Madison Section Newsletter

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Upcoming Meetings

Grid-Forming Inverters: A Critical Asset for the Power Grid
IEEE-Madison PES/IAS Chapter
Date: Thursday, November 14th,
UW Engineering Centers Building, Room 1025
Event Info

December YP/ECN: Hi-Tech Toys
IEEE-Madison Joint Young Professional/ Entrepreneur and Consultants Network
Date: Thursday, December 5th
Secto67, 56 Cory Street, Madison
Event Info

December Section Meeting: Volunteer Appreciation Social
IEEE-Madison Section
Date: Thursday, December 19th
Brasserie V, 1923 Monroe Street, Madison
Event Info

Upcoming Meetings Info

Past Meeting Reviews

News/Announcements

Section Elections! See below for more information

Sponsored Content: DLS EMC, Maydm M2E2 Event for Students

Upcoming Meetings

November PES/IAS Meeting

"Grid-Forming Inverters: A Critical Asset for the Power Grid"

- Thursday, November 14th, 11:30 AM to 1:00 PM
- Professor Robert Lasseter, UW-Madisn ECE Department
- Location:
  ; UW-Madison, Engineering Centers Building (Room 1025)
  1550 Engineering Drive, Madison WI 53706
- Please Register at the IEEE-Madison event page.

Talk: Massive penetration of variable renewable energy (RE) in addition to other distributed energy resources (DER) poses major operational challenges to utility system operators. Traditionally, power system operation assumes synchronous generators provide frequency stability via their stored kinetic energy. With increasing inverter-based sources the system's inertia is reduced and frequency stability becomes a concern. This increased penetration represents ground zero for the disruptio n of the global energy landscape caused by DER. The overarching objective of our work is to transform the installation of very large numbers of inverter based sources from a major potential liability into a critical asset for both the power grid and utility customers.he technical features of the D-VAR VVO will be introduced and serve to motivate stories and surprises from the VVO product.

Bio: Robert H. Lasseter received a Ph.D. in Physics from the University of Pennsylvania, Philadelphia in 1971. He was a Consulting Engineer at General Electric until he joined the Department of Electrical and Computer Engineer at University of Wisconsin-Madison in 1980. Dr. Lasseter is internationally recognized as one of the earliest and most influential pioneers in the microgrid field. His microgrid architecture is widely implemented and recognized for its plug-and-play flexibility. His professional career during the past 40 years has been dedicated to applying pow er electronics to utility systems. His recent work includes PV microgrids, and inverter-based resources in the power grid.

IEEE-Madison Joint Young Professional/ Entrepreneur and Consultants Network

"Hi-Tech Toys"

- Thursday, December 5th, 6:00 PM to 8:00 PM
- Networking/Social and FUN!
- Location:
  Sector67
  56 Cory Street, Madison WI 53704
- Please Register at the IEEE-Madison event page.

< p>**Talk:** The Holiday Season is just around the corner. What Hi-Tech consumer items have impressed you? Bring your favorite one and be prepared to discuss it's technical merits. Also, be prepared to give give a brief introduction to what you do ("Elevator Speech"). This is your opportunity to discuss your company, or your consulting expertise while having fun. .

December Section Meeting

"Volunteer Appreciation Social"

- Thursday, December 19th, 6:00 PM to 8:00 PM
- Location:
  Brasserie V
  1923 Monroe Street, Madison WI 53711
- Please Register at the IEEE-Madison event page.

Volunteer Appreciation Event:

IEEE-Madison Volunteers will be honored. Free appetizers and cash bar will be available for IEEE members and guests. Volunteers will have free drink tickets.

For 2019, the volunteers to be honored are Nate Toth - Chair and Webmaster, Hugh Schmidt - Vice Chair, MIke Stemper - Secretary, Tom Kaminski - ECN Chair, Newsletter Editor and Treasurer, Dennis Bahr - Engineering in Medicine and Biology Chapter Chair, San Rotter - Life Member Affinity Group Chair, Charles Cowie - Life Member Affinity Group Vice Chair, Scott Olsen - Membership Development Chair, Members at Large: Clark Johnson, Craig Heilman, Dennis Bahr, Sandy Rotter. Also Dan Ludois -- PES/IAS Chair, Eric Severson - PES/IAS Vice Chai r, Mike Stemper - PES/IAS Secretary/Treasurer.

Social Event

Meet your IEEE colleagues and their guests socially.

Review of Past Meetings

- **October PES/IAS Meeting:** On 2019-10-21, Patrick Flannery of American Superconductor (AMSC) spoke to the Madison chapter of PES/IAS regarding STATCOM for medium voltage distribution grids. A STATCOM fills a niche similar to an SVC (Static VAR Compensator). However, it is continuous rather than discrete and provides both leading and lagging action.

  Classic voltage control devices for distribution (such as regulators) work in a time domain of minutes, while solar events (such as clouds passing) happen on the order of seconds. Also, while shunt capacitors provide voltage support in both the downstream and upstream directions, regulators only help the downstream direction.

  Since distribution construction practice for installing volta ge is well established, one of AMSC's design goals for the STATCOM was to be able to install them with similar, if not identical, practices. This gives distributions companies a great deal of flexibility in placement. These devices can be mounted on a classic H-frame structure, which eliminates the need for infrastructure such as pads or fencing.

  Mr. Flannery gave several examples of projects that AMSC has completed, along with summaries of the outcomes. He also cautioned that this device is not a panacea and will not solve every voltage profile issue.
- **October Joint EMB/Section Meeting:** On October 25th, Dr. Hari Srikanth. Dept. of Physics, University of South Florida gave an excellent talk on his research into magnetic nano-particles that are injected into a subject for diagnostic or treatment purposes. Because the nano-particles are potentially injected into human, the material must be approved as safe by the FDA. This limits the material to very few possibilities. Either a magnetic material must be encapsulated in an inert material, such as gold, or the material has to be inherently safe.

The research led to using a particular approved iron-oxide that did not have high magnetic properties. For cancer treatment, the particles will be steered to the region of the tumors by a static magnetic field, and then heated by applying an AC field. The material heats up through hysteresis, so it is important to develop material with a large hysteresis. The primary method used was to change the shape of the material though timed application of various temperatures and chemicals as the particles are formed. At this point, there is one German company that has been approved to use the technique in the USA on human subjects.

- **November Joint LMAG/Section Meeting:** On November 7th, Winnie Karanja of Maydm gave an impassioned talk about the need to involve young girls i n STEM related activities. Winnie gave several examples of how girls, particularly minority girls, need to be exposed to STEM careers and involve them in creative activities that help them understand that financially rewarding and interesting careers are possible. IEEE members can potentially help by mentoring youth, providing work-related experiences, and help to develop curriculum.

  The IEEE-Madison Section has agreed to match any contributions to Maydm, a 501-(c)(3) non-profit organization, by IEEE Members. Please mark you contribution to Maydm as "IEEE-Matching" and send the contribution to Maydm, 3330 University Ave Suite 202, Madison, WI 53705.

  Do you know a middle school or high school student who might be interested in STEM careers? Maydm is hosting a "Maker's Epic Experience" on Saturday, December 7th. At the event you can "program your own animations and characters to build your own 3D interactive story, and explore wearable technology with Micro:bit tiny computers!" See the poster at the end of this email to get details, or register at this link.

Upcoming Meetings

- **PES/IAS Meeting:** Emeritus Professor Bob Lasseter, a noted expert on the Micro Grids, will discuss Grid-Forming Inverters. The meeting is at noon in the Engineering Centers building at the Western end of Engineering Drive. Check the UW-Madison Parking lot status (Lot 17 is closest), or park on nearby streets.
- **Joint YP/ECN Meeting:** This evening meting at Sector67 will be an opportunity to meet socially and hear your professional colleague's ideas about their favorite hi-t ech toys.
- **Volunteer Appreciation Event:** Join us on December 19th at 5:30 PM to 8:00 PM for a social event honoring all of the IEEE-Madison Section Volunteers for 2019. The event will include free appetizers and a cash bar (two drinks free for volunteers) at Brasserie V on Monroe Street.

News/Announcements

- **Section Elections:** Are you interested in becoming an office in the IEEE Madison Section, or one of its Chapters or Affilates? If so, please let Hugh Schmidt know (hfschmidt@wisc.edu).
- **Volunteers:** We need volunteers for: YP, ECN, LMAG, PES/IAS, Section and EMB.

IEEE Madison Leadership

- Section Chair – Nate Toth
- Section Vice Chair – Hugh Schmidt
- Section Treasurer – Tom Kaminski
- Section Secretary – Mike Stemper
- Webmaster – Nate Toth
- PES/IAS Chair – Dan Ludois
- PES/IAS Vice Chair – Eric Severson
- PES/IAS Secretary/Treasurer- Mike Stemper
- EMB Chapter Chair – Dennis Bahr
- Life Member Affinity Group Chair – San Rotter
- Life Member Affinity Group Vice Chair – Charles Cowie
- ECN Chair – Tom Kaminski
- Young Professionals Chair – Nate Toth
- Members at Large: Clark Johnson, Craig Heilman, Dennis Bahr, San Rotter.

Membership Upgrades

Those interested in upgrading their IEEE membership level should be aware that the process has been streamlined with much of it on-line. The application process can start with your appl ication as described on line here. You will have to provide the names and IEEE numbers for three Senior Members in your field. The Madison Section Chair (Nate Toth at tothnj@ieee.org) can help, or attend the informal networking portion of the monthly Section meetings to meet the Section Board members and discuss your intention to elevate.

About IEEE

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