



2010 IEEE Conference on Innovative Technologies for an Efficient and Reliable Electricity Supply

27-29 September 2010, The Westin Waltham Boston, Waltham, MA, USA

www.ieee-energy.org

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- [MIT Campus & PSFC](#)
- [Seabrook Nuclear Power Plant](#)
- [Beacon Power Corporation](#)

TUTORIALS

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Preliminary Technical Program

September 27, 2010

0730: Check-In

0830: Welcome
[Tom King](#), Conference Chair, National Grid Executive Director

0900: Keynote: "Stimulating Innovation in Energy Technology"
[Dr. Rajeev Ram](#), DOE ARPA-E Program Director

Plenary Session

0945: Utility Perspective: National Grid
[Stan Blazewicz](#), Vice President, Global Head of Technology, National Grid

1015: Networking Break

1045: National Security, Energy and Climate: A Strategy for the U.S.
Department of Energy
[Dr. Victor Reis](#), Senior Advisor, Office of the Undersecretary of Energy for Science, Washington DC

1115: Setting Standards for the Smart Grid
[George W. Arnold](#), Eng.Sc.D., National Coordinator for Smart Grid Interoperability, National Institute of Standards and Technology, U.S. Department of Commerce

1145: Lunch

1300: Smart Grid
Chair: Jason Stamp, Sandia National Labs

1310: A Faster, Smarter, Controllable, Greener, Distributed Grid - The Keys to an Advanced Grid that yields higher Power Quality
[Leo Casey](#), SatCon Technology Corporation

1330: Technical and Economic Evaluation of Voltage Regulation Strategies for Distribution Grids with a High Amount of Fluctuating Dispersed Generation Units
[Bjoern Gwisdorf](#), Technische Universitaet Dortmund

1350: PMU Placement for Enhancing Dynamic Observability of a Power Grid
[David Pengwei](#), Pacific Northwest National Laboratory

1430: Networking Break

- 1500: Analysis of Spatial and Seasonal Distribution of Power Transmission Line Thermal Aging**
Jana Heckenbergerova, University of Alberta
- 1520: Factored Markov Decision Process Models for Stochastic Unit Commitment**
Daniel Nikovski, Mitsubishi Electric Research Laboratory
- 1540: Smart Grid Architecture Risk Optimization Through Vulnerability Scoring**
Adam Hahn, Iowa State University
- 1450: Superconducting Technologies**
Chair: Joseph Minervini, MIT
- 1500: High-performance 2G HTS Wire for Efficient and Reliable Electricity Supply**
Drew Hazelton, SuperPower, Inc.
- 1520: Combining Superconductor Cables and VSC HVDC Terminals for Long Distance Transmission**
Jack McCall, American Superconductor, USA
- 1540: Interconnecting Substations via Superconductor Cables to Accommodate PHEV Related Load Growth**
Kyle Howells, American Superconductor, USA
- 1600: Massive Underground HVDC Transmission via Elpipes: Implications for Grid Evolution**
Roger Faulkner, Electric Pipeline Corporation, USA
- 1620: Superconducting DC Electric Power Distribution for Large Scale Data and Telecommunications Centers**
Joseph Minervini, Massachusetts Institute of Technology, Engineering Department
- 1300: Renewable Energy, General**
Chair: Ted Bloomstein, MIT Lincoln Laboratory
- 1310: Geo-Spatial Resource Analysis and Optimization of Investment Strategies for Renewable Energy**
Sergey Malinchik, Lockheed Martin Advanced Technology Laboratories
- 1330: Energy Flow Management of a Hybrid Renewable Energy System with Hydrogen**
Lars Baumann, Institute for Energy Optimized Systems
- 1350: Advanced Inverters Facilitate High Penetration of Renewable Generation on Medium Voltage Feeders - Impact and Benefits for the Utility**
Colin Schauder, Satcon Technology Corporation, USA
- 1410: Binary Fluid Ejector Refrigeration**
Wayne May, May-Ruben Technologies, Inc., USA
- 1430: Networking Break**
- 1450: Solar Energy**
Chair: Krishnan Parameswaran, PSI Corporation
- 1500: Microcontroller Based Intelligent DC/DC Converter to Track Maximum Power Point for Solar Photovoltaic Module**
Siwakoti Yam Prasad, Norwegian University of Science and Technology
- 1520: High Penetration and Anti-islanding Analysis of Multi-Single Phase Inverters in an Apartment Complex**
Babak Enayati, National Grid
- 1540: Two-Stage PV Power System with Improved Throughput and Utility Control Capability**
Steve Nichols, Satcon
- 1600: Increasing Thermophotovoltaic Efficiencies using PhC and Vertical Confinement**

Corey Shemelya, Tufts University

1620: 3+1 Multijunction Solar Cell Designs for Improved Efficiencies
Emir Salih Magden, Tufts University

1300: Management of Energy Systems of the Future
Chair: Paul Lawson, MIT Lincoln Laboratory

1310: Economic, Environmental, and Job Impacts of Increased Efficiency in Existing Coal-Fired Power Plants
Roger Bezdek, Management Information Services, Inc.

1330: Managing Large Systems Innovations
Hans Thamhain, Bentley University

1350: Introducing Smart Grids in Residential Contexts: Consumers' Perception of Smart Household Appliances
Jeroen Stragier, Ghent University, Belgium

1410: A Minimal Budget Approach Algorithm for Integration of Clean Energy to Electricity Systems
Jinxu Ding, Iowa State University

1430: Networking Break

1500: Modeling Resource, Infrastructure, and Policy Cost Layers for Optimizing Renewable Energy Investment and Deployment
Sreenivas Sukumar, Oak Ridge National Laboratory

1520: Carbon Offsets of Renewable Resources in Constrained Transmission Systems
Aleksandr Rudkevich, Charles River Associates
Pablo A. Ruiz, Charles River Associates

1540: A Knapsack Problem Approach for Achieving Efficient Energy Consumption in Smart Grid for End-users' Life Style
Omid Sianaki, Curtin University of Technology

1600: Modeling the Deployment of Plug-in Hybrid and Electric Vehicles and Their Effects on the Australian National Electricity Market
Laim Wagner, The University of Queensland

1700: Posters / Reception

Chair: Dr. Juliette Costa, MIT Lincoln Laboratory

Sempa Power Providing the Smart Grid with System Regulation
Holly Dollinger, Sempa Power

Virus Constructed Iron Phosphate Lithium Ion Batteries in Unmanned Aircraft Systems
Rachel Kolesnikov-Lindsey, Massachusetts Institute of Technology

Feasibility Study of Different Criteria of Combined Cooling, Heating and Power Generation for a Residential Complex
S. Pouya Amid, Amirkabir University of Technology

Turning A Generator's Mvar's Into MW's by Use of Static Var Compensator
Brian Scott, ABB, Inc.

Multi-objective Power Expansion Planning in a Planning Horizon
Saleh Zakerinia, University of Tehran

Evaluation of Energy Systems for Selecting the Optimal Energy System
Saleh Zakerinia, University of Tehran

Investigation of GaTIP for Use in Multijunction Photovoltaics
Chandler Downes, Tufts University

Simulation and Testing of Type-II Strained-Layer Superlattices for Low Temperature Thermophotovoltaic Cells
Dante DeMeo, Tufts University

Utility Scale Energy Solution

Sydney Johnston, Cesari and McKenna, LLP
Plug-in Vehicles and the Plug - Policy to address the Chicken or the Egg Problem
John Magee, Boston University

September 28, 2010

0730: Check-In

Plenary Session

0800: Energy for Military Critical Capabilities

[Kenneth Eickmann](#), LGEN, USAF (ret), Senior Research Fellow, Energy Institute, University of Texas at Austin

0830: The Future of Storage on the Grid

[Dr. Imre Gyuk](#), Department of Energy, Washington DC, Program Manager for Storage Technologies

0900: Networking Break

0930: Smart Monitoring and Control

Chair: Richard Kingsborough, MIT Lincoln Laboratory

0940: An Economic Smart Metering Pilot Implementation Using Standards-Based Protocols

Susan Soergel, NSTAR Electric and Gas Corporation

1000: Frequency Waves, Grid Friendly Appliances and Geographic Limits in Smart Grid

Mohammed Olama, Oak Ridge National Laboratory

1020: Agent-based Modeling of Interaction Between Commercial Building Stocks and Power Grid

Fei Zhao, Argonne National Laboratory

1040: Improving Stability and Utilization of the Electricity Infrastructure of a Neighborhood

Albert Molderink, University of Twente

1100: An Approach to Discover Potential for Demand Response in the Domestic Sector

Joana Abreu, Massachusetts Institute of Technology

1120: Power-Saving algorithms in Electricity usage - Comparison Between the Power Saving Algorithms and Machine Learning Techniques

Paul Kwok, Rochester Institute of Technology

1200: Lunch

Post Luncheon Speaker

[Thomas L. Sanders](#), Executive Officer/Past President

American Nuclear Society

Global Energy Needs: Defining a Role for a "Right Sized Reactor"

1300: Distributed Energy

Chair: Stephen Connors, Massachusetts Institute of Technology

1310: Urban Grid Monitoring Renewables Integration

Lawrence Gelbien, NSTAR Electric and Gas Corporation

1330: Multiobjective Optimal Placement of Multi-Type FACTS Devices and DG for Enhancement of Power System Performance by NSGA-II
Sasidharan Sreedharan, Asian Institute of Technology

1350: Development and Test of a Four-module 1200 kVA Distributed Generation Power Plan
Neal Dowling, MTechnology

1410: Networking Break

1430: Evaluation of the Impact of Large Scale Integration of Micro-generation Units in Low and Medium Voltage Distribution Networks
Pedro Almeida, INESC Porto

1450: Wind-Based Hybrid Power Systems In Rural Western New York
Michael Robinson, Alfred University

1510: Operation and Economics of a Behind-the-Meter Fuel Cell Power Plant Array
Neal Dowling, MTechnology

0930: Storage

Chair: Matt Lazarewicz, Beacon Power Inc.

0940: Interconnection Study: 5MW of Beacon Power Flywheels on 23 kV Line
James Cleary, DG Interconnections National Grid USA-Network Planning Department

1000: Energy Storage for Use in Load Frequency Control
Olivia Leitermann, Massachusetts Institute of Technology

1020: PV Plant Intermittency Mitigation Using Constant DC Voltage PV and EV Battery Storage
Joseph Mossoba, SatCon Technology Corporation

1040: Utility Energy Storage Life Degradation Estimation Method
Monika Chawla, GE Global Research

1100: Static and Dynamic Analysis of Li-polymer Battery Using Thermal Electrochemical Model
Meng Xiao, Auburn University

1120: SVC Light with Energy Storage for Frequency Regulation
Marguerite Holmbert, ABB AB

1200: Lunch

Post Luncheon Speaker

Thomas L. Sanders, Executive Officer/Past President

American Nuclear Society

Global Energy Needs: Defining a Role for a "Right Sized Reactor"

1300: Electric Vehicles

Chair: Tom Keim, DRS Technologies, Inc.

1310: Value of Plug-in Vehicle Grid Support Operation
Tony Markel, Transportation Technologies and Systems, National Renewable Energy Lab

1330: Enhanced Plug-in Hybrid Electric Vehicles
Alan Millner, MIT Lincoln Laboratory

1350: Impacts of Plug-In Hybrid Electric Vehicles on the Electric Power System in Illinois
Matthew Mahalik, Agronne National Laboratory

1410: Networking Break**1430: Modeling Lithium Ion Battery Degradation in Electric Vehicles**

Alan Millner, MIT Lincoln Laboratory, USA

1450: Maximizing Societal Benefits Associated With Alternative Fuel Subsidies: The Case of Plug-in Hybrid Electric Vehicles

Samir Nazir, Rochester Institute of Technology

1510: A Monte Carlo Method To Evaluate Electric Vehicle Impacts in Distribution Networks

Filipe Soares, University of Porto

0930: Geothermal, Water and Wind

Chair: Rich Jepsen, Sandia National Labs

0940: Future Geothermal Technology Needs

Randy Normann, CTO Perma Works LLC

1000: Fully-Depleted Silicon on Insulator (FDSOI) for High Temperature Geothermal Applications

Matt Renzi, MIT Lincoln Laboratory

1020: Development of a High Temperature Seismic Tool for EGS

J.A. Henfling, Sandia National Laboratory, USA

1040: Large-Scale Ocean Wave Energy Plant Modeling

Ted Brekken, Oregon State University

1200: Lunch**Post Luncheon Speaker****Thomas L. Sanders**, Executive Officer/Past President**American Nuclear Society**

Global Energy Needs: Defining a Role for a "Right Sized Reactor"

1310: Aggregate Effects of System Integration for Analysis of Wind Energy Diffusion

Katherine Dykes, Massachusetts Institute of Technology

1330: Case Studies: Interconnection of Wind Turbines on Distribution Circuits

James G. Cleary, National Grid, USA

1350: Computational and Economic Limitations of Dispatch Operations in the Next-Generation Power Grid

Victor Zavala, Argonne National Laboratory

1410: Networking Break**1430: High Penetration of DER on a FERC Jurisdictional Distribution Circuit**

Tom McDermott, MelTran, Inc.

1450: Modeling Stochastic Contingency Reserve Activation

James MacPherson, University of Washington

1510: Partial Use of Photovoltaic and Wind Generators as Active Filter. An Engineering Economic Analysis

Alex Emanuel, Worcester Polytechnic Institute

0930: Instrumentation

Chair: Davide Franzoni, VICOR, Inc.

0940: Overview of an Automatic Distribution Fault Location System

Dan Sabin, Electrotek Concepts, Inc.

- 1000: High-Speed Hardware-in-the Loop Testing for Power Electronics and Renewable Energy Systems**
Jason Poon, Massachusetts Institute of Technology
- 1020: Development and Test Facilities for Grid-Connected Distributed Energy Resources**
Neal Dowling, MTechnology
- 1050: Novel Fiber Bragg Grating Sensor Applicable for Fault Detection in High Voltage Transformers**
Amin Moghadas, University of Texas at San Antonio

1200: Lunch

Post Luncheon Speaker

**Thomas L. Sanders, Executive Officer/Past President
American Nuclear Society**

Global Energy Needs: Defining a Role for a "Right Sized Reactor"

- 1300: Microgrids for Rural and Developing Regions**
Chair: Soon Wan, VICOR, Inc.
 - 1310: Reliable Energy for Developing Countries**
Soon Wan, IEEE Humanitarian Technology Challenge
 - 1330: Sustainability Assessment and Implementation Design of Distributed Energy Micro-Generation for Lighting in Western Kenya**
Justin Henriques, University of Virginia
 - 1350: Optimal Management of Microgrids**
Sivanad Kumar, National Institute of Technology
- 1410: Networking Break**
- 1430: Distribution Automation (DA) using Supervisory Control and Data Acquisition (SCADA) with Advanced Metering Infrastructure (AMI)**
Solomon Nunoo, University of Mines and Technology
 - 1450: Micro-Trigeneration- The Best Way for Decentralized Power, Cooling and Heating**
Roshini Easow, Sardar Patel College of Engineering
 - 1510: Using Solar Power as an Alternative Source of Electrical Energy for Street Lighting in Ghana**
Solomon Nunoo, University of Mines and Technology
 - 1530: A Sensitivity-based Approach for Controlling Micro-grid with Synchronous Machine DGs Subsequent to Islanding Process**
Ali Bidram, Isfahan University of Technology
 - 1550: Karst as Hydroelectricity Resource vs. As Limestone Resource**
Novi Rahmawati, Gadjah Mada University

September 29, 2010

0900: Tutorials

0900: Tours

1400: Conference Adjourn

[IEEE Nondiscrimination Policy](#)