 22, 10:15 AM – 12:15 PM

Chair/Moderator: Brent Dorsey, *Entergy Corporation*

Session Summary: The Waxman-Markey American Clean Energy and Security (ACES) Bill proposes setting a market for carbon dioxide emissions. Similar to the sulfur dioxide emission cap and trade system of the mid-1990s that achieved tremendous reductions in SO₂ emissions, the goal of the proposed legislation is to cut the emissions of CO₂ by 83% by 2050. Industry wide debates have ensued evaluating the potential impact of the bill. With global warming no longer remaining a mythical concoction, the market power of cap and trade may be put to test once again. Rising energy prices and a decelerating effect on the economy have been cited as some of the drawbacks of the proposal.

This session will focus on the merits and demerits of the proposed Cap and Trade legislation. The session will examine the following areas: US Cap & Trade Policy, Key Cap & Trade Provisions, GHG regulation and technology perspective on Cap & Trade.

PANELISTS:

Steve Fine, Vice President, *ICF*
Brent Dorsey, Director, *Entergy Corporation*
Bryan Hannegan, Vice President, *EPRI*
Michael Bradley, President, *Michael Bradley & Associates*

Tutorials

(Special paid registration required)

TUT 01: DNP3 Fundamentals

Monday, April 19, 8 a.m.-12 noon

Presenter:

Don Downs, *Triangle MicroWorks, Inc.*

DNP3 is still the leading protocol used in Electrical Utility SCADA systems today. It has retained this position because it was originally designed from the ground up as a SCADA communications protocol and it has an active Technical Committee that oversees the protocol’s managed evolution. This course provides a solid understanding of the fundamentals of DNP3, as well as recent evolutions including Data Sets, Device Description, Secure Authentication, XML Device Profile, and mapping DNP3 to IEC 61850.

TUT02: DNP3 In the Real World

Monday, April 19, 1 p.m.-5 p.m.

Presenter:

Andrew West, *Invensys Process Systems*

This course provides an in-depth look at configuring and using DNP3 in real-world applications. It extends the learning provided in the DNP Fundamentals course by discussing issues faced when deploying systems. During this course a panel of experts from the DNP3 Technical Com-

mittee members will share their experiences and discuss case studies of successful and problematic installations. Attendees are encouraged to submit “real world” scenarios (what worked and what didn’t work) for discussion by the panel.

TUT 03: Fundamentals of Wind Energy

Monday, April 19, 8 a.m.-5 p.m.

Presenters:

Abraham Ellis, *Sandia National Laboratory*
Michael Milligan, *National Renewable Energy Laboratory*
Richard Piwko, *General Electric Company*
Dale Osborn, *Midwest Independent System Operator*
Steve Saylor, *Vestas*
J. Charles Smith, *Utility Wind Integration Group*
Pascal Storck, *3TIER Environmental Forecast Group*
Robert Zavadil, *EnerNex Corporation*
Ernst Camm, *S&C Electric Company*

This tutorial will provide an introduction to the basic considerations associated with planning and operating a power system with wind power plants. An introduction to the wind industry and its status and outlook will be provided, along with a basic understanding of the wind turbine technology and design considerations. The electrical performance of single machines and design considerations for large wind power plants will be addressed. Wind power plant performance, controls and grid codes will be covered in sufficient detail to motivate the discussion of modeling and simulation. Representation of wind power plants in large-scale power flow, transient stability and short circuit studies will be addressed. The increasingly important role of wind forecasting in power system planning and operations will be included, along with a basic understanding of the reliability aspects of system planning with wind plants. A summary of the state-of-the-art in utility wind integration will be provided, as well as the evolving methods for transmission planning with energy resources.

TUT 04: Smart Distribution Grid and the Advanced Integrated Distribution Management System (IDMS)

Monday, April 19, 8 a.m.-5 p.m.

Presenters:

Dr. S. S. (Mani) Venkata, *University of Washington*
Ethan Boardman, *AREVA T&D Inc.*
Bill Mintz, *Alabama Power, a Southern Company*
George Larry Clark, *Alabama Power, a Southern Company*

This tutorial will focus upon the role of an Integrated Distribution Management System in the implementation of Smart Distribution Grid Solutions. The course will feature instructors representing the perspectives of academia, the distribution utility, and the DMS vendor. Topics will include an introduction to the functions of an advanced DMS, field deployment of distribution automation, integrated DMS/OMS, integration of Smart Metering, Distribution Operations Training Simulator, and Smart Distribution Operations in the near future.

TUT05: Gas Insulated Substations and Lines

Monday, April 19, 8 a.m.-5 p.m.

Presenters:

Hermann Koch, *Siemens AG (et al)*

The tutorial will give practical information for engineers working on Gas Insulated Substation (GIS) and/or Gas Insulated Lines (GIL) including the insulating gas SF₆. The tutorial is structured in modules which start with basic information and give deeper views on special topics related to Gas Insulated Substations and Lines.

TUT06: Static VAR Compensators

Monday, April 19, 8 a.m.-5 p.m.

Presenters:

Hubert Bilodeau, *TransÉnergie, Hydro-Québec*
Mikael Halonen, *ABB AB*
Chris Horwill, Dan Sullivan, *Mitsubishi Electric Power Products, Inc.*
Heinz Tyll, Rajiv K. Varma, *University of Western Ontario*

Fast control of reactive power by means of shunt-connected static devices is a proven technology. SVCs are still considered today as a competitive solution to meet future needs of reactive power compensation. Past tutorials offered on Static VAR Compensators have focused mainly on power system aspects and on justifying the need for SVCs. This tutorial is focusing on equipment design and operations. A brief review of system aspects which justifies the need for fast reactive power compensation and a description of various applications are presented. It is intended to provide participants with a solid understanding of basic components and their integration in substation design, of control system and its dynamic performance and commissioning of SVCs. This tutorial targets engineering personnel, plant and design engineers, and anyone responsible for: (1) validating the dynamic performance during the design stage and (2) ensuring reliable operations of Static VAR Compensators.

TUT07: Secondary Network Design and Operation

Monday, April 19 – 8 a.m.-5 p.m.

Presenters:

Elisabeth A. (Betty) Tobin, *Snohomish County PUD*
Robert J. Landman, *H&L Instruments, L.L.C.*
Charles Fijnvandraat, *NSTAR Electric and Gas*
Frank Doherty, *Con Edison*
Hamed Zadehghol, *Seattle City Light*
Henry J. Pinto Jr., *Island Technology Inc.*

This tutorial reviews the principles of secondary network design and operation, and discusses the major components of secondary network systems. It also introduces some of the major changes that have occurred in the design and operation of secondary network systems over the past 15-20 years:

- The evolution of 120/208 volt grid systems to 277/480 volt spot networks, and the inherent problem with secondary faults on 480 volt systems.
- Expanded use of data acquisition, alarm, and control schemes for real time monitoring of network conditions.

- Use of sophisticated protection schemes to prevent catastrophic secondary failures.
- Changes in network transformers, primary and secondary cables, and advances in network protector relays.
- Discussion of emerging business trends and technology that will influence the future state of underground secondary network systems.
- Expanded use of computer-based load flow and ampacity programs to more accurately predict cable capacities and transformer loads.

To receive maximum benefit from this course, the participant should be familiar with electrical engineering theory and fundamentals. The participant should also have experience in utility distribution engineering and operation of protective relaying equipment.

TUT08: Breaker Failure Protection Guide

Monday, April 19, 12 noon-5 p.m.

Presenters:

Russell W. Patterson, *PSRC*

Roger A. Hedding, *PSRC*

The K2 working group of the PSRC investigated issues pertaining to breaker failure protection (such as breaker failure mechanisms, fault detectors, breaker failure circuits, effect of bus configurations, effect of multifunction microprocessor relays, and the effect of modern breaker control schemes) and developed a guide covering the application of breaker failure protection to power circuit breakers.

Engineering Ethics

The 2010 IEEE PES Transmission and Distribution Conference and Exposition is offering a free 2-hour session on Engineering Ethics to all Conference Registrants. The session will be presented twice in order to make it available to as many attendees as possible. Professional Development Hour (PDH) certificates will be issued to those in attendance.

The session will be presented by Dr. Norma Jean Mattei, Professor and Chair of the Department of Civil and Environmental Engineering at the University of New Orleans. Dr. Mattei is currently a member of the Louisiana Professional Engineering and Land Surveying Board, LAPELS. She has also served on the American Society of Civil Engineers' Committee on Licensure and Ethics.

Along with a discourse on the IEEE Code of Ethics, this session will include a series of vignettes designed to illustrate the application of those principles in a professional setting.

EE01

Tuesday, April 20, 1:00 PM – 3:00 PM

TOPIC: Engineering Ethics

PRESENTER: Norma Jean Mattei, P.E., Ph.D., M.ASCE, *Professor/Chair, Civil and Environmental Engineering, University of New Orleans*

EE02 (An Encore Presentation)

Wednesday, April 21, 8:00 AM – 10:00 AM

TOPIC: Engineering Ethics

PRESENTER: Norma Jean Mattei, P.E., Ph.D., M.ASCE, *Professor/Chair, Civil and Environmental Engineering, University of New Orleans*

Education Tracks

The 2010 Education Track features two parallel tracks: a *Fundamentals* track and an *Advanced Topics* track.

The Fundamentals track is composed of seven two-hour sessions that address the “Fundamentals of Electric Power Systems for Engineers.” It is followed by two-hours of hands-on instruction. It was designed to be taken sequentially to provide engineers with refresher materials on the electrical engineering fundamentals of power systems. The sessions are taught by experienced power system educators, and the track is chaired by Dr. Elham Makram of Clemson University.

The Advanced Topics track is composed of eight two-hour sessions whose topics touch aspects of design, operation, and economics as well as IEEE standards. Most were developed as independent two-hour learning opportunities, and target audiences from operators and engineers to planners and executives. These sessions are led by leading industry professionals. One unique offering of this track is the chance to take part in a realistic real-time energy market simulation in the Tulane Energy Institute’s Trading Center. This is the only Education Track session that will be held off-site. Transportation will be provided.

*Anyone who holds an Education Track registration may attend any of the sessions offered and are not limited to staying within a single track. However, anyone wishing to attend the simulation session will be asked to indicate so in advance so we can ensure that transportation limits are not exceeded. Procedures will be announced.

**Continuing Education: Professional Development Hour certificates (PDH) will be awarded for all Education Track sessions.

EDUCATION TRACK - FUNDAMENTALS

ES01

Tuesday, April 20, 1:00 PM – 3:00 PM

TOPICS AND PRESENTERS: Phasor Analysis, Power Definitions, Single-Phase and Three-Phase Circuits
Prof. George Karady, *Arizona State University*
Prof. Anil Pahwa, *Kansas State University*

ES02

Tuesday, April 20, 3:15 PM – 5:15 PM

TOPICS AND PRESENTERS: Transformers, Per-Unit system, and Symmetrical Components
Prof. Mehdi Etezadi, *University of Nevada*
Prof. Charles Gross, *Auburn University*

ES03

Wednesday, April 21, 10:15 AM – 12:15 PM

TOPICS AND PRESENTERS: Loadflow
Prof. Karen Butler-Purry, *Texas A&M University*
Prof. Tom Overbye, *University of Illinois*

ES04

Wednesday, April 21, 1:00 PM – 3:00 PM

TOPICS AND PRESENTERS: Short Circuit Calculations

Prof. Elham Makram, *Clemson University*

Prof. Leonard Bohmann, *Michigan Tech University*

ES05

Wednesday, April 21, 3:15 PM – 5:15 PM

TOPICS AND PRESENTERS: System Protection

Prof. Adly Girgis, *Clemson University*

Prof. Sukumar Brahma, *New Mexico State University*

ES06

Thursday, April 22, 8:00 AM – 10:00 AM

TOPICS AND PRESENTERS: Motors and Drives

Prof. Tim Skvarenina, *Purdue University*

Prof. Randy Collins, *Clemson University*

ES07

Thursday, April 22, 10:15 AM – 12:15 AM

TOPICS AND PRESENTERS: Power Quality and

Harmonics

Prof. Gerald Heydt, *Arizona State University*

Prof. Mark Halpin, *Auburn University*

ES08

Thursday, April 22, 1:00 PM – 3:00 PM

TOPICS AND PRESENTERS: Hands on Instruction by

Relay Manufacturers

EDUCATION TRACK - ADVANCED TOPICS**ES09**

Tuesday, April 20, 3:15 PM – 5:15 PM

TOPIC: IEEE Standards Development Process

PRESENTER: TBD

Summary: IEEE publishes standards on everything from how a computer handles floating point mathematics to substation transformer testing. Although IEEE standards impact almost everyone whether they are an engineer or not, few people understand where they come from or how they are developed. This session will provide an overview of the standards process; how a standards effort is undertaken, how the development proceeds and the drafts are balloted, the steps taken to avoid unfair competitive advantage, and especially how to become part of the process.

ES10

Wednesday, April 21, 8:00 AM – 10:00 AM

TOPIC: Economics of Transformer Design

PRESENTER: H. Jin Sim, PE, Vice President and CTO,

Waukesha Electric Systems

Summary: This session will present a general discussion on specification requirements and their impact on economics, performances, and reliability of the resulting transformer product.

ES11

Wednesday, April 21, 10:15 AM – 12:15 AM

TOPIC: Moisture in Transformers

PRESENTER: Rich Simonelli, Field Service Manager,

Waukesha Electric Systems

Summary: This session will present a general discussion on why the water in transformers is bad, how the water gets in, methods to determine how wet the transformer is, and what the owner can do to minimize the total water inside.

ES12

Wednesday, April 21, 1:00 PM – 3:00 PM

TOPIC: DGA – Dissolved Gas Analysis

PRESENTER: Michel Duval, *Hydro-Quebec (IREQ)*

Summary: This session will present New Versions of the Duval Triangle for Dissolved Gas Analysis (DGA) in Load Tap Changers (LTCs) and Ester Oils, and Recent Investigations on Gas Monitors and DGA by CIGRE/IEC.

ES13

Wednesday, April 21, 3:15 PM – 5:30 PM

(including travel time)

TOPIC: Real-Time Energy Market Simulation

PRESENTER: Gregory A. Thurnher, Adjunct Professor,

Tulane University, NERC Certified Reliability Coordinator

Summary: This two hour course provides a realistic, real-time simulation of Transmission Open Access (via a mock OASIS system), Generation Dispatch, (with a utility fleet at your fingertips), Demand Side Management, Integration of Renewable Energy Sources, and Power Marketing. Choose your role, and work side-by-side with an instructor to balance your system, reduce your production cost, maximize your profits as an Independent Power Producer, or watch customer response to a dispatcher initiated price signal. Success will be measured by production cost and operational compliance with the appropriate reliability standards. No prior knowledge or experience is required, and each simulation will include closely guided instruction such that each participant, whether an executive or an operator, gains a “Smart” view of the Smart Grid.

The session will take place in the Tulane Energy Institute’s Trading Center. The technological centerpiece of Tulane University’s Energy Institute is its Trading Center, a \$3 million electronic trading room equipped with industry-leading simulation, trading and financial software.

Transportation will be provided. Information on how to confirm a seat (no additional charge) at this limited session will be announced at a later date.

ES14

Thursday, April 22, 8:00 AM – 10:00 AM

TOPIC: Arrester Construction and Related Standards

PRESENTER: Mr. Denny Lenk, *Hubbell Power Systems/*

Ohio Brass Company

PRESENTER: Mr. Steve Hensley, *IEEE High Voltage*

Subcommittee Chair

Sponsored by: IEEE High Voltage Subcommittee of the Surge Protection Device Committee

Summary: The session will explain how arresters are built and tested, as well as a history of how arresters were developed into what is in use today. It will be presented by Mr. Denny Lenk of Hubble Power Systems/Ohio Brass Company. The session will also provide which standards exist with respect to over voltage protection, arrester application, arrester testing, neutral grounding, and insulation coord-

dination, as well as what work is being done to revise and update those documents. The Subcommittee's work will be presented by the Subcommittee Chair, Mr. Steve Hensley of Sargent & Lundy.

ES15

Thursday, April 22, 10:15 AM – 12:15 AM

TOPIC: Arrester Application (Part 1)

PRESENTER: Mr. Jonathan Woodworth, *Arrester Works*

Sponsored by: IEEE High Voltage Subcommittee of the Surge Protection Device Committee

Summary: The session will define and explain terms and ratings used in arrester catalogues, and offer practical examples involving specific equipment and scenarios describing how arresters should be applied. It will be

presented by Mr. Jonathan Woodworth of Arrester Works, a firm that provides overvoltage consultation. The target audience is any engineer or technician that has responsibility for or interest in overvoltage protection and/or insulation coordination.

ES16

Thursday, April 22, 1:00 PM – 3:00 PM

TOPIC: Arrester Application (Part 2)

PRESENTER: Mr. Jonathan Woodworth, *Arrester Works*

Sponsored by: IEEE High Voltage Subcommittee of the Surge Protection Device Committee

Summary: Continuation of ES15.

Explanation of Panel and Poster Session Numbering

Each Technical Program Session is assigned a unique identifying number. For Panel and Poster Sessions, this number is composed of a two or three letter code identifying the sponsoring Technical Committee, a sequence number, two letters identifying the day, and a number identifying the time block during the day. A "P" is appended for Panel sessions. Thus, TD05Wd1P is a session in the series sponsored by the Transmission and Distribution Committee, it is the fifth session in that series, it is on Wednesday from 8:00 AM – 10:00 AM (the first time block), and it is a Panel Session.

The Committee identifiers are:

ACE	Power System Analysis, Computing, and Economics Committee
ED	Energy Development and Power Generation Committee
EM	Electric Machinery Committee
ET	Emerging Technologies Coordinating Committee
IC	Insulated Conductors Committee
IG	Intelligent Grid Coordinating Committee
MS	Marine Systems Committee
PSC	Power Systems Communications Committee
PSD	Power System Dynamic Performance Committee
PSI	Power System Implementation and Measurements Committee
PSO	Power Systems Operations Committee
PSP	Power System Planning and Implementation Committee
PSR	Power System relaying Committee
SG	Switchgear Committee
SPD	Surge Protective Devices Committee
SS	Substations Committee
TD	Transmission and Distribution Committee
TR	Transformers Committee
WP	Wind Power Coordinating Committee

The Time Block identifiers are:

1	8:00 AM – 10:00 AM
2	10:15 AM – 12:15 PM
3	1:00 PM – 3:00 PM
4	3:15 PM – 5:15 PM

Panel Sessions

PSO01Tu3P

Aging Workforce Issues in the Electric Industry—Implementation of Solutions

Tuesday, 20 April, 2010 1:00 PM-3:00 PM

Session Chair: Siri Varadan, *KEMA Inc.*

Panel Summary:

Having acknowledged past efforts on identifying problems associated with an aging workforce, this panel session focuses on the implementation of solutions. Recognizing that knowledge transfer lies at the heart of knowledge management, solutions are presented from various points of view – industry, utility and consultant. In each case, experts have been requested to present their solutions and describe what worked, and what did not. Specifically, speakers on the panel session will focus on aspects of the implementation of processes and systems geared towards:

- 1) Knowledge capture
- 2) Knowledge organization, storage and archival
- 3) Knowledge search and retrieval
- 4) Change management
- 5) Practical experience and
- 6) Lessons learned

PRESENTATIONS AND PANELISTS:

2010TD0527 Eaton and the University of Pittsburgh's Swanson School of Engineering Collaborate to Train Students in Electric Power Engineering

W. VILCHECK, Author Affiliation: Eaton Corp.

R. STINSON, Author Affiliation: Eaton Corp.

G. GATES, Author Affiliation: Eaton Corp.

G. REED, Author Affiliation: University of Pittsburgh

2010TD0572 A Collaborative Approach to Developing a Competent Workforce

J. RYZEWSKI, Author Affiliation: The United Illuminating Company

2010TD0577 The Power and Energy Initiative at the University of Pittsburgh: Addressing the

Aging Workforce Issue through Innovative Education, Collaborative Research, and Industry Partnerships

G. REED, Author Affiliation: University of Pittsburgh

W. STANCHINA, Author Affiliation: University of Pittsburgh

2010TD0574 A Knowledge Framework for Sustaining Business Growth and Success

S. FRENCH SMITH, Author Affiliation: KEMA Inc.

R. WILLOUGHBY, Author Affiliation: KEMA Inc.

S. VARADAN, Author Affiliation: KEMA Inc.

TD02Tu3P

Insulators 101

Tuesday, 20 April, 2010 1:00 PM-3:00 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: Andy Schwalm, Victor Insulators

Panel Summary:

This panel discussion will present basic design criteria and application information for porcelain, glass, and non-ceramic insulators. The presenters will review the history of various products for distribution and transmission voltage applications. In addition, the information will discuss the critical issues faced by utilities when selecting a supplier, addressing performance requirements, evaluating installation needs, and verifying long-term performance of the line.

PRESENTATIONS AND PANELISTS:

2010TD0746 Insulators 101 Section A - Introduction

A. SCHWALM, Author Affiliation: Victor Insulators, Inc.

2010TD0745 Insulators 101 - Design Criteria

R. BERNSTORE, Author Affiliation: Hubbell Power Systems

R. BERNSTORE, Author Affiliation: Hubbell Power Systems

2010TD0750 Insulator 101- Section C Standards

A. BAKER, Author Affiliation: K-Line Insulators USA

2010TD0744 Insulators 101 - Section D - Achieving Quality

T. GRISHAM, Author Affiliation: GRISCUT, LTD.

WP01Tu3P

Wind Plant Collector System Design Panel Session

Tuesday, 20 April, 2010 1:00 PM-3:00 PM

Sponsored By: Wind Power Coordinating Committee and Transmission and Distribution Committee

Session Chair: Mitch Bradt, *University of Wisconsin-Madison*

Panel Summary:

The Wind Plant Collector System Design Working Group has prepared a series of papers aimed at providing basic guidelines on engineering design issues for large wind plants. The first five papers were presented at the 2009 PES General Meeting. This panel session is the second of a series of sessions being executed by the Working Group over the next two years, and adds four more topics to the working group's accomplishments. This session includes discussion

of design and application issues related to arc flash hazards, system fault protection coordination, substation power transformers, and cables and overhead lines at wind power plants. Future topics to be covered by the Working Group include power quality, communications & controls, and testing & commissioning of wind plants.

PRESENTATIONS AND PANELISTS:

2010TD0666 Arc Flash Hazard in Wind Power Plants

E. CAMM, Author Affiliation: S&C Electric Company

C. BROOKS, Author Affiliation: S&C Electric Company

I. , Author Affiliation: IEEE PES Wind Plant Collector System Design Working Group

2010TD0668 Power Transformer Application for Wind Plant Substations

E. CAMM, Author Affiliation: S&C Electric Company

R. WALLING, Author Affiliation: GE Energy I. , Author Affiliation: IEEE PES Wind Plant Collector System Design Working Group

2010TD0672 Wind Plant Collector System Fault Protection and Coordination

E. CAMM, Author Affiliation: S&C Electric Company

T. SMITH, Author Affiliation: Oak Ridge National Lab

I. , Author Affiliation: IEEE PES Wind Plant Collector System Design Working Group

2010TD0673 Design and Application of Cables and Overhead Lines in Wind Power Plants

E. CAMM, Author Affiliation: S&C Electric Company

W. DILLING, Author Affiliation: Mortenson Construction

I. , Author Affiliation: IEEE PES Wind Plant Collector System Design Working Group

ACE01Tu4P

Intelligent Optimization for Transmission and Distribution Networks

Tuesday, 20 April, 2010 3:15 PM-5:15 PM

Sponsored By: Power System Analysis, Computing, and Economics Committee

Session Chairs: H. Mori, Meiji Univ

G. Lambert-Torres, Universidade Federal de Itajuba

PRESENTATIONS AND PANELISTS:

2010TD0139 Predictive Optimal Control of Wind Farm Reactive Sources

V. PAPPALA, Author Affiliation: Institute of Electrical Power Systems

W. NAKAWIRO, Author Affiliation: University of Duisburg Essen

I. ERLICH, Author Affiliation: Institute of Electrical Power Systems

2010TD0220 Optimal Setting of Voltage Control Equipment and Analytical Tools Considering Interconnection of Distributed Generators

S. TAKAYAMA, Author Affiliation: Fuji Electric Systems Co., Ltd.

T. KATSUNO, Author Affiliation: Fuji

Electric Systems Co., Ltd.
Y. FUKUYAMA, Author Affiliation: Fuji
Electric Systems Co., Ltd.

2010TD0298 Optimal Methodology for Renewable Energy Dispatching in Islanded Operation

H. KHODR, Author Affiliation: ISEP/
GECAD – Polytechnic of Porto
Z. VALE, Author Affiliation: ISEP/GECAD
– Polytechnic of Porto
C. RAMOS, Author Affiliation: ISEP/
GECAD – Polytechnic of Porto
J. SOARES, Author Affiliation: ISEP/
GECAD – Polytechnic of Porto
H. MORAIS, Author Affiliation: ISEP/
GECAD – Polytechnic of Porto
P. KADAR, Author Affiliation: ISEP/
GECAD – Polytechnic of Porto

2010TD0339 A New Meta-heuristic Method for Probabilistic Transmission Network Expansion Planning

H. MORI, Author Affiliation: Meiji
University
H. KAKUTA, Author Affiliation: Meiji
University

2010TD0344 An Application of ACO in System Reconfiguration

G. LAMBERT-TORRES, Author Affiliation:
Itajuba Federal University
L. DA SILVA, Author Affiliation: Alfenas
Federal University
H. MARTINS, Author Affiliation: Itajuba
Federal University
M. COUTINHO, Author Affiliation: Itajuba
Federal University
L. BORGES DA SILVA, Author Affiliation:
Itajuba Federal University
J. CABRAL NETO, Author Affiliation:
Rondonia Power Company

2010TD0483 Multi-Objective Optimization for Wind Energy Integration

E. SORTOMME, Author Affiliation:
University of Washington
A. AL-AWAMI, Author Affiliation:
University of Washington
M. EL-SHARKAWI, Author Affiliation:
University of Washington

**TD03Tu4P
FACTS Fundamentals**

Tuesday, 20 April, 2010 3:15 PM-5:15 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: Brian Johnson, *University of Idaho*

Panel Summary:

FACTS Controllers are power electronic-based circuit configurations applied in ac transmission systems. The term represents flexible ac transmission systems, flexible implying controllability of voltage and/or current. Shunt configurations can provide voltage/reactive power control, series configurations can provide current/power flow control. Combined series/shunt configurations can provide all of the above. This session introduces fundamental concepts of FACTS controllers but not by a deluge of complicated circuits. Rather, the limitations and controllability of ac

systems will be presented, with the basic FACTS attributes and configurations along with examples from existing installation to demonstrate their performance followed by a planners perspective on the implementation of several existing projects. The presentations are tutorial in nature and do not presume familiarity with power electronics.

It is intended that these sessions will provide the background material that enables attendees to proceed comfortably to the more technically advanced presentations in this conference.

PRESENTATIONS AND PANELISTS:

2010TD0310 Elements of FACTS Controllers

R. VARMA, Author Affiliation: The
University of Western Ontario

2010TD0318 How FACTS Controllers Benefit AC Transmission Systems – Phases of Power System Studies

J. PASERBA, Author Affiliation: Mitsubishi
Electric Power Products, Inc.

2010TD0429 Planning Issues for FACTS

M. HENDERSON, Author Affiliation: ISO
New England

D. RAMEY, Author Affiliation: Independent
Consultant

2010TD0431 Planning HVDC and FACTS in New England

M. HENDERSON, Author Affiliation: ISO
New England

D. BERTAGNOLLI, Author Affiliation: ISO
New England

D. RAMEY, Author Affiliation: Independent
Consultant

WP02Tu4P

Understanding How the Wind Blows (or doesn't)

Tuesday, 20 April, 2010 3:15 PM-5:15 PM

Session Chair: William Cassel, *KEMA Inc.*

Panel Summary:

This panel will discuss various approaches for estimating and evaluating the amount of wind and wind-generated energy availability for power system operations.

PRESENTATIONS AND PANELISTS:

2010TD0073 Equivalent Wind Speed Model of Wind Generation

J. TIAN-JUN, Author Affiliation: China
Agricultural University

Y. MING-HAO, Author Affiliation: China
Agricultural University

2010TD0183 Understanding Wind Ramp Events Through Analysis of Historical Data

C. KAMATH, Author Affiliation: Lawrence
Livermore National Laboratory

2010TD0725 Prediction of Power System Balancing Requirement and Tail Event

S. LU, Author Affiliation: Pacific Northwest
National Laboratory

Y. MAKAROV, Author Affiliation: Pacific
Northwest National Laboratory

A. BROTHERS, Author Affiliation: Pacific
Northwest National Laboratory

C. MCKINSTRY, Author Affiliation: Pacific
Northwest National Laboratory

S. JIN, Author Affiliation: Pacific Northwest National Laboratory

J. PEASE, Author Affiliation: Bonneville Power Administration

2010TD0532 Integration of Wind Generation and Load Forecast Uncertainties into Power Grid Operations

P. ETINGOV, Author Affiliation: Pacific Northwest National Laboratory

Y. MAKAROV, Author Affiliation: Pacific Northwest National Laboratory

Z. HUANG, Author Affiliation: Pacific Northwest National Laboratory

J. MA, Author Affiliation: Pacific Northwest National Laboratory

B. CHAKRABARTI, Author Affiliation: Pacific Northwest National Laboratory

K. SUBBARAO, Author Affiliation: Pacific Northwest National Laboratory

C. LOUTAN, Author Affiliation: California Independent System Operator

R. GUTTROMSON, Author Affiliation: Pacific Northwest National Laboratory

2010TD0626 Integration of Wind Energy into Grid in India-Perceptions and Realities

A. SHAH, Author Affiliation: Suzlon Infrastructure Services Ltd.

S. PILLAI, Author Affiliation: Suzlon Infrastructure Services Ltd.

S. NAGAVARAPU, Author Affiliation: Suzlon Infrastructure Services Ltd.

ACE02Wd1P

Test Feeders for Distribution System Analysis

Wednesday, 21 April, 2010 8:00 AM-10:00 AM

Session Chair: Roger C. Dugan, EPRI

PRESENTATIONS AND PANELISTS:

2010TD0282 A Comprehensive Distribution Test Feeder

B. KERSTING, Author Affiliation: Milsoft Utility Solutions

2010TD0366 The IEEE 8500-Node Test Feeder

R. ARRITT, Author Affiliation: EPRI

R. DUGAN, Author Affiliation: EPRI

2010TD0478 Voltage Control Devices on the IEEE 8500 Node Test Feeder

K. SCHNEIDER, Author Affiliation: Pacific Northwest National Laboratory

J. FULLER, Author Affiliation: Pacific Northwest National Laboratory

2010TD0314 Load-Flow Analysis of the IEEE8500-Node Test Case Using the Current Injection Method

D. PENIDO, Author Affiliation: Federal University of Juiz de Fora

L. DE ARAUJO, Author Affiliation: Federal University of Juiz de Fora

S. CARNEIRO JR, Author Affiliation: Federal University of Rio de Janeiro

J. PEREIRA, Author Affiliation: Federal University of Juiz de Fora

PSC01Wd1P

Cyber Security for the Smart Grid

Wednesday, 21 April, 2010 8:00 AM-10:00 AM

Session Chair: Dan Nordell, Xcel Energy

Panel Summary:

The emergence of Smart Grid communications highlights the need to protect information and control security. This session will highlight current research to assess and improve cyber security for the Smart Grid.

PRESENTATIONS AND PANELISTS:

2010TD0281 Cyber-related Risk Assessment and Critical Asset Identification within The Power Grid

Z. MOHAJERANI, Author Affiliation: Rutgers University

F. FARZAN, Author Affiliation: Rutgers University

M. JAFARY, Author Affiliation: Rutgers University

Y. LU, Author Affiliation: Siemens Corporate Research, Inc.

D. WEI, Author Affiliation: Siemens Corporate Research, Inc.

N. KALENCHITS, Author Affiliation: Siemens Corporate Research, Inc.

B. BOYER, Author Affiliation: Rutgers University

M. MULLER, Author Affiliation: Rutgers University

P. SKARE, Author Affiliation: Siemens Energy Inc.

2010TD0288 Information-Theoretic Approach to Authentication Codes for Power System Communications

T. MATSOMOTO, Author Affiliation: Yokohama National University

T. KOBAYASHI, Author Affiliation: Yokohama National University

S. KATAYAMA, Author Affiliation: Toshiba

K. FUKUSHIMA, Author Affiliation: Toshiba

K. SEKIGUCHI, Author Affiliation: Toshiba

TD05Wd1P

Collection, Access and Use of Customer Level Interruption Data as Pertaining to Distribution Reliability

Wednesday, 21 April, 2010 8:00 AM-10:00 AM

Sponsored By: Transmission and Distribution Committee
Session Chair: Val Werner, *We Energies*

Panel Summary:

This panel will explore the various customer level data collection techniques, tools or methods for accessing the data, and use of the data for customer level reliability purposes. The collection portion will reveal how each utility represented on the panel calculates, captures and stores restoration data for each customer. Access examines the tools and methods used to access and return essential customer related information. Use will reveal the value of customer information including explanations of what customer level reliability metrics or indices are used and why.

PRESENTATIONS AND PANELISTS:

2010TD0245 Collection, Access, and Use of Customer

Level Interruption Event Data at We Energies

V. WERNER, Author Affiliation: We Energies

2010TD0692 Collection, Access, and Use of Customer Level Interruption Data as Pertaining to BChydro Distribution Reliability

T. GUTWIN, Author Affiliation: BChydro
C. SIEW, Author Affiliation: BChydro

2010TD0427 Collection, Access and Use of Customer Level Interruption Event Data at PacifiCorp

H. CASWELL, Author Affiliation: Pacific Power

J. JONES, Author Affiliation: Rocky Mountain Power

2010TD0377 Pocket Reliability – Measures, Uses, Remediation and Data Capture

J. VIGLIETTA, Author Affiliation: PECO Energy Company

PSC02Wd2P

Communication Systems for the Smart Grid - 1

Wednesday, 21 April, 2010 10:15 AM-12:15 PM

Sponsored By: Power System Communications Committee

Session Chair: Dan Nordell, *Xcel Energy*

Panel Summary:

Deploying communication systems for the Smart Grid presents unique challenges. This session will discuss new developments in power system communication systems.

PRESENTATIONS AND PANELISTS:

2010TD0401 Effect of Varying Topologies on the Performance of Broadband Over Power Line

V. CHANDNA, Author Affiliation: Jamia Millia Islamia

M. ZAHIDA, Author Affiliation: Jamia Millia Islamia

2010TD0420 The Use GSM and Web Based SCADA for Monitoring Fault Passage Indicators

S. HODGSON, Author Affiliation: Nortech Management Ltd.

2010TD0446 Integrating Legacy Communications on the Smart Grid Highway

S. WARD, Author Affiliation: RFL Electronics, Inc.

E. DUVELSON, Author Affiliation: RFL Electronics, Inc.

PSD02Wd2P

FACTS/Power Electronic Applications to Improve Power System Dynamic Performance Part I

Wednesday, 21 April, 2010 10:15 AM-12:15 PM

Sponsored By: Power System Dynamic Performance Committee

Session Chair: John Paserba, *Mitsubishi Electric Power Products, Inc.*

Panel Summary:

The evolving utility environment demands a more optimal and profitable operation of the power system. Now, more than ever, advanced technologies are paramount for the reliable and secure operation of power systems. To achieve

operational reliability it has become clear that more efficient utilization and control of the existing transmission system infrastructure is required. Power electronics based equipment—including traditional equipment applied in new ways—has been termed Flexible AC Transmission Systems-FACTS, and can provide proven technical solutions to address these new operating challenges being presented today. FACTS technologies allow for improved transmission system operation with minimal infrastructure investment, environmental impact, and implementation time compared to the construction of new transmission lines. This 2-part Panel Session presents and explores several recent successful applications of FACTS/Power Electronic equipment.

PRESENTATIONS AND PANELISTS:

2010TD0499 Application of Dynamic VAR (D-VAR) at Entergy's Natchez Station

S. DATTA, Author Affiliation: Entergy

V. KOLLURI, Author Affiliation: Entergy

J. DIAZ DE LEON, Author Affiliation: American Superconductor, Inc.

2010TD0349 +/-30 MVAR ATCO CRANBERRY SVC

S. SHAH, Author Affiliation: AREVA T&D

M. FURYK, Author Affiliation: AREVA T&D

P. SINGHEE, Author Affiliation: AREVA T&D

A. EGA, Author Affiliation: AREVA T&D

W. GU, Author Affiliation: ATCO Electric

2010TD0277 Operational Experience of Tucson Electric Power's SVC

A. MEYER, Author Affiliation: Tucson Electric Power Co.

T. MILLS, Author Affiliation: Tucson

Electric Power Co.

B. SCOTT, Author Affiliation: ABB Inc.

D. LARSSON, Author Affiliation: ABB Inc.

2010TD0373 ComEd's Elmhurst SVCs: Challenges and Opportunities

A. EDRIS, Author Affiliation: Siemens Energy

L. KIRSCHNER, Author Affiliation: Siemens Energy

R. ESCHER, Author Affiliation: Siemens Energy

D. DURBAK, Author Affiliation: Siemens Energy

G. ZHOU, Author Affiliation: Siemens Energy

R. DERRA, Author Affiliation: Siemens Energy

M. FRITZSCHE, Author Affiliation: Siemens Energy

A. ENGELMANN, Author Affiliation: ComEd

D. SCHOOLEY, Author Affiliation: ComEd

D. TORGERSON, Author Affiliation: Winfield

G. IRWIN, Author Affiliation: Electranix

A. FLUECK, Author Affiliation: Illinois Institute of Technology

2010TD0278 Selection of Synchronous Condenser Technology for the Granite Substation

P. MARKEN, Author Affiliation: GE Energy

M. HENDERSON, Author Affiliation: ISO New England

D. LAFOREST, Author Affiliation: VELCO
J. SKLIUTAS, Author Affiliation: GE Energy
J. ROEDEL, Author Affiliation: GE Energy
T. CAMPBELL, Author Affiliation: GE
Energy

PSP02Wd2P

Impact of Electric Vehicles on Power Distribution Grid Infrastructures

Wednesday, 21 April, 2010 10:15 AM-12:15 PM

Session Chair: Luther Dow, *Quanta Technology Inc.*

Panel Summary:

It is expected that the market penetration of Electric Vehicles (EVs) on the utility distribution systems of the USA will grow rapidly within the next decade. This would create demands that most power distribution infrastructures could not manage well without increasing the system capacity or mitigating their impacts by using smart grid solutions. This panel will discuss the impacts of EVs on power distribution system planning and asset management, and will explain how utilities are preparing to manage these impacts under various scenarios of EV market penetration. Moreover, the panelists will exchange experiences on modeling and analysis of EVs and the estimation of their effects on utility distribution grids.

PRESENTATIONS AND PANELISTS:

2010TD0685 Analysis of the Impact of PHEVs on the Electric Power Distribution Network

S. RAHMAN, Author Affiliation: Virginia Tech

2010TD0671 Plug-In Electric Vehicle Impact on NES Distribution System Planning

C. NELSON, Author Affiliation: Nashville Electric Service

2010TD0742 Grid Impacts of Plug-in Electric Vehicles on Hydro Quebec's Distribution System

A. MAITRA, Author Affiliation: EPRI
K. KOOK, Author Affiliation: EPRI
J. TAYLOR, Author Affiliation: EPRI
A. GIUMENTO, Author Affiliation: HYDRO QUEBEC

TD06Wd2P

Integrating AMI and Advanced Sensor Data with Distribution Automation

Wednesday, 21 April, 2010 10:15 AM-12:15 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: G. Larry Clark, *Alabama Power Company*

Panel Summary:

The utility strategy for the deployment of the Smart Distribution Grid is being developed. Utilities are earnestly working on the development of the enabling advanced applications and technologies needed for the new future operating environment. Advanced Metering Infrastructure (AMI) and Advanced Sensor Data are emerging as foundational technologies to ensure the achievement of the goals for the Smart Distribution Grid. Utility experiences will be shared about the development of the next generation Smart Distribution Grid with the integration of AMI technology and utilization of sensor technology. AMI deployment achieves corporate goals, greater system visibility, operational improvements and increased system

efficiency. Sensor technology provides advanced techniques to facilitate circuit operational optimization and to increase the visibility of the readiness of power equipment. Four North American utilities have been invited to update the industry on their experiences with the integration of AMI and Advanced Sensor Data into the Smart Distribution Grid strategy.

PRESENTATIONS AND PANELISTS:

2010TD0317 The Use of AMI Meters and Solar PV Inverters in an Advanced Volt/VAR Control System on a Distribution Circuit

R. NEAL, Author Affiliation: Southern California Edison

2010TD0181 Transformation to a Smart Grid

T. WEAVER, Author Affiliation: American Electric Power

2010TD0458 Integrating AMS and Advanced Sensor Data with Distribution Automation at Oncor

A. BERN, Author Affiliation: Oncor

2010TD0512 Communications Options for Distribution Automation and Automatic Metering

D. CRAIG, Author Affiliation: ENMAX Power Corporation

PSC03Wd3P

Communication Systems for the Smart Grid - 2

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Power System Communications Committee

Session Chair: Dan Nordell, *Xcel Energy*

Panel Summary:

Deploying communication systems for the Smart Grid presents unique challenges. This session will discuss new developments in power system communication systems.

PRESENTATIONS AND PANELISTS:

2010TD0461 Comparison of Monitoring Systems for Anaerobic Digesters

G. LINDER, Author Affiliation: Clarkson University

S. GRIMBERG, Author Affiliation: Clarkson University

2010TD0693 Benefits of a Unified Substation Architecture for a Small Utility

G. SMITH, Author Affiliation: SUBNET Solutions Inc.

C. FLEENOR, Author Affiliation: TRICO Electric Cooperative

PSO02Wd3P

Transmission System Operational Security Issues

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Session Chair: Richard Wakefield, *KEMA Inc.*

Panel Summary:

This panel will discuss several security-related experiences, as well as approaches for mitigating transmission security problems.

PRESENTATIONS AND PANELISTS:

2010TD0371 Indices-based Voltage Stability

Monitoring of the Italian HV Transmission System

S. GRILLO, Author Affiliation: University of Genova

S. MASSUCCO, Author Affiliation: University of Genova

A. PITTO, Author Affiliation: University of Genova

F. SILVESTRO, Author Affiliation: University of Genova

2010TD0632 A risk of voltage collapse in transmission network due to insufficient reactive power control

G. BLAJSZCZAK, Author Affiliation: PSE-Operator S.A.

M. WASILUK-HASSA, Author Affiliation: PSE-Operator S.A.

2010TD0589 Application of Operating Security Regions in Power Systems

E. AL-AMMAR, Author Affiliation: King Saud University

M. EL-KADY, Author Affiliation: King Saud University

2010TD0459 Applied Synchrophasor Solutions and Advanced Possibilities

E. SCHWEITZER, III, Author Affiliation: Schweitzer Engineering Laboratories, Inc.

D. WHITEHEAD, Author Affiliation: Schweitzer Engineering Laboratories, Inc.

A. GUZMAN, Author Affiliation: Schweitzer Engineering Laboratories, Inc.

Y. GONG, Author Affiliation: Schweitzer Engineering Laboratories, Inc.

M. DONOLO, Author Affiliation: Schweitzer Engineering Laboratories, Inc.

R. MOXLEY, Author Affiliation: Schweitzer Engineering Laboratories, Inc.

TD08Wd3P

Distributed Resource Integration Impacts

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: Robert Saint, *National Rural Electric Cooperative Association*

Panel Summary:

This panel session is a comprehensive introduction to the issues faced by utility engineers when integrating distributed resources. Topics include flicker impacts and mitigation; protection issues and requirements with induction generators; grid support functions to implement into a utility-scale PV system; and distribution grid considerations for large scale solar and wind installations.

PRESENTATIONS AND PANELISTS:

2010TD0353 Distribution Grid Considerations for Large Scale Solar and Wind Installations

S. STEFFEL, Author Affiliation: Ppeco Holdings, Inc.

2010TD0378 Grid Support Functions Implemented in Utility-Scale PV Systems

R. WALLING, Author Affiliation: GE Energy

K. CLARK, Author Affiliation: GE Energy

2010TD0555 Integration of an Induction Generator on a Distribution System

C. WILLIAMS, Author Affiliation: S&C Electric

2010TD0709 Voltage Control and Voltage Fluctuations in Distributed Resource Interconnection Projects

T. MCDERMOTT, Author Affiliation: MelTran, Inc.

ED02Wd4P

Smart Grid Issues

Wednesday, 21 April, 2010 3:15 AM-5:15 PM

Sponsored By: Energy Development and Power Generation Committee

Session Chairs: Lingling Fan, *University of South Florida*

Lisa Lamont, *Petroleum Institute, Abu Dhabi, UAE*

Panel Summary:

This panel addresses some issues of smart grid such as renewable energy integration, plug-in hybrid electric vehicles, demand response, climate change, and energy policies.

PRESENTATIONS AND PANELISTS:

2010TD0051 A High Quality Power Supply System with DC Smart Grid

K. KUROHANE, Author Affiliation: University of the Ryukyus

T. SENJYU, Author Affiliation: University of the Ryukyus

A. YONA, Author Affiliation: University of the Ryukyus

N. URASAKI, Author Affiliation: University of the Ryukyus

B. MUHANDO, Author Affiliation: University of the Ryukyus

T. FUNABASHI, Author Affiliation: University of the Ryukyus

2010TD0101 The Role of Plug-In Hybrid Electric Vehicles in Demand Response and Beyond

M. MALLETTE, Author Affiliation: UW Madison

G. VENKATARAMANAN, Author Affiliation: UW Madison

2010TD0131 Impact of Large-scale Penetration of Photovoltaic Power Generation Systems on Fluctuation Property of Electricity Load

T. KATO, Author Affiliation: Nagoya Univ.

T. INOUE, Author Affiliation: Nagoya Univ.

Y. SUZUOKI, Author Affiliation: Nagoya Univ.

2010TD0165 Climate Change Impacts on Residential and Commercial Loads in the Western

U.S. Grid Preprint Number: [TPWRS-00810-2008.R2]

N. LU, Author Affiliation: Pacific Northwest National Laboratory

T. TAYLOR, Author Affiliation: Pacific Northwest National Laboratory

W. JIANG, Author Affiliation: Pacific Northwest National Laboratory

C. JIN, Author Affiliation: Pacific Northwest National Laboratory

J. CORREIA, Author Affiliation: Pacific Northwest National Laboratory
L. LEUNG, Author Affiliation: Pacific Northwest National Laboratory
P. WONG, Author Affiliation: Pacific Northwest National Laboratory

2010TD0312 Analysis of Renewable Promotional Policies and Their Current Status in Indian Restructured Power Sector

R. SINGH, Author Affiliation: National Institute of technology
Y. SOOD, Author Affiliation: National Institute of technology
N. PADHY, Author Affiliation: Department of Electrical and Computer Engineering, Ryerson University, Toronto, Canada
B. VENKATESH, Author Affiliation: Department of Electrical and Computer Engineering, Ryerson University, Toronto, Canada.

2010TD0634 Hybrid Stand-alone Power Systems with Hydrogen Energy Storage for Isolated Communities

A. GARGOOM, Author Affiliation: University of Tasmania
A. HARUNI, Author Affiliation: University of Tasmania
M. HAQUE, Author Affiliation: University of Tasmania
M. NEGNEVITSKY, Author Affiliation: University of Tasmania

PSD03Wd4P

FACT/Power Electronic Applications to Improve Power System Dynamic Performance Part 2

Wednesday, 21 April, 2010 3:15 PM-5:15 PM

Sponsored By: Power System Dynamic Performance Committee

Session Chair: John Paserba, *Mitsubishi Electric Power Products, Inc.*

Panel Summary:

The evolving utility environment demands a more optimal and profitable operation of the power system. Now, more than ever, advanced technologies are paramount for the reliable and secure operation of power systems. To achieve operational reliability it has become clear that more efficient utilization and control of the existing transmission system infrastructure is required. Power electronics based equipment—including traditional equipment applied in new ways—has been termed Flexible AC Transmission Systems-FACTS, and can provide proven technical solutions to address these new operating challenges being presented today. FACTS technologies allow for improved transmission system operation with minimal infrastructure investment, environmental impact, and implementation time compared to the construction of new transmission lines. This 2-part Panel Session presents and explores several recent successful applications of FACTS/Power Electronic equipment.

PRESENTATIONS AND PANELISTS:

2010TD0246 Applying SVCs on Distribution Systems

J. DIAZ DE LEON II, Author Affiliation: American Superconductor Inc.

K. DIEHL, Author Affiliation: American Superconductor Inc.

M. GHORAI, Author Affiliation: American Superconductor Inc.

2010TD0368 First Multi-Channel VFT Application - The Linden Project

E. PRATICO, Author Affiliation: GE Energy
C. WEGNER, Author Affiliation: GE Energy
P. MARKEN, Author Affiliation: GE Energy
J. MARCZEWSKI, Author Affiliation: Energy Initiatives Group

2010TD0379 Analysis of High Capacity Power Electronic Technologies for Integration of Green Energy Management

G. REED, Author Affiliation: University of Pittsburgh
B. GRAINGER, Author Affiliation: University of Pittsburgh
H. BASSI, Author Affiliation: University of Pittsburgh
E. TAYLOR, Author Affiliation: University of Pittsburgh
Z. MAO, Author Affiliation: University of Pittsburgh
A. JONES, Author Affiliation: University of Pittsburgh

2010TD0355 Developing Generic Static Var System Models – A WECC Task Force Effort

P. POURBEIK, Author Affiliation: EPRI
D. SULLIVAN, Author Affiliation: MEPPI Substation Division
A. BOSTROM, Author Affiliation: ABB Power Systems
J. SANCHEZ-GASCA, Author Affiliation: GE Energy
Y. KAZACHKOV, Author Affiliation: Siemens PTI
J. KOWALSKI, Author Affiliation: SCE
A. SALAZAR, Author Affiliation: SCE
B. SUDDUTH, Author Affiliation: WECC

PSP03Wd4P

Advanced Metering Infrastructure as an enabler of Demand Response

Wednesday, 21 April, 2010 3:15 PM-5:15 PM

Session Chair: Hahn Tram, *Quanta Technology Inc.*

Panel Summary:

Demand Response (DR) provides major benefits to utilities: increasing T&D capacity utilization, improving system reliability, enabling customer service choices, fostering energy efficiency, reducing carbon footprint, and facilitating energy market participation. This panel explores the benefit opportunities and challenges of DR, and how DR can be built on today's Advanced Metering infrastructures (AMI), establishing a key cornerstone for Smart Grid. The challenges include technology, marketing communication, organization change management, and system deployment and maintenance.

PRESENTATIONS AND PANELISTS:

2010TD0694 Advanced Metering Infrastructure as an Enabler of Demand Response

- H. TRAM, Author Affiliation: Quanta Technology
- 2010TD0707 Evolution of AMI Technologies and Enablement of Smart Grid**
A. HAWKINS, Author Affiliation: CPS Energy
- 2010TD0700 The Smart Grid for an Integrated Multi-Service Utility**
R. GOAD, Author Affiliation: City of Tallahassee Utilities
- 2010TD0699 Enterprise Information and Process Change Management for AMI and Demand Response**
H. TRAM, Author Affiliation: Quanta Technology
- 2010TD0706 AMI Enabled Energy Demand Management with Distributed Energy Resources**
F. FLETCHER, Author Affiliation: Burbank Water & Power

TD12Th1P

Lightning Performance of Overhead Lines

Thursday, 22 April, 2010 8:00 AM-10:00 AM

Sponsored By: Transmission and Distribution Committee

Session Chair: John McDaniel, *National Grid USA*

Panel Summary:

This panel will look at several aspects of Lightning protection of lines. Topics that will be covered are the application of arresters and aspects of grounding. There will also be an presentation on the updated IEEE Flash program.

PRESENTATIONS AND PANELISTS:

- 2010TD0419 Externally Gapped Line Arrester A Comprehensive Review**
J. WOODWORTH, Author Affiliation: ArresterWorks
- 2010TD0322 Field Experience on the Application of Surge Arresters on Transmission Lines**
C. ROMUALDO TORRES, Author Affiliation: Instituto de Investigaciones Electricas
F. MARTINEZ FONSECA, Author Affiliation: Comision Federal de Electricidad
- 2010TD0683 Grounding of Overhead Transmission Lines**
W. CHISHOLM, Author Affiliation: Kinectrics/UQAC
E. PETRACHE, Author Affiliation: Kinectrics
F. BOLOGNA, Author Affiliation: EPRI
- 2010TD0713 A New Version of the IEEE Flash Program**
T. MCDERMOTT, Author Affiliation: MelTran, Inc.

Poster Sessions

PSD01Tu2

Power System Dynamic Performance Committee Poster Session I

Tuesday, 20 April, 2010 10:15 AM-12:15 PM

Sponsored By: Power System Dynamic Performance Committee

Session Chair: John Paserba, *Mitsubishi Electric Power Products, Inc.*

PAPERS AND AUTHORS:

- 2010TD0036 Adaptability of PSS While the Connection between Northeast and North Grids of China Changed from AC to DC**
G. LEI, Author Affiliation: experience exchange and cooperation
Z. FANG, Author Affiliation: experience exchange and cooperation
Z. HONGGUANG, Author Affiliation: experience exchange and cooperation
C. LIU, Author Affiliation: experience exchange and cooperation
- 2010TD0241 Oscillation Source Location Using Wavelet Transforms and Generalized Linear Models**
P. MCNABB, Author Affiliation: University of Edinburgh
N. BOCHKINA, Author Affiliation: University of Edinburgh
D. WILSON, Author Affiliation: Psymetrix Ltd.
J. BIALEK, Author Affiliation: University of Edinburgh
- 2010TD0247 Dynamic Generation Control In Support of Optimal Load Shedding for Preventing Voltage Collapse**
B. GONG, Author Affiliation: Siemens PTI
- 2010TD0302 Dynamic Placement and Signal Selection for UPFCs in Wide-Area Controlled Power Systems**
M. ZARGHAMI, Author Affiliation: ABB
M. CROW, Author Affiliation: Missouri University of Science and Technology
- 2010TD0303 Small Signal Stability Constrained Rescheduling Using Sensitivities Analysis by Neural Network as a Preventive Tool**
A. BEIK-KHORMIZI, Author Affiliation: University Student
M. AGHAMOHAMMADI, Author Affiliation: Power & Water University of Technology (PWUT)
- 2010TD0354 Research on Order Reduction of Power System Modeling for Dynamic Voltage Stability Analysis**
P. LI, Author Affiliation: Power System and its Automation
B. ZHANG, Author Affiliation: Power System and its Automation
J. SHU, Author Affiliation: Power System and its Automation
Z. BO, Author Affiliation: AREVA T&D Automation
A. KLIMEK, Author Affiliation: AREVA T&D Automation
- 2010TD0432 Stressed Power Systems Analysis by Using Higher Order Modal Series Method: A Basic Study**
O. RODRIGUEZ, Author Affiliation: Division de Estudios de Posgrado, FIE,

Universidad Michoacana de San Nicolas de Hidalgo

A. MEDINA, Author Affiliation: Division de Estudios de Posgrado, FIE, Universidad Michoacana de San Nicolas de Hidalgo

2010TD0474 Optimization of Parameter Set for STATCOM Control System

A. VURAL, Author Affiliation: Atilim University

C. BAYINDIR, Author Affiliation: Cukurova University

2010TD0635 Self-tuning Feedback Linearization Controller for Power Oscillation Damping

J. ARIE, Author Affiliation: Imperial College London

N. RAY CHAUDHURI, Author Affiliation: Imperial College London

S. RAY, Author Affiliation: ABB Corporate Research

B. CHAUDHURI, Author Affiliation: Imperial College

2010TD0637 Power Oscillation Damping Control Using Wide-Area Signals: A Case Study on Nordic Equivalent System

N. RAY CHAUDHURI, Author Affiliation: Imperial College London

A. DOMAHIDI, Author Affiliation: ETH Zurich

B. CHAUDHURI, Author Affiliation: Imperial College London

R. MAJUMDER, Author Affiliation: ABB Corporate Research

P. KORBA, Author Affiliation: ABB Corporate Research

S. RAY, Author Affiliation: ABB Corporate Research

K. UHLEN, Author Affiliation: Norwegian University of Science Technology

2010TD0655 Substation Based Dynamic State Estimator - Numerical Experiment

R. HUANG, Author Affiliation: Georgia Institute of Technology

E. FARANTATOS, Author Affiliation: Georgia Institute of Technology

G. COKKINIDES, Author Affiliation: Georgia Institute of Technology

A. MELIOPOULOS, Author Affiliation: Georgia Institute of Technology

SG01Tu2 Switchgear

Tuesday, 20 April, 2010 10:15 AM-12:15 PM

Sponsored By: Switchgear Committee

Session Chair: Ken Edwards, *Switchgear Committee*

PAPERS AND AUTHORS:

2010TD0060 Evolution of an Environmentally Friendly “Green” Compact Three-Phase 27kV, 630A Switchgear to Improve Network Reliability

A. REED, Author Affiliation: Thomas & Betts Elastimold Div.

L. HONG, Author Affiliation: Consolidated Edison N.Y. N.Y.

D. SIMON, Author Affiliation: Consolidated Edison N.Y. N.Y.

F. STEPNIAK, Author Affiliation: Frank Stepniak Consultant

2010TD0116 Effect of Short Circuit Switching on Dielectric Properties of Vacuum Interrupters

M. KOCHACK ZADEH, Author Affiliation: TU Darmstadt

V. HINRICHSEN, Author Affiliation: TU Darmstadt

H. IKEDA, Author Affiliation: University of Tokyo

M. HIKITA, Author Affiliation: Kyushu Institute of Technology

K. HARADA, Author Affiliation: Kyushu Institute of Technology

2010TD0163 Advanced Lubrication Technology & Application Strategy for Improved Outdoor High Voltage Electrical Equipment Reliability

G. FINNER, Author Affiliation: Dow Corning Corporation

2010TD0184 Analytic Method Using Laplace Transform for a Modified TRV of a Circuit Breaker

K. UDAGAWA, Author Affiliation: Toshiba Corporation

T. KOSHIZUKA, Author Affiliation: Toshiba Corporation

H. KAWANO, Author Affiliation: Toshiba Corporation

M. KOSAKADA, Author Affiliation: Toshiba Corporation

M. TOYODA, Author Affiliation: Toshiba Corporation

H. IKEDA, Author Affiliation: The University of Tokyo

E. HAGINOMORI, Author Affiliation: Chuo University

2010TD0367 Transient Heating of Gas Insulated Switchgears

L. KOLLER, Author Affiliation: Budapest University of Technology and Economics

B. NOVAK, Author Affiliation: Budapest University of Technology and Economics

2010TD0376 Disconnecting Circuit Breaker Enables Smarter Substation Design

R. LARSSON, Author Affiliation: ABB High Voltage Products

C. SÖLVER, Author Affiliation: ABB High Voltage Products

L. HAGLUND, Author Affiliation: ABB High Voltage Products

2010TD0551 Simplified Designs for Switching Reactive Power Improve Power System Reliability

J. ROSTRON, Author Affiliation: Southern States, LLC

G. WOLF, Author Affiliation: Lone Wolf Engineering, LLC

TD01Tu2

T&D Poster Session

Tuesday, 20 April, 2010 10:15 AM-12:15 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: John McDaniel, *National Grid USA*

PAPERS AND AUTHORS:

2010TD0196 **Uninterrupted Power Supply in VSC-MTDC**

T. DING, Author Affiliation: Wuhan University

C. ZHANG, Author Affiliation: Wuhan University

2010TD0440 **Minimizing the Impact of Distributed Generation on Distribution Protection System by Solid State Fault Current Limiter**

S. SHAHRIARI, Author Affiliation: Firoozabad Applied and Science University

M. ABAPOUR, Author Affiliation: Tarbiat Moadares University

A. YAZDIAN, Author Affiliation: Tarbiat Moadares University

M. HAGHIFAM, Author Affiliation: Tarbiat Moadares University

2010TD0506 **Sustainable Microgrids for Isolated Systems**

E. O'NEILL-CARRILLO, Author Affiliation: University of Puerto Rico-Mayaguez

R. MARTINEZ-CID, Author Affiliation: University of Puerto Rico-Mayaguez

2010TD0606 **Acceptable Capacity of PV System according to Capacity of NaS Battery in a Microgrid under 30 min Power Balancing Control**

T. SHIMAKAGE, Author Affiliation: NTT Facilities, Inc.

A. SONE, Author Affiliation: Nagoya University

T. KATO, Author Affiliation: Nagoya University

Y. SUZUOKI, Author Affiliation: Nagoya University

K. NISHIOKA, Author Affiliation: NTT Facilities, Inc.

H. YAMANE, Author Affiliation: NTT Facilities, Inc.

2010TD0701 **A Conceptual Framework of a Hierarchically Networked Agent-based Microgrid Architecture**

S. SURYANARAYANAN, Author Affiliation: Colorado School of Mines

J. MITRA, Author Affiliation: Michigan State University

S. BISWAS, Author Affiliation: Michigan State University

TR01Tu2

Transformers 1

Tuesday, 20 April, 2010 10:15 AM-12:15 PM

Sponsored By: Transformers Committee

Session Chairs: Bill Chiu, Vice Chair Transformers Committee

Ed Smith, Chair Transformers Committee

PAPERS AND AUTHORS:

2010TD0020 **Detection of Inrush Current Using S-Transform and Probabilistic Neural Network**

G. MOKRYANI, Author Affiliation: Islamic Azad University, Soofian Branch

M. HAGHIFAM, Author Affiliation: Tarbiat Moadares University

H. LATAFAT, Author Affiliation: Islamic Azad University, Soofian Branch

P. ALIPARAST, Author Affiliation: Islamic Azad University, Soofian Branch

A. ABDOLLAHY, Author Affiliation: Islamic Azad University, Soofian Branch

2010TD0225 **Transformer Diagnosis Using Probabilistic Vibration Models**

P. IBARGUENGOYTIA, Author Affiliation: Instituto Investigaciones Electricas

R. LIÑAN, Author Affiliation: Instituto de Investigaciones Electricas

E. BETANCOURT, Author Affiliation: Prolec General Electric

2010TD0276 **Experimental Research of Vibration Sweep Frequency Response Analysis to Detect the Winding Deformation of Power Transformer**

F. WANG, Author Affiliation: Shanghai Jiaotong university

J. XU, Author Affiliation: Shanghai Jiaotong university

Z. JIN, Author Affiliation: Shanghai Jiaotong university

S. GUI, Author Affiliation: Shanghai Municipal Electric Power Company

2010TD0294 **Detection of Inrush Current Based On Wavelet Transform and LVQ Neural Network**

G. MOKRYANI, Author Affiliation: Islamic Azad University, Soofian Branch

M. HAGHIFAM, Author Affiliation: Tarbiat Moadares University

H. LATAFAT, Author Affiliation: Islamic Azad University, Soofian Branch

P. ALIPARAST, Author Affiliation: Islamic Azad University, Soofian Branch

A. ABDOLLAHY, Author Affiliation: Islamic Azad University, Soofian Branch

2010TD0311 **Investigating Short-circuit in Power Transformer Winding with Quasi-static Finite Element Analysis and Circuit-based Model**

M. BARZEGARAN, Author Affiliation: Babol University of Technology

M. MIRZAEI, Author Affiliation: Babol University of Technology

A. SHAYEGANI AKMAL, Author Affiliation: University of Tehran

2010TD040 **Design of a Planar Power Transformer for High Voltage, High Frequency Use**

Y. WANG, Author Affiliation: Shanghai Jiao
Tong University
D. XIAO, Author Affiliation: Shanghai Jiao
Tong University
Y. LIU, Author Affiliation: Virginia
Polytechnic Institute and State University

ED01Tu3

Energy Development and Power Generation Committee

Tuesday, 20 April, 2010 1:00 PM-3:00 PM

Sponsored By: Energy Development and Power Generation
Committee

Session Chairs: Ning Lu, PNL

Billy Muhando, University of the Ryukyus

PAPERS AND AUTHORS:

**2010TD0050 LPV-Based H₂ Inf Paradigm for Grid-
Interactive WECS Under High Inflow
Stochasticity**

B. MUHANDO, Author Affiliation:
University of the Ryukyus

T. SENJYU, Author Affiliation: University of
the Ryukyus

A. UEHARA, Author Affiliation: University
of the Ryukyus

T. FUNABASHI, Author Affiliation:
Meidensha Corporation

C. KIM, Author Affiliation: Sung Kyun
Kwan University

**2010TD0098 In Site Hydroelectric Power Plant Unit
Efficiency Measurement**

T. SOUSA, Author Affiliation: University of
Sao Paulo

J. JARDINI, Author Affiliation: University of
Sao Paulo

R. ALVES LIMA, Author Affiliation: AES
Tiete

**2010TD0191 Grid Support by Wind Turbines and
Future Trends**

S. PASTROMAS, Author Affiliation:
University of Patras

**2010TD0259 Generation Scheduling with Integration of
Wind Power and Compressed Air Energy
Storage**

H. DANESHI, Author Affiliation: Illinois
Institute of Technology

A. SRIVASTAVA, Author Affiliation:
Mississippi State University

A. DANESHI, Author Affiliation: Islamic
Azad University of Tehran

**2010TD0434 A Study of Short-Term Impact of Wind
Generation on LOLP**

J. JIANG, Author Affiliation: the University
of Oklahoma

C. LIN, Author Affiliation: the University of
Oklahoma

T. RUNOLFSSON, Author Affiliation: the
University of Oklahoma

**2010TD0541 Harmonic Analysis of A Doubly Fed
Induction Generator**

Preprint Number: [TEC-00470-2008]

L. FAN, Author Affiliation: University of
South Florida

S. YUVARAJAN, Author Affiliation: North
Dakota State University

R. KAVASSERI, Author Affiliation: North
Dakota State University

**2010TD0566 Automated Design for Boosting Offshore
Photovoltaic (PV) Performance**

S. AL-DHAHERI, Author Affiliation: The
Petroleum Institute

L. LAMONT, Author Affiliation: The
Petroleum Institute

L. EL CHAAR, Author Affiliation: The
Petroleum Institute

O. AL-AMERI, Author Affiliation: The
Petroleum Institute

**2010TD0717 Development of a Computational Tool for
Application in the Operation of
Hydrothermal Power Systems**

T. ALENCAR, Author Affiliation: UFABC
- Universidade Federal do ABC

P. LEITE, Author Affiliation: UFABC -
Universidade Federal do ABC

IC01Tu3

Insulated Conductors Committee Poster Session

Tuesday, 20 April, 2010 1:00 PM-3:00 PM

Sponsored By: Insulated Conductors Committee

Session Chair: TBD, TBD

PAPERS AND AUTHORS:

**2010TD0063 Grounding Elbow with 25kA Fault-closure
Rating for Underground Distribution
Systems**

D. HUGHES, Author Affiliation: Cooper
Power System

2010TD0147 Harmonic Behaviour of HVDC Cables

R. BENATO, Author Affiliation: University
of Padova

M. FORZAN, Author Affiliation: University
of Padova

M. MARELLI, Author Affiliation: Prysmian
S.r.l.

A. ORINI, Author Affiliation: Prysmian S.r.l.

E. ZACCONE, Author Affiliation: Prysmian
S.r.l.

**2010TD0232 Study on the Thermal Expansion of EHV
Cable Line with Large Size Conductor in
Tunnel**

J. LUO, Author Affiliation: State Grid
Electric Power Research Institute

L. ZHANG, Author Affiliation: Shanghai
Electric Power Corporation

Y. LIU, Author Affiliation: Guangzhou
Electrical Power Corporation

**2010TD0263 A Green Method for Cable Diagnostics
Coupled with Selective Cable Restoration
– Re-Use Instead of Replace**

W. CHATTERTON, Author Affiliation:
UtilIX Corporation

**2010TD0313 Research and Development of the Smart
Telemonitor System for Power Cable
Tunnel**

M. LUO, Author Affiliation: Huazhong
University of Science and Technology

Z. ZHOU, Author Affiliation: Beijing

Electrical Power Corporation
H. LI, Author Affiliation: Beijing Electrical Power Corporation
Y. LUO, Author Affiliation: WLT Technologies Co., Ltd.

2010TD0341 New Approach of Thermal Field and Ampacity of Underground Cables Using Adaptive hp-FEM

N. NGUYEN, Author Affiliation: HoChiMinhCity University of Technology
P. VU, Author Affiliation: HoChiMinhCity University of Technology
J. TLUSTY, Author Affiliation: Czech Technical University in Prague

2010TD0362 Partial Discharge Trends in Medium Voltage Cables Measured While In-Service with PDOL

A. CUPPEN, Author Affiliation: KEMA - the Netherlands
F. STEENNIS, Author Affiliation: KEMA- the Netherlands
P. VAN DER WIELEN, Author Affiliation: KEMA - the Netherlands

2010TD0496 Enhanced Energy Efficiency of Underground Cables

B. RICHARDSON, Author Affiliation: Dow Chemical
R. RAMACHANDRAN, Author Affiliation: Dow Chemical

2010TD0557 Separable Connecting Systems for MV and HV Equipment, Advantages for a Flexible Grid

R. GRUND, Author Affiliation: Pfisterer Cable Systems
T. KLEIN, Author Affiliation: Pfisterer Cable Systems

TR02Tu3 Transformers 2

Tuesday, 20 April, 2010 1:00 PM-3:00 PM

Sponsored By: Transformers Committee

Session Chairs: Bill Chiu, Vice Chair Transformers Committee

Ed Smith, Chair Transformers Committee

PAPERS AND AUTHORS:

2010TD0424 Investigation of EMTP Transformer Model for TRV Calculation after Fault Current Interrupting by Using FRA Measurement

M. THEIN, Author Affiliation: Toshiba
H. IKEDA, Author Affiliation: Toshiba
H. TODA, Author Affiliation: Toshiba
K. HARADA, Author Affiliation: Toshiba
S. OHTSUKA, Author Affiliation: Toshiba
M. HIKITA, Author Affiliation: Toshiba
E. HAGINOMORI, Author Affiliation: Toshiba
T. KOSHIDUKA, Author Affiliation: Toshiba

2010TD0475 On-Site Methods for Reliable Moisture Determination in Power Transformers

M. KOCH, Author Affiliation: Omicron Energy

M. KRÜGER, Author Affiliation: Omicron Energy

S. TENBOHLEN, Author Affiliation: University of Stuttgart

2010TD0492 Utilizing Piecewise Linear Approximation and Harmonic Regression to Analyze Power Transformer Insulating Oil On-Line Dissolved Gas Samples

D. LAMONTAGNE, Author Affiliation: Arizona Public Service Company

2010TD0528 Moisture in Transformers and Online Dryer Performance

R. RASOR, Author Affiliation: SD Myers Inc
H. MOLESKI, Author Affiliation: SD Myers Inc.

H. LUBBECK, Author Affiliation: FirstEnergy Corp.

L. LO, Author Affiliation: AES Nigeria Barge Operations Ltd.

2010TD0646 Ultra High Efficiency Distribution Transformers

M. CARLEN, Author Affiliation: ABB
D. XU, Author Affiliation: ABB
J. CLAUSEN, Author Affiliation: ABB
T. NUNN, Author Affiliation: ABB
V. RAMANAN, Author Affiliation: ABB
D. GETSON, Author Affiliation: ABB

2010TD0649 Development of a Fluid Structure Interaction Tool for the Study and Prevention of Transformer Tank Explosions

B. LANDIS, Author Affiliation: TPC
R. BRADY, Author Affiliation: TPC

EM01Tu4

Electric Machinery Poster Session

Tuesday, 20 April, 2010 3:15 PM-5:15 PM

Sponsored By: Electric Machinery

Session Chair: TBD, TBD

PAPERS AND AUTHORS:

2010TD0624 A System for Incipient Fault Detection and Fault Diagnosis Based on MCSA

D. GAZZANA, Author Affiliation: ufrgs
L. PEREIRA, Author Affiliation: pucrs
D. FERNANDES, Author Affiliation: pucrs

ET01Tu4

Emerging Technologies

Tuesday, 20 April, 2010 3:15 PM-5:15 PM

Sponsored By: Emerging Technologies Committee

Session Chair: TBA, TBA

PAPERS AND AUTHORS:

2010TD0052 Fuzzy Logic Based Coordinated Voltage Regulation Method for Distribution System with Multiple Synchronous Generators

D. GAONKAR, Author Affiliation: National Institute of Technology karnataka Surathkal
G. PILLAI, Author Affiliation: Indian Institute of Technology Roorkee

- 2010TD0415 What Smart Grid Means to an ISO/RTO?**
Z. FAN, Author Affiliation: PJM Interconnection
Y. MAO, Author Affiliation: PJM Interconnection
T. HORGER, Author Affiliation: PJM Interconnection
- 2010TD0433 Resonance of a Distribution Feeder with a Saturable Core Fault Current Limiter**
C. CLARKE, Author Affiliation: Southern California Edison
F. MORICONI, Author Affiliation: Zenergy Power Inc.
A. SINGH, Author Affiliation: Zenergy Power
A. KAMIAB, Author Affiliation: Southern California Edison
R. NEAL, Author Affiliation: Southern California Edison
A. RODRIGUEZ, Author Affiliation: Zenergy Power Inc.
F. DE LA ROSA, Author Affiliation: Zenergy Power Inc.
N. KOSHNICK, Author Affiliation: Zenergy Power Inc.
- 2010TD0445 Impact of Solid-State Fault Current Limiters on Protection Equipment in Transmission and Distribution Systems**
Y. FENG, Author Affiliation: University of Arkansas
E. JOHNSON, Author Affiliation: University of Arkansas
O. SAADEH, Author Affiliation: University of Arkansas
J. BALDA, Author Affiliation: University of Arkansas
H. MANTOOTH, Author Affiliation: University of Arkansas
M. SCHUPBACH, Author Affiliation: Arkansas Power Electronics International
- 2010TD0678 Model and Simulation of a 75kW PV Solar Array**
M. JENSEN, Author Affiliation: University of Nevada, Reno
R. LOUIE, Author Affiliation: University of Nevada, Reno
M. ETEZADI-AMOLI, Author Affiliation: University of Nevada, Reno
M. FADALI, Author Affiliation: University of Nevada, Reno
- 2010TD0718 Synchronous Multi-Channel PD Measurements and the Benefits for PD Analyses**
A. KRAETGE, Author Affiliation: OMICRON electronics
K. RETHMEIER, Author Affiliation: OMICRON electronics
M. KRÜGER, Author Affiliation: OMICRON electronics
P. WINTER, Author Affiliation: OMICRON electronics
- PSP01Tu4 PSPI Posters - Generation and Distribution Planning**
Tuesday, 20 April, 2010 3:15 PM-5:15 PM
Sponsored By: Power System Planning and Implementation Committee
Session Chair: Anil Pahwa, *Kansas State University*
- PAPERS AND AUTHORS:
- 2010TD0008 Interactive Economic Multi-Objective Optimization in Electric Power Market**
A. SALEHIAN, Author Affiliation: Cambridge Energy Research Associates
- 2010TD0035 The Application of the Hybrid Intelligent Algorithm in Distribution Devices Maintenance Scheduling**
J. ZHANG, Author Affiliation: North China Electric Power University
S. CUI, Author Affiliation: University of Science and Technology of China
W. LIU, Author Affiliation: North China Electric Power University
- 2010TD0363 Utilizing Reliability Indices to Study Generation Adequacy**
A. AL-ALAWI, Author Affiliation: Southwest Power Pool
M. NAGLE, Author Affiliation: Southwest Power Pool
J. ZHU, Author Affiliation: ABB
- 2010TD0382 Improving the Reliability of Power Distribution Systems Through Single-Phase Tripping**
J. ROMERO AGUERO, Author Affiliation: Quanta Technology
J. WANG, Author Affiliation: Quanta Technology
J. BURKE, Author Affiliation: Quanta Technology
- 2010TD0402 Assessment of Indian Power Sector Reform Through Productivity Analysis: Pre and Post Electricity Act, 2003**
V. YADAV, Author Affiliation: IIT, Roorkee
N. PADHY, Author Affiliation: IIT, Roorkee
H. GUPTA, Author Affiliation: IIT, Roorkee
- 2010TD0438 Risk Assessment of Major Accidents in Large Electric Power Plants**
I. DE SIQUEIRA, Author Affiliation: CHESF
B. DE SOUZA, Author Affiliation: UFCG
- 2010TD0585 Optimal Dispatch with Reactive Power Compensation by Genetic Algorithm**
M. SILVA, Author Affiliation: ISEP
Z. VALE, Author Affiliation: ISEP
H. KHODR, Author Affiliation: ISEP
C. RAMOS, Author Affiliation: ISEP
J. YUSTA, Author Affiliation: Universidad de Zaragoza
- 2010TD0618 Unit Commitment with Nature and Biologically Inspired Computing**
L. BELEDE, Author Affiliation: International Institute of Information Technology
A. JAIN, Author Affiliation: International Institute of Information Technology
R. GADDAM, Author Affiliation:

International Institute of Information
Technology

**2010TD0619 Placement of DG with Stochastic
Generation**

A. HADIAN, Author Affiliation: Islamic
Azad University
M. HAGHIFAM, Author Affiliation: Tarbiat
Modares University

SS01Tu4

Substations Poster Session

Tuesday, 20 April, 2010 3:15 PM-5:15 PM

Sponsored By: Substations Committee

Session Chair: John Randolph, *PGE*

PAPERS AND AUTHORS:

**2010TD0240 Measurement of Magnetic Fields in a
220kV Gas Insulated Substation**

K. ELLITHY, Author Affiliation: Qatar
University

2010TD0684 Control and Monitoring System for GIS

L. HEINEMANN, Author Affiliation: ABB
J. GLOCK, Author Affiliation: ABB
C. REHERS, Author Affiliation: ABB
T. SCHULZ, Author Affiliation: ABB

**2010TD0484 Revision of the GIS Standard Rated Above
52 kV - C37.122**

J. BRUNKE, Author Affiliation: Siemens
H. KOCH, Author Affiliation: IEEE TCPC

**2010TD0037 Gas Insulated Switchgear Developed to
Meet Increased Load Demand in Los
Angeles Basin**

B. WITHERS, Author Affiliation: Mitsubishi
Electric Power Products
P. BOLIN, Author Affiliation: Mitsubishi
Electric Power Products
S. NAKAUCHI, Author Affiliation:
Mitsubishi Electric Corporation
Y. SHIMIZU, Author Affiliation: Mitsubishi
Electric Corporation
H. SADAKUNI, Author Affiliation:
Mitsubishi Electric Corporation
M. OSUMI, Author Affiliation: Mitsubishi
Electric Corporation
P. FITZGERALD, Author Affiliation: AZZ/
CGIT Systems, Inc.
J. FLOOD, Author Affiliation: AZZ/CGIT
Systems, Inc.
C. HAND, Author Affiliation: Southern
California Edison
D. GOWHARI, Author Affiliation: Southern
California Edison
T. TRAN, Author Affiliation: Southern
California Edison
D. DOW, Author Affiliation: Southern
California Edison
T. NINH, Author Affiliation: Southern
California Edison

**2010TD0256 Innovative Smart Solution for Enhancing
Reliability of Power Supply to Mumbai
Metropolis Using Gas Insulated
Technology**

A. RAJE, Author Affiliation: Siemens ltd

D. RAINA, Author Affiliation: Tata Power
P. MURUGAN, Author Affiliation: Tata
Power

TD04Tu4

T&D Poster Session

Tuesday, 20 April, 2010 3:15 PM-5:15 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: John McDaniel, *National Grid USA*

PAPERS AND AUTHORS:

**2010TD0096 Development and Requirements of a New
High Power Laboratory**

I. ORUE, Author Affiliation: Ormazabal
Corporate Technology
I. GILBERT, Author Affiliation: Ormazabal
Corporate Technology
J. LARRIETA, Author Affiliation: Ormazabal
Corporate Technology

**2010TD0188 Smart Tie-Line Control Using
Controllable Network Transformers**

D. DAS, Author Affiliation: Georgia
Institute of Technology
D. DIVAN, Author Affiliation: Georgia
Institute of Technology
R. HARLEY, Author Affiliation: Georgia
Institute of Technology

**2010TD0236 Development of a Monitoring System to
Improve Ampacity in 138kV Transmission
Lines Using Photonic Technology**

F. NAZARE, Author Affiliation: COPPE/UFRJ
M. WERNECK, Author Affiliation: COPPE/
UFRJ

**2010TD0603 Conductor Temperature Monitoring as
a Tool to Increase Capacity of
Transmission Network Infrastructure
Elements**

A. JENKINS, Author Affiliation: GeoDigital
International Inc.
B. MEKHANOSHIN, Author Affiliation:
Opten Ltd.
V. SHKAPTSOV, Author Affiliation: Opten
Ltd.

**2010TD0712 Improving Utility Energy Efficiency
through Loss Identification**

B. YANG, Author Affiliation: GE
R. WALLING, Author Affiliation: GE
L. FREEMAN, Author Affiliation: GE
J. SKLIUTAS, Author Affiliation: GE
M. MARSHALL, Author Affiliation: none

**2010TD0500 A Breaker-Oriented, Three-Phase IEEE 24-
Substation Test System**

Preprint Number: [TPWRS-00095-2009.R1]
Q. DAM, Author Affiliation: Georgia
Institute of Technology
A. MELIOPOULOS, Author Affiliation:
Georgia Institute of Technology
G. HEYDT, Author Affiliation: Arizona State
University
A. BOSE, Author Affiliation: Washington
State University

IG01Wd1**Intelligent Grid Coordinating Committee Poster Session***Wednesday, 21 April, 2010 8:00 AM-10:00 AM*

Sponsored By: Intelligent Grid Coordinating Committee

Session Chair: TBD, TBD

PAPERS AND AUTHORS:

- 2010TD0482 Smart Grid Communication Network Capacity Planning for Power Utilities**
W. LUAN, Author Affiliation: BC Hydro
D. SHARP, Author Affiliation: BC Hydro
S. LANCASHIRE, Author Affiliation: BC Hydro
- 2010TD0510 Solar Microgrids to Accommodate Renewable Intermittency**
C. WELLS, Author Affiliation: OSIsoft
- 2010TD0533 Artech Algorithms and their Application in the Estimation of States in Smart Grid**
V. NARAYAN, Author Affiliation: President Netzconsult Ingenieure
A. MARTINEZ DEL SOL, Author Affiliation: Artech
J. MIER GARCIA, Author Affiliation: Artech
G. BECERRIL, Author Affiliation: Artech
- 2010TD0554 Plug-in Hybrid Electric Vehicles in the Smart Grid Environment**
W. SHIREEN, Author Affiliation: University of Houston
S. PATEL, Author Affiliation: University of Houston
- 2010TD0576 Operational Characteristic Analysis of DC Micro-grid using Detailed Model of Distributed Generation**
J. LEE, Author Affiliation: Myongji University
B. HAN, Author Affiliation: Myongji University
- 2010TD0592 Towards Intelligent Smart Grid Devices with IEC 61850 Interoperability and IEC 61499 Open Control Architecture**
V. VYATKIN, Author Affiliation: The University of Auckland
G. ZHABELOVA, Author Affiliation: The University of Auckland
N. HIGGINS, Author Affiliation: ENERGEX
K. SCHWARZ, Author Affiliation: SCC
N. NAIR, Author Affiliation: The University of Auckland
- 2010TD0665 A Multi-Layered Adaptive Load Management (ALM) System: Information Exchange Between Market Participants for Efficient and Reliable Energy Use**
J. JOO, Author Affiliation: Carnegie Mellon University
M. ILIC, Author Affiliation: Carnegie Mellon University
- 2010TD0708 Impact of TOU Rates on Distribution Load Shapes in a Smart Grid with PHEV Penetration**
S. SHAO, Author Affiliation: sshao@vt.edu
T. ZHANG, Author Affiliation: Virginia Tech
M. PIPATTANASOMPORN, Author Affiliation: Virginia Tech
S. RAHMAN, Author Affiliation: Virginia Tech

MS01Wd1**Marine Systems Coordinating Committee Poster Session***Wednesday, 21 April, 2010 8:00 AM-10:00 AM*

Sponsored By: Marine Systems Coordinating Committee

Session Chair: TBD, TBD

PAPERS AND AUTHORS:

- 2010TD0679 Dealing with Uncertainty in the Measurements for the Reconfiguration of Distribution Power Systems**
V. PENDURTHI, Author Affiliation: Mississippi State University
N. SCHULZ, Author Affiliation: Kansas State University
A. SRIVASTAVA, Author Affiliation: Mississippi State University

PSR01Wd1**Power System Relaying Poster Session***Wednesday, 21 April, 2010 8:00 AM-10:00 AM*

Sponsored By: Power System Relaying Committee

Session Chair: Roger Hedding, ABB

PAPERS AND AUTHORS:

- 2010TD0014 Design of Adaptive Autoreclosure Schemes for 132kV Network with High Penetration of Wind: Part 1 – Real Time Modelling**
S. LE BLOND, Author Affiliation: University of Bath
- 2010TD0019 Application of Intelligent Algorithm In Island Detection of Distributed Generation**
X. LIN, Author Affiliation: Hohai University
X. DONG, Author Affiliation: School of Electrical Engineering, Southeast University
Y. LU, Author Affiliation: School of Electrical Engineering, Southeast University
- 2010TD0084 An Adaptive Differential Relay for CT Saturation Based on Wavelet Transform**
A. RAHMATI, Author Affiliation: University of Ilam
- 2010TD0140 Investigation of Frequency Domain Traveling Wave Fault Location Methods**
V. FAYBISOVICH, Author Affiliation: SCE Company
M. FEIGINOV, Author Affiliation: Technical University of Darmstadt
M. KHOROSHEV, Author Affiliation: TOKHO-M
- 2010TD0143 A Digital Sampling Rate Synchronization Scheme for Fully Digital Relay Protection**
C. CAI, Author Affiliation: Southeast University
Y. LU, Author Affiliation: Southeast University
- 2010TD0204 Generator Field Ground Protection Using Digital Technology**
C. MOZINA, Author Affiliation: Beckwith Electric Company, Inc.
- 2010TD0221 Use of Recursive Wavelet Transform for Estimating Power System Frequency and Phasors**
J. REN, Author Affiliation: Texas A&M University / TEES

- M. KEZUNOVIC, Author Affiliation: Texas A&M University / TEES
- 2010TD0392 A Morphological Filter to Distinguish a Fault from Capacitor Switching**
S. BUGGAVEETI, Author Affiliation: New Mexico State University
S. BRAHMA, Author Affiliation: New Mexico State University
- 2010TD052 Testing and Configuration of IEC 61850 Multivendor Protection Schemes**
R. AGUILAR, Author Affiliation: Megger
J. ARIZA, Author Affiliation: Megger
- 2010TD0536 Analysis of a Mixed Overhead-Underground Transmission Line with Specific Reference to Protection and Ferroresonance Problems**
P. NAVALKAR, Author Affiliation: Indian Institute of Technology Bombay
S. SOMAN, Author Affiliation: Indian Institute of Technology Bombay
S. PATKI, Author Affiliation: Indian Institute of Technology Bombay
J. SHROTRI, Author Affiliation: Indian Institute of Technology Bombay
S. DESHMUKH, Author Affiliation: Indian Institute of Technology Bombay
- 2010TD0537 Considerations for Generator Protection During Black Start Conditions**
S. TURNER, Author Affiliation: Beckwith Electric Company, Inc.
- 2010TD0590 The Impact of Optical Current and Voltage Sensors on Phasor Measurements and Applications**
R. NUQUI, Author Affiliation: ABB Inc
M. ZARGHAMI, Author Affiliation: ABB Inc
M. MENDIK, Author Affiliation: ABB Inc
- 2010TD0641 Smart Grid Distribution Automation for Public Power**
H. GILL, Author Affiliation: ABB
- 2010TD0663 Comparison of impedance and travelling wave fault location using real faults**
S. ZIMATH, Author Affiliation: Reason Tecnology
M. RAMOS, Author Affiliation: Furnas Centrais Eletricas
J. FILHO, Author Affiliation: Furnas Centrais Eletricas
- 2010TD0688 An Improved CT Testing Method for Enhancing Protective Relay Performance**
B. VANDIVER, Author Affiliation:OMICRON electronics
A. APOSTOLOV, Author Affiliation:OMICRON electronics
P. MEINHARDT, Author Affiliation:OMICRON electronics
- 2010TD0715 Maintenance Testing of Multifunctional Distance Protection IEDs**
A. APOSTOLOV, Author Affiliation:OMICRON electronics
B. VANDIVER, Author Affiliation:OMICRON electronics
- 2010TD0720 Comparing Series and Shunt Reactive Power Compensation via UPFC from Distance Relay Point of View**
S. JAMALI, Author Affiliation: Iran University of Science and Technology
A. KAZEMI, Author Affiliation: Iran University of Science and Technology
H. SHATERI, Author Affiliation: Iran University of Science and Technology
- 2010TD0731 Measured Impedance at Source Node of a Distribution Feeder for Inter Phase Faults**
H. SHATERI, Author Affiliation: Iran University of Science and Technology
S. JAMALI, Author Affiliation: Iran University of Science and Technology
- 2010TD0736 Adaptive Distance Protection in Presence of STATCOM on a Transmission Line**
A. KAZEMI, Author Affiliation: Iran University of Science and Technology
S. JAMALI, Author Affiliation: Iran University of Science and Technology
H. SHATERI, Author Affiliation: Iran University of Science and Technology
- ACE03Wd2
PSACE Poster Session V**
Wednesday, 21 April, 2010 10:15 AM-12:15 PM
Sponsored By: Power System Analysis, Computing and Economics
Session Chair: Roger Dugan, EPRI
- PAPERS AND AUTHORS:
- 2010TD0529 Renewable Integration Model and Analysis**
J. CHANG, Author Affiliation: The Brattle Group
K. MADJAROV, Author Affiliation: The Brattle Group
R. BALDICK, Author Affiliation: University of Texas, Austin
A. ALVAREZ, Author Affiliation: PG&E
P. HANSER, Author Affiliation: The Brattle Group
- 2010TD0562 Voltage Stability Monitoring Using PMU Data in KEPCO System**
S. HAN, Author Affiliation: Korea Univ.
B. LEE, Author Affiliation: Korea Univ.
S. KIM, Author Affiliation: Korea Univ.
Y. MOON, Author Affiliation: Korea Univ.
B. CHANG, Author Affiliation: Korea Univ.
J. SHIN, Author Affiliation: Korea Univ.
- 2010TD0583 Speeding-up Network Reconfiguration by Minimum Cost Maximum Flow Based Branch Exchanges**
C. ABABEI, Author Affiliation: North Dakota State University
R. KAVASSERI, Author Affiliation: North Dakota State University
- 2010TD0638 Economic Analysis and Justification for Transmission Line Transposition**
J. MOONEY, Author Affiliation: POWER Engineers, Inc.

2010TD0640 Emission-Concerned Economic Dispatch: Possible Formulations and Implementations

L. XIE, Author Affiliation: Carnegie Mellon University

M. ILIC, Author Affiliation: Carnegie Mellon University

2010TD0670 A Simplified Operation Planning Model Considering Natural Gas Network and Reservoir Constraints

C. CINTRA, Author Affiliation: Petrobras

C. BORGES, Author Affiliation: Federal University of Rio de Janeiro

D. FALCÃO, Author Affiliation: Federal University of Rio de Janeiro

IG02Wd2

Intelligent Grid Coordinating Committee Poster Session

Wednesday, 21 April, 2010 10:15 AM-12:15 PM

Sponsored By: Intelligent Grid Coordinating Committee
Session Chair: TBD, TBD

PAPERS AND AUTHORS:

2010TD0078 Outline of a New Hierarchical Agent-Based Voltage Instability Protection System

F. BAALBERGEN, Author Affiliation: TU Delft

M. GIBESCU, Author Affiliation: TU Delft

L. VAN DER SLUIS, Author Affiliation: TU Delft

2010TD0085 Research on Centralized and Coordinate Controls of Multiple HVDC Systems in China

Z. JINHUA, Author Affiliation: China Electric Power Research Institute

2010TD0171 Performance Analysis of Positive-feedback-based Active Anti-islanding Schemes for Inverter-Based Distributed Generators

P. DU, Author Affiliation: Pacific Northwest National Laboratory

E. APONTE, Author Affiliation: Pacific Northwest National Laboratory

J. NELSON, Author Affiliation: Pacific Northwest National Laboratory

2010TD0212 Island Identification in Customer-Driven Micro-Grids

P. JAIN, Author Affiliation: New Mexico State University

S. RANADE, Author Affiliation: New Mexico State University

S. SRIVASTAVA, Author Affiliation: New Mexico State University

2010TD0223 Control Strategies for Gas Turbine Generators for Grid Connected and Islanding Operations

P. MAHAT, Author Affiliation: Aalborg University

Z. CHEN, Author Affiliation: Aalborg University

B. BAK-JENSEN, Author Affiliation: Aalborg University

2010TD0249 Improving Area Control Error Diversity Interchange (ADI) Program by Incorporating Congestion Constraints

N. ZHOU, Author Affiliation: Pacific Northwest National Laboratory

P. ETINGOV, Author Affiliation: Pacific Northwest National Laboratory

Y. MAKAROV, Author Affiliation: Pacific Northwest National Lab

R. GUTTROMSON, Author Affiliation: Pacific Northwest National Lab

B. MCMANUS, Author Affiliation: Bonneville Power Administration

2010TD0359 Simulation Methods for Assessing Electric Vehicle Impact on Distribution Grids

L. ZHAO, Author Affiliation: Institute of Power Systems and Economics

S. PROUSCH, Author Affiliation: Institute of Power Systems and Economics

M. HÜBNER, Author Affiliation: Institute of Power Systems and Power Economics

A. MOSER, Author Affiliation: Institute of Power Systems and Economics

2010TD0473 Study and Construction of Integrated Information Platform In Electric Power Companies Based On Grid Technology

L. HAN-CHENG, Author Affiliation: China Agriculture University

Z. JIA-QI, Author Affiliation: China Agriculture University

W. QIAN, Author Affiliation: Beijing Electric Power Company

Y. MING-HAO, Author Affiliation: China Agriculture University

2010TD0477 Coordinated Control Scheme for Stand-alone PV System with Nonlinear Load

X. LIU, Author Affiliation: Nanyang Technological University

P. WANG, Author Affiliation: Nanyang Technological University

P. LOH, Author Affiliation: Nanyang Technological University

SPD01Wd2

Surge Protective Devices Paper Presentations

Wednesday, 21 April, 2010 10:15 AM-12:15 PM

Session Chair: Kenneth Brown, *Leviton Mfg. Co., Inc.*

PAPERS AND AUTHORS:

2010TD0079 Application Considerations for Gapped Silicon-Carbide Arresters Installed on Utility High Voltage Systems Part II: Energy Consumption

D. LENK, Author Affiliation: Hubbell Power Systems

2010TD0195 Elbow Arrester for Windfarm Collector Circuit Protection

H. YAWORSKI, Author Affiliation: Tyco Electronics

2010TD0380 Evaluation at Field of Aged 345kV Class ZnO Surge Arresters

H. TATIZAWA, Author Affiliation: Instituto de Eletrotecnica e Energia da USP

W. R. BACEGA, Author Affiliation: CTEEP
- Cia de Transmissao de Energia Eletrica
Paulista

A. G. KANASHIRO, Author Affiliation:
Instituto de Eletrotecnica e Energia da USP
G. F. BURANI, Author Affiliation: Instituto
de Eletrotecnica e Energia da USP

**2010TD0629 Performance Analysis of the RC Clampers
in Switching Off No Load Arc Furnace
Transformers**

M. SANTOS, Author Affiliation: Gerdau
Açominas

M. SANTOS, Author Affiliation: DALTEC
V. ONOFRI, Author Affiliation: Gerdau
Açominas

TD07Wd2

T&D Poster Session

Wednesday, 21 April, 2010 10:15 AM-12:15 PM

Sponsored By: Transmission and Distribution Committee
Session Chair: John McDaniel, *National Grid USA*

PAPERS AND AUTHORS:

**2010TD0343 Voltage Improvements by Series Converter
Filter for Power Quality Park**

G. BLAJSZCZAK, Author Affiliation: PSE-
Operator S.A.

**2010TD0383 Development of a Real-Time Monitoring
System for Controlling the Tensioning Guy
Wires in Transmission Lines**

J. MELLO, Author Affiliation: TBE Energia
D. FIGUEIREDO, Author Affiliation: TBE
Energia

R. JACOBSEN, Author Affiliation: TBE
Energia

J. JARDINI, Author Affiliation: USP

J. SANTOS, Author Affiliation: USP

L. MAGRINI, Author Affiliation: FDTE

M. JARDINI, Author Affiliation: FDTE

M. MASUDA, Author Affiliation: USP

L. OGIBOSKI, Author Affiliation: FDTE

F. CRISPINO, Author Affiliation: FDTE

J. BIZZARRIA, Author Affiliation: FDTE

**2010TD0456 A New Method for Public Involvement in
Electric Transmission Line Routing**

Preprint Number: [TPWRD-00522-2008]

W. JEWELL, Author Affiliation: Wichita
State University

T. GROSSARDT, Author Affiliation:
University of Kentucky Transportation
Center

K. BAILEY, Author Affiliation: University of
Arizona

R. GILL, Author Affiliation: Black and
Veatch

**2010TD0487 Field Trials of Cutout Mounted Reclosers
on Single-Phase Spurlines in ESB
Networks, Ireland**

T. MURRAY, Author Affiliation: Electricity
Supply Board

A. JONES, Author Affiliation: S&C Electric
Europe Limited

**2010TD0573 Analysis of Three-Phase Parallel
Distribution Feeders Fed from Different
Substations**

A. BERMAN, Author Affiliation: UCI

N. MARKUSHEVICH, Author Affiliation:UCI

**2010TD0578 Investigating the Potential of Re-
conducting A Lattice Tower Overhead
Line Structure**

K. KOPSIDAS, Author Affiliation: The
University of Manchester

S. ROWLAND, Author Affiliation: The
University of Manchester

**2010TD0596 Short-term Load Forecasting Based
Capacity Check for Automated Power
Restoration of Electric Distribution
Networks**

V. DONDE, Author Affiliation: ABB Inc.

Z. WANG, Author Affiliation: ABB Inc.

F. YANG, Author Affiliation: ABB Inc.

J. STOUPIIS, Author Affiliation: ABB Inc.

ACE04Wd3

PSACE Poster Session I

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Power System Analysis, Computing and
Economics

Session Chair: Roger Dugan, *EPRI*

PAPERS AND AUTHORS:

**2010TD0048 Using State Estimation Residuals to Detect
Abnormal SCADA Data**

J. MA, Author Affiliation: Pacific Northwest
National Laboratory

Y. CHEN, Author Affiliation: Pacific
Northwest National Laboratory

Z. HUANG, Author Affiliation: Pacific
Northwest National Laboratory

P. WANG, Author Affiliation: Pacific
Northwest National Laboratory

**2010TD0158 Mitigation of Three-Phase Unbalancing
for Distribution Feeders by Rephasing of
Laterals and Distribution Transformers**

C. LIN, Author Affiliation: National
Kaohsiung University of Applied Sciences

C. CHEN, Author Affiliation: I-Shou
University

T. KU, Author Affiliation: National Sun Yat-
Sen University

C. HO, Author Affiliation: Kao Yuan
University

**2010TD0222 Line Switch Unit Commitment for
Distribution Automation Systems Using
Neural Networks**

C. CHEN, Author Affiliation: I-Shou
University

T. KU, Author Affiliation: National Sun Yat-
Sen University

C. LIN, Author Affiliation: National
Kaohsiung University of Applied Sciences

C. ESPINOZA, Author Affiliation: National
Sun Yat-Sen University

2010TD0315 A Novel Condition Assessment System for Underground Distribution Applications

Preprint Number: [10.1109/

TPWRS.2009.2022977]

M. MOUSAVI, Author Affiliation: ABB US Corporate Research

K. BUTLER-PURRY, Author Affiliation: Texas A&M University

2010TD0375 Errors in Fault Analysis of Power Distribution Systems Using Sequence Components Approach

K. GAMPA, Author Affiliation: NEW MEXICO STATE UNIVERSITY

S. VEMPRALA, Author Affiliation: NEW MEXICO STATE UNIVERSITY

S. BRAHMA, Author Affiliation: NEW MEXICO STATE UNIVERSITY

2010TD0467 Evaluating Different Clustering Techniques for Electricity

Customer Classification

S. BIDOKI, Author Affiliation: Shiraz University

N. MAHMOUDI-KOHAN, Author Affiliation: Tarbiat Modares University

M. SADREDDINI, Author Affiliation: Shiraz University

M. ZOLGHADRI JAHROMI, Author Affiliation: Shiraz University

M. PARSA MOGHADDAM, Author Affiliation: Tarbiat Modares University

2010TD0651 Probabilistic Vulnerability Assessment Based on Power Flow and Voltage Distribution

J. MA, Author Affiliation: Pacific Northwest National Laboratory

Z. HUANG, Author Affiliation: Pacific Northwest National Laboratory

P. WONG, Author Affiliation: Pacific Northwest National Laboratory

T. FERRYMAN, Author Affiliation: Pacific Northwest National Laboratory

SS02Wd3

Substation Automation and Integration

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Substations Committee

Session Chair: John Randolph, *PG&E*

PAPERS AND AUTHORS:

2010TD0044 History – Events Leading to the Development of IEEE Std 1613™-2003 and its predecessor standards (IEEE Std C37.90, IEEE Std C37.90.1, IEEE Std C37.90.2, and IEEE Std C37.90.3)

J. TENGDIN, Author Affiliation: OPUS Consulting Group

2010TD0689 UML and XML Use in IEC 61850

A. APOSTOLOV, Author Affiliation: OMICRON electronics

2010TD0399 A Model-Driven Approach to Smart Substation Automation and Integration for Comision Federal de Electricidad

R. LOPEZ, Author Affiliation: CFE-

Comision Federal De Electricidad

A. MOORE, Author Affiliation: OSIsoft, Inc.

J. GILLERMAN, Author Affiliation: SISCO, Inc.

SS03Wd3

Substation Grounding

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Substations Committee

Session Chair: John Randolph, *PG&E*

PAPERS AND AUTHORS:

2010TD0534 Soil Model Determination Using Asymptotic Approximations to Sunde's Curves

G. GILBERT, Author Affiliation: University of Waterloo

L. CHOW, Author Affiliation: University of Waterloo

D. BOUCHARD, Author Affiliation: University of Waterloo

M. SALAMA, Author Affiliation: University of Waterloo

SS04Wd3

Offshore Substations: Voltage-Sourced Converters (VSC)

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Substations Committee

Session Chair: John Randolph, *PG&E*

PAPERS AND AUTHORS:

2010TD0485 Connecting Large Offshore Wind Farms to the Transmission Network

H. KOCH, Author Affiliation: IEEE TCPC

D. RETZMANN, Author Affiliation: Siemens AG

TD09Wd3

T&D Poster Session

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: John McDaniel, *National Grid USA*

PAPERS AND AUTHORS:

2010TD0141 The Impact of a Volt &Var Control System (VVC) on PQ and Customer's Equipment

F. ZAVODA, Author Affiliation: IREQ (Hydro-Quebec)

C. PERREAULT, Author Affiliation: Hydro-Quebec

A. LEMIRE, Author Affiliation: Hydro-Quebec

2010TD0202 Some Elements of Design and Operation of a Smart Distribution System

H. BROWN, Author Affiliation: Colorado School of Mines

D. HAUGHTON, Author Affiliation: Arizona State University

G. HEYDT, Author Affiliation: ASU

S. SURYANARAYANAN, Author Affiliation: Colorado School of Mines

- 2010TD0205 Implementing “SMART GRID” Integrated Distribution Volt/var/kW Management**
E. JAUCH, Author Affiliation: Beckwith Electric Company, Inc.
- 2010TD0394 Calculating Line Losses in Smart Grid: A New Rule of Thumb**
T. HONG, Author Affiliation: Quanta Technology, LLC
J. BURKE, Author Affiliation: Quanta Technology, LLC
- 2010TD0598 Implementation of Control Center Based Voltage and Var Optimization in Distribution Management System**
X. FENG, Author Affiliation: ABB Inc.
W. PETERSON, Author Affiliation: ABB Inc.
F. YANG, Author Affiliation: ABB Inc.
G. WICKRAMASEKARA, Author Affiliation: ABB Inc.
J. FINNEY, Author Affiliation: ABB Inc.
- 2010TD0599 BC Hydro’s Experience on Voltage VAR Optimization in Distribution System**
V. DABIC, Author Affiliation: BC Hydro
C. SIEW, Author Affiliation: BC Hydro
J. PERALTA, Author Affiliation: BC Hydro
D. ACEBEDO, Author Affiliation: BC Hydro
- 2010TD0643 OPC UA and CIM: Semantics for the Smart Grid**
S. ROHJANS, Author Affiliation: OFFIS
M. USLAR, Author Affiliation: OFFIS-Insitute for Information Systems
H. APPELRATH, Author Affiliation: OFFIS
- 2010TD0176 Combined Use of PLS-CADD and TOWER Softwares for Transmission Line Design – The Experience and Methodology of COPEL for Tower Analysis**
L. HATASHITA, Author Affiliation: Companhia Paranaense de Energia - Copel
J. HOFFMANN, Author Affiliation: Companhia Paranaense de Energia - Copel
C. PEDROSO, Author Affiliation: Companhia Paranaense de Energia - Copel
- 2010TD0182 High Temperature Current Cycle Test of Implosive Connectors on ACSS Conductor**
C. PASINI, Author Affiliation: FCI Canada Inc.
H. SILDVA, Author Affiliation: FCI Canada Inc.
G. GORJA, Author Affiliation: FCI Canada Inc.
Z. PETER, Author Affiliation: Kinectrics Inc.
- 2010TD0054 Live-Line Maintenance of AC Overhead Lines Equipped with Non Ceramic Insulators (NCI)**
M. DE NIGRIS, Author Affiliation: ERSE
I. GUTMAN, Author Affiliation: STRI
A. PIGINI, Author Affiliation: Consultant
- 2010TD0457 Condition Assessment and Maintenance Scheduling for Distribution Reclosers**
J. WARNER, Author Affiliation: ABB
W. JEWELL, Author Affiliation: Wichita State University
P. BHUSAL, Author Affiliation: Electrical Consultants, Inc.
- 2010TD0480 Preventive Inspection of Line Insulators through Corona Emission: A Case Study**
R. VASQUEZ-ARNEZ, Author Affiliation: FDTE
M. JARDINI, Author Affiliation: FDTE
M. MASUDA, Author Affiliation: USP
L. JUNIOR, Author Affiliation: ELEKTRO Eletricidade e Servicos
J. JARDINI, Author Affiliation: USP

TD10Wd3

T&D Poster Session

Wednesday, 21 April, 2010 1:00 PM-3:00 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: John McDaniel, *National Grid USA*

PAPERS AND AUTHORS:

- 2010TD0170 Investigation on Lightning Attractive Width of Transmission Lines: Experimental Studies**
T. DISYADEJ, Author Affiliation: Mississippi State University
S. GRZYBOWSKI, Author Affiliation: Mississippi State University
- 2010TD0172 Optimal Maintenance Strategies for Transmission Systems Using the Genetic Algorithm**
J. HEO, Author Affiliation: Seoul National University
G. PARK, Author Affiliation: Seoul National University
Y. YOON, Author Affiliation: Seoul National University
J. PARK, Author Affiliation: Seoul National University
S. LEE, Author Affiliation: the Korea Electrical Engineering and Science Research Institute (KESRI)

ACE05Wd4

PSACE Poster Session II

Wednesday, 21 April, 2010 3:15 PM-5:15 PM

Sponsored By: Power System Analysis, Computing and Economics

Session Chair: Roger Dugan, *EPRI*

PAPERS AND AUTHORS:

- 2010TD0047 Wind Speed Data Analysis Used in Installation of Wind Energy Conversion Systems in Algeria**
Y. HIMRI, Author Affiliation: Electricity & Gas National Enterprise (SONELGAZ), Béchar, Algeria
S. HIMRI, Author Affiliation: University of Béchar, Department of fundamental Sciences Algeria
A. BOUDGHENE STAMBOULI, Author Affiliation: University of Sciences and

- Technology of Oran, Department of Electronics, Algeria
- 2010TD0152 Economic Load Dispatch with Stochastic Wind Power: Model and Solutions**
X. LIU, Author Affiliation: University of Arkansas at Little Rock
W. XU, Author Affiliation: University of Arkansas at Little Rock
C. HUANG, Author Affiliation: University of Arkansas at Little Rock
- 2010TD0243 Optimal Contract Pricing of Distributed Generation Under a Competitive Framework**
J. LOPEZ-LEZAMA, Author Affiliation: Universidade Estadual Paulista
A. PADILHA-FELTRIN, Author Affiliation: Universidade Estadual Paulista
J. CONTRERAS, Author Affiliation: Universidad de Castilla La Mancha
J. MUÑOZ, Author Affiliation: Universidad de Castilla La Mancha
- 2010TD0261 The Effect of Wind and Demand Uncertainty on Electricity Prices and System Performance**
J. CARDELL, Author Affiliation: Smith College
L. ANDERSON, Author Affiliation: Cornell University
C. TEE, Author Affiliation: Smith College
- 2010TD0285 Application of Fuzzy Logic to Price-Based Unit Commitment Under Price Uncertainty**
H. DANESHI, Author Affiliation: Illinois Institute of Technology
A. SRIVASTAVA, Author Affiliation: Mississippi State University
A. DANESHI, Author Affiliation: Islamic Azad University of Tehran
- 2010TD0297 Relative Cost of Fault-Tolerant Transmission for Connecting Distributed Resources**
R. WEISSBACH, Author Affiliation: Penn State Erie, The Behrend College
W. WANG, Author Affiliation: Penn State Erie, The Behrend College
C. COULSTON, Author Affiliation: Penn State Erie, The Behrend College
M. TANG, Author Affiliation: Gannon University
- 2010TD0540 Wind Farms with HVDC Delivery in Load Frequency Control**
Preprint Number: [PESL-00021-2009]
L. FAN, Author Affiliation: University of South Florida
Z. MIAO, Author Affiliation: University of South Florida
D. OSBORN, Author Affiliation: Midwest ISO
- 2010TD0595 A Study of Short-Term Impact of Wind Generation on LOLP (revised)**
J. JIANG, Author Affiliation: the University of Oklahoma
C. LIN, Author Affiliation: the University of Oklahoma
- T. RUNOLFSSON, Author Affiliation: the University of Oklahoma
- PSC04Wd4 Communication Systems for the Smart Grid**
Wednesday, 21 April, 2010 3:15 PM-5:15 PM
Sponsored By: Power System Communications Committee
Session Chair: Dan Nordell, *Xcel Energy*
- PAPERS AND AUTHORS:
2010TD0645 Sensor Network-based AMI Network Security
J. KIM, Author Affiliation: R&D Center, Korea Electric Power Data Network Co., Ltd.
S. AHN, Author Affiliation: R&D Center, Korea Electric Power Data Network Co., Ltd.
Y. KIM, Author Affiliation: R&D Center, Korea Electric Power Data Network Co., Ltd.
K. LEE, Author Affiliation: R&D Center, Korea Electric Power Data Network Co., Ltd.
S. KIM, Author Affiliation: R&D Center, Korea Electric Power Data Network Co., Ltd.
- PSI01Wd4 PSIM Posters**
Wednesday, 21 April, 2010 3:15 PM-5:15 PM
Sponsored By: Power System Implementation and Measurements
Session Chair: Farnoosh Rahmatian, Quanta Technology
- PAPERS AND AUTHORS:
2010TD0077 A New Method for Measuring Voltage Harmonics on Medium or High Voltage Systems
Y. FENG, Author Affiliation: University of Ulm
J. XIE, Author Affiliation: University of Ulm
- 2010TD0122 A New, Ultra Low Cost Power Quality and Energy Measurement Technology — The Future of Power Quality Monitoring**
A. MCEACHERN, Author Affiliation: Power Standards Lab
A. EBERHARD, Author Affiliation: Power Standards Lab
- 2010TD0234 Evaluation of Ground Grid Resistance for In-Service Substations**
L. DEVARAKONDA, Author Affiliation: NSTAR Gas & Electric
J. MOSKOS, Author Affiliation: NSTAR Gas & Electric
A. WOOD, Author Affiliation: NSTAR Gas & Electric
- 2010TD0332 DSP-FPGA Based Real-time Power Quality Disturbances Classifier**
M. ZHANG, Author Affiliation: Huazhong University of Science and Technology
K. LI, Author Affiliation: Huazhong University of Science and Technology
- 2010TD0631 A High Accuracy Standard for Electricity Meters**
L. IRWIN, Author Affiliation: Schneider Electric

2010TD0719 Experimental Studies of a Phase Identification System for Distribution Systems
 T. DUNMORE, Author Affiliation: Drexel University
 E. JAFFE, Author Affiliation: Drexel University
 S. KENNEDY, Author Affiliation: Drexel University
 D. PATEL, Author Affiliation: Drexel University
 P. SONI, Author Affiliation: Drexel University
 M. KLEINBERG, Author Affiliation: Drexel University
 K. MIU, Author Affiliation: Drexel University

**PSO03Wd4
 Not Your Grandfather's Power System Operation - PSOC
 Poster Session I**

Wednesday, 21 April, 2010 3:15 PM-5:15 PM
 Sponsored By: Power System Operations Committee
 Session Chair: Siri Varadan, *KEMA Inc.*
 William Cassel, *KEMA Inc.*

PAPERS AND AUTHORS:

2010TD0110 Emergency Demand Response for Distribution System Contingencies
 R. TYAGI, Author Affiliation: GE Global Research
 J. BLACK, Author Affiliation: GE Global Research

2010TD0189 The Role of Uncertainty in Asset Management
 C. FEINSTEIN, Author Affiliation: Santa Clara University
 P. MORRIS, Author Affiliation: VMN Group LLC

2010TD0327 Effects of Optimised Plug-in Hybrid Vehicle Charging Strategies on Electric Distribution Network Losses
 S. ACHA, Author Affiliation: Imperial College London
 T. GREEN, Author Affiliation: Imperial College London
 N. SHAH, Author Affiliation: Imperial College London

2010TD0403 Probabilistic Availability Analysis of Control and Automation Systems for Active Distribution Networks
 J. KÖNIG, Author Affiliation: Royal Institute of Technology
 U. FRANKE, Author Affiliation: Royal Institute of Technology
 L. NORDSTRÖM, Author Affiliation: Royal Institute of Technology

2010TD0470 Equilibrium Analysis in Imperfect Traders' and GenCos' Market
 P. CHITKARA, Author Affiliation: Univ. of Hong Kong
 J. ZHONG, Author Affiliation: Univ. of Hong Kong

2010TD0628 Autonomous State Estimation for the Smart Grid - Laboratory Implementation
 S. CHOI, Author Affiliation: Georgia Institute of Technology
 B. KIM, Author Affiliation: Hyundai Heavy Industries Co.
 G. COKKINIDES, Author Affiliation: Georgia Institute of Technology
 A. MELIOPOULOS, Author Affiliation: Georgia Institute of Technology

TD11Wd4

T&D Poster Session

Wednesday, 21 April, 2010 3:15 PM-5:15 PM
 Sponsored By: Transmission and Distribution Committee
 Session Chair: John McDaniel, *National Grid USA*

PAPERS AND AUTHORS:

2010TD0525 Connection of Renewable Energy Sources through Grid Constraint Points Using HVDC Power Transmission Systems
 N. MACLEOD, Author Affiliation: AREVA T&D
 C. BARKER, Author Affiliation: AREVA T&D
 N. KIRBY, Author Affiliation: AREVA T&D

2010TD0605 18-step Back-to-Back Voltage Source Converter with Pulse Interleaving Circuit for HVDC Application
 J. JEONG, Author Affiliation: Myongji University
 H. LEE, Author Affiliation: Myongji University
 B. HAN, Author Affiliation: Myongji University

2010TD0616 Application of TCR-Type SVC in Power Substation and Electric Arc Furnaces
 Z. ZHAO, Author Affiliation: Nari-relays electric company limited
 C. CHEN, Author Affiliation: Nari-relays electric company limited
 S. BAO, Author Affiliation: Nari-relays electric company limited
 T. FANG, Author Affiliation: Nari-relays electric company limited
 X. WANG, Author Affiliation: Nari-relays electric company limited

2010TD0656 Electrical Resistance Stability Measurements in Power Utility Connections
 B. JOHNSON, Author Affiliation: Tyco Electronics
 C. COPPER, Author Affiliation: Tyco Electronics
 N. CORMAN, Author Affiliation: Tyco Electronics

2010TD068 Optimal Coordinated Voltage Control to Enhance Long Term Voltage Stability Using Direct Dynamic Optimization
 W. ZHENG, Author Affiliation: Howard University
 M. LIU, Author Affiliation: Electric Power College

J. MOMOH, Author Affiliation: Howard University

2010TD0703 Transmission Efficiency Initiative: Contributing to a Lower Carbon Future

K. FORSTEN, Author Affiliation: EPRI

2010TD0735 The Impact of Plug-in Hybrid Electric Vehicle Interaction with Energy Storage and Solar Panels on the Grid for a Zero Energy House

A. BEDIR, Author Affiliation: Tennessee Tech University

B. OZPINECI, Author Affiliation: Oak Ridge National Laboratory

J. CHRISTIAN, Author Affiliation: Oak Ridge National Laboratory

ACE06Th1

PSACE Poster Session III

Thursday, 22 April, 2010 8:00 AM-10:00 AM

Sponsored By: Power System Analysis, Computing and Economics

Session Chair: Roger Dugan, EPRI

PAPERS AND AUTHORS:

2010TD0025 Current and Emerging Challenges in PJM Energy Market

Z. FAN, Author Affiliation: PJM Interconnection

T. HORGER, Author Affiliation: PJM Interconnection

J. BASTIAN, Author Affiliation: PJM Interconnection

2010TD0080 An Example of Risk Assessment in a Large Metropolitan Area

G. PAMPIN, Author Affiliation: Instituto de Investigaciones Electricas

H. SARMIENTO, Author Affiliation: Instituto de Investigaciones Electricas

R. CASTELLANOS, Author Affiliation: Instituto de Investigaciones Electricas

G. VILLA, Author Affiliation: Instituto de Investigaciones Electricas

M. MIRABAL, Author Affiliation: Instituto de Investigaciones Electricas

2010TD009 The Economic Value of Advanced Governor Control

S. YEE, Author Affiliation: siemens

D. PUDIJANTO, Author Affiliation: imperial college l

J. MILANOVIC, Author Affiliation: University of Manchester

F. HUGHES, Author Affiliation: independent consultant

2010TD0178 Congestion Management in Deregulated Power System by Optimal Choice and Allocation of FACTS Controllers Using Multi-Objective Genetic Algorithm

S. REDDY, Author Affiliation: National Institute of Technology

S. KUMARI, Author Affiliation: National Institute of Technology

M. SYDULU, Author Affiliation: National Institute of Technology

2010TD0449 Modeling the Primary Reserve Allocation in Preventive and Curative Security Constrained OPF

K. KAROUI, Author Affiliation: Tractebel Engineering (GDF-SUEZ)

H. CRISCIU, Author Affiliation: Tractebel Engineering (GDF-SUEZ)

L. PLATBROOD, Author Affiliation: Tractebel Engineering (GDF-SUEZ)

2010TD0511 Fast Newton Load Flow

R. IDEMA, Author Affiliation: Delft University of Technology

D. LAHAYE, Author Affiliation: Delft University of Technology

K. VUIK, Author Affiliation: Delft University of Technology

L. VAN DER SLUIS, Author Affiliation: Delft University of Technology

2010TD0513 N-1-1 AC Contingency Analysis as a Part of NERC Compliance Studies at Midwest ISO

D. CHATTERJEE, Author Affiliation: Midwest ISO

J. WEBB, Author Affiliation: Midwest ISO

Q. GAO, Author Affiliation: Midwest ISO

M. VAIMAN, Author Affiliation: V&R Energy Systems Research, Inc.

M. VAIMAN, Author Affiliation: V&R Energy Systems Research, Inc.

M. POVOLOTSKIY, Author Affiliation: V&R Energy Systems Research, Inc.

2010TD0522 Monitoring of Inter-Area Oscillations within the European Interconnected Network Based on a Wide Area Measuring System

J. LEHNER, Author Affiliation: Universitaet Stuttgart Institute of Process Engineering and Power Plant Technology

M. KAUFHOLD, Author Affiliation: Siemens AG

M. TREUER, Author Affiliation: Universitaet Stuttgart Institute of Process Engineering and Power Plant Technology

T. WEISSBACH, Author Affiliation: Universitaet Stuttgart Institute of Process Engineering and Power Plant Technology

PSP04Th1

PSPI Posters - Transmission Planning

Thursday, 22 April, 2010 8:00 AM-10:00 AM

Sponsored By: Power System Planning and Implementation Committee

Session Chair: Fran Li, *University of Tennessee*

PAPERS AND AUTHORS:

2010TD0149 Transmission Portfolio Screening Using PROMOD Analysis Tool (August 2009)

P. QUINN, Author Affiliation: Midwest ISO

R. THAPPETAOBULA, Author Affiliation: Midwest ISO

2010TD0150 Electric Power Transmission Network Design for Wind Generation in the Western United States: Algorithms, Methodology, and Analysis

- G. TOOLE, Author Affiliation: Los Alamos National Laboratory
M. FAIR, Author Affiliation: Los Alamos National Laboratory
A. BERSCHIED, Author Affiliation: Los Alamos National Laboratory
R. BENT, Author Affiliation: Los Alamos National Laboratory
- 2010TD0169 Issues Associated with International Power Grid Interconnections in Mexico**
H. SARMIENTO, Author Affiliation: Instituto de Investigaciones Electricas
M. AVILA ROSALES, Author Affiliation: CFE Mexico
- 2010TD0255 Implementation of Optimal Mitigation Measures for Transmission Planning Assessment**
J. ROBISON, Author Affiliation: Southwest Power Pool
M. NAGLE, Author Affiliation: Southwest Power Pool
M. VAIMAN, Author Affiliation: V & R Energy Systems Research Inc.
- 2010TD0351 Widening the Bottleneck: Increasing the Utilisation of Long Distance AC Transmission Corridors**
C. BARKER, Author Affiliation: AREVA T&D
N. KIRBY, Author Affiliation: AREVA T&D
N. MACLEOD, Author Affiliation: AREVA T&D
R. WHITEHOUSE, Author Affiliation: AREVA T&D
- 2010TD0497 Reducing Transmission Investment to Meet Renewable Portfolio Standards Using Smart Wires**
D. DAS, Author Affiliation: Georgia Institute of Technology
F. KREIKEBAUM, Author Affiliation: Georgia Institute of Technology
D. DIVAN, Author Affiliation: Georgia Institute of Technology
F. LAMBERT, Author Affiliation: Neetrac
- 2010TD0546 Allocation of UPFC in North West Grid of Iran to Increase Power System Security**
B. ASADZADEH, Author Affiliation: Azerbaijan Regional Electric Company
V. ASADZADEH, Author Affiliation: MAPNA Group
S. HOSSEINI, Author Affiliation: Department of Electrical and Computer Engineering, Tabriz University
G. GHAREHPETIAN, Author Affiliation: Department of Electrical Engineering, Amirkabir University
- 2010TD0582 Transmission Network Planning under a Price-based Demand Response Program**
A. KAZEROONI, Author Affiliation: The University of Manchester
J. MUTALE, Author Affiliation: The University of Manchester
- 2010TD0604 Prevention of Cascading Outages in Con Edison's Network**
M. KOENIG, Author Affiliation: Con Edison of New York
P. DUGGAN, Author Affiliation: Con Edison of New York
J. WONG, Author Affiliation: Con Edison of New York
M. VAIMAN, Author Affiliation: V&R Energy Systems Research, Inc.
M. VAIMAN, Author Affiliation: V&R Energy Systems Research, Inc.
M. POVOLOTSKIY, Author Affiliation: V&R Energy Systems Research, Inc.
- 2010TD0652 Grid Expansion Planning Considering Probabilistic Production and Congestion Costs Based on Nodal Effective Load Model**
J. PARK, Author Affiliation: Gyeongsang National University
J. CHOI, Author Affiliation: Gyeongsang National University
D. JEON, Author Affiliation: Korea Electric Power Research Institute
A. EL-KEIB, Author Affiliation: The Petroleum Institute
J. MITRA, Author Affiliation: Michigan State University
W. CHO, Author Affiliation: Geumhwa Plant Service & Construction Co., Ltd
R. BILLINTON, Author Affiliation: Univ. of Saskatchewan
- TD13Th1 T&D Poster Session**
Thursday, 22 April, 2010 8:00 AM-10:00 AM
Sponsored By: Transmission and Distribution Committee
Session Chair: John McDaniel, *National Grid USA*
- PAPERS AND AUTHORS:
- 2010TD0159 A Fault Section Detection Method Using ZCT When a Single Phase to Ground Fault in Ungrounded Distribution System**
I. LIM, Author Affiliation: Myongji Univ.
H. LIM, Author Affiliation: KDN
M. CHOI, Author Affiliation: Myongji Univ.
S. LEE, Author Affiliation: Myongji Univ.
D. BAK, Author Affiliation: Myongji Univ.
T. KIM, Author Affiliation: Myongji Univ.
- 2010TD0301 Modeling and Test Validation of a 15kV 24MVA Superconducting Fault Current Limiter**
F. MORICONI, Author Affiliation: Zenergy Power Inc.
N. KOSHINICK, Author Affiliation: Zenergy Power Inc.
F. DE LA ROSA, Author Affiliation: Zenergy Power Inc.
A. SINGH, Author Affiliation: Zenergy Power Inc.
- 2010TD0329 A Comprehensive Approach for Reliability Worth Assessment of the Automated Fault Management Schemes**
S. KAZEMI, Author Affiliation: Helsinki University of Technology
M. LEHTONEN, Author Affiliation: Helsinki

University of Technology
M. FOTUHI-FIRUZABAD, Author
Affiliation: Sharif University of Technology
2010TD0617 Adaptive Network-Based Fuzzy Inference for Momentary Failure Rate Modeling
E. AKHVAN, Author Affiliation: Islamic Azad University
M. HAGHIFAM, Author Affiliation: Tarbiat Modares University
A. FERIDONIAN, Author Affiliation: PWTU

ACE07Th2

PSACE Poster Session IV

Thursday, 22 April, 2010 10:15 AM-12:15 PM

Sponsored By: Power System Analysis, Computing and Economics

Session Chair: Roger Dugan, EPRI

PAPERS AND AUTHORS:

2010TD0224 Voltage Stability Analysis of Multi-Infeed HVDC Systems Using Small-Signal Stability Assessment

Y. SHAO, Author Affiliation: China Electric Power Research Institute

Y. TANG, Author Affiliation: China Electric Power Research Institute

2010TD0254 Forecasting Turkey's Short Term Hourly Load with Artificial Neural Networks

M. BILGIC, Author Affiliation: Hacettepe University, Clean and Renewable Energies Division. Ankara, Turkey

P. GIREP, Author Affiliation: Middle East Technical University, Mechanical Engineering Department. Ankara, Turkey

S. ASLANOGLU, Author Affiliation: Hacettepe University, Environmental Engineering Department. Ankara, Turkey

M. AYDINALP-KOKSAL, Author Affiliation: Hacettepe University, Environmental Engineering Department. Ankara, Turkey

2010TD0472 Demand Response for Domestic and Small Business Consumers: A New Challenge

T. NGUYEN, Author Affiliation: University of Tasmania

2010TD0721 Improved DC Power Flow Method Based on Empirical Knowledge of the System

N. ZHOU, Author Affiliation: Pacific Northwest National Lab

S. LU, Author Affiliation: Pacific Northwest National Lab

N. KUMAR, Author Affiliation: Pacific Northwest National Lab

N. SAMAN, Author Affiliation: Pacific Northwest National Lab

B. CHAKRABARTI, Author Affiliation: Transpower NZ LTD.

2010TD0696 Voltage Stability Assessment of AC/DC Systems

M. LIN, Author Affiliation: Mississippi State University

A. SRIVASTAVA, Author Affiliation: Mississippi State University

N. SCHULZ, Author Affiliation: Kansas State University

2010TD0545 Study on Prediction-Correction Homotopy Method of Tracking Hopf Bifurcation Point

W. GU, Author Affiliation: Southeast University

W. LIU, Author Affiliation: Southeast University

R. WANG, Author Affiliation: Southeast University

2010TD0386 Reference Network Development for Distribution Network Pricing

R. BHAKAR, Author Affiliation: Indian Institute of Technology Roorkee

N. PRASAD PADHY, Author Affiliation: Indian Institute of Technology Roorkee

H. OM GUPTA, Author Affiliation: Indian Institute of Technology Roorkee

2010TD0660 Potential Problems with Large Scale Differential Pricing Programs

J. BLACK, Author Affiliation: GE Global Research

R. TYAGI, Author Affiliation: GE Global Research

PSD04Th2

Power System Dynamic Performance Committee Poster Session II

Thursday, 22 April, 2010 10:15 AM-12:15 PM

Sponsored By: Power System Dynamic Performance Committee

Session Chair: John Paserba, *Mitsubishi Electric Power Products, Inc.*

PAPERS AND AUTHORS:

2010TD0226 Smart Grid Technologies for Reactive Power Compensation in Motor Start Applications

M. PETERSON, Author Affiliation: Entergy, Inc.

B. SINGH, Author Affiliation: John Deere

2010TD0306 Power System Stability Enhancement Using Reduced Rule Base Self-tuning Fuzzy PI Controller for TCSC

S. HAMEED, Author Affiliation: A.M.U., Aligarh

2010TD0421 Planned Islanding for Brazilian System Reliability

R. LONDERO, Author Affiliation: UFPA

C. AFFONSO, Author Affiliation: UFPA

M. NUNES, Author Affiliation: UFPA

W. FREITAS, Author Affiliation: UNICAMP

2010TD0538 Detecting and Managing the Electrical Island Created in the Aftermath of Hurricane Gustav Using Phasor Measurement Units (PMUs)

F. GALVAN, Author Affiliation: Entergy

C. WELLS, Author Affiliation: OSIsoft

2010TD0575 Study of Power System Load Shedding Scheme Based On Dynamic Simulation

A. KULKARNI, Author Affiliation: Tennessee Tech University

W. GAO, Author Affiliation: Tennessee Tech University

J. NING, Author Affiliation: Tennessee Tech University

2010TD0579 Fault Ride-Through of Fully Enclosed Squirrel-Cage Induction Generators for Wind Farms in Thailand

K. DAUNGHOM, Author Affiliation: Provincial Electricity Authority

S. PREMRUDEEPREECHACHARN, Author Affiliation: Chiang Mai University

2010TD0614 Study of FACTS Device Applications for the 500kV Vietnam's Power System

C. LE, Author Affiliation: PECC4

T. TRAN-QUOC, Author Affiliation: IDEA

H. NGUYEN, Author Affiliation: Qui Nhon University

2010TD0621 Static Var Compensator for Power Oscillation Damping

J. PELTOLA, Author Affiliation: Areva T&D Finland

P. HALONEN, Author Affiliation: Areva T&D Finland

A. KÄHKÖNEN, Author Affiliation: Areva T&D Finland

2010TD0657 Application of STATCOM with Energy Storage for Wind Farm Integration

J. ENSLIN, Author Affiliation: Quanta Technology

J. CASTANEDA, Author Affiliation: SCE

D. ELIZONDO, Author Affiliation: Quanta Technology

N. ABED, Author Affiliation: Quanta Technology

S. TELEKE, Author Affiliation: Quanta Technology

2010TD0714 Initial Studies on Actionable Control for Improving Small Signal Stability in Interconnected Power Systems

F. TUFFNER, Author Affiliation: Pacific Northwest National Laboratory

Z. HUANG, Author Affiliation: Pacific Northwest National Laboratory

N. ZHOU, Author Affiliation: Pacific Northwest National Laboratory

R. GUTTROMSON, Author Affiliation: Pacific Northwest National Laboratory

A. JAYANTILAL, Author Affiliation: AREVA T&D

PSO04Th2

Analytical Methods for Power System Operations - PSOC Poster Session II

Thursday, 22 April, 2010 10:15 AM-12:15 PM

Sponsored By: Power System Operations Committee

Session Chair: William Cassel, *KEMA Inc.*

Siri Varadan, *KEMA Inc.*

PAPERS AND AUTHORS:

2010TD0252 Bus Impedance Matrix Based Approach for Congestion Management in Deregulated Environment

K. SINGH, Author Affiliation: Indian Institute of Technology, Roorkee, India

N. PADHY, Author Affiliation: Indian Institute of Technology, Roorkee, India

J. SHARMA, Author Affiliation: Indian Institute of Technology, Roorkee, India

2010TD0336 A Novel Weight-Improved Particle Swarm Optimization Algorithm for Optimal Power Flow and Economic Load Dispatch Problems

P. VU, Author Affiliation: HoChiMinhCity University of Technology

D. LE, Author Affiliation: HoChiMinhCity University of Technology

N. VO, Author Affiliation: HoChiMinhCity University of Technology

J. TLUSTY, Author Affiliation: Czech Technical University in Prague

2010TD0507 Negotiation Model for Generating Units Balancing in Optimal Dispatch Based on Power System Contingencies Using Agents

A. OONSIVILAI, Author Affiliation: Suranaree University

K. GREYSON, Author Affiliation: Suranaree University of Technology

2010TD0530 Transmission Grid Vulnerability Assessment by Eigen-Sensitivity and Cut-Set Screening

G. JOOS, Author Affiliation: Department of Electrical and Computer Engineering, McGill University

X. LIU, Author Affiliation: Alberta Electrical System Operator

2010TD0548 An Improved Parameterization Technique for the Continuation Power Flow

A. BONINI, Author Affiliation: UNESP

D. ALVES, Author Affiliation: UNESP

2010TD0740 Genetic Algorithm Based Simulated Annealing Method for Solving Unit Commitment Problem in Utility System

C. CHRISTOBER ASIR RAJAN, Author Affiliation: PONDICHERRY ENGINEERING COLLEGE

TD14Th2

T&D Poster Session

Thursday, 22 April, 2010 10:15 AM-12:15 PM

Sponsored By: Transmission and Distribution Committee

Session Chair: John McDaniel, *National Grid USA*

PAPERS AND AUTHORS:

2010TD0100 Reliability Improvement on Underground Distribution Spot Network System

A. OHARA, Author Affiliation: S&C Electric do Brasil LTDA

C. SHINDI TAKIGUCHI, Author Affiliation: S&C Electric do Brasil LTDA

B. PINHEIRO IWAMOTO, Author Affiliation: S&C Electric do Brasil LTDA

C. TEIXEIRA, Author Affiliation: S&C Electric do Brasil LTDA

E. CESAR BELVEDERE, Author Affiliation: AES Eletropaulo

D. VAROLO, Author Affiliation: AES Eletropaulo



C. MARTINS, Author Affiliation: AES Eletropaulo
R. OLIVEIRA BRANDÃO, Author Affiliation: AES Eletropaulo
B. MELLO, Author Affiliation: AES Eletropaulo
R. FERREIRA COSTA, Author Affiliation: USP

2010TD0118 Field Tests of a Robot System Prototype for the Underground Distribution Lines

J. ALLAN, Author Affiliation: Hydro-Quebec Research Institute (IREQ)
S. REIHER, Author Affiliation: Hydro-Quebec Research Institute (IREQ)
G. LAMBERT, Author Affiliation: Hydro-Quebec Research Institute (IREQ)
S. LAVOIE, Author Affiliation: Hydro-Quebec Research Institute (IREQ)

2010TD0145 GPR Mapping to Avoid Utility Conflicts Prior to Construction of the M-29 Transmission Line

J. MOONEY, Author Affiliation: Con Edison
J. CIAMPA, Author Affiliation: Spectra Underground Imaging
G. YOUNG, Author Affiliation: Underground Imaging Technologies, Inc.
A. KRESSNER, Author Affiliation: Con Edison
J. CARBONARA, Author Affiliation: Con Edison

2010TD0428 A Smart Technology Solution for Maximizing Cable System Reliability at the Lowest Cost

D. WOZNIAC, Author Affiliation: NIPSCO
B. LANZ, Author Affiliation: IMCORP - Power Cable Reliability

2010TD0650 Surface, Sub-Surface Mapping and GeoHazard Identification and Associated Risk Mitigation for Power Transmission

C. HITCHCOCK, Author Affiliation: Fugro WLA
T. MITCHELL, Author Affiliation: Fugro SESL Geomatics
D. AMINE, Author Affiliation: Fugro Airborne Surveys

IEEE *Transactions on Smart Grid*

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Among the products on display are monitoring and testing equipment, system protection, including breakers and relays, communication and control, SCADA, EMS, distribution automation, demand-side management, AM/FM, GIS, GPS, customer information systems, meters and metering devices, telecommunication systems, computer hardware and software systems, substation equipment, transmission system equipment and engineering services, overhead distribution equipment and services, underground distribution equipment and services, mechanical construction and maintenance and fleet management, station, auxiliary equipment, training systems and services, transformers, outdoor lighting, tools, rope and safety equipment, wire and cable, switchgear, consulting and contracting services.

Exposition Hall Hours

Tuesday April 20
10:00 am-5:00 pm

Wednesday, April 21
10:00 am-6:00 pm

Thursday, April 22
10:00 am-3:00 pm

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Aditya Birla Insulators (a unit of Aditya Birla Nuvo Ltd.)

Advanced Cable Bus

Advanced Control Systems

Advanced Power Technologies

Advanced Rubber Products, Inc.

AECI Specialty Transformer

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Air2, LLC

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Alcan Cable

All-Pro Fasteners, Inc

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Almetek Industries, Inc.

Altran Solutions Corporation

Aluma-Form, Inc

America Asia Group Co

American Polywater Corporation

American Wind Energy Association

American Wire Group

Ampirical Solutions. LLC

Amran Inc.

AMSC American Superconductor

Anderson (Hubbell Power Systems)

Anixter

Appa Hangzhou Tech Inc.

Arbiter Systems, Inc.

Arch Wood Protection, Inc.

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ArresterWorks

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ASAT Solutions Inc.

Ask Products Inc.

ASPEN, INC.

Atlas Tube Canada ULC

AVO Training Institute

Avtron LoadBank, Inc.

AZZ, Inc.

BAE Batteries USA

Bal Seal Engineering, Inc.

Barkman Concrete Ltd.

Basler Electric Company

BBC Electrical Services. Inc.

Beckwith Electric Company

Bell Lumber & Pole Company

Beta Engineering

Black & Veatch

BMK Corporation

BPEG Reactors

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Brass Copper & Alloy (I) Ltd

Brooks Manufacturing Company

Brugg Cables

BTECH Inc.

BTX Co., Ltd.

Burndy

Burns & McDonnell

C.B. (HK) Ltd. (Dextra Power)

C.I. Agent Solutions

C&D Line Fittings Co., Ltd.

Cable Technology Laboratories, Inc.

Canduct Industries

Carte International Inc.

CBS ArcSafe

CDR Systems (Hubbell Power Systems)

CEATI International Inc.

Centriforce Products Ltd

CESI

CG Power Systems Belgium NV

Chain Electric Company

Champion Wire

Chance (Hubbell Power Systems)

Chi Li Tomas Trading Co., Ltd.

CHM Industries dba Keystone Poles

Christie Digital Systems Inc. USA

Cindus Corporation

CISCO Systems, Inc.

CK Composites, Inc.

CMC/BMC Utility Products

Coastal Switchgear, Inc.

Cobre 110 S.A. de C.V.

COC

Cogent Power

Colossal Transport Solutions, LLC

Colt Power Services Div.

Comemsa

Commonwealth Associates, Inc.

CommScope

ComRent International

Concast, Inc.

Condumex, Inc

Connector Products Inc.

Cooper Power Systems

Corporacion Industrial Multico, S.A.

De C.V.

Cottrell Paper Company

CPS Security Solutions

Cross Oil Refining & Marketing Co., Inc.

Crown Technical Systems

Crux Subsurface, Inc.

CSI Shelter Technologies

CTC Cable Corporation

DAL International, Inc.

Davey Resource Group

Delta Star Connector

Delta Star, Inc.

Delta Star Mobil (Transformers & Substations)

Denonit

Dexsil Corporation

DiGioia Gray & Associates, LLC

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Dis-Tran
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 Dis-Tran Steel Pole, LLC
 Dis-Tran Wood Products, LLC
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 Doble Engineering Company
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 Draka Cableteq USA, Inc.
 DryKeep USA Division
 DSG -Canusa
 Dulhunty Power
 DuPont Company
 DuraSystems Barriers Inc.
 Duratel
 Dynamic Ratings Inc.
 Dynapower/Rapid
 E&J DeMark
 EA Technology Ltd.
 Eaglerise
 Eaton Corporation
 Eco-Electrical Systems, LLC
 EDM International, Inc.
 EFACEC Group
 Eger Products, Inc.
 El Bit, Lago Electromecanica, Leyden
 Electric Motion Company
 Electrical Consultants, Inc. (ECI)
 Electrical Distribution Design, Inc.
 Electricity Today
 Electro Composites Inc. (Hubbell
 Power Systems)
 Electro Industries/GaugeTech
 Electrocon International, Inc.
 Electromark Company
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 Elliott Industries, Inc.
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 EMID, Inc
 EMSPEC
 Enercon Services
 EnerNex Corporation
 EnerSys
 Enervac Corporation
 Entec Electric & Electronic Co., Ltd.
 Entes Elektronik
 EPS Industries
 Equisales Associates
 Ergon, Inc.
 ERICO, Inc.
 ERLPhase Power Technologies
 Ermco, Inc.
 ETAP
 Eternal Sun Steel Mast (Shanghai)
 Co., Ltd.
 EtherWAN Systems
 Exacter, Inc.
 Exide Technologies Industrial Power
 Fabrimet Inc.
 Falcon Steel Company
 Fargo (Hubbell Power Systems)
 Federal Pacific Company
 Ferraz Shawmut, Inc.
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 FLIR Systems, Inc.
 Fluke Corporation
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 Fortune Electric Company, Ltd.
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 Fritz & Macziol GmbH



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 Fusion Supply Company
 FWT, Inc.
 G&W Electric Company
 G4 Power Products
 Galvan Industries, Inc.
 Gammon India Ltd., T&D Division
 GarrettCom, Inc.
 GE Energy
 General Cable
 General Fittings
 General Switchgear & Controls Ltd.
 GeoDigital International Inc.
 Georg Manufacturing Systems Inc.
 GeoSpatial Innovations, Inc.
 Geotek, PUPI Division
 Global Power Supply
 Greenhorne & O'Mara
 GridSense, Inc.
 Hamby Young
 Han Chang Transformer
 Harger Lightning & Grounding
 Hastings Hot Line Tools
 Haverfield Corporation
 HD Electric Company
 HD Supply Utilities
 HDR
 HDW Electronics, Inc.
 Heartland Solutions, Inc.
 Heary Bros. Lightning Protection Co.
 Inc.
 Hedrich Vacuum Systems
 Helical Line Products Company
 Helix Uniformed Ltd.
 Henan Machinery & Electric Import
 & Export Co., Ltd.
 Henkels & McCoy, Inc.
 HICO America
 Hidro-Jet Equipamentos Hidraulicos
 Ltda.
 High Voltage, Inc.
 High Voltage Supply
 HindlePower, Inc.
 Hipotronics, Inc. (Hubbell Power
 Systems)
 Hirschmann, A BELDEN BRAND
 Hitachi America, Ltd.
 Hoffman
 Hong Shang Heat Shrinkable
 Materials Co., Ltd.
 Hooper Corporation
 Howard Industries, Inc.
 Hubbell (Hubbell Power Systems)
 Hubbell Power Systems, Inc.
 Hughes Brothers, Inc.
 Huntsman
 HV Diagnostics
 HV Technologies, Inc.
 HVB AE Power Systems Inc.
 Hydrodec North America
 Hyundai Heavy Industries Co., Ltd.

I.C.M.I.(Inductive Components Mfg. Inc.)
 Ice Energy
 IFD Corporation
 ILJIN Electric Co., Ltd.
 Imbibitive Technologies America, Inc.
 IMCORP
 IML, Inc.
 Impact Power, Inc.
 InCon, Inc.
 Indel Bauru Industria Eletromet.Ltda
 InfrastruX Corporation
 Innovative Technologies Group
 Innovative Utility Products Corp.
 Island Technology Inc.
 (ITEC) Instrument Transformer
 Equipment Corporation
 Itron
 ITW Polymer Technologies
 JDSU
 JM Test Systems, Inc.
 JOC Machinery Co. Ltd.
 John Chance Land Surveys, Inc.
 Jordan Transformer, LLC
 JSHP Transformer
 Juangsu Shuanghui Power
 Development Co., Ltd.
 K-Line Insulators Limited
 Kaddas Enterprises, Inc.
 Kehui Automation Co., Ltd.
 Kelvatek, Inc.
 KEMA
 Kenny Construction Company
 Keystone Electrical Manufacturing Co.
 Kiewit
 Kinectrics
 Kinects Solutions Inc.
 Kingsine Electric Automation Co., Ltd.
 Kirk Key Interlock Company
 Kleinfelder
 KoCoS America
 Koontz-Wagner Electric Company
 Korea Electrotechnology Research
 Institute (KERI)
 Korean Electrical Manufacturers
 Association (KOEMA)
 Krenz and Company Inc.
 Laminated Wood Systems, Inc.
 LAPP Insulator Company LLC
 LaPrairie Inc.
 Lectrus
 Lee Electrical Construction, Inc.
 Legnano Teknoelectric Company
 Lem Products Inc.
 Libo Group
 Liling Dong Fang Electroceramic Co. Ltd.
 Liling Huaxing Porcelain Insulator &
 Electric Apparatus Co., Ltd.
 Linderlake Corporation
 Lindsey Manufacturing Company
 Locweld Inc.
 Loresco Inc.
 Lovink Enertech b.v.
 LS Cable
 LS Industrial Systems
 Luvata Grenada LLC
 MacLean Power Systems
 Magnekon S.A. de C. V.
 Mango Copper
 Manitoba HVDC Research Centre
 Manta Test Systems Inc.
 Mass Int'l Corp.
 Mastec North America, Inc.

Maxwell Technologies SA
 Maysteel, LLC
 McKinney Drilling Company
 MCM Structures
 McWane Poles
 Megger
 Mehta Tech, Inc.
 Meramec Electrical Products Co., Inc.
 Metalpol SA de CV
 Metglas Inc.
 MetPlas Inc.
 Michels Corporation
 Midsun Group Inc.
 Milsoft Utility Solutions
 Mitsubishi Electric Power Products, Inc.
 Modern Insulator Limited
 Modular Connections, LLC
 Moloney Electric Inc.
 Morgan Schaffer
 Mountain Air Helicopters Inc.
 MP Husky
 MTC Transformers
 Myers Power Products, Inc.
 NASCO Industries, Inc.
 National Strand Products, Inc.
 Natural Resource Group
 NEETRAC/Georgia Tech
 Neoptix Fiber Optic Sensors, Inc.
 NETA -International Electrical Testing Assn.
 Network Mapping Limited
 New River Electrical Corporation
 New South Equipment Mats
 Newell-PSN LLC
 Nexans
 NGK Insulators, Inc.
 Niagara Transformer Corporation
 Ningbo Jinwei Standard Part Co., Ltd.
 NOJA Power Switchgear Pty Ltd.
 Nomos Systems
 Noram SMC, Inc.
 Nordic Fiberglass, Inc.
 North American Clean Energy
 North American Wood Pole Coalition
 Northeast Electrical Ltd. (NHVS)
 NovaTech, LLC
 Novinium, Inc.
 NR Electric Compay, Ltd.
 NRECA TechAdvantage Expo
 Nucor Steel
 Nynas USA, Inc.
 Oak Ridge National Lab
 Ofil
 Ohio Brass (Hubbell Power Systems)
 The Okonite Company
 Oldcastle Precast Enclosure Solutions
 Oldcastle Precast, Inc.
 Omicron Electronics Corp. USA
 Open Systems International, Inc. (OSI)
 Ormazabal
 Orto De Mexico, S.A. De C.V.
 Osmose Utilities Services, Inc.
 Oz Optics Limited
 P & R Technologies
 PA Breaker and PA Transformer
 Pacmetals Corporation
 Pacs Industries, Inc.
 Paradoxe Corporation
 Park Electric Company
 Parkline, Inc.
 Partner Software
 Partner Technologies Inc. (PTI)

Parts Super Center
 Pauwels Transformers Inc. (now CG Power Systems USA)
 PCORE (Hubbell Power Systems)
 PCS UtiliData
 Peak Power Engineering, Inc.
 Peak Substation Services LLC
 Pelco Structural
 PenCell Plastics, Inc.
 Pennington Crossarm Company
 Petra Solar
 Pfisterer International
 Phenix Technologies, Inc.
 Phoenix Electric Corporation
 Piedmont Bushings and Insulators, LLC
 Piremag Corporation
 Plastic Dip Moldings, Inc./Insulboot
 Plymouth Rubber Company, LLC
 Polaris Connectors
 Portacat Industries LLC
 Power Advanced Tech Co. Ltd.
 Power Asset Recovery Corporation
 Power Delivery Products, Inc.
 Power Diagnostix Systems GmbH
 Power Engineers, Inc.
 Power Line Systems, Inc.
 Power Monitors, Inc. (PMI)
 Power Systems Development, Inc. (PSD)
 POWERGRID International Magazine
 Powerline Hardware, LLC
 PowerPD, Inc.
 Powertech Labs Inc.
 Powertrusion Products
 Preformed Line Products Company
 Primax Technologies Inc
 Priority Wire & Cable
 Productive Industrial Products
 ProGlass, Inc.
 ProgUSA
 Prolec GE
 Prometek Inc.
 QEI, Inc.
 Qualitrol Company LLC
 Quanta Services
 Quazite (Hubbell Power Systems)
 R.L. Components Ltd.
 Radar Engineers
 Raytech USA, Inc.
 Rea Magnet Wire
 Reason International, Inc.
 Redragon Oil and Gas Systems International Inc.
 Reinhausen Manufacturing Inc.
 Renew Grid/North American Windpower Resin Systems
 Reuel Inc.
 RFL Electronics Inc.
 RHM International
 Richards Manufacturing
 Ritz Instrument Transformers, Inc.
 ROAM Wireless Controls
 Rochling Engineering Plastics
 ROHN Products, LLC
 Rotonics Manufacturing
 RS Technologies
 RTDS Technologies Inc.
 RuggedCom Inc.
 Rural Electric (RE) Magazine
 S D Myers, Inc.
 S&C Electric Company
 Sabre Tubular Structures
 SAE Towers

Salisbury by Honeywell
 Sam Dong Inc.
 Samwhamerica
 Sargent & Lundy, LLC
 Satec, Inc.
 Schneider Electric
 Schweitzer Engineering Laboratories, Inc.
 Secucontrol Inc.
 SeeWater, Inc.
 SEFCOR, Inc.
 SEI Industries Ltd.
 SenGenuity
 Senior Industries
 Sensa
 SensorLink Corporation
 SensorTran
 Sensus
 Seves USA, Inc.
 Shakespeare Composite Structures
 Shallbetter, Inc.
 Shandong Peiport Electric Power S&T Co., Ltd.
 Shanghai Complee Instrument Co., Ltd.
 Shanghai Jaimeng Electrical Equipment Co., Ltd
 Shanxi Century Metal Industries Inc.
 Shenma Electric Technology Co., Ltd.
 Shenzhen Clou Electronics Co., Ltd.
 Shenzhen Hope Power Technology Holding Co., Ltd
 Shermco Industries, Inc.
 Shihlin Electric and Engineering Corp.
 Siba Fuses LLC
 Sicame Corporation
 Siemens Energy, Inc.
 SISCO, Inc.
 Systeemex
 Sky Cast
 Smarter Security Systems
 Smit Transformers Sales, Inc.
 Solidification Products Int'l. Inc.
 Solon Belleville Spring Div.
 Solon Industrial Controls Div.
 Solon Manufacturing Company
 Sonoco Products Co., Inc.
 Southern States, LLC
 Southwire Company
 Specific Systems
 SpidaWeb LLC
 Stanley Consultants, Inc.
 Stantec Consulting
 Stark International
 Subnet Solutions Inc.
 Sunlink Electric Co. Ltd.
 Sunrise Technology Co., Ltd.
 Superior Concrete Products
 SuperPower, Inc.
 SuperSeal
 Systems Control
 T & D World Magazine
 T&R Electric Supply Company
 Taihan Electric Wire Co., Ltd
 TAMINI Transformers
 TAW (Tampa Armature Works) Custom Equipment
 TBEA USA Corporation
 Team Fishel
 Tech Products, Inc.
 Tek I.D., Inc.
 Telema & Berger Resistors, Inc.
 Telogis
 Tentech Corporation

TG Insulators
 The Gund Company, Inc.
 The National Telephone Supply Co.
 thermOweld (Continental Industries)
 Thomas & Betts Corporation
 Threaded Fasteners, Inc.
 TMC Italia Spa
 Toshiba Corporation, Power Systems & Services Company
 TPC Wire & Cable
 Trachte, Inc.
 Transformer Protector Corporation
 Transgard Systems Inc
 TransGrid Solutions
 Trantech Radiator Products Inc.
 Trayer Engineering Corporation
 TRC Engineers
 Treetech Sistemas Digitais Ltda
 Trench Limited
 Trenwa, Inc.
 Triangle MicroWorks, Inc.
 Trimble
 Triple Crown Products, Inc.
 TriVis Inc.
 Tuboly-Astronic AG
 Tyco Electronics Corporation/Energy Division
 Udeyraj Electricals Pvt. Ltd
 Ulteig Engineers

UMSC
 Underground Devices, Inc.
 Underground Imaging Technologies, Inc.
 Union Metal Corporation
 United Wire & Cable Inc.
 University of Maryland
 University of Wisconsin
 URS Washington Division
 US DOE Wind Technologies Program
 USCO (Hubbell Power Systems)
 Utilco
 Utility Wind Integration Group
 V&S Schuler Engineering
 Valmont Newmark
 Vanguard Instruments Company, Inc.
 Vanquish Fencing, Inc.
 Venameca
 VI Engineering
 VIAT America, Inc.
 Virginia Transformer Corporation
 Volani Metais Industria E Comercio Ltda.
 The Von Corporation
 Von Roll Holding AG
 VR Energy
 W.A. Chester, LLC
 W. E. Gundy & Associates, Inc. (WEGAI)
 W.I.R.E. Services
 W.P.I. Worchester Polytechnic Institute
 WAG Goods

Waukesha Electric Systems
 Waukesha Service
 Waukesha Training
 Waukesha Transformers
 WEG Electric Corporation
 Weidmann Electrical Technology Inc.
 Weschler Instruments, Div of Hughes Corp.
 Westwood Professional Services
 Wetzel S.A. (Foundry Engineers, Inc.)
 WIKA Instrument Corporation
 William Frick
 Williams Form Engineering Corporation
 Williams Metals and Welding Alloys, Inc.
 Wilson Construction Company
 Windsor Communications, Inc.
 WLT Technologies Inc.
 Worley Parsons
 XD Group
 Xi'an Shendian Electric
 Zenergy Power
 Zensol Automation Inc.
 ZIV USA, Inc.
 ZTZ Services International, Inc.

Info-Sessions (As of December 2, 2009)

Wednesday, April 21st

9:30 am

ACA Conductor Accessories

ConductaClean(r)

Presenter: Ray McCoy

Description: ACA Conductor Accessories, a division of AFL Telecommunications, announces a new product ConductaClean(r), a reliable, cost-effective system for cleaning the ends of overhead conductors prior to installing compression fittings. Wire brushing is no longer needed. ConductaClean agitates a specialized solution to remove oxidation and grime from conductor strands, and can be adjusted for one, three or six minute cycles depending on the condition of the conductor, saving line crews time and money.

AMSC American Superconductor

GE Energy

Use of Dissolved Gas Analysis During Temperature-Rise Tests of Power Transformers as a Reliability Assurance Tool

Presenters: Juan G. Castellanos G., Enrique Betancourt R.

Description: Dissolved Gas Analysis (DGA) is a powerful tool applied to assess reliability of transformers in service, and improves diagnostics and reliability assurance during factory tests.

Manitoba HVDC Research Centre

The Manitoba HVDC Research Centre will demonstrate their world renowned PSCAD® software for power systems and a number of applications areas will be discussed.

RuggedCom Inc.

Presenter: Maciej Goraj

Description: "Latest trends and developments in communications solutions for Electrical Utilities. What shall be considered for deploying robust communications networks to leverage the Smart Grid architecture?"

11:00 am

Huntsman

Lastest Technologies and Products for Outdoor Electrical Insulation

Presenters: Mangesh Rajadhyaksha & Robert Kultzow

Description: HCEP-Hydrophobic Cycloaliphatic Epoxy Resins for bushings, insulators, instrument transformers, and switch-gear components; SHCEP-Shade Hydrophobic Cycloaliphatic Epoxy Resins for high-voltage housings, composite hollow insulators, suspension insulators and comparable properties to silicones; existing product lines.

IFD Corporation

Power PD, Inc.

Schweitzer Engineering Laboratories, Inc.

Synchronous Measurement and Control of EPS

Presenter: Edmund O. Schweitzer III, Ph.D.

Description: Overcome system challenges of intermittent, remote generation and regulatory changes. Learn about new integrated com-munications systems; real-time, wide-area controls; and in-depth security.

2:30 pm

IMCORP

"A Smart Technology Solution for Maximizing Cable System Reliability at the Lowest Cost."

Presenter: Benjamin Lanz

Description: IMCORP's smart cable system diagnostic technology enables utilities to develop an optimized strategy which balances planned investment and desired power cable system reliability improvement.

Power Advanced Tech Co., Ltd.

Testing methods of the protective relays based on IEC61850 protocols

Presenters: Mr. Sam Xia and Mr. Qian Xiang

Description: Using Test Templates to test protective relays

ACA Conductor Accessories

Copperweld® Strands for Utility Substation and Wind Farm Applications

Presenters: Dustin Fox and Cece Syarif

Description: Recent research and fusing current test confirm Copperweld® Wire and Strands as an innovative alternative to copper for grounding grid, grounding mats, and fence grounding.

Subnet Solutions Inc.

Telogis

Leveraging Smarter Solutions to Save Money and Optimize Asset Utilization

Presenter: Jason Koch

Description: Utility Companies are looking to make significant operational difference by maximizing the efficiency of their fleets. Location based intelligence solutions are the key to optimization.

Thursday, April 22st

9:30 am

Korea Smart Grid Institute (KOEMA)

Technical Tours in Brief-Get on Board for an Inside Look at State-of-the-Art Facilities

Enrich your experience and visit to New Orleans by participating in the technical tour program. Special arrangements have been made by this year's host committee to introduce attendees to some of the world's most intriguing and unique facilities. You're encouraged to review the list of tours and check the times and dates that each tour is available. Space is limited and at a premium. Reservations are accepted on a first-come, first-served basis.

Monday, April 19, 2010

St. Bernard Project

7:45 am-5:00 pm

St. Bernard Project: Rebuilding the homes and lives of New Orleanian Families-Volunteer Project Transportation and Lunch Provided

Fee: No Cost

Most of the devastation from Katrina occurred in the outskirts of the city and the surrounding suburban area. Many of those areas have been restored, but some do remain either unrestored or torn down and undeveloped. For this reason, our committee thought it would be a good idea to offer attendees of the conference the opportunity to contribute to that restoration effort through a volunteer activity. As a result, we are planning to offer attendees an opportunity to volunteer on the "St. Bernard Project"—www.stbernardproject.org. This is an award-winning nonprofit rebuilding organization whose mission is to remove barriers for families who want to return home. The average cost to rebuild a home in St. Bernard Parish is \$15,000 and takes twelve weeks. These costs are kept low because most of the labor is provided by volunteers. Liz McCartney, director and co-founder, was named the CNN 2008 Hero of the Year.



Monday, April 19, 2010

Entergy's Transmission Static Var Compensator at Nine Mile Plant

9:00 am-11:30 am

Capacity: 15 people

Fee: \$25

Installed in May of 2005, this 300 MVar SVC provides fast dynamic voltage support in response to transmission system disturbances and enables Entergy to avoid running

expensive out-of-merit generation for this purpose. The dynamic range of 0-300 MVar is achieved by six steps of 75 MVar each, using three thyristor-switched capacitor branches, two rated 75 MVar and one rated 150 MVar controlled in a binary switching sequence. Designed and built as an EPC project, the SVC incorporates redundant SIMATIC TDC Digital control systems.

Monday, April 19, 2010

Entergy's Gretna Transmission Operations Center—Near Downtown New Orleans

1:30 pm-3:30 pm

Capacity: 30 people

Fee: \$25

The Gretna TOC is one of Entergy's facilities that provide the controlling authority for field operations involving transmission system restoration and scheduled transmission switching. Entergy's TOC dispatchers can evaluate changing transmission system conditions by using SCADA to continuously monitor analog data and device status for critical facilities. The Gretna TOC's dispatchers monitor data and remotely control devices at over 125 Entergy Louisiana and Entergy New Orleans transmission substations and switchyard located within southeast Louisiana.

No cameras recording devices, firearms, alcohol or smoking is allowed at the facility. No power marketers may attend this tour.

Tuesday, April 20, 2010

Entergy's Transmission Static Var Compensator at Nine Mile Plant

1:30 pm-4:00 pm

Capacity: 15 people per tour

Fee: \$25

Installed in May of 2005, this 300 MVar SVC provides fast dynamic voltage support in response to transmission system disturbances and enables Entergy to avoid running expensive out-of-merit generation for this purpose. The dynamic range of 0-300 MVar is achieved by six steps of 75 MVar each, using three thyristor-switched capacitor branches, two rated 75 MVar and one rated 150 MVar controlled in a binary switching sequence. Designed and built as an EPC project, the SVC incorporates redundant SIMATIC TDC Digital control systems.

Wednesday, April 21, 2010

Army Corps of Engineers-Hurricane Protection Tour

8:30 am-1:00 pm

Capacity: 40 people

Fee: \$25

Orientation lecture will be provided at the Convention Center prior to beginning of tour. The tour includes a bus tour of the pumping station, floodwalls, safe room, 9th ward, Paris Bridge, West Closure Complex, and Surge Barrier which is estimated to be complete by 2010.

Wednesday April 21, 2010

Entergy's Gretna Transmission Operations Center—Near Downtown New Orleans

9:00 pm-11:30 pm

Capacity: 30 people

Fee: \$25

The Gretna TOC is one of Entergy's facilities that provide the controlling authority for field operations involving transmission system restoration and scheduled transmission switching. Entergy's TOC dispatchers can evaluate changing transmission system conditions by using SCADA to continuously monitor analog data and device status for critical facilities. The Gretna TOC's dispatchers monitor data and remotely control devices at over 125 Entergy Louisiana and Entergy New Orleans transmission substations and switchyard located within southeast Louisiana.

No cameras recording devices, firearms, alcohol or smoking is allowed at the facility. No power marketers may attend this tour.

Thursday, April 22, 2010

LIGO Science Education Center

9:00 am-3:00 pm

Capacity: 40 people

Fee: \$35

The Laser Interferometer Gravitational Wave Observatory (LIGO) detects the ripples in space-time by using a device called laser interferometer, in which the time it takes light to travel between suspended mirrors is measured with high precision using controlled laser light. Two



mirrors hang far apart, forming one "arm" of the interferometer, and two more mirrors make a second arm perpendicular to the first. LIGO is located in Livingston, LA and

is a national research facility. The project is funded by the National Science Foundation through a co-operative

agreement with the California Institute of Technology in Partnership with the Massachusetts Institute of Technology.

Thursday, April 22, 2010

NASA UNO/Michoud Assembly Facility

9:00 am-1:00 pm

Capacity: 40 people

Fee: \$35



NASA Michoud Assembly Facility is one of the world's largest manufacturing plants with more than 2.2 million square feet of manufacturing space and state-of-the-art plant and tooling equipment. The Michoud facility supports several major projects for the Constellation Program, which is developing NASA's next generation of crew exploration and launch vehicles. A tour of Michoud includes some of the advanced manufacturing equipment used in production of NASA flight hardware.

A Celebration on the River - Naturally Nawlins

Conference and Exposition Reception

Monday, April 19, 2010

6:00 pm-9:00 pm

Come out and make some noise as the week's activities get underway in the streets of New Orleans. The city is ready for you, and the IEEE Power & Energy Society and our local organizing committee, the *Crescent City Currents*, are thrilled that you're here to enjoy the camaraderie with your fellow utility professionals from across the globe.

The first evening of your week in the Crescent City contains all the activities and elements of enthusiasm that we hope you will realize continuously during your visit. Just read about the extravaganza we've got planned for you!

"Laissez-les Bon Temps Rouler" as the sirens wail and the parade begins to depart and make its way towards the Aquarium of the Americas! Mardi Gras floats, complete with revelers lead the way as attendees march to a rousing beat. Guests will enjoy experiencing the parade first hand by throwing beads and doubloons to on-lookers who will pause to see the excitement. Then, they can take a moment to dance with a "Naturally Nawlins" Mardi Gras Indians band that will perform to a Cajun-Native American beat. As the parade continues, guests may choose to samba with Casa Samba Brazilian drums or second line with a classic New Orleans style brass band that will be bringing up the rear. A complimentary motor coach will be offered for non-walkers who still want to participate in the parade action. Once the parade reaches its destination, attendees will enjoy exclusive use of the Aquarium of the Americas.

The reception will take place in and around the remarkable Aquarium of the Americas. As attendees arrive for the reception, they will have an opportunity to explore all of the exhibits in this first rate aquarium. Among the stunning displays are: The Caribbean Reef, offering a tunnel for a spectacular journey through this 132,000 gallon exhibit; the Amazon Rainforest which features cascading waterfalls, rare orchids, vibrant colored macaws and red bellied piranhas; The Mississippi River Delta, which includes rare white alligators and pre-historic paddlefish, as well as a host of other aquatic species; and the Gulf of Mexico, featuring a one-quarter scale oil drilling rig surrounded by sharks, giant grouper and a 150-pound tarpon. Attendees may choose to enter the Aquarium first through the serene foyer to view the many wonderful exhibits inside. Those who wish to experience the festival first may walk to the left of the entrance where they will encounter a vibrantly



All images courtesy of New Orleans CVB.

lit clear top tent complete with awnings, tables and chairs. Beautiful sea-colored linens and Aquarium centerpieces will adorn each table to accent the theme.

When not enjoying delectable food and beverage selections, attendees can shake it to the best entertainment that New Orleans has offer. Attendees can enjoy gospel, rhythm and blues, Cajun/Sidecar, and traditional New Orleans Style Jazz at the Plaza Stage.

When not enjoying the Aquarium exhibits or the Plaza Stage, guests may wander onto the Kohlmeyer lawn to experience a New Orleans favorite: Rock n Dopsie Jr. and the Zydeco Twisters!

Also located on the Kohlmeyer Lawn will be our unique **Cajun Village** where attendees can experience first hand the Cajun Crab Trap maker, Quilters, Cajun Storyteller, Duck Caller and Carver, Washboard Maker, Miniature Boat Builder, Cajun House Painter and Alligator Jewelry Maker. All of these elements are combined with authentic décor to transport guests to the most remote of Southwestern Louisiana Swamps!

For those guests who want to take a break from the action happening on the outside of the Aquarium, may we suggest there is the Authentic New Orleans Style Jazz club located next to the Otter Exhibit in the Pisces Room.

And if all of this is not enough, what better way to end a fabulous evening than with fireworks? As guests exit the venue they will cast their eyes on the sky overlooking the moonlit Mississippi to view a 15 minute fireworks show that will send them on their way to reminisce about the memories of the night.



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