

INTELEC 2008

SUNDAY, SEPTEMBER 14, 2008

		LOCATION
7:00 am – 5:00 pm	Speaker Ready Room	<i>Dover</i>
TUTORIAL PROGRAM		
8:00 am – 12:00 pm		
Tutorial 01:	CENTRAL OFFICE GROUNDING FROM THE EARTH UP Ernie Farren	<i>Sunset</i>
Tutorial 02:	PRODUCT MANAGEMENT Keku Mistry, <i>Food Lion LLC</i>	<i>Towne</i>
Tutorial 03:	ADVANCED BATTERY TECHNOLOGIES FOR TELECOM APPLICATIONS Subhas Chalasani, <i>Consultant to Boeing</i>	<i>Sunrise</i>
Tutorial 04:	OVERVIEW OF THE BENEFITS OF HYDROGEN FUEL CELLS IN APPLICATIONS FOR TELECOMMUNICATIONS Joe Blanchard and Mark Cowen, <i>ReliOn</i>	<i>Esquire</i>
PARTNER PROGRAM		
12:00 pm – 4:30 pm	Partner Hospitality Suite	<i>Stratford</i>
TUTORIAL PROGRAM		
1:00 pm – 5:00 pm		
Tutorial 05:	ENGINE GENERATOR SETS Frank Verbeke, <i>Alturdyne</i>	<i>Towne</i>
Tutorial 06:	BASIC UNDERSTANDING OF TELECOM POWER COMPONENTS AND SYSTEMS Jimmy Godby, <i>Telecom Power Consultants</i>	<i>Sunrise</i>
Tutorial 07:	FUEL CELLS, THEIR FUELS, THEIR ADVANTAGES, DISADVANTAGES, AND THEIR STATE OF DEVELOPMENT Kathryn Bullock, <i>Villanova University</i>	<i>Sunset</i>
Tutorial 08:	BATTERY DEPLOYMENT GUIDELINES – VRLA, NICKEL-BASED & LITHIUM-BASED Tom O'Sullivan	<i>Esquire</i>
6:00 pm – 8:30 pm	EXHIBITS OPEN – WELCOME RECEPTION The conference opens with a Welcome Reception in the Grand Exhibit Hall at the Town and Country Resort. This event provides an opportunity to meet and chat with other INTELEC delegates, speak with exhibitors and browse the numerous power systems and power systems related exhibits. Heavy hors d'oeuvres will be served during the reception.	

MONDAY, SEPTEMBER 15, 2008

PARTNER PROGRAM		LOCATION
8:00 am – 4:00 pm	Partner Hospitality Suite	Stratford
8:00 am – 12:00 pm	Trekking in Torrey Pines State Reserve Guests enjoy an invigorating day of hiking in the scenic Torrey Pines State Reserve, as they admire the beautiful Pacific Coast. Perched high atop the bluffs overlooking the Pacific Ocean, Torrey Pines State Reserve features breathtaking views, superb trails and the gnarled, twisted, rugged Torrey Pine tree. Guests may hike through the trails, enjoying the beauty of these rare and beautiful trees, which are found only in San Diego and on the island of Santa Rosa. They may also enjoy a delightful stroll down the beautiful Pacific coastline. This is an afternoon of unparalleled scenery and invigorating exercise.	
9:00 am – 2:00 pm	Behind the Scenes Sea World Tour One always wonders what is behind those areas marked 'Authorized Personnel Only.' On an exclusive behind-the-scenes tour at SeaWorld your guests have the opportunity to find out. Some of the exciting possibilities include petting a baby penguin or one of the flying stars of the Bird Show; discovering how whales are cared for; handling shark specimens; visiting the sea lions; and learning the nuances of marine mammal training. Guests are also invited to feed the animals at one of the feeder attractions: Rocky Point Preserve, Forbidden Reef, Beached Animals, or Seal and Sea Lion. Additionally, they are treated like VIPs with front-of-the-line privileges at Shipwreck Rapids and Wild Arctic. This tour is truly a unique way to explore one of the finest aquatic parks in the world. Customized to meet the needs of each group, this specially-designed tour is not available to the general public	
9:00 am – 3:00 pm	Behind the Scenes San Diego Zoo Tour Experience the World Famous San Diego Zoo from an exclusive and unique perspective! By special arrangement, your guests have the opportunity to observe the Zoo from behind-the-scenes where they may learn about the accomplishments and development of ongoing projects. The breeding of endangered species, elephant, giraffe or rhino barns, and the camel yard are some of the features regularly included in these special tours. This program is narrated and conducted on your group's private, open-air bus by one of the Zoo's knowledgeable and friendly education staff. Since 1916 the San Diego Zoo has been one of the world's most popular and respected Zoos in the world. Its collection of animals is extensive and the research and breeding programs sponsored and operated by the Zoo are internationally acclaimed. This is a great opportunity to experience the Zoo from behind-the-scenes.	

TECHNICAL PROGRAM

6:45 am – 8:00 am	Presenter / Session Chair Breakfast (<i>Monday & Tuesday Sessions</i>)	Tiki Pavilion
7:00 am – 5:00 pm	Speaker Ready Room	Dover

SESSION 1: PLENARY

Session Chair: Dan McMenamin

8:30 am - 9:00 am	1.1	Worth of a Watt: The New Economics and Technologies Mark E Jacobs, <i>Slater & Matsil, L.L.P.</i>	Golden West
9:00 am - 9:30 am	1.2	The End of Cheap Oil: The Beginning of a New Age for the Information Communications Technology World Setting the Green Agenda Francesco De Leo, PhD, <i>Wind Telecomunicazioni S.p.A.</i>	
9:30 am - 10:00 am	1.3	Current Market Electricity Supply Issues & Trends David A Olson, <i>Energetix Plc</i>	

MONDAY, SEPTEMBER 15, 2008 (continued)

Location

TECHNICAL PROGRAM

10:00 am – 10:30 am *BREAK IN EXHIBIT HALL – EXHIBITS OPEN*

10:00 am – 6:30 pm *EXHIBITS OPEN*

SESSION 2: VRLA I

Session Chair: George Zguris

California

10:30 am - 11:00 am 2.1 Recovering Lost Capacity in 2 Volt VRLA Cells by way of the IOVR™ Process and the Duration of that Recovered Capacity
P J DeMar, *Battery Research and Testing, Inc*

11:00 am - 11:30 am 2.2 Storage Impact in VRLA Batteries Life
A Pinhel Soares, *Furnas*; M F N C Rosolem; L A Soares; G Ribeiro dos Santos; P Tobias Frare; R F Beck ; V Torquato Arioli, *CPqD*

11:30 am - 12:00 pm 2.3 Validation of Single Frequency Z Measurement for Standby Battery State of Health Determination
M Kiel; D Uwe Sauer, *ISEA*; P Turpin; M Naveed; E Favre, *LEM Group*

SESSION 3: CONVERTERS 1

Session Chair: Vineeta Agarwal

Golden West

10:30 am - 11:00 am 3.1 An Integrated DC-DC Power Converter for use in Distributed Generation Power Systems
P Das; G Moschpoulos, *University of Western Ontario*

11:00 am - 11:30 am 3.2 The Analysis and Evaluation for the Leakage Inductance Effects of Two Front-end DC/DC Converters with Capacitive Output Filter
C Zhao; X Wu; Z Qian, *Zhejiang University*

11:30 am - 12:00 pm 3.3 Lossless DCR Current Sensing for Multi-Winding Coupled Inductors
B Oraw; R Ayyanar, *Arizona State University*

SESSION 4: GREEN TECHNOLOGY 1

Session Chair: Leendert Lam

Royal Palm 1 & 2

10:30 am - 11:00 am 4.1 Site Power Saving
F Pizzuti, *Telecom Italia Spa*; G Rega, *Ericsson TLC*; M Grossoni, *Telecom Italia Spa*

11:00 am - 11:30 am 4.2 Energy Logic: A Road Map to Reducing Energy Consumption in Telecommunications Networks
S Roy, *Emerson Network Power*

11:30 am - 12:00 pm 4.3 The Green Revolution in DC Power Systems
M Kania; A Pitts, *Eltek Valere*

12:00 pm – 1:00 pm *LUNCH IN EXHIBIT HALL*

MONDAY, SEPTEMBER 15, 2008 (continued)

Location

TECHNICAL PROGRAM

SESSION 5: FUEL CELLS 1

California

Session Chair: Subhas Chalasani

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|-------------------|-----|---|
| 1:00 pm - 1:30 pm | 5.1 | A Method for Determining Optimum Design for Fuel-cell-based Energy Network
T Hayashi; A Takeuchi; Y Nozaki, <i>NTT Energy & Environment Systems Laboratories</i> ;
T Shimakage, <i>NTT Facilities, Inc.</i> |
| 1:30 pm - 2:00 pm | 5.2 | Next Generation Fuel Cell Solutions for Telecommunication Backup Power
A K Trehan, <i>CommScope, Inc.</i> ; D B Canavan, <i>Hydrogenics Corporation</i> |
| 2:00 pm - 2:30 pm | 5.3 | Fuel Cells Enabling Renewable Off-Grid Solutions
T Esser, <i>P21 GmbH</i> |
| 2:30 pm - 3:00 pm | 5.4 | Design of a Fuel Cell Based Backup System for Telecom Applications
B Bidoggia, <i>University of Padova & University of Tours</i> ; G Spiazzi; S Buso, <i>University of Padova</i> ;
T Lequeu; L Ventura, <i>University of Tours</i> |

SESSION 6: CONTROLS & SIMULATIONS ANALOG

Golden West

Session Chair: Ernest Farren

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|-------------------|-----|--|
| 1:00 pm - 1:30 pm | 6.1 | Modeling and Design of a Pulse Phase Modulated Resonant Inverter System
Z Ye; Z Liang, <i>Intersil Corporation</i> |
| 1:30 pm - 2:00 pm | 6.2 | Stability Analysis of Cascaded Converters for Bidirectional Power Flow Applications
H Krishnamurthy; R Ayyanar, <i>Arizona State University</i> |
| 2:00 pm - 2:30 pm | 6.3 | A Two-Stage Converter Based Controller for a Stand Alone Wind Energy System used for Remote Applications
A Sinha; De Kumar; Da Kumar; P Samuel; R Gupta, <i>MN National Institute of Technology</i> |
| 2:30 pm - 3:00 pm | 6.4 | Small-Signal Averaged Model and Carrier-Based Linear Control of a SEPIC-type Power Factor Correction Circuit
H Y Kanaan, <i>Saint-Joseph University, Faculty of Engineering</i> ; K Al-Haddad, <i>ETS</i> |

SESSION 7: GREEN TECHNOLOGY 2

Royal Palm 1 & 2

Session Chair: Steve Roy

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|-------------------|-----|---|
| 1:00 pm - 1:30 pm | 7.1 | Risk Mitigation of Lightning Incursion into Network Equipment Via Photo Voltaic Systems: It's Not Easy Being "Green"
D McMenamin, <i>Dan McMenamin and Associates, Inc.</i> ; R Steward, <i>Verizon Wireless</i> |
| 1:30 pm - 2:00 pm | 7.2 | Steps Taken to Address the Energy of Telecom Equipment in North America
M Elkenaney, <i>Huawei Technologies</i> |
| 2:00 pm - 2:30 pm | 7.3 | Operation and Monitoring System of Hokuto Mega-Solar Project
H Konishi; R Tanaka; T Shiraki, <i>NTT Facilities Inc</i> |
| 2:30 pm - 3:00 pm | 7.4 | Supply and Demand Control of Distributed Generators in a Microgrid
T Shimakage; J Sumita, <i>NTT Facillites, Inc.</i> ; N Uchiyama, <i>Hitachi, Ltd.</i> ;
T Kato; Y Suzuoki, <i>Nagoya University</i> |

MONDAY, SEPTEMBER 15, 2008 (CONTINUED)

LOCATION

TECHNICAL PROGRAM

3:00 pm – 3:30 pm **BREAK IN EXHIBIT HALL – POSTER VIEWING**

SESSION 8: ADVANCED BATTERY SYSTEM DESIGN

California

Session Chair: Rod Shane

- 3:30 pm - 4:00 pm 8.1 Study of an Advanced VRLA Battery with Titanium Electrode
I Kurisawa; K Fujita, *GS Yuasa Power Supply Ltd.*;
M Shiomi, *GS Yuasa International*; S Osumi; K Matsui, *GS Yuasa Power Supply Ltd.*
- 4:00 pm - 4:30 pm 8.2 Feasibility of Increase in Smoothing-Capacitor of Battery System for Dumping Power
Oscillation in Transition to Isolated Operation of Distributed Generator
T Kato; M Hisada; Y Suzuoki, *Nagoya University*; H Yamawaki, *Toho Gas Co., Ltd*
- 4:30 pm - 5:00 pm 8.3 Tailoring Advanced Ni-Cd Technology for a High Energy, Sustainable Battery
Solution for Outdoor Telecom Cabinets
S Lansburg; J-M Dauchier; T Kitch; J Brunarie; M Lippert, *Saft Batteries*

SESSION 9: RECTIFIERS & POWER FACTOR CORRECTION 1

Golden West

Session Chair: Harvey Weintrob

- 3:30 pm - 4:00 pm 9.1 A Voltage Stress Reduction Technique for Three-Phase Single-Switch
Buck-Type AC-DC Converters
S Bassan; G Goschopoulos, *University of Western Ontario*
- 4:00 pm - 4:30 pm 9.2 A Novel PFC Circuit for Three-Phase Utilizing a Single Switching Device
N Takeuchi; K Matsui; I Yamamoto, M Hasegawa, *Chubu University*;
F Ueda; H Mori, *Chubu Electric Power Co., Inc.*
- 4:30 pm - 5:00 pm 9.3 Multi-resolution Simulation of PWM Dc-Dc Converters
A Davoudi; P L Chapman, *University of Illinois at Urbana-Champaign*;
J Jatskevich, *University of British Columbia*

SESSION 10: COOLING 1

Royal Palm 1 & 2

Session Chair: Zbig Noworolski

- 3:30 pm - 4:00 pm 10.1 Active Floor System for High Density Applications – Experimental Test Case
E Sturaro; D Zardo, *Uniflair*; M A Mauri, *Cineca*
- 4:00 pm - 4:30 pm 10.2 Analysis of Electric Power Architectures to Improve Availability and Efficiency of
Air Conditioning Systems
A Kwasinski, *The University of Texas at Austin*
- 4:30 pm - 5:00 pm 10.3 Aisle-Capping Method for Airflow Design in Data Centers
M Takahashi; T Uekusa; M Kishita; H Kaneko; H Kaneko, *NTT Facilities, Inc.*

5:00 pm – 6:30 pm **RECEPTION IN EXHIBIT HALL**

Our Exhibitors invite you to a Cocktail Reception in the Exhibit Area to provide an opportunity to meet and chat with other INTELEC delegates, speak with exhibitors and browse the numerous power systems and power related exhibits. Light refreshments will be served during the reception.

TUESDAY, SEPTEMBER 16

PARTNER PROGRAM

8:00 am – 1:00 pm Partner Hospitality Suite

LOCATION

Stratford

TECHNICAL PROGRAM

7:00 am – 1:00 pm Speaker Ready Room

Dover

SESSION 11: FUEL CELLS 2

Session Chair: Frank Fleming

California

8:00 am - 8:30 am 11.1 Fuel Cell Technology: A Promising Alternative for Extended Back-Up Power Run Time for Telecommunication Sites
R Szasz, *MTS Allstream*

8:30 am - 9:00 am 11.2 On the Start-Up Reliability of Fuel Cell Systems
J Nordlund; A Ocklind; P Gode, *Cellkraft AB*

9:00 am - 9:30 am 11.3 A New Direct Methanol Fuel Cell Employing a Flexible Type Assembly for Telecommunication Applications
M Tsuchiya; T Yachi, *Tokyo University of Science*

9:30 am - 10:00 am 11.4 Fuel Cell Backup Power Systems for Telecommunications Networks - the Established Technology
A Zehnder, *P21 GmbH*

SESSION 12: MODELING & SIMULATIONS

Session Chair: Michael Leblanc

Golden West

8:00 am - 8:30 am 12.1 Large-Scale Modeling of Critical Telecommunications Facilities and Data Centers
F Bodi, *Silcar Pty Ltd*

8:30 am - 9:00 am 12.2 Telecom Power System Design for Reliability Compliance
B Serban, *Emerson NetworkPower*

9:00 am - 9:30 am 12.3 Dynamic Modeling of Stand-Alone Micro-Wind Turbine Generator Systems for Telecommunication Power Supply
S Chiniforoosh; P Alaeinovin, *University of British Columbia*;
A Davoudi, *University of Illinois at Urbana-Champaign*;
J Jatskevich, *University of British Columbia*;
P L Chapman, *University of Illinois at Urbana-Champaign*

9:30 am - 10:00 am 12.4 Design and Performance Prediction of Miniaturized Stirling Power Generators
A Sari; C Espanet; F Lanzetta; D Chamagne, *Institut FEMTO-ST*;
D Marquet, *France Telecom R&D*; P Nika, *Institut FEMTO-ST*

TUESDAY, SEPTEMBER 16 (continued)

Location

TECHNICAL PROGRAM

SESSION 13: GREEN TECHNOLOGY 3

Royal Palm 1 & 2

Session Chair: Steve Roy

- 8:00 am - 8:30 am 13.1 Cooling System of Outdoor Cabinet using Underground Heat Pipe
H Yuping; J Shengqin; Z Liqian; C Qiao, *Huawei Technologies Co., Ltd.*
C Bianco, *Telecom Italia*
- 8:30 am - 9:00 am 13.2 Fresh Air-Natural Asset ReFRESHed
P Gillan, *BT Group plc*
- 9:00 am - 9:30 am 13.3 Perspectives of Development of Integrated Monitoring System of
Power Supply and Air Conditioning Equipment Towards Technical
Environment Equipment Monitoring System of the Operator
P Paschke; M Plonczak, *Leading Polish Operator*;
P Klis, *National Institute of Telecommunications*; M Grunt, *Electronic Power & Market*
- 9:30 am - 10:00 am 13.4 GreenShelter for Telecom Applications: A New Generation of Shelter for
Telecom Applications Integrating Fuel Cell Electric Back Up and
A New Cooling Approach
G Gianolio; I Rosso; L Mercante; F Pedrazzo, *Electro Power Systemes SpA*;
G Simonato; F Ceriani, *Omnishelter srl*

9:00 am – 12:00 pm *EXHIBITS OPEN*

10:00 am – 10:30 am *BREAK IN EXHIBIT HALL – EXHIBITS OPEN*

SESSION 14: FUEL CELLS 3

California

Session Chair: Murray MacDonald

- 10:30 am - 11:00 am 14.1 Backup Power Steps Forward: Fuel Cells as a Safety Net in the OSP
P Misar, *Emerson Network Power Energy Systems*
- 11:00 am - 11:30 am 14.2 Fuel Cell Solutions for FCC-Compliant Backup Power at Cellular Sites
D R Paluzzi, *Ballard Power Systems*
- 11:30 am - 12:00 pm 14.3 PEM Fuel Cells versus Diesel Generators - Which Solution to Pick
J P Gagge, *EnerSys*

SESSION 15: COOLING 2

Golden West

Session Chair: Zbig Noworolski

- 10:30 am - 11:00 am 15.1 Energy Saving Active Cooling Systems for Outdoor Cabinet
H Yuping; J Shengqin; Z Yunhui; K Xiaoming, C Qiao, *Huawei Technologies Co., Ltd*
F Cucchietti; G Griffa; C Bianco, *Telecom Italia*
- 11:00 am - 11:30 am 15.2 CFD Thermal Analysis for CO of TI Lab
H Dong; H Qian; H Yuping; K Xiaoming; L Zhaoxia; T Wenfei; H Wenxiong, *Huawei Technologies*
G Rossi; A Arena; V Bernardino; P Salamandra; D Suino, *Telecom Italia*
- 11:30 am - 12:00 pm 15.3 Temperature Control in Electronics
S C Baer; D C Harrison, *Zomeworks Corporation*

TUESDAY, SEPTEMBER 16 (continued)

Location

TECHNICAL PROGRAM

SESSION 16: DISASTER RECOVERY

Royal Palm 1 & 2

Session Chair: Marc J. Durocher

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|---------------------|------|---|
| 10:30 am - 11:00 am | 16.1 | Smart Operation of a Mobile Network in Event of Disaster
R Hofmann, <i>Nokia Siemens Network</i> |
| 11:00 am - 11:30 am | 16.2 | Business Continuity Management of NTT Facilities, Inc.
S Iwai; H Iwamoto; G Aizu; Y Kawagoe, <i>NTT Facilities, Inc.</i> |
| 11:30 am - 12:00 pm | 16.3 | Avoiding Power & Cooling System Disasters at Telecom New Zealand through Structured Risk Management
D Monkman, <i>Opus International Consultants</i> |

PARTNER / GROUP PROGRAM

1:00 pm – 5:00 pm Balboa Park Museum Tour

Balboa Park, the horticultural wonder in the heart of San Diego, was recently recognized as the best urban park in the Americas. This spectacular park started in the late 1800s when land was set aside for planting trees, now it houses the finest museums in the city. Building began in 1915 as part of an Expo competition and was completed in 1935 for the California Panama International Exposition.

The 1,400-acre park provides the setting for fourteen museums and art galleries, all within walking distance of each other. Among them are the Aerospace Museum, the Museum of Art, the Reuben H. Fleet Science Center, the Natural History Museum, the Mingei International Museum of Folk Art, the Hall of Champions, the Museum of Man, and the Museum of Photographic Arts. Other areas of interest are the Old Globe Theatre, Cassius Carter and Lowell Davies Theaters; the Japanese Friendship Garden; Spreckels Organ Pavilion; and the world famous San Diego Zoo. Guests may also stroll through the Botanical Gardens or the Horticultural Building.

Set off and discover the cultural and natural wonders of Balboa Park!

1:00 pm – 5:00 pm San Diego Zoo Tour

The World Famous San Diego Zoo is home to more than 1,600 animals and 6,500 plant species, each ready to welcome your guests when they pass through the entrance gates.

A day at the Zoo offers endless possibilities to get to know the animals. Guests may choose to get an overview on board a 35-minute narrated bus safari, which encompasses 80% of the Zoo's sprawling canyons and mesas. This is a fabulous way to meet a variety of animals, ranging from the tallest giraffes to the smallest meerkat. Guests may also proceed on foot and catch a ride back on the Skyfari Tram that offers great views of the Zoo and Balboa Park. Look down on Gorilla Tropics and wave hello!

What sets the San Diego Zoo apart is that it is also a certified botanical garden. Featured attractions include: the elusive and cuddly Pandas, visiting from their native China; Tiger River, with its mist-shrouded path where one may come within whisker distance of a Sumatran Tiger; the Polar Bear Plunge, where its massive inhabitants gracefully glide and play while submerged in large pools; Gorilla Tropics, covering 2½ acres in a lush African rainforest including exotic plants, a free-flight aviary with a flock of jewel-toned birds, plus an entertaining family of lowland gorillas; and Ituri Forest, the most complex multi-species habitat ever developed at the Zoo, where guests are immersed into the 'Congo' - featuring animals indigenous to the area such as forest buffalo, spot-necked otters, graceful hippos and acrobatic monkeys. The Zoo has something for everyone. Come talk with the animals!

PARTNER / GROUP PROGRAM

- 1:00 pm – 5:00 pm **San Diego City Tour with Harbor Cruise**
 San Diego's majestic beauty is unparalleled. With a multitude of unique and wonderful attractions and communities, this is truly 'America's Finest City.'
- Guests will be taken on a narrated bus tour of San Diego's finest areas. Each area offers distinct boutiques and galleries with a wonderful array of exceptional, handcrafted items in addition to award-winning restaurants.
- This tour continues to enthrall guests as they embark upon a tour on San Diego Bay, one of the most beautiful natural harbors in the world. The cruise takes in 21 miles of scenic waterways. From the water, visitors view picturesque Harbor and Shelter Islands, Point Loma (home of the Cabrillo Monument), the magnificent Coronado Bay Bridge and the U.S. Pacific Naval Fleet.
- 1:00 pm – 5:00 pm **USS Midway Tour with Harbor Cruise**
 The long awaited opening of the Midway Aircraft Carrier Museum is finally here. This United States Naval Aircraft Carrier has been converted into a multi-dimensional, interactive, educational and entertainment complex that attracts visitors and residents alike as one of the only museums of its kind on the west coast.
- The Midway continues her final tour of duty, after 47 years of history, on the south side of Navy Pier in San Diego. She serves as the cornerstone of the revitalized North Embarcadero, the gateway to downtown. The Midway joins the Star of India and other historic visitor attractions along the waterfront, and serves as a poignant, compelling tribute to the hundreds of thousands of men and women who have embarked from Navy Pier in service to their country. Midway Magic lives once again, in the hearts and minds of young and old alike when they come aboard and feel that special quality that has always set the Midway apart.
- This tour continues to enthrall guests as they embark upon a tour on San Diego Bay, one of the most beautiful natural harbors in the world. The cruise takes in 21 miles of scenic waterways. From the water, visitors view picturesque Harbor and Shelter Islands, Point Loma (home of the Cabrillo Monument), the magnificent Coronado Bay Bridge and the U.S. Pacific Naval Fleet.

TUTORIAL PROGRAM

- 1:00 pm – 5:00 pm
- Tutorial 09: **DC DRIVEN ENTERPRISE**
 B J Sonnenberg, *Emerson Network Power* *Sunrise*
 Kevin Bross, *Intel*
 Edmond Miron, *Emerson Network Power*
- Tutorial 10: **ENGINEERING REMOTE TERMINAL POWER SYSTEMS**
 Harvey Weintrob *Sunset*

WEDNESDAY, SEPTEMBER 17

PARTNER PROGRAM

LOCATION

8:00 am – 4:00 pm	Partner Hospitality Suite	<i>Stratford</i>
9:00 am – 4:00 pm	Southern California Wine Tour California's world-famous wine industry got its start over two hundred years ago in San Diego County. The Spanish cultivated the area's first vineyards, as they built the state's first missions. Today the vintners of Temecula Valley carry on the rich traditions of early California wine-making. With eighteen wineries and pending expansions, the area has become renowned for producing everything from vintage sherry to award winning champagne. Vistas of rolling hills are covered with uniquely designed wineries and vineyards in Temecula. The blend of cool summer nights and a gap in the coastal mountain range allows the breezes from the Pacific Ocean to flow into the valley, creating a climate similar to the wine regions of Southern France. This excursion includes a tour and tasting at Callaway Vineyard and Winery and lunch at Wilson Creek family owned winery. Callaway Vineyard and Winery is the region's largest and most modern premium wine producer. Other local wineries include Thornton Winery, Mt. Palomar winery, Bella Vista Cilurzo Winery, and Falkner Winery,	
10:00 am – 3:00 pm	Wild Animal Park Tour Step through the gates into another world at the San Diego Wild Animal Park, a 2,100-acre animal sanctuary where the animal residents may roam freely in settings similar to their native homelands. The journey may begin with a 20-minute, "Journey into Africa" tour aboard the park's special open-air tram. An informative guide describes the animals living together on the sweeping plains and veldt. See ostriches running across the savanna or catch a glimpse of rhinos butting horns. View endangered species and learn what efforts are being made to ensure they thwart extinction. Additional attractions at the Park include a 32-acre Heart of Africa walking safari, Lorikeet Landing, Nairobi Village, and Condor Ridge, celebrating the diversity of North American habitats and their rare and endangered animal inhabitants. Immerse yourself in the festive atmosphere of the African Village with its exciting animal shows, exotic exhibits like the Gorilla Grotto and Animal Care Center, and picturesque gardens or visit the park's Lion Camp. The Wild Animal Park has gained worldwide recognition for its conservation efforts. Being there is like being on safari in some of the most exotic places in the world!	

WEDNESDAY, SEPTEMBER 17(continued)

TECHNICAL PROGRAM		LOCATION
6:45 am – 8:00 am	Presenter / Session Chair Breakfast (<i>Wednesday & Thursday Sessions</i>)	<i>Tiki Pavilion</i>
7:00 am – 5:00 pm	Speaker Ready Room	<i>Dover</i>
SESSION 17: LITHIUM 1 <i>Session Chair: Subhas Chalasani</i>		<i>California</i>
8:00 am - 8:30 am	17.1 Don't Blame it on Arrhenius G Karlsson, <i>SiteTel AB</i>	
8:30 am - 9:00 am	17.2 Designing to Meet GR-3150- Avoiding the Pitfalls of Lithium-Ion Battery Development J McDowall, <i>Saft American, Inc.</i> ; M Bellé, <i>Saft SA</i>	
9:00 am - 9:30 am	17.3 Construction of Three-Dimensional Thermal Simulation Model of Lithium-Ion Secondary Battery T Matsushita; K Yabuta; T Tsujikawa; T Matsushima, <i>NTT Facillites Inc.</i> ; M Arakawa, <i>NTT Facillites Research Institute</i> ; K Kurita, <i>Shin-Kobe Electric Machinery Co., Ltd.</i>	
SESSION 18: KATRINA PANEL <i>Session Chair: Marc J. Durocher</i>		<i>Golden West</i>
8:00 am - 10:00 am	Panel Presentations / Discussion	
SESSION 19: POWER SYSTEM ARCHITECTURES <i>Session Chair: Harvey Weintrob</i>		<i>Royal Palm 1 & 2</i>
8:00 am - 8:30 am	19.1 Backup Generation Considerations for Telecommunication / Central Office Applications M Kirchner, <i>Generac Power Systems</i> ; W J McCoy, <i>Telecommunications Consultant</i>	
8:30 am - 9:00 am	19.2 Halve the Power Related Costs for a Cluster of Diesel-Fed Telecom Sites L Efraimsson, <i>Ericsson AB</i>	
9:00 am - 9:30 am	19.3 Analysis of a Flexible and Rugged Photovoltaic-based Power System B Le; A Kwasinski, <i>The University of Texas at Austin</i>	
9:30 am - 10:00 am	19.4 High Voltage DC Power Distribution for Telecommunications Facilities C Foster, <i>Telecom New Zealand</i> ; M Dickinson, <i>Opus International Consultants</i>	
10:00 am – 10:30 am	BREAK IN EXHIBIT HALL – POSTER VIEWING	
10:00 am – 3:00 pm	EXHIBITS OPEN	

WEDNESDAY, SEPTEMBER 17(continued)

TECHNICAL PROGRAM		LOCATION
SESSION 20: LEAD-ACID <i>Session Chair:</i> Rod Shane		California
10:30 am - 11:00 am	20.1 Applied Ohmic Battery Testing in a Global Mobile Telecommunications Operator: A Multi-year Study J Gao; L Yu, <i>China Mobile Communications Group Co., Ltd</i>	
11:00 am - 11:30 am	20.2 Between Floating and Intermittent Floating: Low-Current Self-Discharge Under Compensation T M P Nguyen, <i>Electricite De France R&D and Institut d'Electronique du Sud</i> ; G Dillenseger; C Glaize, <i>Institut d'Electronique du Sud</i> ; J Alzieu, <i>Electricite De France R&D</i>	
SESSION 21: MONITORING <i>Session Chair:</i> Michael Leblanc		Golden West
10:30 am - 11:00 am	21.1 Power Quality Measurements in Telecommunication Exchanges M Caciotta; F Leccese; M Grossoni, <i>University of "Roma Tre"</i>	
11:00 am - 11:30 am	21.2 Telecommunication Power Systems: Energy Saving, Renewable Sources and Environmental Monitoring C Lubritto; A Petraglia; C Vetromile; F Caterina; A D'Onofrio, <i>University of Naples</i> ; M Logorelli; G Marsico; S Curcuruto, <i>National Agency for Environment</i>	
11:30 am - 12:00 pm	21.3 A Tool for Calculating Reliability of Power Supply for Information and Communication Technology Systems T Tsumura; T Takeda; K Hirose, <i>NTT Facilities, Inc.</i>	
SESSION 22: BROADBAND POWER <i>Session Chair:</i> Don Davidson		Royal Palm 1 & 2
10:30 am - 11:00 am	22.1 Remote Power Node for Broadband Services E Alfonso, <i>TELUS</i> ; M MacDonald, <i>Emerson Network Power Canada</i>	
11:00 am - 11:30 am	22.2 Powering the Fiber Information Network D Michlovic, <i>Emerson Network Power</i>	
11:30 am - 12:00 pm	22.3 Offer Internet Connections in Remote Areas and Lower the Cost of Ownership L Eframsson; J Åhman, <i>Ericsson Network Technologies AB</i>	
12:00 pm – 1:00 pm	LUNCH IN EXHIBIT HALL	

WEDNESDAY, SEPTEMBER 17(continued)

TECHNICAL PROGRAM			LOCATION
SESSION 23: BATTERIES			California
<i>Session Chair:</i> George Zguris			
1:00 pm - 1:30 pm	23.1	Permanent Load Shifting and UPS Functionality at a Telecommunications Site using the VRB-ESS™ - A Case Study J Davis, <i>VRB Power Systems Inc</i>	
1:30 pm - 2:00 pm	23.2	Zinc Bromide® Batteries for Extended Duration Energy Storage at Cell Towers D Darcy; P Gibson, <i>Premium Power Corporation</i>	
2:00 pm - 2:30 pm	23.3	Statistical Modeling SoH of an Automotive Battery for Online Indication N Khare; S Chandra; R Govil, <i>Banasthali University</i>	
SESSION 24: COOLING WORKSHOP			Golden West
<i>Session Chair:</i> Dan McMenamin			
1:00 pm – 2:30 pm	Presentations / Discussion		
SESSION 25: CONTROLS & SIMULATIONS (ANALOG)			Royal Palm 1 & 2
<i>Session Chair:</i> Ernest Farren			
1:00 pm - 1:30 pm	25.1	A Predictive Non-Linear Voltage Mode Control Method to Improve the Transient Performance of Voltage Regulators S Pan; P K Jain, <i>Queen's University</i>	
1:30 pm - 2:00 pm	25.2	Large Signal Average Model for an Extended Duty Ratio and Conventional Buck B Oraw; R Ayyanar, <i>Arizona State University</i>	
2:00 pm - 2:30 pm	25.3	A Control Strategy to Stabilize PWM DC-DC Converters with Input Filters Using State-Feedback and Pole-Placement M Usman Iftikhar; E Godoy; P Lefranc; D Sadarnac; C Karimi, <i>Ecole Supérieure d'Electricité</i>	
2:30 pm – 3:00 pm	BREAK IN EXHIBIT HALL – POSTER VIEWING		
SESSION 26: FUEL CELLS 4 / COMPRESSED AIR STORAGE			California
<i>Session Chair:</i> Steve Vechy			
3:00 pm - 3:30 pm	26.1	Suitability of Compressed Air Energy Storage Technology for Electricity Utility Standby Power Applications J Beukes; T Jacobs, <i>Eskom</i> ; J Derby; R Conlon; I Henshaw, <i>Energetix Pnu Power</i>	
3:30 pm - 4:00 pm	26.2	Hydrogen Delivery and Storage Options for Backup Power and Off-Grid Primary Power Fuel Cell Systems M Cohen; G C Snow, <i>ReliOn, Inc.</i>	
4:00 pm - 4:30 pm	26.3	Telecommunications Installation for Truly Extended Run Backup Power R Romer, <i>IdaTech</i>	
4:30 pm - 5:00 pm	26.4	Hybrid Power Plants Combining Old and New Technologies B Bailey, <i>Emerson Network Power</i>	

WEDNESDAY, SEPTEMBER 17(continued)

TECHNICAL PROGRAM		LOCATION
SESSION 27: FUTURE TRENDS IN POWER CONVERSION <i>Session Chair:</i> Praveen Jain		<i>Golden West</i>
3:00 pm - 3:30 pm	27.1 Si-MESFET Technologies for Low Drop Out Regulators S Wood; W Lepkowski; S Wilk; T Thornton, <i>SJT Micropower, Inc.</i>	
3:30 pm - 4:00 pm	27.2 Equivalent Circuit Model for a GaN-HEMTs in a Switching Simulation A Nakajima; K Takao; M Shimizu; H Okumura; H Ohashi, <i>National Institute of Advanced Industrial Science and Technology</i>	
4:00 pm - 4:30 pm	27.3 Small-Size Boost Type DC-DC Converter with the Tiny Embedded Inductor M Yamadaya, <i>Fuji Electric Device Technology Co., Ltd. And Nagasaki University</i> ; M Owa, <i>Fuji Electric Device Technology Co., Ltd.</i> ; H Matsuo, <i>Nagasaki University</i>	
4:30 pm - 5:00 pm	27.4 Efficient Low Voltage Direct AC/DC Converters for Self-powered Wireless Sensor Nodes and Mobile Electronics S Dwari; L Parsa, <i>Rensselaer Polytechnic Institute</i>	
SESSION 28: ELECTRICAL PROTECTION <i>Session Chair:</i> Michael Leblanc		<i>Royal Palm 1 & 2</i>
3:00 pm - 3:30 pm	28.1 Fuse Blowing Characteristics for HVDC Power Supply Systems T Tanaka; T Tanaka; T Babasaki; M Mino, <i>NTT Energy & Environment Systems Laboratories</i>	
3:30 pm - 4:00 pm	28.2 An Update on Power Line Surge Protection Techniques for Telecommunication Facilities A Torrelli, <i>Telecom Italia SpA</i> ; S Pappas, <i>Raycap SA</i>	
4:00 pm - 4:30 pm	28.3 Grounding System of an Uninterruptible Power System (UPS) X Liu, <i>China Information Technology Designing & Consulting Institute</i>	
4:30 pm - 5:00 pm	28.4 Improved AC Immunity of Ground Fault Protection in Span Power Systems J Babineau, <i>Emerson Network Power Canada</i> ; G Moschopoulos, <i>University of Western Ontario</i>	
6:00 pm – 10:00 pm	RECEPTION AND BANQUET – Town and Country Resort The evening will begin with an outdoor cocktail reception from 6:00 pm to 7:00 pm at the Town and Country Resort. A jazz trio will perform during the reception. At 7:00 pm, the group will enter into a “Golden Gala” decorated Ball Room at the Town and Country for a plated dinner followed by a special musical presentation by the <i>San Diego Chamber Orchestra: Pops and All that Jazz!</i>	

THURSDAY, SEPTEMBER 18

PARTNER PROGRAM

8:00 am – 1:00 pm Partner Hospitality Suite

LOCATION

Stratford

TECHNICAL PROGRAM

7:00 am – 1:00 pm Speaker Ready Room

Dover

SESSION 29: UPS & INVERTERS 1

Session Chair: Michael Leblanc

California

- 8:30 am - 9:00 am 29.1 DC/AC Inverter for Telecommunication Power-Supply System
T Yoshida; H Yajima; S Takagi; T Tawara, *NTT Facilities, Inc.*;
R Sudo; J Hayakawa, *Shindengen Electric Manufacturing Co., Ltd.*
- 9:00 am - 9:30 am 29.2 Why is There a Need for a Truly Modular Three Phase Inverter for
Critical Telecom AC Power Applications?
D Anderson, *Benning Power Electronics Inc*
- 9:30 am - 10:00 am 29.3 Input Current-Ripple Reduction of a Pulse-Link DC-AC converter for Fuel Cells
K Fukushima, *Kyushu University*; I Norigoe, *EBARA DENSAN LTD*;
T Ninomiya, *Nagasaki University*; M Shoyama, *Kyushu University*;
Y Harada; K Tsukakoshi, *EBARA DENSAN LTD*

SESSION 30: DC/DC CONVERTERS

Session Chair: Harvey Weintrob

Golden West

- 8:30 am - 9:00 am 30.1 Zero Voltage Switching Asymmetrical Half-Bridge Converter Topology
C D Davidson, *Argus Technologies Ltd*
- 9:00 am - 9:30 am 30.2 Practical Development of Half-Bridge High Frequency PWM Inverter-Linked
DC-DC Converter with Diode-Clamped Active Edge Resonant Cells and
Extended Topologies
T Etoh; T Doi; K Morimoto, *Daihen Corporation*; T Ahmed, *Assiut University*;
H Sugimura; B Saha, *Kyungnam University*;
M Nakaoka, *Kyungnam University and Yamaguchi University*
- 9:30 am - 10:00 am 30.3 Isolated Current Doubler with Multiple Levels of Ripple Cancellation
M E Jacobs, *Slater & Matsil, L.L.P.*

SESSION 31: WORKSHOP: ENERGY CONSERVATION

Session Chair: George Tiemstra

Royal Palm 1 & 2

8:30 am – 10:00 am Presentations / Discussion

10:00 am – 10:30 am *BREAK in ATLAS FOYER*

THURSDAY, SEPTEMBER 18 (continued)

TECHNICAL PROGRAM

LOCATION

SESSION 32: UPS & INVERTERS 2

California

Session Chair: Dusty Becker

- 10:30 am - 11:00 am 32.1 "DC Grade" Reliability Part 2- Ultra Reliable, Green UPS for Telecommunications Data Centers
F Bodi, *Silcar Pty Ltd*
- 11:00 am - 11:30 am 32.2 Development of Uninterruptible Power Supply System with Distributed Generators (DGs)
T Takeda; H Keiichi, *NTT Facilities, Inc*; Y Okui, *Sanyo Denki co., Ltd.*;
K Yukita; K Ichiyanagi, *Aichi Institute of Technology*
- 11:30 am - 12:00 pm 32.3 Delta Modulated Cyclo-Inverter
A Agarwal; V Agarwal, *MNNIT Allahabad*
- 12:00 pm - 12:30 pm 32.4 Direct Amplitude Modulation in Inverter Mode of Operation
J Drobnik, *Freescale Semiconductor*

SESSION 33: DIGITAL CONTROL TECHNIQUES

Golden West

Session Chair: Murray MacDonald

- 10:30 am - 11:00 am 33.1 Small Signal Analysis and Modeling of a Voltage Mode Controlled Multiphase Voltage Regulator with Load Line Positioning and Phase Current Balancing
W Guo; P K Jain, *Queen's University*
- 11:00 am - 11:30 am 33.2 A New Digital Control DC-DC Converter with Peak Current-Infected Control
F Kurokawa; S Sukita; Y Shibata, *Nagasaki University*; T Yokoyama, *Tokyo Denki University*;
M Sasaki; Y Mimura, *Shindengen Electric Mfg. Co., Ltd.*
- 11:30 am - 12:00 pm 33.3 Reducing Computational Time Delay in Digital Current-Mode Controllers in DC-DC Converter
K Wan; M Ferdowsi, *Missouri University of Science and Technology*
- 12:00 pm - 12:30 pm 33.4 Digitally Controlled Switching Power Supply Using the High-Speed DSP and Quasi-PID Control
Y Nishikori, *Texas Instruments Japan Limited and Nagasaki University*;
Y Nakamura, *WINZ Corporation and Nagasaki University*;
K Kobayashi, *Shibaura Institute of Technology*; H Matsuo; Y Ishizuka, *Nagasaki University*

THURSDAY, SEPTEMBER 18 (continued)

TECHNICAL PROGRAM

LOCATION

SESSION 34: DATA

Session Chair: Michael Leblanc

Royal Palms 1 & 2

- | | | |
|---------------------|------|--|
| 10:30 am - 11:00 am | 34.1 | Power Distribution Architecture for Tele- and Data Communication System Based on New Generation Immediate Bus Converter
R Miftakhutdinov, <i>Texas Instruments Inc</i> |
| 11:00 am - 11:30 am | 34.2 | A Step Towards Green Datacenters: Enlarging Climatic Ranges- Studying the Effects of the Building
D Nörtershäuser; J Gautier, S Le Masson, <i>France Telecom R&D</i> |
| 11:30 am - 12:00 pm | 34.3 | Relationship Between the Reliability of a Data-center Air-conditioning System and The Air-conditioning Power Supply
R Nishida; S Waragai; K Sekiguchi; M Kishita; H Miyake; T Uekusa, <i>NTT Facilities, Inc.</i> |
| 12:00 pm - 12:30 pm | 34.4 | Rise of the Smart Infrastructure Management Empire: How to Increase Control Over Your Vital Assets in 7 Steps
C Leduc, <i>Multitel</i> |

SESSION 35: CLOSING PLENARY

Session Chair: Chris Seyer

Golden West

12:30 pm – 1:30 pm

POSTER PAPERS

- P01 **400-Ah Lithium-ion Cells for Telecommunications Systems and DC Power-Supply Systems**
T Matsushima; N Suzuki, *NTT Facilities R&D Headquarters*
- P02 **Design Criteria of a Multi-oscillaed Current Resonant Type DC-DC Converter**
N Higashi, *Nagasaki University*; R Araki; T Sato; H Ota, *Fuji Electric Device Technology co., Ltd*
Y Ishizuka; H Matsuo, *Nagasaki University*
- P03 **Electricity Procurement from Non-utility Providers - Risk Management Strategies and Environmental Attributes**
J Bush, *Sempra Energy Solutions*
- P04 **Embedded Software "Capsule Works" forSwitching Power Supply**
Y Nakamura, *WINZ Inc . and Nagasaki University*, Y Nishikori, *Texas Instruments Japan Limited and Nagasaki University*,
H Matsuo, *Nagasaki University*
- P05 **Feasibility Study of Ventilation Cooling Technology for Telecommunication Base Stations in Guangzhou**
Y Chen; J Wu; F Wang; Y Zhang; Q Meng, *South China University of Technology*
- P06 **Field Trial on a Rack-mounted DC Power-supply System Using an 80-Ah Lithium-ion Backup Battery**
T Matsushima; N Susuki, *NTT Facilities R&D Headquarters*
- P07 **A Novel Tapped Inductor Bi-directional Buck-boost Topology**
W Lin; J Wang; J Huang; Y Xu, *Fuzhou University*
- P08 **A Novel Telecom Power System**
O H Amin Shirazi; O Onar; A Kahligh, *Illinois Institute of Technology*
- P09 **Optimized Digital Maximum Power Point Tracker Implementation for Satellites**
A Ramamurthy; S Bhattacharya, *North Carolina State University*
- P10 **The Research on the Digital Controlled Effect of Performance on the PWM Inverter**
H Shan, *Huazhong University of Science & Technology and Hubei Automobile Industrial Institute*;
Y Kang, *Huazhong University of Science & Technolog*; X Kong, *Shenzhen Santak Power Co. Ltd*;
Z Liu; M Yu; H Li; F Luo; L Liu, *Huazhong University of Science & Technology*
- P11 **Stability of Multi-Winding Coupled Inductors in Buck Converters**
B Oraw; R Ayyanar, *Arizona State University*

Program Subject to Change