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IEEE Galveston Bay Section

Joint Technical Societies Chapters

Present

**"POWER and ENERGY WEEK"**

**with special Webinars**

**on**

**TUESDAY-July 26, THURSDAY-July 28 and SATURDAY- July 30**

**TUESDAY- July 26th, 12:00 PM US-Central**

**TOPIC:** "**New Challenges in Transportation Electrification, Powertrain Drives & New Power Electronics Architectures"**

**SPEAKER: Dr Osama Mohammed, Distinguished Professor and Associate Dean of Research, Director of Energy Systems Research Laboratory. Florida International University**

**PRESENTATION:**

**Electrification of the transportation industry and large-scale integration of renewable energy sources into the power grid represent some of the most disruptive transformations of our time. This engineering field brings ideas from Computational electromagnetics, power and energy, electromechanics, IoT, and artificial intelligence. This enables the creations of efficient, reliable, safe, and environmentally friendly means of implementing these ideas in new applications.**

**In this talk, we will share our views on the future of these applications through a detailed**

**discussion of the roles of computational modeling, Power electronics architectures,**

**devices, the embedding of components, challenges of utilizing magnetics, and thermal**

**management under higher operational frequencies, currents, and voltages. We will**

**discuss packaging issues and describe some applications requiring increased power**

**densities. This part of the presentation will identify the areas of research, which hold the**

**promise of high impact and potential for achieving improved performance.**

**PRESENTER:**

**Dr. Osama A. Mohammed is a Distinguished Professor of Electrical Engineering and the Associate Dean of Research at the College of Engineering and Computing, Florida**

**International University. He has researched various topics in computational methods, power and energy systems, design optimization, and physics-based modeling in electric**

**drive systems, power electronics, and other low-frequency environments. He is world-renowned for his contributions in these areas. He has significant research in electromagnetic signatures, EMI, wide bandgap devices, and movable power systems modeling and analysis. He currently has active research projects for several federal agencies in these areas. In addition, he has also completed projects in power system operation, smart grid distributed control and interoperability, cyber-physical systems, and co-design of cyber and physical components for future energy systems applications.**

**Professor Mohammed has published more than 850 articles in refereed journals, and other IEEE refereed international conference records. He holds 19 patents. His publications are highly cited, and his presentations are frequently invited, at research, academic and industrial organizations, and conferences worldwide. He also authored a book and several book chapters. Dr. Mohammed is a Fellow of the National Academy of Inventors, a Fellow of IEEE and a Fellow of the Applied Computational Electromagnetic Society. He received the prestigious IEEE Power and Energy Society Cyril Veinott Electromechanical Energy Conversion Award, the 2012 Outstanding Research Award from Florida International University, the 2017 outstanding doctoral mentor, and the university distinguished Professor honors in 2018.**

**Complimentary Registration on VTool**

**https://events.vtools.ieee.org/event/register/318812**

**Deadline for registration: Sunday, July 24th, 5:00 PM US-Central**

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**THURSDAY-July 28th, 11:00 AM US-Central**

**TOPIC: Grid Modernization: Technological Advancements Beyond Smart Grid**

**SPEAKER: John McDonald, PE, IEEE Life Fellow**

**PRESENTATION:**

This talk will familiarize participants with a vision for Grid Modernization, focusing on technological advancements beyond Smart Grid. The technological advancements include discussions of key industry/societal trends, Smart Grid concepts, holistic solutions, integration of microgrids and distributed generation, and Advanced Distribution Management System (ADMS) software applications. The talk will also cover feeder automation business models, managing different types of data, big data, analytics, enterprise data management, Smart Grid standards and interoperability, and Smart Grid deployments and lessons learned.

**PRESENTER:**

John D. McDonald, P.E., is Smart Grid Business Development Leader for GE’s Grid Solutions business. John has 48 years of experience in the electric utility transmission and distribution industry. John received his B.S.E.E. and M.S.E.E. (Power Engineering) degrees from Purdue University, and an M.B.A. (Finance) degree from the University of California-Berkeley. John is a Life Fellow of IEEE (member for 51 years), and was awarded the IEEE Millennium Medal, the IEEE Power &amp; Energy Society (PES) Excellence in Power Distribution Engineering Award, the IEEE PES Substations Committee Distinguished Service Award, the IEEE PES Meritorious Service Award, the 2016 CIGRE Distinguished Member Award, the 2016 CIGRE USNC Attwood Associate Award, the 2021 CIGRE Honorary Member Award and the Smart Energy Consumer Collaborative (SECC) Lifetime Achievement Award. John is Past President of the IEEE PES, the VP for Technical Activities for the US National Committee (USNC) of CIGRE, the Past Chair of the IEEE PES Substations Committee, the IEEE Division VII Past Director, and a member of the National Academy of Engineering. John was on the Board of Governors of the IEEE-SA (Standards Association), is an IEEE Foundation Director, and is a Founding Board Member and Treasurer of the SECC. John received 2009 Outstanding Electrical and Computer Engineer Award and the 2023 Distinguished Engineering Alumni Award from Purdue University. John teaches a Smart Grid course at the Georgia Institute of Technology, a Smart Grid course for GE, and Smart Grid courses for various IEEE PES local chapters as an IEEE PES Distinguished Lecturer (since 1999). John has published one hundred fifty papers and articles, co-authored five books, and has one US patent.

**Complimentary Registration on VTool:**

**https://events.vtools.ieee.org/event/register/318560**

**Deadline: July 26th, 5:00 PM US-Central**

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**Saturday, July 30th, 11:00 AM US-Central**

**TOPIC:**  "**Impact Analysis of EV load on Low-Voltage Distribution Systems".**

**SPEAKER: Syed Rahman, Texas A&M University**

**PRESENTATION:**

Achieving net-zero emissions is a global challenge, requiring technical innovations, policy making, investment, and cultural change. A major aspect of this challenge is the electrification of aerial, marine, and ground transportation. The past decade has witnessed the exponential growth of electric vehicles (EVs), aided by improved design, cost reduction, tax credits, and environmental awareness. To meet this growth rate, charging infrastructure must be developed, modernized, and improved as per the charging demand. However, the impact of adding EVs as charging loads to the utility grid makes this infrastructure update more complex, especially in low-voltage distribution systems. Thus, to address this complex process, a thorough understanding of the underlying charging speeds, existing load demand, and voltage profile/power quality of the utility grid is necessary.

This talk focuses on exploring the key players of EV impact on utility grids. Different charging strategies to demonstrate the power variance as a function of charging speed will be discussed, followed by design requirements of onboard vs offboard chargers. Datasheets of a few commercial chargers will be examined. The impact of adding EVs on the grid vitals like voltage profile, peak load, average demand, and unit pricing will be analyzed. Finally, case studies of a 33-bus IEEE system, with an estimation of EV penetration capability, and potential solutions to maximize the penetration will be presented.

**PRESENTER:**

Syed Rahman (S’21) received B.E (Electrical and Electronics Engineering-Gold Medal) from Osmania University, India in 2012. He completed his M. Tech (Specialization: Machine Drives and Power Electronics) from IIT Kharagpur, India in 2014. He is currently pursuing a Ph.D. degree in electrical engineering from Texas A&M University, USA. He worked as an R&D “Design Engineer” at GE Healthcare, India from Oct 2014 to Jan 2016. From Feb 2016 to Dec 2019, he worked as a “Research Associate” at Qatar University, on a research project funded by Qatar Foundation. His areas of interest include renewable energy integration, multilevel inverters, cold-ironing in marine vessels, and impact analysis of slow/fast charging solutions on the utility grid. He has published more than 25 refereed journal articles, 25 conference papers, and 1 US patent in the field of power electronics and renewable energy integration. He was also a recipient of the Thomas W. Powell &#39;62 and Powell Industries Inc. Fellowship in 2021 and is an Energy institute Fellow of Texas A&M Energy Institute for the year 2022-2023.

**Complimentary Registration on VTool**

https://events.vtools.ieee.org/event/register/318561

**Deadline: Thursday July 28th , 5:00 PM US-Central**

GBS "PES WEEK" Coordinator:

Dr Zafar Taqvi, Chair GBS PES Joint Chapter, University of Houston Clear Lake

Dr Irfan Khan, Vice Chair, GBS PES Joint Chapter, Texas A&M University

GBS Website //r5.ieee.org/gb