Madison Section Newsletter

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Newsletters are archived online at IEEE-Madison

Upcoming Meetings

IEEE Webinar: "Today's Engineering Workplace and How IEEE-USA Can Help"
Wednesday, October 21st at 5:30 PM On-Line
Event Info

IEEE-Madison PES/IAS: "Reaching the Full Potential of Integrated Machine Drives"
Thursday, October 29th at 6:00 PM On-Line
Event Info

IEEE-Madison PES/IAS: "A New Grid Model Repository and New Ways to Securely Share Grid Data for Research and Industry"
Wednesday, December 2nd at 12:00 Noon On-Line
Event Info

Section ELECTIONS: Help Us!

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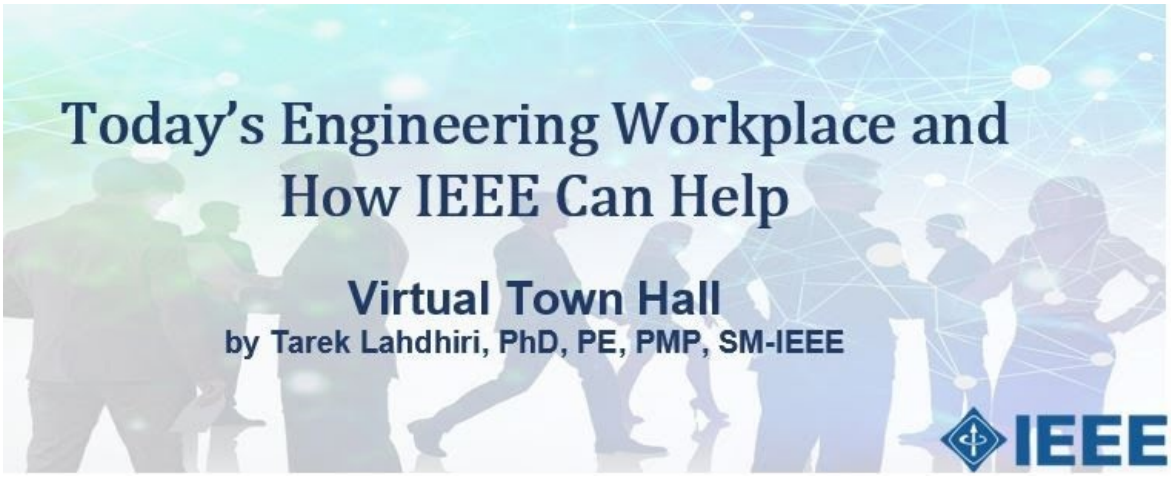
Sponsored Content: DLS EMC

Upcoming Meetings

IEEE Webinar: "Today's Engineering Workplace and How IEEE-USA Can Help"

- Wednesday, October 21st at 5:30 PM
- Virtual Town Hall by Tarek Lahdhiri
- Location:
  On-Line (Link will be emailed from you registration information)
- Please Register at the IEEE-Madison event page.



Talk: Join IEEE-R4 Members for an informative town hall meeting meeting by Tarek Lahdhiri.

This Virtual Town Hall presents some of the challenges in today's engineering workplace in view of all the changes that we recently experienced. In addition, it discusses the marketplace directions and see what engineering specialties are predicted to grow most in the near future, and hear how IEEE supports engineering careers.

Topics will include:

Working/Studying Remotely

Shift in Industry Strategy as far as place of work

Skills to have in Today's workplace

Bio: Dr. Lahdhiri received the degree of MS-EE in Communication Systems in 1990 and the PhD degree in Control Systems in 1995. Dr. Lahdhiri is currently working for General Motors LLC in Warren, Michigan, where he is holding the position of Strategy Leader for Real-Time Control Systems Simulations and Automation within the Global Validation Department. He is a licensed Professional Engineer (PE) in the State of Michigan, licensed Project Management Professional (PMP) by the Project Management Institute (PMI), and Master Black Belt DFSS certified by General Motors LLC. He authored and co-authored over 16 journal papers and 35 conference papers and his areas of interest include Control Systems, Systems Engineering, Real-Time Modeling and Simulation, and Engineering Management.

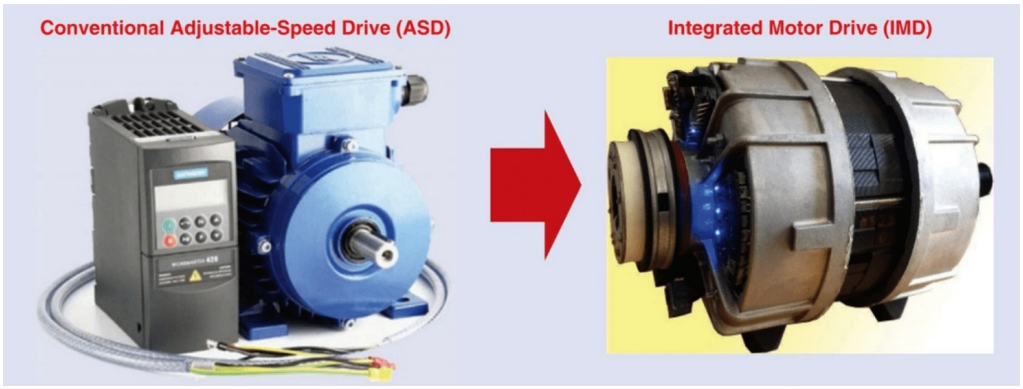
Dr. Lahdhiri is a Senior IEEE member and has been leading several activities within the IEEE organization. Currently, he is the IEEE Region 4 PACE Chair and member of the IEEE-USA Career Professional Development (CPD). He held the position of IEEE-USA Vice President of Career Member Services (2018-2019). Currently, Dr. Lahdhiri is running for Region 4 Director position.

Dr. Lahdhiri is the recipient of the 2001 IEEE-USA Professional Achievement Award, the 2004 IEEE-USA Professional Leadership Award, and the 2007 IEEE-USA Citation of Honor Award, and the 2012 IEEE Region 4 Jack Sherman Award.

IEEE-Madison PES/IAS: "Reaching the Full Potential of Integrated Machine Drives"

Thursday, October 29th at 6:00 PM

- On-Line Presentation by Dr. Thomas Jahns, UW-College of Engineering
- Location:
  On-Line (Link will be emailed from you registration information)
- Please Register at the IEEE-Madison event page.



Talk: Power electronics is an appealing target for physical integration with electric machines, motivated by desires to achieve mass, volume, and cost savings via elimination of special enclosures and connecting cables. Despite some notable successes dating back to the 1960s, there have been a number of formidable obstacles that have limited the successful adoption of this integration technology, including the inability of power electronics to tolerate the thermal and vibration extremes imposed by the machines. Despite these challenges, continuing advances in power electronics (PE) technology are progressively suppressing the barriers to successful integration. Key among these is the accelerating maturity of wide-bandgap (WBG) power semiconductor switches (SiC and GaN) that offer exciting prospects for shrinking the size of power converters by significantly raising their operating frequencies.

This presentation explores the future of integrated motor drives(IMDs) by first reviewing key applications and motivating factors that are spurring new research in this field. Looking ahead, the case will be made for a revival of interest in current-source inverters (CSIs) for future machine drives, highlighting the potential of new WBG power switches to update a technology that has been largely dormant for the past 30+ years. The objective is to simultaneously address EMI, temperature, voltage overshoot, and faultmode limitations of today's dominant voltage-source inverter (VSI) machine drives. Progress made to date towards achieving these appealing advantages will be highlighted. The presentation will conclude with a review of both the opportunities and challenges presented by emerging technologies for realizing the full potential of the integrated motor drive vision during coming years.

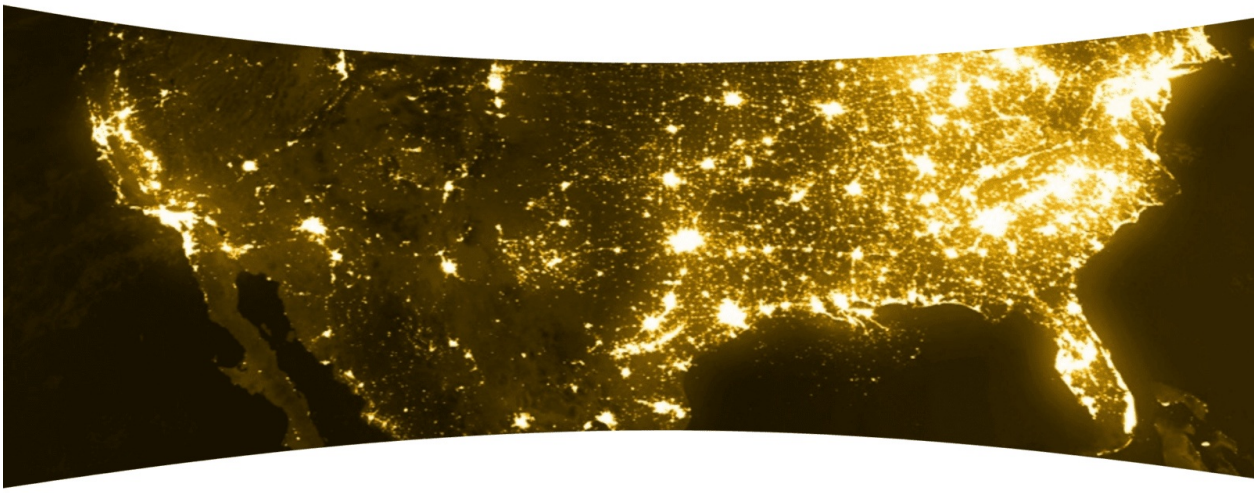
Bio: Thomas M. Jahns received his bachelors, masters, and doctoral degrees in electrical engineering from MIT, Cambridge, MA (USA). Dr. Jahns joined the faculty of the University of Wisconsin – Madison (USA) in 1998 as a Grainger Professor of Power Electronics and Electric Machines in the Department of Electrical and Computer Engineering. He is the Director of the Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), a university/industry consortium with over 85 international sponsors.

Prior to coming to UW-Madison, Dr. Jahns worked at GE Corporate Research and Development in Niskayuna, NY (USA) 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 integrated motor drives and multiple forms of electrified propulsion, including on- and off-road electric vehicles and electric aircraft propulsion.

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. He was elected to the US National Academy of Engineering in 2015.

IEEE-Madison PES/IAS Webinar: "A New Grid Model Repository and New Ways to Securely Share Grid Data for Research and Industry"

- Wednesday, December 2nd at 12:00 Noon
- Virtual Talk by Terry Nielsen of GridBright
- Location:
  On-Line (Link will be emailed from you registration information)
- Please Register at the IEEE-Madison event page.



Talk: New control, optimization algorithms, and other research and development projects are being developed by research institutions and vendors to address new issues such as grid resilience, grid modernization, and increased penetration of distributed energy resources. However, due to the sensitivity of data sets and models that often contain critical infrastructure information and/or personally identifiable information, new research projects and vendor products cannot be easily tested on real grid data. Furthermore, if research projects and products do manage to test using sensitive data, the complete test datasets and related results cannot be shared, restricting the ability to independently validate results and perform peer review. For these reasons, in 2016, ARPA-E funded the GRID DATA project to develop new, large and realistic grid models that are public and can be used by researchers, vendors, and utilities.

A result of this project was the creation of the BetterGrids.org Grid Data Repository that contains many new, large and realistic publicly available grid models. As a follow-on and currently on-going project, ARPA-E funded another research project to reduce complexity, cost, and friction when vendors, utilities, researchers and grid business

entities need to share data that does include sensitive information.

Bio: Terry Nielsen is an Executive Vice President and Board Member at GridBright. He has over 30 years of experience in defining and developing software solutions for the utility industry. His experience includes the development, implementation, and integration of Energy Management Systems (EMS), Network Model Management Systems, Distribution Management Systems (DMS) and Outage Management Systems (OMS). Terry has been teaching courses annually at EUCI and DistribuTech on ADMS, DERMS, and OMS for over five years. Terry is also currently the technical committee chair for the BetterGrids.org Grid Model Repository that serves the power systems research community.

Terry is a Senior Member of the IEEE and an active member of the several IEEE working groups. Terry has a BS in Electrical Engineering from Iowa State University.

IEEE-Madison Section Elections

- **Call to Form a Nominating Committee:**

  When we were students we were captivated by Marshall McLuhan's insight, "The medium is the message!" After lifetimes of pursuing our discipline we know as profoundly that "Technology is the thread!"

  Everybody relies on leadership in organizations like ours that keeps us in touch with the most current and best knowledge and thinking. This effective leadership base is built in local organizations from Chapters, Special Interest and Affinity Groups (Women in Engineering, Young Professionals and Humanitarian Technology...) and Student Branches.

  Our Madison Section leadership evolves annually through fall recruitment and December elections. The first step is assembling a nominating committee of three rank-and-file members to prepare a slate of candidates that will be elected-at-large in December.

  If you or someone you know would be willing to serve on the Nominating Committee please let our Section Chair, Nate Toth know at <tothnj@ieee.org> soon.

- **Officer/Volunteer Solicitation:** Please let us know if you would like to volunteer for IEEE Madison. We welcome anyone interested in helping out, or in being considered for an elected office. Email Nate <tothnj@ieee.org> if you are interested.

Upcoming Meetings

- **PES/IAS Chapter Meetings:** Two virtual meetings have been scheduled. The first meeting is by Dr. Jahns at UW-Madison and is based on his excellent article in the September 2020 IEEE Power Electronics Magazine, co-authored by Dr. Bulent Sarlioglu, also of UW-Madison. This talk is of current relevance considering the importance of electric drives on modern vehicles. The second talk is by Terry Nielsen of GridBright on the GRID DATA project funded by ARPA-E.

- **IEEE-Madison ECN TownHall:** Covid-19 had changed the way we work today and presents it own set of problems. This Virtual Town Hall, presented by Tarek Lahdhiri, a Region 4 Director candidate, will identify ways to work more effectively in this new age. Please register using the link above so that the Madison ECN affiliate can get credit for the meeting.

Review of Past Meetings

- **September 18th EMB Chapter Meeting:** Dr. Stadler gave an excellent presentation on the evolution of magnetic nanobot technology for fighting cancer. This talk discussed the evolution of the technology since she last presented the research in Madison as part of the IEEE Magnetics Society Distinguished Lecturer Series. Clearly, much has advanced with clinical additions to the largely theoretical presentation last time. In addition, Dr. Stadler discussed promising new applications of the technology in preserving harvested tissues and organs for donation. Magnetic materials can be used to quickly warn organs after cryogenic preservation, extending the use of donated organs from hours to weeks or longer. The talk was recorded for you to review.

  Topic: "Battling cancer at the cellular level with magnetic nano-bots"
  File size: 66.8MB
  Duration: 51 minutes
  Download Recording: Download Link

News/Announcements

- **Volunteers:** We need volunteers for: YP, ECN, LMAG, PES/IAS, Section and EMB.

IEEE-Madison Slack Channel Established and Open to IEEE Members

- **What is Slack?**: Slack is a messaging application that works on most modern computing platforms, including cell phones. Many organizations use slack to quickly connect with people and conduct business. You can share files and create sub-channels for discussion. IEEE-Madison is using the free verison of slack that has limited

features.
- **Executive Committee Presence:** Members of the IEEE-Madison Executive Committee have joined a Slack Channel and will be available to discuss issues you might bring up.
- **For more:** See this YouTube Video on Slack.
  Also see this site: What is Slack?
- **Get an Invitation to Join the IEEE-Madison Slack Channel:** at Slack Channel.
- **Access it here:** IEEE Madison Slack Channel

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 – Mike Stemper
- PES/IAS Vice Chair – Dan Ludois
- PES/IAS Secretary/Treasurer- Don Neumeyer
- EMB Chapter Chair – Dennis Bahr
- Life Member Affinity Group Chair – San Rotter
- Life Member Affinity Group Vice Chair – Charles Cowie
- ECN Chair – Matt Nowick
- Young Professionals Chair – Thomas Murphy
- Members at Large: Clark Johnson, Craig Heilman, Dennis Bahr

Membership Upgrades

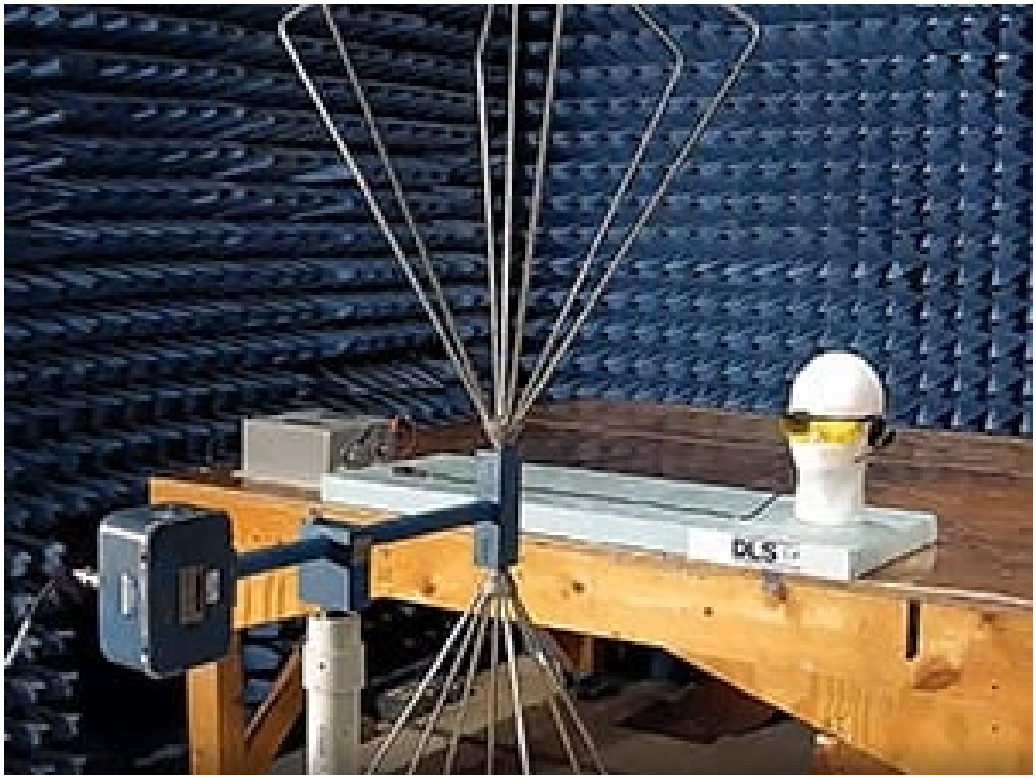
Those interested in upgrading their IEEE membership level should be aware that the process has been streamlined with much of it on-line. The application process can start with your application as described on line here. You will have to provide the names and IEEE numbers for three Senior Members in your 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

The Institute of Electrical and Electronics Engineers or IEEE (read Eye-Triple-E) is an international non-profit, professional organization dedicated to advancing technology innovation and excellence for the betterment of humanity. IEEE and its members inspire a global community through IEEE's highly cited publications, conferences, technology standards, and professional and educational activities. It has the most members of any technical professional organization in the world, with more than 300,000 members in around 150 countries. The IEEE consists of 38 societies, organized around specialized technical fields, with more than 300 local organizations that hold regular meetings. Discover what IEEE Member Discounts can offer you. The Member Discounts portfolio consists of insurance products and programs for the home, office and travel, all at excellent group rates and reduced pricing. Visit IEEE Member Discounts to see what's available in your location and enjoy the savings. For more information, please visit: IEEE.ORG.

Sponsored Content

Remote witnessing now allowed by FAA



The FAA has issued Policy Statement PS-AIR-21-1901 allowing for remote witnessing of testing projects. DLS TestView remote access monitoring platform allows for encrypted video and audio during the testing process, with a fully controllable camera system allowing for the most visual experience during the testing process. For more information and an example of the DLS TestView platform, go to www.dlsemc.com/testview or ask your DLS team member for an individual demonstration.
