

3rd THE INTERNATIONAL CONFERENCE on RENEWABLE ENERGY
RESEARCH and APPLICATIONS
(ICRERA 2014)

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TOPICS

Renewable (Green) Energy Systems and Sources (RESSs) as Wind Power, Hydropower, Solar Energy, Biomass, Biofuel, Geothermal Energy, Wave Energy, Tidal energy, Hydrogen & Fuel Cells, Energy Storage, Li-ion Batteries, Capacitors

- New Trends and Technologies for RESSs
- Policies and Strategies for RESSs
- Energy Transformation from Renewable Energy System (RES) to Grid
- Novel Energy Conversion Studies for RESSs
- Power Devices and Driving Circuits for RESSs
- Control Techniques for RESSs
- Grid Interactive Systems Used in Hybrid RESSs
- Performance Analysis of RESSs
- Hybrid RESSs
- Decision Support Systems for RESSs
- Renewable Energy Research and Applications for Industries
- RESSs for Electrical Vehicles and Components
- Artificial Intelligence and Machine Learning Studies for RESSs and Applications
- Computational Methods for RESS
- Energy Savings for Vehicular Technology, Power Electronics, Electric Machinery and Control, etc.
- New Approaches in Lightings
- Public Awareness and Education for Renewable Energy and Systems
- Reliability and Maintenance in RESSs
- Smart grids and RESSs
- Safety and Security of RESSs
- Renewable Energy Systems in Smart Cities
- Future Challenges and Directions for RESSs

LANGUAGE

The working language of the ICRERA conference is English

WELCOME to ICRERA 2014

Dear Colleagues,

The purpose of the International Conference on Renewable Energy Research and Applications (ICRERA) 2014 is to bring together researchers, engineers, manufacturers, practitioners and customers from all over the world to share and discuss advances and developments in renewable energy research and applications.

After the success of the first and second edition of ICRERA in Nagasaki and Madrid, this third ICRERA will continue promoting and disseminating knowledge concerning several topics and technologies related to renewable (green) energy systems and sources. ICRERA aims to present important results to the international community of renewable energy fields in the form of research, development, applications, design and technology. It is therefore aimed at assisting researchers, scientists, manufacturers, companies, communities, agencies, associations and societies to keep abreast on new developments in their specialist fields and to unite in finding alternative energy solutions to current issues such as the greenhouse effect, sustainable and clean energy issues. It is our great pleasure to host and be with you in Milwaukee during the conference. Please feel free as if you are at home.

You will find detail information about this activity on the conference official website www.icrera.org.

We are looking forward to seeing you in the well-known city Milwaukee/USA.



Professor Adel NASIRI
General Chair, ICRERA 2014



Professor Ilhami COLAK
Co-Chair, ICRERA 2014



Professor Fujio KUROKAWA
Co-Chair, ICRERA 2014

KEYNOTE SPEAKERS

Keynote 1: Prof. Thomas Jahns, University of Wisconsin - Madison

Date : Oct 20, 2014 > 08.30 AM



Biography: Prof. Thomas M. Jahns received his bachelors, masters, and doctoral degrees from MIT, all in electrical engineering.

Dr. Jahns joined the faculty of the University of Wisconsin-Madison in 1998 as a Grainger Professor of Power Electronics and Electric Machines in the Department of Electrical and Computer Engineering. He is a Co-Director of the Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), an industrial consortium with over 85 international sponsors. Dr. Jahns is also the Research Director of the Center for Renewable Energy Systems (CRES) that is supported

by UW-Madison and three other research universities in the Midwest.

Prior to coming to UW-Madison, Dr. Jahns worked at GE Corporate Research and Development in upstate New York for 15 years, where he pursued new power electronics and motor drive technology in a variety of research and management positions. His current research interests at UW-Madison include electric vehicle propulsion, renewable energy systems, microgrids, and energy storage equipment.

Dr. Jahns is a Fellow of IEEE. He received the 2005 IEEE Nikola Tesla Technical Field Award "for pioneering contributions to the design and application of AC permanent magnet machines". Dr. Jahns is a Past President of the IEEE Power Electronics Society and the recipient of the 2011 Outstanding Achievement Award presented by the IEEE Industry Applications Society.

Transforming the Electric Grid from the Distribution System Out

Summary:

Declining prices coupled with tax incentives are driving increased use of distributed energy resources in the electrical utility system. As a result, more power is being generated in homes, businesses, and commercial buildings and used locally. This increase in power production at the distribution level presents a challenge to the traditional electrical transmission and distribution system based on centralized power generation and control. The centralized system operated by utilities was not designed for the flexible load tracking required by renewables or the control of large numbers of distributed electrical energy resources. An alternative approach that holds promise is a dynamic distribution system that includes a Distribution System Operator as the local balancing authority. As conceived, the dynamic distribution system uses local sources to track loads, stabilize voltage and frequency, and smooth intermittent renewable energy generation providing a predictable, constant load profile to the utility. This new dynamic distribution system connects central and local electricity generation, storage, microgrids, and loads with a marketplace that enables energy transactions, such as payments passing between buyers and sellers of energy at the local distribution level. This new system provides a promising framework for distributed energy resources to deliver the same services at a better price, with decreased power losses, decreased emissions, and better reliability. The challenges and opportunities associated with this dynamic distribution system architecture will be discussed in this presentation.

Keynote 2: Bob Yanniello, Vice President of Engineering Electrical Systems & Services Business, Eaton

Date : Oct 20, 2014 > 09.15 AM



Biography: Bob is the vice president of engineering for Eaton's Electrical Systems & Services Business. Bob graduated from The University of Akron in 1980 with a BSEE. He started his career with Westinghouse's medium-voltage switchgear group and has held positions in MV switchgear applications and factory sales, field applications engineering, and low-voltage switchgear applications engineering manager. Since being acquired by Eaton in 1994, Bob has held design and technology responsibility for numerous product lines within Eaton's Electrical Sector.

Bob's present areas of engineering and technology responsibility encompasses legacy Eaton products such as: MV & LV switchgear, MV & LV motor control, MV & LV bus systems, MV & LV automatic transfer switches, MV motor drives, panelboards, lighting control systems, switchboards, switching devices, dry type distribution transformers, and electric vehicle charging systems. Since Eaton's acquisition of the former Cooper Industries in December of 2012, Bob has assumed the added engineering responsibility for products including: reclosers, padmounted switchgear, capacitor banks, voltage regulators, power transformers, molded rubber products, lighting arrestors, distribution automation, substation automation, endpoint demand control, and the electrical systems and services business. Bob is responsible for new product development and strategic product and technology planning for these products.

Bob lives in Asheville, NC and has offices in Asheville and Pittsburgh, PA. Bob is a registered Professional Engineer in North & South Carolina, is the vice chair of the NEMA Switchgear and Circuit Breaker Section, is a member and former chair of the NEMA Smart Grid Council, is a senior member of the IEEE, has authored three IEEE papers, and holds 17 patents.

Customer and Market Trends in The Electrical Power Industry

Summary: Understanding the needs of our customers is critical to providing them with value-added solutions. This presentation will discuss several contemporary market needs – improved safety, increased reliability, and increased asset utilization through reduced size, weight and losses (higher efficiencies). Several real-world solutions to these customer needs will be shared.

Keynote 3: Prof. Mark Ehsani, Texas A&M University College Station
Date : Oct 20, 2014 > 10.15 AM



Biography: Professor M. Ehsani received the Ph.D. degree from the University of Wisconsin-Madison in electrical engineering. In 1981 he founded one of the first national power electronics and motor drives program of teaching and research at Texas A&M University, College Station, Texas where he is now the Robert M. Kennedy Endowed Professor of electrical engineering and Director of Sustainable Energy and Vehicle Engineering Research Program and the Power Electronics and Motor Drives Laboratory. Dr. Ehsani has been a founding member of IEEE Power Electronics Society (PELS) AdCom and has been the chairman of numerous IEEE committees. He was the General Chair of IEEE Power Electronics Specialist Conference for 1991. He is the founder of IEEE International Vehicle Power and Propulsion Conference. In 2002 he was elected to the Board of Governors of VTS. He also serves on the editorial board of several technical journals. He is a Fellow of IEEE, a Fellow of SAE, an IEEE Industrial Electronics Society and Vehicular Technology Society, Industry Applications Society, and Power Engineering Society Distinguished Lecturer. In 2001 he received the IEEE-VTS Avant Garde Award for "Contributions to the theory and design of hybrid electric vehicles" and in 2003 he received the IEEE Field Award for undergraduate Teaching. He is the author of over 350 publications, 17 books, over 20 US and EU patents, numerous international seminars and short courses, and has been a consultant to over 60 international companies. He is also a registered professional engineer in the State of Texas.

Sustainable Energy & Vehicle Engineering

Summary: The living film covering the surface of planet earth is delicately balanced. The conditions for life are created by life. These conditions are complex of systems and feedback mechanisms that are poorly understood. Humanity now captures one quarter of primary productivity of the planet. However, we lack engineering systems to properly manage this productivity at the planetary scale. This is resulting in environmental impacts, such as biodiversity loss, pollution, and climate change. The broader impact of our present energy and resource management can be divided into three categories: Human Society, Economy, and Resources.

The solution is a new way of thinking and new technologies that I refer to as Sustainable Energy Engineering. It has been estimated that the global average surface needed to supply the needs and absorb the wastes of an individual is about 2.3 ha/person.

Our industrial economy was built on abundant energy, mostly from fossil fuels. Energy demand is rising rapidly and the easy supplies are shrinking. Energy demand will grow 50% by 2030, but oil conventional production is peaking and will decline 75% in 30 years. Adaptation to these new realities will be extremely expensive and the struggle for diminishing resources will be globally destabilizing. In short, the fossil-fuel-based energy subsidy of civilization is unsustainable.

In this talk, I will review the above issues. I will pay special attention to the issues and power electronics technologies of sustainable energy production, consumption and the relationship between these two. This will establish the foundations of the holistic sustainable energy production-consumption technology complex. Then I will examine some individual technologies with this insight.



Biography: Alan Perlstein became the Mid-West Energy Research Consortium's (M-WERC) second Executive Director and CEO effective April 16, 2013.

Mr. Perlstein was a founder of the organization and its first Chairperson and has remained active with the organization in his capacity on the M-WERC Board and the Board's Executive Committee as Chairperson Emeritus. He was most recently leading M-WERC's Organizational Development activities.

Mr. Perlstein draws upon 35 years of experience in ship building, power electronics, design development and program management for navy nuclear, ship controls, propulsion, and power distribution technology programs. He has a successful track record for deployment of new technologies affordably and on schedule.

Alan has worked extensively at building effective Public Private partnerships. His leadership has been recognized on the boards of the North West Side Community Development Corporation, the Milwaukee Work Force Investment Board, and as a founding member of M-WERC. Alan is recognized as a passionate proponent for economic growth and work force development for Milwaukee and the surrounding regions.

Mr. Perlstein is a graduate of the Kellogg School of Business at Northwestern University, with a Masters in Business Administration. He attended American University, with a Bachelor of Science and Honors graduate in Economics.

The Evolving Role of Distributed Generation in a Centralized Power System

Summary

Centralized Power Systems

The modern centralized power system has been very effective in providing affordable electric power to the country. This has been driven by the economics of scale and an ever growing consumption of bulk power. The centralized system provides an acceptable level of reliability with a modest amount of reserve capacity and redundancy. The relative affordability of coal, nuclear and large-scale hydro has made these 'fuels' the dominate source of electric power. In recent years, other forms of power have become more affordable through economies of scale. Wind power has become more affordable. Again, economies of scale have prevailed and average wind farms are 80 to 120 MW and connected to the centralized grid. Medium and Large centralized solar plants have also been built, relying upon the economics of scale utilizing both high voltage distribution and transmission to connect to the central grid.

The Evolving Role of Distributed Generation

There are a number of developments that are increasing the role of distributed generation. Photovoltaic panels have become much more affordable. Incentives such as 'net metering' and state renewable power mandates have resulted in a significant nation-wide penetration of customer-owned solar capacity. In addition third party lease business models have had market successes in a number of locations. Small and Medium size IC engines powered with natural gas, biogas, landfill gas (methane) and other affordable energy sources are oftentimes most economic when connected to the distribution system. The next 'wave' of distributed generation capacity is likely to be natural gas-fired combined heat-and-power generation. The relative affordability and availability of natural gas has made CHP much more affordable. A properly designed CHP system can be the low-cost solution to meet the combined energy, heat, and chilled-water efficiency/resiliency needs across a wide range of customers.

Microgrids, Energy Storage, Energy Efficiency Linked to a Smarter Grid

Microgrids provide an effective way of adding distributed generation (in all of its forms), energy storage, and energy efficient CHP to the existing centralized power system. A properly designed microgrid allows distributed generation to 'play' properly with the centralized electric system and can assist the centralized grid in dealing with varying power flow from many of the "smart grid" generation and load systems.

The interconnected electric power system of the future will evolve. Distributed power can and will network with the existing power grid. Integrated Systems will enable stable platforms that link multiple power generation sources. Flexible market models will develop, enabled by a new partnership between the central grid, microgrids, and distributed generation. This new partnership holds the promise of a growing value proposition that all stakeholders can share. Wind, Solar, Geothermal, Local CHP Systems as well as Energy Storage capabilities will be integrated with Central Generation, Transmission and Distribution Networks as we continue to evolve our Smarter Grid Infrastructure.

Keynote 5: Prof. Don Tan, Northrop Grumman Aerospace Systems

Date : Oct 21, 2014 > 08.45 AM



Biography: Don Tan is fellow / APOL program manager with NGAS. He earned his Ph.D. from Caltech and is an IEEE fellow.

He is an authority in power management technology within NGC, NASA, Air Force, government communities and space power industry. He is President of IEEEPELS and the Founding Editor-in-Chief for IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE). His recent recognitions include NGAS Distinguished Engineer in 2011, CIE USA Asian American Engineer of the Year Award in 2010, AIAA Space System Award in 2008, JANNAF Outstanding Achievement Award in Spacecraft Propulsion in 2007, and NGST Distinguished Patent Award

in 2002. His technology was licensed to a major telecom company.

Emerging Trends for Power Electronics

Summary: Power Electronics is at the cusp of exponential growth to propel it to be among the top-tier technologies. The growth will be both extensive and intensive: extensive similar to what the semiconductor industry did to the IT industry and intensive similar to what poly-phase system did for power grid. In this keynote, Don will cover emerging technological trends for power electronics. Topics include clean energy systems and integrations, all things grid connected, dc grids, smart building and smart cities, transportation electrification, adiabatic power conversion, monolithic power converters, and multi-level conversion technologies. He will also address the issue of wide-band-gap devices applications, together with the opportunities and challenges.



Biography: Dushan Boroyevich was born in 1952 in Zagreb, Croatia, in what then used to be Yugoslavia. In the same country, he earned a Dipl. Ing. degree from the University of Belgrade in 1976 and an M.S. degree from the University of Novi Sad in 1982, both in electrical engineering. He obtained a Ph.D. degree in power electronics in 1986 from Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA, also known as Virginia Tech.

From 1976 to 1982, Dr. Boroyevich was instructor at the Institute for Power and Electronic Engineering of the University of Novi Sad, helping to establish the electronics program. After three and a half years on doctoral studies at Virginia Tech with General Electric Co. Fellowship, he returned to the University of Novi Sad in 1986 as an assistant professor, where he founded the power and industrial electronics research and education programs.

In 1990, Dr. Boroyevich joined the Bradley Department of Electrical and Computer Engineering at Virginia Tech, as associate professor, and in 1996 became associate director of Virginia Power Electronics Center that was founded by Prof. Fred Lee ten years earlier. In 1998, Fred and Dushan led the team of faculty from Virginia Tech, University of Wisconsin-Madison, Rensselaer Polytechnic Institute, University of Puerto Rico-Mayaguez, and North Carolina A&T State University to win the US National Science Foundation funding for the first national engineering research center in the area of power electronics, the Center for Power Electronics Systems (CPES). With over 20 professors and over 200 students, working in partnership with more than 80 companies, CPES became the most renowned power electronics research and education center in the world. In addition to its alumni, probably the most enduring legacy of CPES was the paradigm shift in power electronics research towards higher levels of integration and modularization.

Dr. Boroyevich is the American Electric Power Professor at Virginia Tech and CPES co-director. He has led numerous research projects in the areas of multi-phase power conversion, electronic power distribution systems, modeling and control, and multi-disciplinary design optimization. He developed a comprehensive geometric approach to modeling and control of high-frequency switching power converters, which is widely used for the analysis, design, and control of multi-phase ac power conversion systems. He has advised over 70 Ph.D. and M.S. students to graduation and has co-authored with them over 650 technical publications.

Dr. Boroyevich is an IEEE Fellow, a recipient of the IEEE William E. Newell Power Electronics Technical Field Award, and a past President of the IEEE Power Electronics Society (PELS). He is also the recipient of the Award for Outstanding Achievements and Service to Profession by the European Power Electronics and Motion Control Council, six prize paper awards, and several awards for excellence in research and teaching at Virginia Tech. Dr. Boroyevich was elected to the US National Academy of Engineering in 2014 for advancements in control, modeling, and design of electronic power conversion for electric energy and transportation.

Power Sharing and Stability in AC Systems with Large Penetration of Renewables

Summary: The advancement of power electronics has been a key enabler of the vast proliferation of renewable energy sources in the electrical power grid over the past several years, acting both as energy source interface and as compensation asset in HVDC and FACTS-supported ac systems for energy transport. This trend, together with the ever-increasing deployment of electronically-interfaced loads, as well as the increasing penetration of micro-grids, is fundamentally changing the nature of the sources and the loads in the electrical grid, altering their conventionally mild aggregate dynamics, and inflicting low- and high- frequency dynamic interactions that existed never before.

Integration of distributed energy resources requires power sharing and synchronization. The current approach is to operate the grid-interface converters as current sources for maximum primary-source power tracking, and to achieve the synchronization through low-bandwidth phase-locked loops. These “source inverters” demonstrate “negative incremental output resistance” which makes them susceptible to the low-frequency dynamic interactions with other sources and loads on the grid that are trying to synchronize at the same time. Additionally, as the load power converters make the final load more robust to the variations in the grid voltage, they also present a “negative incremental input resistance” which may initiate low-frequency dynamic interactions in the system voltage.

Consequently, further penetration of electronic energy sources and electronic loads will strongly depend on our ability to model, understand, design, and dynamically control subsystem power sharing and synchronization. This presentation will focus on the impedance-based approach to the analysis of subsystem interactions at grid interfaces, and illustrate detrimental instabilities as well as dynamic response improvements that could result from high-power electronic converters.

SPECIAL SESSIONS

Session 1: Current and Future Developments in Renewable Energy Date : Oct 20, 2014 - 11.10 AM
Organizers: Youcef Soufi, University of Tébessa, Tébessa, Algeria
Co-Organizers:
Summary: The main objective of the session is to present, and provide an open forum for discussing, the current, latest advances and developments in sustainable energy and bring researcher and experts to discuss and share their studies, results, conclusion and experience.
Topics of interest include, but are not limited to: <ul style="list-style-type: none">• Renewable Energy Systems Applications• Renewable energy conversion• Power Electronics and Applications in Renewable Energy• Power Quality and Filtering Techniques in Renewable Energy• High Efficiency Electrical Machines and Drives for Energy Saving• Diagnosis, Monitoring and Fault Tolerance Control in Renewable Energy

Session 2: Power Electronics for Renewable Energy Research and Applications Date : Oct 22, 2014 - 08.00 AM
Organizers: Tadashi SUETSUGU, Fukuoka University, Japan
Co-Organizers:
Summary: For the development of renewable energy applications, high quality technology of power electronics is required. Advanced power conversion technologies, ac-to dc, dc-to- dc, dc-to-ac conversions are key technology for making renewable energy applications practical. In this special session, challenging power electronics technologies which will propel breakthrough to the renewable energy applications are discussed.
In this special session, every aspect of research and technology regarding a power electronics for renewable energy are welcome to join.

Session 3: Sustainable Technology for Renewable Energy Research and Applications Date : Oct 22, 2014 - 08.00 AM and Oct 22, 2014 - 10.00 AM
Organizers: Yoshitaka NAKANISHI, Kumamoto University, Japan
Co-Organizers:
Summary: The development of renewable energy sources, in some cases, causes many problems. The high cost of manufacturing and the low efficiency of these power-generating systems may constrain economic growth. The construction or breakdown of the power-generating system can cause substantial environmental destruction. Moreover, additional devices may be required for performance retention of power generation efficiency or for overcoming energy instability. If new technologies are acquired, the development of untapped energy sources could be expected.
In this special session, every aspect of research and technology regarding a sustainable future, from bigpicture solutions to technological developments within mechanical or electrical disciplines, are welcome to join.

TUTORIALS

Session 1: Future of High Voltage DC Transmission

Date : Oct 19, 2014 - 09.00 AM

Organizers: Dr Khaled Ahmed, University of Aberdeen, UK

Co-Organizers:

Summary: The current state of the art in commercial HVDC link technology is current based HVDC or voltage based HVDC. Most existing DC transmission systems are based on current source thyristor converter technology because thyristor devices have low losses and are available in robust high current capacity single wafer capsules. On the other hand, thyristors inject significant low frequency harmonics, which must be eliminated by large passive filtering, cannot decouple the real and reactive power injected into the network, and require large passive components leading to large footprint systems. HVDC transmission systems based on voltage source converter were developed to address the shortcomings associated with HVDC transmission systems based on current source. The most known commercial technologies are ABB HVDC Light technology, Siemens HVDC PLUS and Alstom HVDC MaxSine. The main objective of the tutorial is to investigate the HVDC systems with clarifying different topologies advantages and disadvantages. The current, future, and challenges of HVDC systems will be covered. The tutorial will study HVDC operation, control and interactions with AC systems. The interactions of current source and voltage source HVDC with AC systems through controls and harmonics will be analysed. The tutorial covers also the latest modular multilevel converter based HVDC topologies. AC and DC faults analysis for different HVDC technologies will be presented. The tutorial is supported with simulation on MATLAB/SIMULINK software.

Session 2: Design and Implementation of an Electrohydraulic Hybrid Mining Shovel

Date : Oct 19, 2014 - 10.45 AM

Organizers: Dr. Omar Abdel-Baqi, Caterpillar

Co-Organizers:

Summary: The concept of hybrid architecture is penetrating the heavy industry machines including Hydraulic Mining Shovels (HMS). Achieving increased machine efficiency, productivity, and performance, reduced emissions, and prolonged lifetime are the main goals in developing hybrid shovel structures. This tutorial presents the energy management concept for an HMS, which uses high power density energy storage system to supplement the existing diesel-powered generators. A 2.25 MW ultracapacitor system is applied to improve the sluggish dynamic response of the diesel engine during sudden load changes and to limit the engine power requirements by maintaining an optimal engine speed. In addition to the engine dynamic improvement, the ultracapacitor system supports the engine during peak power demand allowing for a smaller engine size for the machine, which results in higher fuel savings and less exhaust emissions. Detailed control schemes for the converters and system are described and modeling and experimental results are also provided to verify the analyses.

Session 3: FPGA-based Digital Control Development with Matlab/Simulink and Altera DSP Builder

Date : Oct 19, 2014 - 01.15 PM

Organizers: Jason Katcha, GE Healthcare

Co-Organizers:

Summary: The Field Programmable Gate Array (FPGA) offers opportunities for improved performance and design flexibility for digital control of power electronics. However, the complexity of Hardware Description Language (HDL) coding can be a barrier for the design engineer. This tutorial will present a system modeling and development environment for FPGA-based digital control that also has the ability to auto-generate HDL code. The method uses Altera DSP Builder technology in a Matlab / Simulink environment to develop a digital power electronics controller. Altera DSP Builder libraries will be presented along with debug tools, Advanced DSP Builder capabilities and existing target hardware. This design flow allows the user to build floating point designs in low cost Cyclone class FPGAs. The tutorial will take attendees through the complete design process of a current control loop for a grid-tie solar inverter. This includes basic control design and linear simulation using Matlab/Simulink and SimPowerSystems. The linear control blocks are then replaced with DSP Builder blocks and simulation results compared. VHDL code will then be auto-generated, compiled and loaded onto a grid-tie inverter control board for actual demonstration. A 3-phase grid-tie inverter with active and reactive power control will be presented. The controller is built with Altera Advanced DSP builder blocks with math functions that have floating point capability. This includes 3-phase PLL, synchronous PI and proportional resonant controllers. The development process will be presented along with actual results from a 10kW wind turbine gridtie converter.

Session 4: Durability of PEM Fuel Cells

Date : Oct 19, 2014 - 03.00 PM

Organizers: Dr. Furkan Dundar, Meliksah University, Kayseri, TURKEY

Co-Organizers:

Summary: Proton Exchange Membrane Fuel Cells (PEMFC) or in other words Polymer Electrolyte Fuel Cells (PEFC) promise clean energy. They are efficient and provide zero emission. There were several attempts to commercialize these energy converters for various applications, however low performance, high cost and poor durability of these components delayed these expectations. PEM type fuel cells showed adequate performance at research labs, but real life tests came up with new and unexpected problems. New problems were mostly related with durability of these systems. Standard fuel cell stack and system components failed under challenging conditions of real life. New components were developed to stand real life conditions and test protocols were enhanced to simulate these new problems. Accelerated durability tests both for the components and the whole stack were designed to test improved stack components. Membranes, Catalysts, Catalyst supports, gas diffusion layers (GDL), bipolar plates and gaskets were tested under extreme conditions. Similarly, membrane electrode assemblies (MEAs) were also tested under extreme conditions and novel stack components were evaluated. Durable MEAs were subject to long term tests before real life applications. This tutorial will provide information about novel durable stack components and accelerated durability tests both for components and stacks.

Session 5: System Interactions and Application Issues for Regeneration AC Drives:

Date : Oct 19, 2014 - 04.30 PM

Organizers: Yogesh Patel, Rockwell Automation, USA
Ranga Tallam, Rockwell Automation, USA

Co-Organizers:

Summary:

Regenerative PWM rectifiers
(Yogesh Patel, Rockwell Automation, 45min)

- 1) Grid interaction of PWM rectifier with LCL filters resonance, active and passive damping
- 2) Grid impedance estimation
- 3) LCL capacitor failure causes and detection
- 4) Modulation schemes and impact on rectifier and LCL filter rating
- 5) Benefits of high switching frequency with SiC technology

Application issues

(Ranga Tallam, Rockwell Automation, 45min)

- 1) Summary of system issues with long motor leads reflected wave, common- mode issues
Filters and modulation schemes to mitigate long cable issues
- 2) AC distribution system grounding and its effects on drive operation high resistance and floating distribution
- 3) Common- mode reduction for regenerative AC drives filters, PWM schemes
- 4) System level modeling and simulation finite-element modeling tools, circuit simulation of high frequency effects

INDUSTRY PANELS

Panel 1 : Challenges and Solutions for Renewable Energy Intermittency

Date : Oct 20, 2014 - 03.00 PM

Participants:

Dan Ionel, Regal Beloit
Chris Kuhl, ZBB
Alberto Guerrero Agos, Ingeteam
Jeff Anthony, M-WERC
Tony Miller, S&C

Summary: This panel will explore diverse concepts for energy storage, control, machine and system design to overcome the dynamics and energy scheduling challenges posed by the different availability cycles of renewable energy.

Panel 2 : Renewable Energy Success Stories and Application Examples

Date : Oct 21, 2014 - 03.30 PM

Participants:

Additional Panelist, S&C
Igor Stamenokovic, Eaton
Yogesh Patel, Rockwell Automation
Rajni Burra, GE
Ajith Wijenayake, DRS Technologies
John Marino, LEM

Summary: Many previous panels have delved into the issues faced by renewables in various field applications. This panel will focus on success stories, large and small, described from the experience of the panelists in the areas of technology, economics, and sustainability.

CONFERENCE PROGRAM SUMMARY

Oct 19, 2014 Sunday			Oct 20, 2014 Monday			Oct 21, 2014 Tuesday			Oct 22, 2014 Wednesday		
Start	End	Program	Start	End	Program	Start	End	Program	Start	End	Program
08:30	17:00	Registration	08:00	17:00	Registration	08:00	17:00	Registration	08:00	17:00	Registration
09:00	10:30	Tutorial (Khaled Ahmed)	08:00	08:10	Opening Ceremony	08:00	08:45	Keynote (Alan Perlstein)	08:00	08:20	Paper Session
10:30	10:45	Coffee Break	08:10	08:20	Short Invited Speech (Chris Abele)	08:45	09:30	Keynote (Dr. Don Tan)	08:20	08:40	Paper Session
10:45	12:15	Tutorial (Omar Abdel-Baki)	08:20	08:30	Short Invited Speech (Tom Barrett)	09:30	10:15	Keynote (Dushan Boroyevich)	08:40	09:00	Paper Session
12:15	13:15	Lunch Time	08:30	09:15	Keynote (Thomas Jans)	10:15	10:30	Coffee Break	09:00	09:20	Paper Session
13:15	14:45	Tutorial (Jason Katcha)	09:15	10:00	Keynote (Bob Yaniello)	10:30	10:50	Paper Session	09:20	09:40	Paper Session
14:45	15:00	Coffee Break	10:00	10:15	Coffee Break	10:50	11:10	Paper Session	09:40	10:00	Coffee Break
15:00	16:30	Tutorial (Furkan Dundar)	10:15	11:00	Keynote (Mark Ehsani)	11:10	11:30	Paper Session	10:00	10:20	Paper Session
16:30	18:00	Tutorial (Ranga Tallam, Yogesh Patel)	11:10	11:30	Paper Session	11:30	11:50	Paper Session	10:20	10:40	Paper Session
			11:30	11:50	Paper Session	11:50	12:10	Paper Session	10:40	11:00	Paper Session
			11:50	12:10	Paper Session	12:10	13:30	Lunch Time	11:00	11:20	Paper Session
			12:10	12:30	Paper Session	13:30	13:50	Paper Session	11:20	11:40	Paper Session
			12:30	12:50	Paper Session	13:50	14:10	Paper Session	11:40	12:00	Paper Session
			12:50	13:50	Lunch Time	14:10	14:30	Paper Session	12:10	13:30	Lunch Time
			13:50	15:00	Poster Sessions	14:30	14:50	Paper Session	13:30	13:50	Paper Session
			15:00	17:00	Industry Panel	14:50	15:10	Paper Session	13:50	14:10	Paper Session
						15:10	15:30	Coffee Break	14:10	14:30	Paper Session
						15:30	17:30	Industry Panel	14:30	14:50	Paper Session
						17:00	18:00	Poster Session	14:50	15:10	Paper Session
									15:10	16:30	Poster Session
17:00	19:00	Welcome Reception				19:00	22:00	Gala Dinner	16:30	17:30	Closing Ceremony

SCHEDULE

Sunday Oct 19, 2014

Date: Oct 19, 2014 - AM		5TH FLOOR BALLROOM FOYER	
08:30-16:30	Registration		
Date: Oct 19, 2014		4TH FLOOR	HALL: WRIGHT BALLROOM
TUTORIALS			
09:00-10:30	Future of High Voltage DC Transmission, <i>Khaled Ahmed, University of Aberdeen, UK</i>		
10:30-10:45	COFFEE BREAK		
10:45-12:15	Design and Implementation of an Electrohydraulic Hybrid Mining Shovel, <i>Omar Abdel-Baqi, Caterpillar, USA</i>		
12:15-13:15	LUNCH BREAK		
13:15-14:45	FPGA-based Digital Control Development with Matlab/Simulink and Altera DSP Builder, <i>Jason Katcha, GE Healthcare, USA</i>		
14:45-15:00	COFFEE BREAK		
15:00-16:30	Durability of PEM Fuel Cells, <i>Furkan Dunder, Meliksah University, TURKEY</i>		
16:30-18:00	System Interactions and Application Issues for Regenerative AC Drives, <i>Ranga Tallam and Yogesh Patel, Rockwell Automation, USA</i>		
Date: Oct 19, 2014		LOBBY LEVEL	HALL: EMPIRE BALLROOM
17:00-19:00	WELCOME RECEPTION		

Monday Oct 20, 2014

Date: Oct 20, 2014 - AM		5TH FLOOR BALLROOM FOYER	
08:00-17:00	Registration		
Date: Oct 20, 2014 - AM		5TH FLOOR	HALL: CYRSTAL BALLROOM
08:00-08:10	Opening Ceremony		
08:10-08:20	Short Invited Speech, <i>Chris Abele, Milwaukee County Executive</i>		
08:20-08:30	Short Invited Speech, <i>Tom Barrett, Mayor of Milwaukee</i>		
KEYNOTES		5TH FLOOR	HALL: CYRSTAL BALLROOM
08:30-09:15	"Transforming the Grid from the Distribution System Out", <i>Thomas Jahns, UW-Madison</i> Session Chairs: <i>Adel Nasiri, Ilhami Colak, Fujio Kurokawa</i>		
09:15-10:00	"Customer and Market Trends in The Electrical Power Industry", <i>Bob Yanniello, Eaton Corporation</i> Session Chairs: <i>Yoshitaka Nakanishi, Tadashi Suetsugu, Halil Ibrahim Bulbul</i>		
10:00-10:15	COFFEE BREAK		
10:15-11:00	"Sustainable Energy & Vehicle Engineering", <i>Mark Ehsani, Texas A&M University College Station</i> Session Chairs: <i>Youcef Soufi, Ramazan Bayindir, Igor Stamenkovic</i>		
ORAL PRESENTATIONS			
Date: Oct 20, 2014 - AM		5TH FLOOR	HALL: JUNEAU
TOPIC: Current and Future Developments in Renewable Energy		SESSION CHAIR: Youcef Soufi	
11:10-11:30	ID: 214 Adaptation of Renewable Based Power Plants to the Energy Market Using Battery Energy Storage Systems <i>Emre Durna* (METU), Eda Uz Logoglu (Middle East Technical University), Cem Ozgur Gercek (TUBITAK MAM Energy Institute), Deniz Parlak (Gama Energy Inc)</i>		
11:30-11:50	ID: 267 Electrical Responses of Piezoelectric Device <i>Asnor Ishak* (UPNM), Elya Mohd Nor (Universiti Pertahanan Nasional Malaysia (UPNM)), Mohd Taufiq Ishak (Universiti Pertahanan Nasional Malaysia (UPNM)), Nik Ghazali Nik Daud (Universiti Pertahanan Nasional Malaysia (UPNM))</i>		
11:50-12:10	ID: 299 Maximum Power Point Tracking Using Fuzzy Logic Control for Photovoltaic System <i>Youcef Soufi* (Tebessa University)</i>		
12:10-12:30	ID: 308 Analysis of Touch Potentials in Solar Farms <i>Eduardo Enrique* (Stantec Consulting Ltd.), Jose Walsh (Stantec Consulting Ltd.)</i>		
12:30-12:50	ID: 189 A Review on Developments in the Design and Analysis of Wind Turbine Drive Train <i>Christopher Izelu* (FUPRE), Iyabo Oghenevwaire (FUPRE)</i>		
12:50-13:50	LUNCH BREAK		

Date: Oct 20, 2014 - AM		5TH FLOOR	HALL: OAK
TOPIC:		SESSION CHAIR: Ály Flores	
11:10-11:30	ID: 295 Hidden Wind Farms Potential for Residential Households Having Roof-Mounted Wind Arrester <i>Amin Amini* (IUPUI), Hesam E. Shoori J. (Oregon State University), Mustafa Kamoona (IUPUI)</i>		
11:30-11:50	ID: 297 Energy Storage Techniques for Hydraulic Wind Power Systems <i>Masoud Vaezi* (Purdue School Of Engineering), Afshin Izadian ()</i>		
11:50-12:10	ID: 294 Control of a Hydraulic Wind Power Transfer System Under Disturbances <i>Masoud Vaezi* (Purdue School Of Engineering), Afshin Izadian ()</i>		
12:10-12:30	ID: 4 Maglev Wind Generator <i>Santoshkumar Chaturvedi* (Sardar Patel College Of Engineering), Mahesh Utekar (Sardar Patel College Of Engineering)</i>		
12:30-12:50	ID: 19 Harmonic Fields Machine – The Low Cost, High Efficiency Alternative to a Conventional Generator with Frequency Converter for Wind Energy Applications <i>Vlado Ostovic* (University Of Applied Sciences)</i>		
12:50-13:50	LUNCH BREAK		
Date: Oct 20, 2014 - AM		5TH FLOOR	HALL: KILBOURN
TOPIC:		SESSION CHAIR: Tanmoy Maity	
11:10-11:30	ID: 53 Wind Farm Two-Level Hierarchical Control for Energy Optimization And Management <i>Elkhatib Ibrahim* (University Of Picardie Jules V)</i>		
11:30-11:50	ID: 57 GSC and FFT Control Strategy for Harmonic Voltage Elimination of Grid-Connected DFIG Wind Turbine <i>Maximiliano Ferrari* (UPV)</i>		
11:50-12:10	ID: 65 Policy Trends of Renewable Energy in Korea <i>Suhyeon Han* (Green Technology Center), Hyun Woo Shin (Green Technology Center)</i>		
12:10-12:30	ID: 69 Performance Analysis of Conventional PSS and Fuzzy Controller for Damping Power System Oscillations <i>Hasan Ul Banna* (Btu Germany), Alvaro Luna (Universidad Politecnica De Catalunya), Pedro Rodriguez (), Ana Cabrera (Upc Spain), Shaoping Ying (Brandenburg Technical University Germany), Hamidreza Ghorbani (Upc Spain)</i>		
12:30-12:50	ID: 70 Investigation On The Application Of Generator Circuit-Breakers In Power Plants Employing Doubly-Fed Induction Generators <i>Alejandro Marmolejo* (ABB Switzerland Ltd.), Mirko Palazzo (ABB Switzerland Ltd.), Maurizio Delfanti (Politecnico Di Milano)</i>		
12:50-13:50	LUNCH BREAK		
Date: Oct 20, 2014 - AM		4TH FLOOR	HALL: WALKER
TOPIC:		SESSION CHAIR: Thomas Jahns	
11:10-11:30	ID: 114 Prediction of Critical Generator Buses in Transient Stability Using Synchrophasor Data <i>Yunhui Wu (University Of Maine), Mohamad Musavi* (University Of Maine, Orono), Paul Lerley (RLC Engineering), Brian Conroy (Central Maine Power)</i>		
11:30-11:50	ID: 121 Anaerobic Co-Digestion of Cafeteria, Vegetable and Fruit Wastes for Biogas Production <i>Muhammad Rashed Al Mamun* (Kumamoto University, Japan), Shuichi Torii (Kumamoto University, Japan)</i>		
11:50-12:10	ID: 130 Energy Storage in a Motor <i>John Doffing* (Wichita State University), Visvakumar Aravinthan (Wichita State University), Hootan Mehraein (Wichita State University), Kim Cluff (Wichita State University)</i>		
12:10-12:30	ID: 146 An Active Power Self-Synchronizing Controller for Grid-Connected Converters Emulating Inertia <i>Daniel Remon* (Abengoa), Antoni Mir (Abengoa), Elyas Rakhshani (Abengoa), Ignacio Candela (Technical University Of Catalonia), Pedro Rodriguez (Universidad Politecnica De Catalunya)</i>		
12:30-12:50	ID: 148 Neural Network Based a Two Phase Interleaved Boost Converter for Photovoltaic System <i>Donny Radianto* (Student Member IEEE), Masahito Shovama (Kvushu University)</i>		
12:50-13:50	LUNCH BREAK		
Date: Oct 20, 2014 - AM		4TH FLOOR	HALL: MITCHELL
TOPIC:		SESSION CHAIR: Wahiba Yaici	
11:10-11:30	ID: 170 A Laboratory Environment for Real Time Testing Of Energy Management Scenarios <i>Francisco Huerta* (Institute IMDEA Energy), Jorn Gruber (Institute IMDEA Energy), Milan Prodanovic (Institute IMDEA Energy), Pablo Matataqui (Institute IMDEA Energy), Tokhir Gafurov (Institute IMDEA Energy)</i>		
11:30-11:50	ID: 178 Multi-Agent Simulator of Incentive Influence on PV Adoption <i>Andrea Borghesi* (University Of Bologna), Michela Milano (University Of Bologna DISI)</i>		
11:50-12:10	ID: 183 Reactive Power Minimization of Dual Active Bridge DC/DC Converter with Triple Phase Shift Control Using Neural Network <i>Yasen Harve* (University Of Aberdeen), Ahmed Aboushady (University Of Aberdeen), Khaled Ahmed (University Of Aberdeen)</i>		
12:10-12:30	ID: 188 Control of Active and Reactive Powers in Three Phase Inverters for Grid-Tied Photovoltaic Systems Under Unbalanced Voltages <i>Maria Mantilla* (UIS), Johann Petit (UIS), Gabriel Ordóñez Plata (Industrial University Of Santander), David Rincon (Universidad Industrial De Santander), Oscar Sierra (Universidad Industrial De Santander)</i>		
12:30-12:50	ID: 194 Prediction of the Performance of A Solar Thermal Energy System Using Adaptive Neuro-Fuzzy Inference System <i>Wahiba Yaici* (Natural Resources Canada/Canmetenergy), Evgeniy Entchev (Natural Resources Canada / Canmetenergy)</i>		
12:50-13:50	LUNCH BREAK		

Date: Oct 20, 2014 - AM		LOBBY LEVEL	HALL: EMPIRE BALLROOM BALCONIES
13:50-15:00	Poster Session		
Date: Oct 20, 2014 - AM		LOBBY LEVEL	HALL: EMPIRE BALLROOM
15:00-17:00	Industry Panel (Midwest Energy Research Consortium; Rockwell Automation, Regal Beloit, DRS Technologies, GE Energy, Ingeteam, ZBB)		
POSTER SESSION-1 (Oct 20, 2014 MONDAY, 13:50-15:00)		HALL: EMPIRE BALLROOM BALCONIES	
TOPIC:		SESSION CHAIR: Mirko Palazzo	
ID: 263 Modeling and Evaluation of Combined Photovoltaic-Battery Systems in the Decentralized German Power Generation			
<i>Stefan Sieling* (RWTH Aachen (Germany)), Julia Welsch (), Hans-Josef Allelein (Institute for Reactor Safety and Reactor Technology)</i>			
ID: 302 Use of Artificial Neural Networks for Real-Time Prediction of Heave Displacement in Ocean Buoys			
<i>Hesam E. Shoori J.* (Oregon State University)</i>			
ID: 9 A Dynamic Photo-Voltaic Integral for a Domestic Load Using ANFIS Controller			
<i>Arulmozhiyal Murugan* (Sona College of Technology), ARUL Prakash (Anna University), Murali Muniraj (Sona College of Technology)</i>			
ID: 14 Formulating Policies for Mitigating Greenhouse Gases			
<i>Oludolapo Olanrewaju* (Tshwane University of Technology), Josiah Munda (CEEP, TUT), Adisa Jimoh (Electrical department, TUT)</i>			
ID: 17 Design, Characteristic Analysis of PM Wind Generator Based on SMC Material for Small Direct-Drive Wind Energy Conversion System			
<i>Pedram Asef* (AEET)</i>			
ID: 28 Placement of Distributed Energy Storage via Multidimensional Scaling and Clustering			
<i>Arthur Barnes* (University of Arkansas), Juan Balda (University of Arkansas)</i>			
ID: 30 Analysis of Sustainable and Competitive Energy System			
<i>Michela Longo* (Politecnico di Milano), Cristian Lazaroiu (University POLITEHNICA of Bucharest), Mariacristina Roscia (University of Bergamo), Mario Pagano (University of Naple "Federico II")</i>			
ID: 32 Coaxial Magnetic Gear Analysis and Optimization			
<i>Carlos Neves* (Universidade Federal Do Pampa), Aly Flores (UFRGS)</i>			
ID: 33 Robust Battery Fuel Gauge Algorithm Development, Part 1: Online Parameter Estimation			
<i>Balakumar Balasingam* (University of Connecticut), Gopi Avvari (University of Connecticut), Bharath Pattipati (University of Connecticut), Krishna Pattipati (University of Connecticut), Yaakov Bar-Shalom (University of Connecticut)</i>			
ID: 39 Case Study of Lights Energy Saving			
<i>Alberto Dolara (Politecnico di Milano), Michela Longo* (Politecnico di Milano), Mariacristina Roscia (University of Bergamo)</i>			
ID: 42 Wind Energy Potential Assessment In Order to Produce Electrical Energy for Case Study in Divandareh, Iran			
<i>Abas Hosseini (University of Tehran), Vahid Rasouli* (University of Isfahan), Simin Rasouli (University of Agder)</i>			
ID: 45 Arrangement of Fibonacci Number Photovoltaic Modules for Power Generation Woods			
<i>Toshihiro Nishiwaki* (Department of Electrical Engin), Toshiaki Yachi(Tokyo University of Science)</i>			
ID: 47 A Study of Interconnections between Renewable Energy Source and 22.9 kV-Y Distribution Power System in Korea			
<i>Hyeong-Seung An* (Korea Electric Power Co.), Seung-Yun Hyeon (KEPCO), Myeong Ho Choi (KEPCO), Sung Hwan Bae (KEPCO), In Seong (KEPCO), Nam Hun Song (KEPCO)</i>			
ID: 48 Research & Development of the Ground Source Heat Reference Map			
<i>Ayako Funabiki (Nihon University), Takashi Sato (Nihon University), Masahito Oguma* (Nihon University)</i>			
ID: 52 Control of Solar System's Battery Voltage based on State of Charge Estimation (SOC)			
<i>Amin Hajizadeh* (University of Shahrood), Amir Hossein Shahirinia (University of Wisconsin-Milwaukee), Saeed Arabameri (), David Yu (University of Wisconsin-Milwaukee)</i>			
ID: 56 Proposals for Flexible Operation of Multi-Terminal DC Grids: Introducing Flexible DC Transmission System (FDCTS)			
<i>Kumars Rouzbehi (), Arash Miranian* (BPJ), Ignacio Candela (Technical University of Catalonia), Alvaro Luna (), Pedro Rodriguez ()</i>			
ID: 58 Energy Management System based on IEC61131 Automation Project Methodology			
<i>Renato Castro* (Faculdade Senai De Tecnologia), Luciano Chaves (Faculdade Senai De Tecnologia), Hermes Gonçalves Jr. (Faculdade Senai De Tecnologia), Carlos Pereira (UFRGS), Fausto Libano (UFRGS)</i>			

Tuesday Oct 21, 2014

Date: Oct 21, 2014 - AM		5TH FLOOR BALLROOM FOYER	
08:00-17:00	Registration		
Date: Oct 21, 2014 - AM		5TH FLOOR HALL: CYRSTAL BALLROOM	
KEYNOTES			
08:00-08:45	"Energy Industry and Research", Alan Perlstein, Mid-West Energy Research Consortium . Session Chairs: Seref Sagiroglu, Dan Ionel, Sevki Demirbas		
08:45-09:30	"Emerging Trends for Power Electronics", Dr. Don Tan, Northrop Grumman Aerospace Systems Session Chairs: Istvan Nagy, Ersan Kabalci, Haruhi Eto		
09:30-10:15	"Power Sharing and Stability in AC Systems with Large Penetration of Renewables", Dushan Boroyevich, Virginia Tech Session Chairs: Sheldon Williamson, Rosario Miceli, Yogesh Patel		
10:15-10:30	COFFEE BREAK		
ORAL PRESENTATIONS			
Date: Oct 21, 2014 - AM		5TH FLOOR HALL: JUNEAU	
TOPIC:		SESSION CHAIR: Michela Longo	
10:30-10:50	ID: 271 An Experimental Study on Modeling of Transient Response and Parameters Identification for Mn-Type Li-Ion Battery with Temperature Dependency Natthawuth Somakettarin* (Osaka University), Tsuyoshi Funaki (Osaka University)		
10:50-11:10	ID: 282 A New Approach for Relationship Between Daylight and Indoor Illumination Level Ramazan Avaz* (), Ismail Nakir (), Hakan Akca (Yildiz Technical University), Ali Aider (), Muqdesem Tanrioven ()		
11:10-11:30	ID: 292 Hybrid Microgrid Testbed Involving Wind/Solar/Fuel Cell Plants a Design and Analysis Testbed Ersan Kabalci* (Nevsehir University), Ramazan Bavindir (Gazi University), Eklas Hossain ()		
11:30-11:50	ID: 36 Robust Battery Fuel Gauge Algorithm Development, Part 0: Normalized OCV Modeling Approach Bharath Pattipati (University Of Connecticut), Balakumar Balasingam* (University Of Connecticut), Gopi Avvari (University Of Connecticut), Krishna Pattipati (University Of Connecticut), Yaakov Bar-Shalom (University Of Connecticut)		
11:50-12:10	ID: 239 System Analysis of a Small Scale PMSG-Based Grid Tied Wind Turbine System Using Back-To-Back Converter Sadik Ozdemir* (Yeditepe University), Canbolat Ucak (Yeditepe University)		
12:10-13:30	LUNCH BREAK		
Date: Oct 21, 2014 - PM		5TH FLOOR HALL: JUNEAU	
TOPIC:		SESSION CHAIR: Balakumar Balasingam	
13:30-13:50	ID: 34 Robust Battery Fuel Gauge Algorithm Development, Part 2: Online Battery-Capacity Estimation Balakumar Balasingam* (University Of Connecticut), Gopi Avvari (University Of Connecticut), Bharath Pattipati (University Of Connecticut), Krishna Pattipati (University Of Connecticut), Yaakov Bar-Shalom (University Of Connecticut)		
13:50-14:10	ID: 35 Robust Battery Fuel Gauge Algorithm Development, Part 3: State Of Charge Tracking Balakumar Balasingam* (University Of Connecticut), Gopi Avvari (University Of Connecticut), Bharath Pattipati (University Of Connecticut), Krishna Pattipati (University Of Connecticut), Yaakov Bar-Shalom (University Of Connecticut)		
14:10-14:30	ID: 43 An Organic Rankine Cycle System For Solar Thermal Power Applications Kuanrong Qiu* (Canmetenergy)		
14:30-14:50	ID: 117 Determination of Iron Loss Considering Spatial Harmonics and Tooth Pulsation Effects for Cage Motor Vinay Jaiswal* (Crompton Greaves)		
14:50-15:10	ID: 274 Design and Development of Solar Flat Mirror and Heat Storage System Evren Toygar (Dokuz Eylul University), Tufan Bayram (Solarux Alternative Energy Systems), O uzhan Da * (), Alper Yazar (), Mustafa Ta tan (), Hüseyin Çalmaz (), Ömer Kaya ()		
15:10-15:30	COFFEE BREAK		
Date: Oct 21, 2014 - AM		5TH FLOOR HALL: OAK	
TOPIC:		SESSION CHAIR: Tiefu Zhao	
10:30-10:50	ID: 55 An Indirect Method for Maximum Power Point Tracking for Photovoltaic Arrays Aleck Leedy* (Murray State University), Kristen Garcia (Murray State University)		
10:50-11:10	ID: 64 Current Sensorless Control of a Cascaded H-Bridge Photovoltaic System Nathan Marks* (University Of Newcastle), Terry Summers (University Of Newcastle), Robert Betz (University Of Newcastle)		
11:10-11:30	ID: 190 Justification and Conceptual Design of Solar-Powered Traffic Signal Systems Bill Diong* (Southern Polytechnic State Uni)		
11:30-11:50	ID: 228 Analysis Of Current Sensorless AC-DC Converter Motoshi Matsunaga* (Nagasaki University), Fujio Kurokawa (Nagasaki University, Kazuki Yoshimura ())		
11:50-12:10	ID: 238 A Versatile Test Bench for Grid Integration Investigations of Back-to-Back Wind Energy Conversion Systems Hang Yin (TU Berlin), Moritz Dereschkewitz (), Dennis Wagenitz (TU Berlin), Sibylle Dieckerhoff* (TU Berlin)		
12:10-13:30	LUNCH BREAK		

Date: Oct 21, 2014 - PM		5TH FLOOR	HALL: OAK
TOPIC:		SESSION CHAIR: Khaled Ahmed	
13:30-13:50	ID: 72 Data Processing Framework with Analytic Infrastructure for Future Smart Grid Jiro Yamazaki* (The University Of Aizu), Daishi Yoshino (The University Of Aizu), Hideyuki Fukuhara (The University Of Aizu), Hajime Tokura (The University Of Aizu), Takafumi Hayashi (The University Of Aizu), Jiro Iwase (The University Of Aizu), Joseph Tsai (The University Of Aizu), Shinji Kikuchi (The University Of Aizu), Masanari Murasawa (The University Of Aizu), Yuva Itoh (The University Of Aizu)		
13:50-14:10	ID: 80 Simulation Analysis on the Operation Model of Household Power Generation and Storage Sho Aihara* (The University Of Tokyo), Ryuji Matsuhashi ()		
14:10-14:30	ID: 84 A Control Strategy for DC-Link Voltage Control Containing PV Generation and Energy Storage -An Intelligent Approach Kumars Rouzbehi (), Arash Miranian* (BPJ), Jose Ignacio Candela (), Alvaro Luna (), Pedro Rodriguez ()		
14:30-14:50	ID: 167 Sensorless Multi-Loop Control of Phase-Controlled Series-Parallel Resonant Converter Ahmed Aboushady (University Of Aberdeen), Khaled Ahmed* (University Of Aberdeen)		
14:50-15:10	ID: 246 Improved Optimal Sizing of Hybrid PV/Wind/Battery Energy Systems Mustafa Baysal* (Yildiz Technical University), Gunes Gursoy ()		
15:10-15:30	COFFEE BREAK		
Date: Oct 21, 2014 - AM		5TH FLOOR	HALL: KILBOURN
TOPIC:		SESSION CHAIR: Amel Lachichi	
10:30-10:50	ID: 90 No-Load Power Losses and Motor Overheating Effects Versus PWM Switching Frequencies Andrew Strandt* (Rockwell Automation), Jiangqiang Hu (), Lixiang Wei ()		
10:50-11:10	ID: 95 Interconnection Between Different DC Technologies at Multi-Terminal HVDC Network Ahmed Omran* (Alexandria University), Khaled Ahmed (University Of Aberdeen), Moustafa Hamad (Arab Academy For Science, Technology, And Maritime Transport), Ibrahim Al-Arabaw (Alexandria University)		
11:10-11:30	ID: 129 Value-Driven Design and Sensitivity Analysis of Hybrid Energy Systems Using Surrogate Modeling Wenbo Du (Idaho National Laboratory), Humberto Garcia* (Idaho National Laboratory), William Binder (Georgia Institute Of Technology), Christiaan Paredis (Georgia Institute Of Technology)		
11:30-11:50	ID: 219 Modular Multilevel Converter for Wind Power Generation System Connected to Micro-Grid Toshiki Nakanishi* (Nagaoka University of Technology), Jun- chi Itoh (Nagaoka University Of Tec.), Koji Orikawa ()		
11:50-12:10	ID: 287 LCL Filter Resonance Mitigation Technique for Voltage Source Converters Adel Nasiri* (University Of Wisconsin Milwaukee), Yogesh Patel (Rockwell Automation), Lixiang Wei ()		
12:10-13:30	LUNCH BREAK		
Date: Oct 21, 2014 - PM		5TH FLOOR	HALL: KILBOURN
TOPIC:		SESSION CHAIR: Milan Prodanovic	
13:30-13:50	ID: 149 The Contribution of PV and Thermal Solar Plants in CCHP Systems to the Reduction of Costs and GHG Emissions in the Residential Sector Valentina Panone* (University Of L'Aquila), Michele Anatore (University Of L'Aquila)		
13:50-14:10	ID: 153 Simulation and Experimental Study of a Hybrid System for Different Loads Zehra Ural Bavrak* (Firat University), Muhsin Tunay Gencoqlu (Firat University)		
14:10-14:30	ID: 157 Analysis of Massive Integration of Renewable Power Plants Under New Regulatory Frameworks Josu Arrinda* (INGETEM), Jon Andoni Barrena (University Of Mondragon), Miguel Angel Rodriguez (INGETEM), Alberto Guerrero (INGETEM)		
14:30-14:50	ID: 162 Fuel Cell – Battery Hybrid Systems for Auxiliary Power Units Carsten Krupp* (Forschungszentrum Jülich GmbH), Remzi Samsun (Forschungszentrum Jülich GmbH), Ralf Peters (Forschungszentrum Jülich GmbH), Detlef Stolten (Forschungszentrum Jülich GmbH), Bruno Gnörich (RWTH Aachen University), Sydney Baltzer (RWTH Aachen University)		
14:50-15:10	ID: 172 Reconfiguration Algorithm to Reduce Power Losses in Offshore HVDC Transmission Lines Ines Sanz Alonso (), Miguel Moranchel Pérez* (University Of Alcalá), Susel Fernandez (), Francisco Javier Rodriguez (), Jorge Perez Morales ()		
15:10-15:30	COFFEE BREAK		

Date: Oct 21, 2014 - AM		4TH FLOOR	HALL: WALKER
TOPIC:		SESSION CHAIR: Koji Orikawa	
10:30-10:50	ID: 165 Dual Loop Control for Eliminating DC-Bias in a DC-DC Dual Active Bridge Converter <i>Bhanu Baddipadiqa (Missouri S&T), Mehdi Ferdowsi* (Missouri S&T)</i>		
10:50-11:10	ID: 166 A Protection Strategy for Fault Detection and Location for Multi-Terminal MVDC Distribution Systems with Renewable Energy Systems <i>Mehdi Monadi* (UPC), Cosmin Koch-Ciobotaru (Universitat Politècnica De Cat), Alvaro Luna (Universidad Politecnica De Catalunya), Ionacio Candela (Technical University Of Catalonia), Pedro Rodriguez ()</i>		
11:10-11:30	ID: 171 Low-Cost Monitoring System for Solar Farm Using Agent Technology <i>Miguel Moranchel Pérez* (University Of Alcalá), Susel Fernandez (), Ines Sanz Alonso (), Francisco Javier Rodriguez (), Jorge Perez Morales ()</i>		
11:30-11:50	ID: 317 Robust Current Observer Design for DC-DC Converters <i>Rosario Miceli* (University Of Palermo), Gionata Cimini (Universit' A Politecnica Delle Marche), Gianluca Ippoliti (Universita Politecnica Delle Marche), Giuseppe Orlando (Universita Politecnica Delle Marche), Sauro Longhi (Universita Politecnica Delle Marche)</i>		
11:50-12:10			
12:10-13:30	LUNCH BREAK		
Date: Oct 21, 2014 - PM		4TH FLOOR	HALL: WALKER
TOPIC:		SESSION CHAIR: Jiangbiao He	
13:30-13:50	ID: 173 Simulation of a Photovoltaic Panel Supported Real Time Hybrid Electric Vehicle <i>Hakan Suvak* (H), Kemal Ersan (Gazi University)</i>		
13:50-14:10	ID: 175 The IFOC Based Speed Control of Induction Motor Fed by a High Performance Z-Source Inverter <i>Ananda Kumar* (BITS-PILANI)</i>		
14:10-14:30	ID: 187 Differential Diffusion Charge Redistribution for Photovoltaic Cell-Level Power Balancing <i>Arthur Chang* (MIT), Steven Leeb ()</i>		
14:30-14:50	ID: 316 Manufacturing Tolerances Effects on PV Array Energy Production <i>Rosario Miceli* (University Of Palermo), Giovanni Cipriani (University Of Palermo), Vincenzo Di Dio (University Of Palermo), Andrea Marcotulli (University Of Palermo)</i>		
14:50-15:10	ID: 312 A Survey on Public Awareness Towards Renewable Energy in Turkey <i>Melike Ayaz (Gazi University), Erdal Irmak* (Gazi University), Suudan Gok (Gazi University), Almula Sahin (Bilkent University)</i>		
15:10-15:30	COFFEE BREAK		
Date: Oct 21, 2014		LOBBY LEVEL	HALL: EMPIRE BALLROOM
15:30-17:30	Industry Panel (Midwest Energy Research Consortium; Eaton Corporation, WE Energies, LEM USA, S&C Electric Company, ABB)		
Date: Oct 21, 2014 - AM		LOBBY LEVEL	HALL: EMPIRE BALLROOM BALCONIES
17:00-18:00	Poster Session		
Date: Oct 21, 2014 - AM		5TH FLOOR	HALL: CYRSTAL BALLROOM
19:00-22:00	GALA DINNER		

POSTER SESSION-2 (Oct 21, 2014 TUESDAY, 17:00-18:00)	HALL: EMPIRE BALLROOM BALCONIES
TOPIC:	SESSION CHAIR: Moein Lak
ID: 61 Improved Droop Control Method in Microgrid and Its Small Signal Stability Analysis <i>Wei Cao (Shanghai University; Shanghai University of Electric Power), Hu Su* (Shanghai University of Electric Power), Jia-lin Cao (Shanghai University), Jing Sun (Shanghai University of Electric Power), Daopei Yang (Shanghai University of Electric Power)</i>	
ID: 67 The Basic Characteristic of Heat and Electricity Combined Generation System Using Biomass Fuel <i>Oku Masatoshi* (University of Miyazaki), Hayashi Noriyuki (University of Miyazaki), Tashima Daisuke (University of Miyazaki), Sakoda Tatsuya (University of Miyazaki)</i>	
ID: 81 Application of Island Microgrid Based on Hybrid Batteries Storage <i>Yeting Wen* (Hunan University), Yuxing Dai (CGN), Xiwei Zhou (CGN Solar Energy Development Co.Ltd), Ye Wang (CGN), Bin Xie (CGN Solar Energy Development Co.Ltd)</i>	
ID: 93 Sliding Modes Control for Voltage Source Converter - Applied in Wind Systems <i>Kairous Djilali* (UQAT), Jean-Jacqu Beaudoin (UQAT), René Wamkeue (UQAT), Mohand Ouhrouche (UQAC)</i>	
ID: 96 Analysis of Distributed Generation Sources and Load Shedding Schemes on Isolated Island Grids Case Study: The Bahamas <i>Nadia Smith* (University of Arkansas), Roy McCann (University of Arkansas)</i>	
ID: 97 DC Distribution Systems – An Overview <i>Anand Prabhala (Missouri S&T), Bhanu Baddipadiga (Missouri S&T), Mehdi Ferdowsi* (Missouri S&T)</i>	
ID: 98 Numerical Study on the Thermal Performance of Tubular Light Pipes under Tropical Climate: Case Study from Jamaica <i>Dudley Williams* (University of the West Indies,), Jean-Francois Dorville (U.W.I Physics Department)</i>	
ID: 100 A 3D Photovoltaic Simulation Tool for Low Concentration and Sun Tracking <i>Igor Miranda* (UFRB), Rodney Guimaraes (Unime), Artur Lima (Unime)</i>	
ID: 101 Speed Control for Direct Drive Permanent Magnet Wind Turbine <i>Moein Lak* (Power Quality Research Group), Vigna Kumaran Ramachandaramurthy (Power Quality Research Group, Dep. of EE., Universiti Tenaga Nasional)</i>	
ID: 109 Design, Testing and Comparison of P&O, IC and VSSIR MPPT Techniques <i>Moin Hanif* (University of Cape Town), Raedani Ronn (University of Cape Town)</i>	
ID: 125 Integrating Flywheel Energy Storage System to Wind Farms-Fed HVDC System via a Solid State Transformer <i>Raymond Said* (Alexandria University, Egypt), Ayman Abdel-Khalik (Alexandria University, Egypt), Amr El-Zwawi (Alexandria University, Egypt), Moustafa Hamad (Arab Academy for Science, Technology, and Maritime Transport)</i>	
ID: 126 A Novel Wind Turbine Concept Based on a Sandwich-Typed PMSG and an Improved Converter <i>Q Gao* (Shanghai Jiao Tong University), F Shi (Department of Electrical Engineering, Shanghai Jiao Tong University), z Tan (School of Electrical and Electronic Engineering, Newcastle University, U.K), X.S Xie Xian (Department of Electrical Engineering, Shanghai Jiao Tong University), W.P Cao (School of Electronics, Electrical Engineering and Computer Science, Queen's Uni), X Cai (Department of Electrical Engineering, Shanghai Jiao Tong University)</i>	
ID: 128 A Comprehensive Analysis Study about Harmonic Resonances in Megawatt Grid-Connected Wind Farms <i>Gia MinhThao Nguyen* (Waseda University, Japan.), Kenko Uchida (Waseda University, Japan), Kentaro Kofuji (Fuji Electric Co., Ltd.), Toru Jintsugawa (Fuji Electric Co., Ltd.), Chikashi Nakazawa (Fuji Electric Co., Ltd.)</i>	
ID: 145 Distributed FLISR Algorithm for Smart Grid Self-Reconfiguration based on IEC61850 <i>Cosmin Koch-Ciobotaru* (Universitat Politècnica de Cat), Mehdi Monadi (UPC), Alvaro Luna (Universidad Politecnica de Catalunya), Pedro Rodriguez (Universidad Politecnica de Catalunya)</i>	
ID: 159 Smart Energy Users in Social Housing by BECA ICT Service <i>Michele Pastorelli* (Politecnico di Torino), Mariapia Martino (Politecnico di Torino), Michele Tartaglia (Politecnico di Torino), Alessandra Guerrisi (Politecnico di Torino)</i>	
ID: 163 Topology Selection for Medium-Voltage Three-Phase SiC Solid-State Transformer <i>Hossein Sepahvand (), Sachin Madhusoodhanan (), Keith Corzine (), Subhashish Bhattacharya (), Mehdi Ferdowsi* (Missouri S&T)</i>	
ID: 269 Determining Regression Constants for Calculating Global Solar Radiation at Jharkhand(India) Region, <i>Kumari Namrata* (NIT JAMSHEDPUR), SP Sharma (NIT JAMSHEDPUR), S.B.L. Seksena (NIT JAMSHEDPUR)</i>	
ID: 318 Parametrical Study of Multilayer Structures for CIGS Solar Cells <i>Rosario Miceli* (University of Palermo), Alessandro Busacca (University of Palermo), Vincenzo Rocca (University of Palermo), Luciano Curcio (University of Palermo), Antonino Parisi (University of Palermo), Alfonso Carmelo Cino (University of Palermo), Riccardo Pernice (University of Palermo), Andrea Ando* (University of Palermo), Gabriele Adamo (University of Palermo), Alessandro Tomasino (University of Palermo), Giovanni Palmisano (University of Palermo), Salvatore Stivala (University of Palermo), Massimo Caruso (), Giovanni Cipriani (University of Palermo), Diego La Cascia (University of Palermo), Vincenzo Di Dio (University of Palermo), Giuseppe Ricco Galluzzo (University of Palermo)</i>	
ID: 321 Control Subsystem Design For Wireless Power Transfer <i>Rosario Miceli* (University of Palermo), filippo Pellitteri (University of Palermo), Valeria Boscaino (University of Palermo), Antonino Oscar Di Tommaso (University of Palermo), Giuseppe Capponi (University of Palermo)</i>	
ID: 313 Heuristic Strategy For Smart Charging Of Plug-In Electric Vehicle In Residential Areas: Variable Charge Power <i>Harun Turker* ()</i>	
ID: 221 Contactless Power Delivery for Mobile Device Charging Applications <i>A Astrid (National University of Singapore), Qifan Li (National University of Singapore), Yung C. Liang* (National University of Singapore)</i>	
ID: 99 Considerations of design of PV systems in Colombia <i>German Osma Pinto* (Industrial University of Santa), Gabriel Ordonez Plata (Industrial University of Santander)</i>	

Wednesday Oct 22, 2014

Date: Oct 22, 2014 - AM		5TH FLOOR BALLROOM FOYER	
08:00-17:00	Registration		
ORAL PRESENTATIONS			
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: JUNEAU
TOPIC:		SESSION CHAIR: Mehdi Ferdowsi	
08:00-08:20	ID: 248 Model Predictive Control of Multi-Terminal DC Grids with Offshore Wind Farms Mahdi Zarif (), Arash Miranian* (BPJ)		
08:20-08:40	ID: 252 Analysis of Digital Peak Current Control DC-DC Converter Fujio Kurokawa (Nagasaki University), Shusuke Maeda* (Nagasaki University), Yudai Furukawa (Nagasaki University)		
08:40-09:00	ID: 254 Application of Wide Bandgap Power Devices in Renewable Energy Conversion Systems – Benefits and Challenges Jiangbiao He* (Marquette University), Tiefu Zhao (Eaton Corporation), Xin Jing (General Motors Corporation), Nabeel Demerdash (Marquette University)		
09:00-09:20	ID: 257 Thermal Management of Power LED System Hakan Akca* (Yildiz Technical Univeristy), Yusuf Yasa (), Ramazan Ayaz (), Ali Ajder (), Ismail Nakir (), Mugdesem Tanrioven (), Ali Durusu (Yildiz Technical Univeristy)		
09:20-09:40	ID: 320 Experimental Investigation on High Efficiency Real-Time Control Algorithms for IPMSMs Rosario Miceli* (University Of Palermo), Massimo Caruso (), Antonino Oscar Di Tommaso (University Of Palermo), Fabio Genduso (University Of Palermo)		
09:40-10:00	COFFEE BREAK		
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: JUNEAU
TOPIC:		SESSION CHAIR: Istvan Nagy	
10:00-10:20	ID: 265 Microgrid Communications: State of the Art and Future Trends Adel Nasiri* (University Of Wisconsin Milwaukee), Abedalsalam Bani-Ahmed (UW-Milwaukee), Luke Weber (UW-Milwaukee), Hossein Hosseini (UW-Milwaukee)		
10:20-10:40	ID: 288 Novel Approach of Microgrid Control Istvan Nagy* (BUTE AAIT), Peter Stumpf (BUTE), István Vaik (BUTE)		
10:40-11:00	ID: 325 Back-to-Back MVDC Link for Distribution Systems Active Connection: A Network Study. Massimiliano Chiandone* (Chiandone), Giorgio Sulligoi (), Federico Milano (), Giovanni Piccoli (), Paolo Manià ()		
11:00-11:20	ID: 225 Performance Study of a Wind-Grid System in a Semi-Arid Region and Major Integration Issues Swarna Kumary* (Deakin University)		
11:20-11:40	ID: 158 Design and Analysis of Repetitive Controllers for Grid Connected Inverter Considering Plant Bandwidth for Interfacing Renewable Energy Sources Mohsin Jamil* (National University Of Science), Rizwan Arshad (NUST), Usman Rashid (NUST), Yasar Ayaz (NUST), Muhammad Khan (University Of South Australia)		
11:40-12:00	LUNCH BREAK		
12:00-13:30			
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: JUNEAU
TOPIC:		SESSION CHAIR: Yusuf Yasa	
13:30-13:50	ID: 195 Storage Commitment and Placement for an Interconnected Island System with High Wind Penetration, Gotland Bahri Uzunoqlu* (Uppsala University), Ali Erduman (Uppsala University)		
13:50-14:10	ID: 232 Design and Analysis of Generator and Converters for Outer Rotor Direct Drive Gearless Small-Scale Wind Turbines Yusuf Yasa* (), Erkan Mese (Yildiz Technical University)		
14:10-14:30	ID: 272 Partial Shading Fault Diagnosis in PV System with Discrete Wavelet Transform (DWT) Mehrdad Davarifar* (MIS LAB), Abdelhamid Rabhi (MIS LAB), Ahmed Hajjaji (MIS LAB), Zahra Daneshifar ()		
14:30-14:50	ID: 323 An Economic Study About the Installation of PV Plants Reconfiguration Systems in Italy Rosario Miceli* (University Of Palermo), Fabio Viola (University Of Palermo), Pietro Romano (University Of Palermo), Eleonora Riva Sanseverino (University Of Palermo), Marzia Cardinale (University Of Palermo), Giuseppe Schettino (University Of Palermo)		
14:50-15:10			

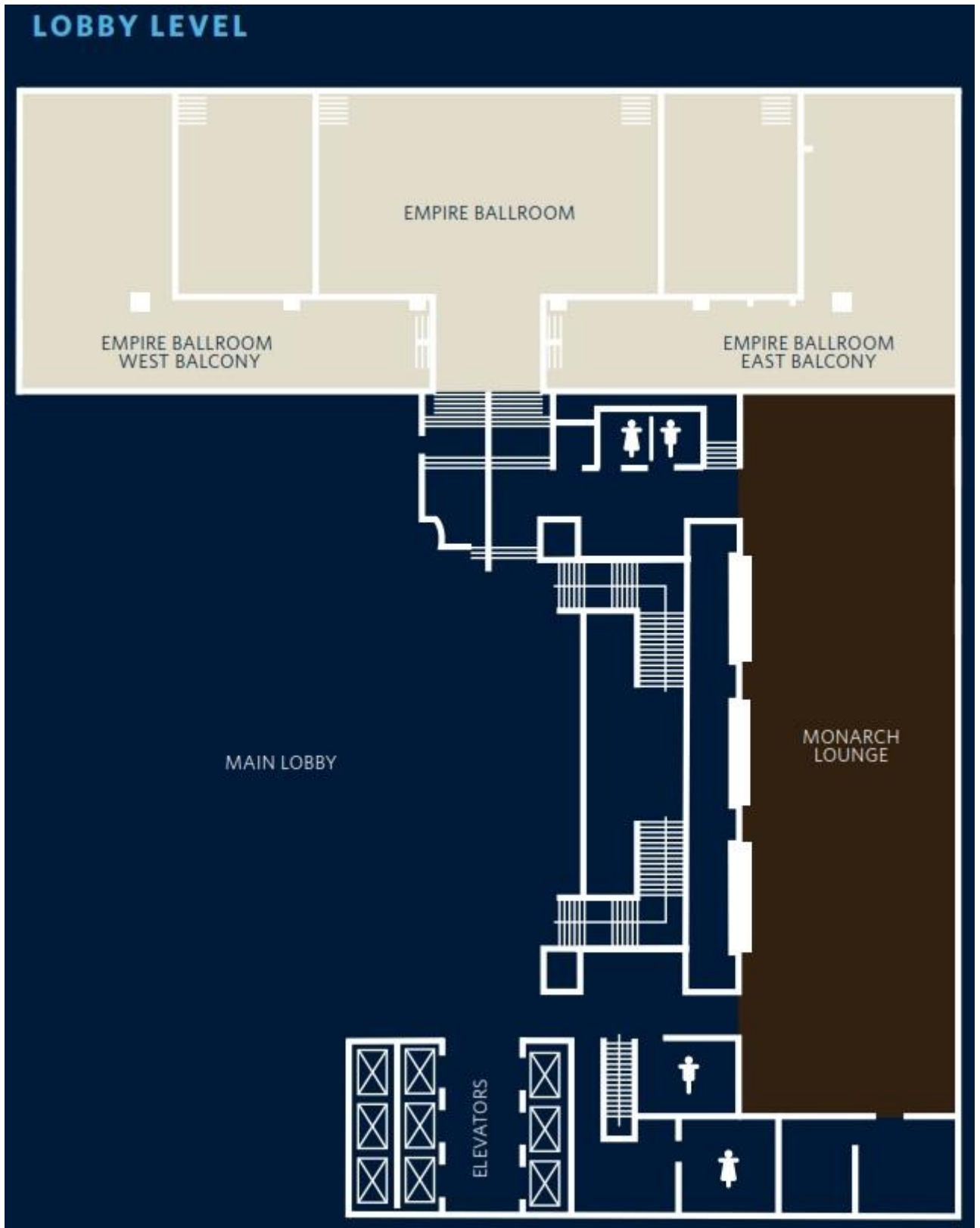
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: OAK
TOPIC: Power Electronics for Renewable Energy Research and Applications		SESSION CHAIR: Tadashi Suetsugu	
08:00-08:20	ID: 251 A Novel Two-Compensation Digital Control DC-DC Converter <i>Fujio Kurokawa (Nagasaki University), Yudai Furukawa* (Nagasaki University), Tsuyoshi Higuchi (Nagasaki University), Akihiko Katsuki (Nagasaki University), Ilhami Colak (Gazi University)</i>		
08:20-08:40	ID: 118 PEPWM Architectures for Fast Transient Response of Class E Amplifiers in EER System <i>Tadashi Suetsugu* (Fukuoka University), Xiuqin Wei (Fukuoka University), Shotaro Kuqa (Fukuoka University)</i>		
08:40-09:00	ID: 273 Input Power Factor Control of High-Frequency-Link AC/DC Converter <i>Kazuma Suzuki* (Nagoya Institute Of Technology), Takaharu Takeshita (Nagoya Institute Of Technology)</i>		
09:00-09:20	ID: 283 Study of the Suitability of Recently Proposed Quasi-Z Source Inverter for Wind Power Conversion <i>Tanmoy Maitiy* (ISM), H. Prasad (), V. Raniith Babu ()</i>		
09:20-09:40	ID: 286 Approach to Control of Hybrid Renewable Power System on the Basis of Adaptive Control with Local Parametric Optimization <i>Viktor Ten* (Nazarabayev University), Vladimir Nikulin (Binghamton University), Dana Sharipova (Nazarabayev University)</i>		
09:40-10:00	COFFEE BREAK		
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: OAK
TOPIC:		SESSION CHAIR: Ionel Vechiu	
10:00-10:20	ID: 184 Analyzing the Effect of Inverter Efficiency Improvement in Wind Turbine Systems <i>Sadik Ozdemir* (Yildiz Technical University), Ugur Selamogullari (Yildiz Technical University), Onur Elma (Yildiz Technical University)</i>		
10:20-10:40	ID: 304 Comparison of Different Small Signal Modeling Methods for Bidirectional DC-DC Converter <i>Enes Uqur* (Yildiz Technical University), Bulent Vural (Yildiz Technical University)</i>		
10:40-11:00	ID: 280 Modular Multilevel Converters with Integrated Batteries Energy Storage <i>Amel Lachichi* (ABB Corporate Research Centre)</i>		
11:00-11:20	ID: 115 Power Management of Hybrid Fuel Cell and Microturbine Based DG System in Utility Connected Mode <i>Sanjeev Navak* (NMIT Bangalore)</i>		
11:20-11:40	ID: 156 An Efficient Reconfiguration Method Based on Standard Deviation for Series and Parallel Connected PV Arrays <i>Koray Parlak* (Firat University), Mehmet Karakose (Firat University)</i>		
11:40-12:00			
12:00-13:30	LUNCH BREAK		
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: OAK
TOPIC:		SESSION CHAIR: Ismail Topaloglu	
13:30-13:50	ID: 20 An All Digital Speed Adaptive Maximum Power Point Tracker for Automotive Photovoltaic Applications <i>Sebastian Strache* (RWTH Aachen University), Ralf Wunderlich (RWTH Aachen University), Stefan Heinen (RWTH Aachen University)</i>		
13:50-14:10	ID: 22 Feasibility Analysis Design of a PV Grid Connected System for a Rural Electricfication In Ba, Fiji Islands <i>Vishal Charan* (Fiji National University)</i>		
14:10-14:30	ID: 29 Semi-Activate Supplies of Zigzag-Type Dmfcs With The Channel Paths <i>Mio Iijima* (Tokyo University of Science), Toshiaki YACHI (Tokyo University of Science), Toshiyuki Ishikake (Tokyo University of Science)</i>		
14:30-14:50	ID: 31 Design and Optimization of Surface Mounted Line Start Permanent Magnet Synchronous Motor Using Electromagnetic Design Tool <i>Ismail Topaloglu* (Cankiri Karatekin University)</i>		
14:50-15:10	ID: 38 Output Power of 1/3-Phyllotaxis FPM Under Various Stage Shape And Cell Size Conditions <i>Kosuke Mukaiyama* (Tokyo University Of Science), Toshiaki Yachi (Tokyo University Of Science)</i>		

Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: KILBOURN
TOPIC:		SESSION CHAIR: Koray Parlak	
08:00-08:20	ID: 230 A Simple-Novel Indirect Algorithm for Tracking Maximum Power Under Rapid or Slow Irradiation and Temperature Changes <i>Mustafa Gokdag* (Karabuk University), Mehmet Akbaba (Karabuk University)</i>		
08:20-08:40	ID: 200 Impacts of Wind Energy in-Feed on Power System Small Signal Stability <i>Hasan Ul Banna* (BTU Germany), Alvaro Luna (Universidad Politecnica De Catalunya), Pedro Rodriguez (), Shaoqing Ying (Brandenburg Technical University Germany), Hamidreza Ghorbani (UPC Spain)</i>		
08:40-09:00	ID: 268 Biogeography-Based Optimization Technique for Maximum Power Tracking of Hydrokinetic Turbines <i>Mohamed Shafei* (Department Of Electrical Power Eng. - Faculty Of Engineering, Cairo Univ, Egypt), Doaa Khalil (Faculty Of Engineering - Cairo University), Essam Abu El Zahab (Faculty Of Engineering, Cairo University, Egypt), Mohamed Adel Younes (Mechanical & Electrical Research Institute - National Water Research Center, Egv)</i>		
09:00-09:20	ID: 264 Rectifier Efficiency Analysis for DC Distributed Data Centers <i>Adel Nasir* (University Of Wisconsin Milwaukee), Seved Ahmad Hamidi (UW-Milwaukee), Tiefu Zhao (Eaton Corporation)</i>		
09:20-09:40			
09:40-10:00	COFFEE BREAK		
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: KILBOURN
TOPIC: Sustainable Technology for Renewable Energy Research and Application		SESSION CHAIR: Yoshitaka Nakanishi	
10:00-10:20	ID: 120 Hybrid Renewable Energy with Membrane Distillation Polygeneration for Rural Households in Bangladesh: Pani Para Village Case Study <i>Ershad Ullah Khan* (Royal Institute Of Technology), Andrew Martin (Royal Institute Of Technology)</i>		
10:20-10:40	ID: 174 Battery Time of Discharge Setting for Maximum Effectiveness in a Distribution Smart Grid Application <i>Nasser Hosseinzadeh* (Electrical And Computer Engine), Peter Wolfs (Cquniversity)</i>		
10:40-11:00	ID: 202 Measured Performance and Theoretical Validation of a Concentrator Assisted Solar Distillation System <i>Ajay Singh* (NIT, Jamshedpur, India), Yamuan Yadav (Department Of Physics, NIT Jamshedpur, India)</i>		
11:00-11:20	ID: 209 Design, Sensitivity Analysis and Fabrication of DC Linear Direct-Drive Motor (LDDM) <i>Mojtaba Ghodsi* (123), Nasser Hosseinzadeh (Electrical And Computer Engine), Abdullah Ozer (), Amer Al-Yahmadi (), Mehran Nodari Zadeqa ()</i>		
11:20-11:40	ID: 255 Biomimetic Sealing System with Hydrated Materials For Ocean Current or Tidal Power Generation <i>Yoshitaka Nakanishi* (), Yuichi Oka (Kumamoto University), Jason Sanderson (Kumamoto University), Takuro Honda (Kumamoto University), Keiji Kasamura (Kumamoto University), Hidehiko Higaki (Kyushu Sanyo University), Yuta Nakashima (Kumamoto University)</i>		
11:40-12:00			
12:00-13:30	LUNCH BREAK		
Date: Oct 22, 2014 - AM		5TH FLOOR	HALL: KILBOURN
TOPIC:		SESSION CHAIR: Sadik Ozdemir	
13:30-13:50	ID: 75 New Solar Radiation Atlas for Saudi Arabia <i>Sulaiman Alwahya* (Qassim University), Mohammad Irfan (Qassim University)</i>		
13:50-14:10	ID: 77 A Comparative Performance Analysis of C-Si And A-Si PV Based Rooftop Grid Tied Solar Photovoltaic Systems in Jodhpur <i>Vikas Singh* (IIT Jodhpur), Vivek Vijay (IIT Jodhpur), B. Ravindra (IIT Jodhpur), M. Bhatt (CPRI, Bangalore)</i>		
14:10-14:30	ID: 85 Research on Operation Optimization Strategy of Grid-Connected PV-Battery System <i>Wei Cao* (Shanghai University; Shanghai University Of Electric Power), Yang Du (Shanghai University Of Electri), Lijun Ji (), Xiaoping Qi ()</i>		
14:30-14:50	ID: 92 Flicker Mitigation Planning Solutions in Distributed Wind Power: A Real-Time Simulation Analysis <i>Moataz Ammar* (Mcqill), Geza Joos ()</i>		
14:50-15:10	ID: 113 Optimal Energy Storage Sizing Based on Wind Curtailment Reduction <i>Mohammad Moradzadeh* (Ghent University), Jan Van De Vyver (Ghent University), Lieven Vandeveld (Ghent University)</i>		

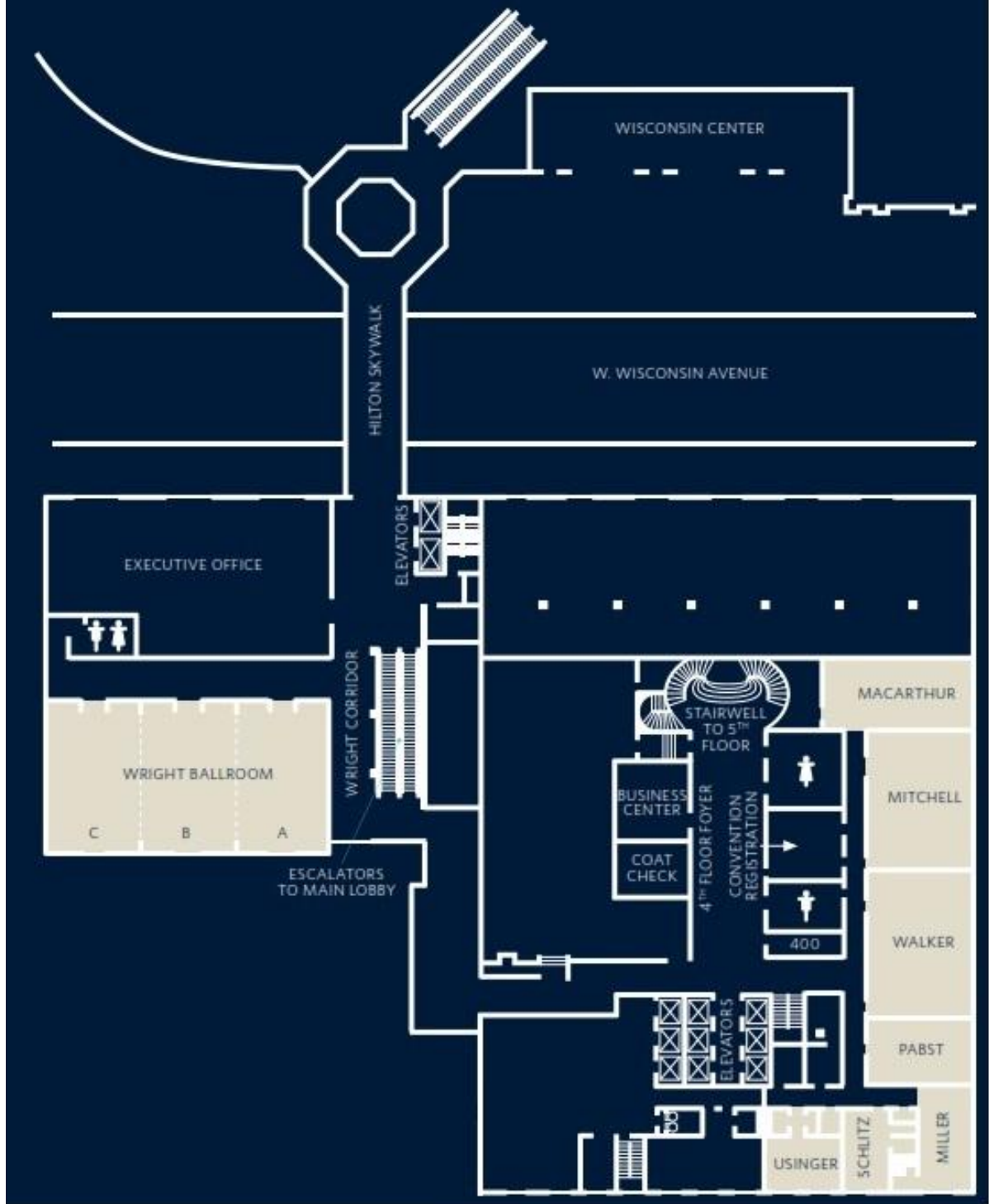
Date: Oct 22, 2014 - AM		4TH FLOOR	HALL: WALKER
TOPIC:		SESSION CHAIR: Yoshitaka Nakanishi	
08:00-08:20	ID: 240 Development of Gasoline Direct Injector Using Giant Magnetostrictive Materials <i>Mojtaba Ghodsi* (123), Hamid Rajabzadeh (), Nasser Hosseinzadeh (Electrical And Computer Engine), Nader Garjasi Varzeghani (), Amer Al-Yahmadi (), Abdullah Ozer ()</i>		
08:20-08:40	ID: 144 Annealing Effect on Efficiency of Aspilia Africana Flowers Dye Sensitized Solar Cells <i>Adenike Boyo* (Lagos State University, Lagos), Henry Boyo (University Of Lagos,Akoka, Nigeria), Sunkanmi Kesinro (Lagos State University, Lagos, Nigeria)</i>		
08:40-09:00	ID: 176 Design of an Induction Generator with Copper Squirrel Cage Rotor and Asymetric Slots <i>Carlos Nascimento* (UFRGS), Ály Flores (UFRGS)</i>		
09:00-09:20	ID: 181 Improved Radiofrequency Energy Harvesting Based on a Rectenna Array System and Its Feasibility Evaluation in Urban Environments <i>Jayme Milanezi Junior* (University Of Brasilia), João Paulo Lustosa Da Costa (University Of Brasilia), Edison De Freitas (Federal University Of Santa Maria (UFSM), Santa Maria, Brazil)</i>		
09:20-09:40	ID: 218 Sustainable Electric Energy Microgeneration System Based on Electric Eels <i>Jayme Milanezi Junior* (University Of Brasilia), João Paulo Lustosa Da Costa (University Of Brasilia), Edison De Freitas (Federal University Of Santa Maria (UFSM), Santa Maria, Brazil), José Antônio Gomes (National Institute Of Amazonian Research, Manaus, Brazil), Renata Schmidt (National Institute Of Amazonian Research, Manaus, Brazil)</i>		
09:40-10:00	COFFEE BREAK		
Date: Oct 22, 2014 - AM		4TH FLOOR	HALL: WALKER
TOPIC:		SESSION CHAIR: Rosario Miceli	
10:00-10:20	ID: 142 Control of A Microgrid-Connected Hybrid Energy Storage System <i>Jonel Vechiu* (Estia Institute Of Technology), Aitor Etxeberria (UPV/EHU, Estia), Camblong Haritza (UPV/EHU, Estia), Quentin Tabart (UPV/EHU, Estia)</i>		
10:20-10:40	ID: 326 Impact of Distributed Generation on Power Losses on an Actual Distribution Network. <i>AMassimiliano Chiandone* (Chiandone), Giorgio Sulligoi (University Of Trieste), Riccardo Campaner (), Alessandro Massi Pavan (University Of Trieste), Paolo Manià (), Giovanni Piccoli ()</i>		
10:40-11:00	ID: 322 Reduction of The Uncertainty in the Measurements of Magnetic Fields <i>Rosario Miceli* (University Of Palermo), Ciro Spataro (University Of Palermo), Mariacristina Roscia (University Of Bergamo)</i>		
11:00-11:20	ID: 324 Economical Evaluation Of Ecological Benefits Of The Demand Side Management <i>Rosario Miceli* (University of Palermo), Fabio Viola (University of Palermo), Pietro Romano (University of Palermo), Diego La Cascia (University of Palermo), Michela Longo (Politecnico di Milano), Ganesh Sauba (DNV.GL)</i>		
11:20-11:40			
12:00-13:30	LUNCH BREAK		
Date: Oct 22, 2014 - AM		4TH FLOOR	HALL: WALKER
TOPIC:		SESSION CHAIR: Ramazan Bayindir	
13:30-13:50	ID: 151 A Proportional Resonant Controller Tuning Method for Grid Connected Power Converters with LCL+Trap Filter <i>Weiyi Zhang* (SEER), Toni Cantarellas (), Daniel Remon (Abengoa), Alvaro Luna (Universidad Politecnica De Catalunya), Pedro Rodriguez ()</i>		
13:50-14:10	ID: 155 Zigbee Enabled LED Luminaire - Enhanced Design and Control <i>Shamshudeen J (C-DAC), Dhivva G* (C-DAC), Subaashini Krishnamurthy (C-DAC), Sridevi S (C-DAC), Pitchiah R (Deity)</i>		
14:10-14:30	ID: 290 Microgrid Facility at European Union <i>Ramazan Bayindir* (Gazi University), Erdal Bekiroglu (A. Izzet Baysal University), Eklas Hossain (), Ersan Kabalci (Nevsehir University)</i>		
14:30-14:50	ID: 291 Microgrid Facility Around Asia and Far East <i>Eklas Hossain (), Ersan Kabalci (Nevsehir University), Ramazan Bayindir* (Gazi University), Sevki Demirbas (Gazi University)</i>		
14:50-15:10	ID: 168 A New Control Strategy for a Class of Multiple-Input DC-DC Converters <i>Anand Prabhala (Missouri S&T), Mostafa Khazraei (), Mehdi Ferdowsi* (Missouri S&T)</i>		
Date: Oct 22, 2014 - AM		4TH FLOOR	HALL: MITCHELL
TOPIC:		SESSION CHAIR: Mehmet Ilyas Bayindir	
08:00-08:20	ID: 210 A New Real-Time Reconfiguration Approach based on Neural Network in Partial Shading for PV Arrays <i>Mehmet Karakose* (), Mehmet Baygin (Firat University), Koray Parlak ()</i>		
08:20-08:40	ID: 212 Multi-Objective Optimal Design of Hybrid Renewable Energy Systems Using MOEAD <i>Rui Wang* (National Univ. Of Defense Tech), Tao Zhang (College Of Information System And Management, National Univ. Of Defense Tech.)</i>		
08:40-09:00	ID: 213 Application of Reaching Law Approach to Design of Sliding Mode Voltage Controller for PV System <i>Mehmet Ilyas Bayindir* (Firat University), Koray Parlak (Firat University)</i>		
09:00-09:20	ID: 231 Design Phases for Grid Connected PV System <i>Muhammad Hafeez Abbasi* (King Saud University), Abdulhameed Al-Ohaly (King Saud University), Yasin Khan (King Saud University), Hanv Hasanien (KSU)</i>		
09:20-09:40	ID: 270 Stochastic Model for PV Sensor Array Data <i>Faris Alfaris (North Carolina State University), Ahmad Alzahrani (Missouri S&T), Jonathan Kimball* (Missouri S&T)</i>		

Date: Oct 22, 2014 - AM	LOBBY LEVEL	HALL: EMPIRE BALLROOM BALCONIES
15:10-16:30	Poster Session	
Date: Oct 22, 2014	LOBBY LEVEL	HALL: EMPIRE BALLROOM
16:30-17:30	Closing Ceremony	
POSTER SESSION-3 (Oct 22, 2014 WEDNESDAY, 15:10-16:30)		HALL: EMPIRE BALLROOM BALCONIES
TOPIC:		SESSION CHAIR: Harun Turker
ID: 177 A Hybrid Power Flow Controller for Flexible Operation of Multi-Terminal DC Grids		
<i>Kumars Rouzbehi (), Arash Miranian* (BPJ), Ignacio Candela (Technical University of Catalonia), Alvaro Luna (Universidad Politecnica de Catalunya), Pedro Rodriguez ()</i>		
ID: 199 All-Digital Current Control for Capacitor-Free Multi-Channel LED Drivers		
<i>Stefan Dietrich* (RWTH Aachen University), Kai Lu (RWTH Aachen University), Sebastian Strache (RWTH Aachen University), Ralf Wunderlich (RWTH Aachen University), Stefan Heinen (RWTH Aachen University)</i>		
ID: 208 Modeling and Simulation for the Power Sharing of Micro-Grid Inverter		
<i>Furong Liu (Wuhan University of Technology), Xu Bingrong* (Wuhan University Of Technology)</i>		
ID: 227 A Novel Sensorless Model Control DC-DC Converter		
<i>Fujio Kurokawa (Nagasaki University), Shota Hirotaki* (Nagasaki University)</i>		
ID: 243 Maximum Power Extraction in Wave Energy Harvesting System with Magnetostrictive Material		
<i>Jongwon Shin (Virginia Tech), Khatib Mudassar (), Mukherjee Subhajyoti (Virginia Tech), Khai Ngo* ()</i>		
ID: 245 Predicting Probabilistic Wind Power Generation Using Nonparametric Techniques		
<i>Soraida Aguilar Vargas* (Pontifical Catholic University), Reinaldo Castro Souza (Pontifical Catholic University of Rio de Janeiro), José Francisco Pessanha (Rio de Janeiro State University)</i>		
ID: 249 Suppression Control of Module Capacitor Voltage Fluctuation for Cascade STATCOM		
<i>Yu Sugahara* (Nagoya Institute of Technology), Takaharu Takeshita (Nagoya Institute of Technology)</i>		
ID: 250 Estimation of Thermodynamic Properties of Liquid Fuel from Biomass Pyrolysis		
<i>Sou Hosokai* (AIST, Japan), Koichi Matsuoka (AIST), Koji Kuramoto (AIST), Yoshizo Suzuki (AIST)</i>		
ID: 285 Modified Control and Effective Energy Storage Sizing for Efficiency and Power Quality Improvement; CO₂ and Cost Reduction, in an Island Energy Network		
<i>Adel Nasiri* (University of Wisconsin Milwaukee), Ashishkumar Solanki (UW-Milwaukee), Vijay Bhavaraju (Eaton Corporation), Bora Novakovic (UW-Milwaukee), Yakov Familant (Eaton Corporation), Edward Buck (Eaton Corporation), Qiang Fu (Eaton Corporation)</i>		
ID: 229 A High Boost Ratio DC-DC Converter for Low Voltage Fuel Cell		
<i>Haruka Hatsuyado* (Tokyo University of Science), Nobukazu Hoshi (Tokyo University of Science)</i>		
ID: 119 MPPT Method for PV Modules Using Current Control-Based Partial Shading Detection		
<i>Balaji Veerasamy* (Nagoya Institute of Technology), Wataru Kitagawa (Nagoya Institute of Technology), Takaharu Takeshita (Nagoya Institute of Technology)</i>		
ID: 314 Optimal Charge Control of Electric Vehicles in Parking Stations for Cost Minimization in V2G Concept		
<i>Harun Turker* ()</i>		
ID: 319 CIGS PV Module Characteristic Curves Under Chemical Composition and Thickness Variations		
<i>Rosario Miceli* (University of Palermo), Giovanni Cipriani (University of Palermo), Vincenzo Di Dio (University of Palermo), Ciro Spataro (University of Palermo), Giuseppe Ricco Galluzzo (University of Palermo), Vincenzo Rocca (University of Palermo), Luciano Curcio (University of Palermo), Antonino Parisi (University of Palermo), Alfonso Carmelo Cino (University of Palermo), Riccardo Pernice (University of Palermo), Andrea Ando' (University of Palermo), Gabriele Adamo (University of Palermo), Alessandro Tomasino (University of Palermo), Salvatore Stivala (University of Palermo), Alessandro Busacca (University of Palermo), Giovanni Palmisano (University of Palermo), Diego La Cascia (University of Palermo)</i>		
ID: 253 Single Phase Induction Motor Alternate Start-up and Speed Control Method for Renewable Energy Applications		
<i>Rachid Darbali* (University Of Puerto Rico), Andres Diaz (), Daniel Merced (), Eduardo Ortiz ()</i>		
ID: 310 Optimal Placement and Sizing of Distributed Generation Sources Considering Network Parameters and Protection Issues		
<i>Adel Nasiri* (University Of Wisconsin Milwaukee), Seyed Hossein Sadeghi (Amirkabir University Of Technology), Hossein Askarian Abyaneh (Amirkabir University), Amir Hosseini (Amirkabir University)</i>		
ID: 311 Frequency-Dependent Modeling of Grounding System for Wind Turbine Lightning Transient Studies		
<i>Adel Nasiri* (University Of Wisconsin Milwaukee), Vali Mashayekhi (Amirkabir University Of Technology), Seyed Hossein Sadeghi (Amirkabir University Of Technology), Rouzbeh Moini (Amirkabir University Of Technology), Hamidreza Karami (Buali Sina University), Keyhan Sheshyekani (Amirkabir University Of Technology)</i>		

PLAN of Conference Saloons



4TH FLOOR



5TH FLOOR



Presentation Instruction for ICRERA Presenters

Oral presentation

Presentation time is 15 min. Question/Discussion is 5 min. Organizer will prepare Windows 7 desktop computer with MS Office Standart 2010 in each room. Presenter can also bring their own laptop. PPT files should be uploaded to desktop computer during recess before the session. Presenter should meet session chair(s) during recess before the presentation and pass a brief bio or business card to session chair(s).

Poster presentation

Size of poster is 70*100 mm. Use the sheet of poster with the shorter side at the top. In recess before the session, presenter must meet session chair. Fail of meeting with session chair may be regarded as "No show". Poster must be removed when session is finished.

Note that oral and poster presentation of ICRERA have same value. Both of them are included in candidates for Best Paper Award and candidates for selected papers to be endorsed to IEEE Trans. On Industrial Electronics and IJERER.

Internet:

Wireless Internet access will be available conference saloon and halls.

General Information

Welcome Reception:

The Hilton
Empire Ballroom, Upper Lobby
Sunday, October 19, 2014
5:00 pm – 7:00 pm

VIP Reception:

The Brewhouse Inn and Suites
1215 N. 10th Street, Milwaukee, WI 53205
Monday, October 20, 2014
5:30 pm – 7:30 pm

Gala Dinner:

The Hilton
Crystal Ballroom
Tuesday, October 21, 2014
7:00 pm – 10:00 pm