



Madison Section Newsletter

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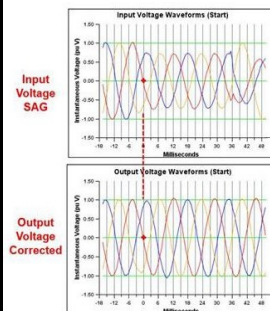
Vol. 20, No. 5

Serving IEEE Members of South Central Wisconsin

May 2017

• Upcoming Events

■ May LMAG "SoftSwitching Technologies Talk and Tour"



- **Event:** Technical Talk and Tour of Rockwell Automation/SoftSwitching Technologies in Middleton
- **Date/Time:** Thursday, May 11th, from 5:00 PM until 7:00 PM
- **Speakers:** Dr. Bill Brumsickle and Josh Kagerbauer **Talk:** Voltage Quality Assurance for Automated Processes
- **Dinner:** Pizza, beverages, and cookies. Voluntary donation: IEEE Member \$5, Guest \$10

■ Location:

Rockwell Automation
8155 Forsythia Street
Middleton, Wisconsin
United States 53562
Room: Front entrance

- **RSVP:** Please Register at the IEEE Madison Section [event page](#). Non-member guests are always welcome.

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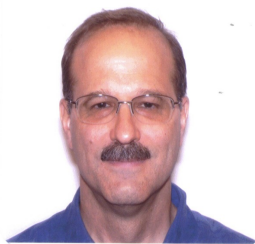
Event: This is a technical talk and tour of SoftSwitching Technologies, now owned by Rockwell Automation.

Talk: Highly automated industrial process lines, from aseptic yogurt cup packaging to 120-inch 4K flat panel display fabrication, require a level of electrical power consistency beyond what can be economically provided by electrical utility companies. A variety of IEEE, IEC, and industry standards exist to evaluate industrial equipment tolerance to voltage variations, particularly voltage sags. We show why sags are a common problem and discuss methods to reduce the economic consequences. Then we tour the facility where Rockwell's DySC (Dynamic Voltage Sag Corrector) products, from 1 amp to 2 mega-VA sizes, are assembled and tested.

Speakers: Dr. Bill Brumsickle received his bachelors degree in physics from Univ. of Washington, Seattle, and his masters and Ph.D degrees in electrical power systems from Univ. of Wisconsin—Madison. Bill joined SoftSwitching Technologies in 1997 and Rockwell Automation in 2012, when Rockwell acquired SST's DySC product line. He is presently a Senior Engineering Manager. He is a Senior Member of IEEE and has served on several IEEE and international standards working groups.

Josh Kagerbauer received his bachelors and masters degrees in electrical engineering from Univ. of Wisconsin—Madison. Josh joined SoftSwitching Technologies in 2006. He has worked on DySC product development for SoftSwitching Technologies and Rockwell Automation for 11 years. Josh is presently the DySC product Hardware Engineering Manager. He is a current member of IEEE.

◦ May Section Meeting "Wholesale Electricity Markets"



- **Event:** Lunch and Technical Talk
- **Talk:** Wholesale Electricity Markets: The Evolving Interplay Between the Rules of Markets and the Constraints of Physics
- **Date/Time:** Thursday, May 18th, from 11:45 AM until 1:00 PM
- **Speaker:** Dr. Christopher DeMarco, UW-Madison ECE Department
- **Lunch:** Pizza, beverages. Voluntary donation: IEEE Member \$5, Guest \$10, Students FREE
- **Location:**
Madison Sequoya Library
4340 Tokay Blvd
Madison, Wisconsin
United States 53711
- **RSVP:** Please Register at the IEEE Madison Section [event page](#). Non-member guests are always welcome.

Talk: In many parts of the US, generation supply and wholesale electricity prices are determined in markets that update every five minutes, with locationally distinct prices across thousands of grid locations. In the computations that make such markets possible, basic physics dictates total generation output must equal total load demand plus network losses, second by second. Moreover, given that installed generation capacity exceeds demand on all but a few peak demand days of the year, tremendous flexibility exists in deciding the exact allocation to each of the many thousands of operating generators. The restructuring of the US power industry over the past 20+ years has largely focused on making this decision process more and more market-oriented, with faster and faster update rates.

The giant circuit that is the US power grid must satisfy many physical and reliability-based constraints. First, the grid is subject to the basic circuit equations of Kirchhoff's Current Law and Kirchhoff's Voltage Law, dictating a set of exact equalities grid voltages and currents must satisfy. Quality service to customers then demands that frequency and voltages stay in acceptable ranges (e.g., 60 Hz, and 120 Vrms +/-5% at your wall outlet). Reliability demands that each transformer and each transmission line must stay within its current carrying limits. Any market-based decision for allocating generator output levels must respect these many physical constraints.

Historically, generation companies were willing to accept payments based on approximate allocations, with "out of market" adjustments to ensure satisfaction of all physical limits, often with significant margins to allow for approximate engineering calculations. As markets evolve, pressure is growing to make engineering calculations more precise, to avoid "leaving money on the table" in allowance for approximate computation. Against this backdrop, this talk will highlight on-going research at UW-Madison to improve engineering accuracy and speed of power grid market optimization.

Speaker: Christopher DeMarco holds the Grainger Professorship in Power Engineering at the University of Wisconsin-Madison, where he been a member of the faculty of Electrical and Computer Engineering (ECE) since 1985. He has served as ECE Department Chair (2002-2005), and is UW-Madison Site Director for the Power Systems Engineering Research Center (2004-present). He was recipient of the UW-Madison Chancellor's Distinguished Teaching Award in 2000. Dr. DeMarco received his PhD degree at the University of California, Berkeley in 1985, and his B.S. degree from the Massachusetts Institute of Technology in 1980, both in Electrical Engineering and Computer Sciences. His research and teaching interests center on control, operational security, and optimization of electrical energy systems.

▪ June ECN Meeting "The Entrepreneur Path: From Concept to Corporation"



- **Event:** Lunch and Discussion
- **Talk:** "The Entrepreneur Path"
- **Date/Time:** Thursday, June 8th, from 11:45 AM until 1:00 PM
- **Speaker:** Dominic DiMarco, QBE Insurance, Inc.
- **Lunch:** Pizza, beverages.
- **Location:**
Sector67
2100 Winnebago Street
Madison, WI
- **RSVP:** Please Register at the IEEE Madison Section [event page](#).
Non-member guests are always welcome.

Talk: After traveling around the Globe, Dominic has returned to Madison and is now part of an organization that funds start-ups. Bring your questions for discussion and see what Dominic has to offer.

Speaker: Dominic DiMarco is currently the Entrepreneur in Residence at QBE America where he applies non-corporate thinking to the corporate environment. Dominic has been taking things apart to see how they work his whole life, which is how he found himself cruising IRC channels to learn how to write code for the iPhone well before Apple released an SDK. In 2011 he co-founded MobileIgniter -- an Internet of Things guide to manufacturers, retailers, and service providers.

▪ Section News

▪ Meeting Reviews

April IEEE-Madison Section and LMAG joint meeting: A fund raising event was held for the benefit of the Wisconsin Science Museum. IEEE-Madison members donated \$660 to the Wisconsin Science Museum that will be matched by the IEEE-Madison Section. The event, held at the museum, was jointly sponsored by the IEEE Madison Section and the Madison IEEE Life Member Affinity Group. Members and guests were invited to tour the museum on Saturday, April 29th starting at 9:00 AM. Pizza, donated by the IEEE_Madison Section, was served at noon followed by a presentation on the IceCube South Pole Neutrino Observatory.

The speaker, Dr. Francis Halzen, is the Principal Investigator of the observatory. He is a theoretician studying problems at the interface of particle physics, astrophysics and cosmology. An enthusiastic audience listened intently as Dr. Halzen described the fundamental particle of matter called the neutrino and the knowledge of the universe that can be potentially be gained by the IceCube observatory. Since the observatory detects neutrinos that travel through the entire mass of the earth, IceCube data can be used to study the earth's core. IceCube data can also help to reveal parts of the universe that are so far away that no other forms of radiation from that region reaches the earth. IceCube website: [IceCube Website](#)



▪ Upcoming Meetings

The May LMAG Meeting and tour has limited registrants. Please sign up ASAP. The May IEEE-Madison Section meeting is scheduled for the Sequoya Library and will be a lecture by Professor Christopher DeMarco, Grainger Professor of Power Engineering. Pizza and a Drink will be served. The June ECN Meeting will feature Dominic DiMarco, formerly of MobleIgniter, an IoT startup. He is now on the other side of the fence with the QBE Group, giving advice to startups (and sometimes cash). Note the date change for that meeting. The June Section Meeting will feature a dinner and evening lecture by Dr. Bandara Gamini from UW-Platteville. He will speak about Collaborative robots, geared towards manufacturing & applied automation. The location and date details have not yet been ironed out.

▪ Volunteers Needed

Micro Volunteers: Do you have some time to spare to help IEEE-Madison Section? Perhaps you have a meeting topic that you would like to see us host and could find a speaker. Maybe you have time to call a few members who might have forgotten to renew their membership. Particular Need: Record Video/Audio of meetings for later use. Contact Tom Kaminski (tjkaminski [at] ieee.org) to volunteer

▪ Regular Meetings

▪ Section Meetings

The third Thursday of January through May, and September through December is reserved for a meeting to provide recent research, developments, trends and/or innovations in one of our membership's technical areas.

▪ Life Member Affinity Group

The first Thursday of January, March, May, September and November is reserved for a meeting on a topic selected from a broad range including such areas as technology, science, history, culture and leisure.

▪ IEEE-MSN-ECN Networking Meetings

- Purpose: Presentations, Discussions, networking
- Date: First Thursday of even-numbered months
- Time: 11:45 AM to 1:00 PM
- Location: Sector67, 2100 Winnebago Street (East Side of Madison)
- Parking: Park in lot or on Winnebago Street.
- Process: Members are encouraged to make introductions, describe endeavors, and make request for: contacts in target companies, needs, resources.

▪ Membership Upgrades

Those interested in upgrading their IEEE membership level should send their resumes or other information showing five years of significant performance in an IEEE-designated field to Charles J Gervasi via email at [cj\(at\)cgervasi.com](mailto:cj(at)cgervasi.com). Madison Section Board will attempt to find Senior IEEE members knowledgeable in the applicant's area of practice who may be able to provide references. You are invited to attend the informal networking portion of the monthly Section

meetings (starting at 11:30am) to meet the Section Board members and discuss intentions.

■ 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.

■ Madison IEEE Section

The IEEE-Madison Section of the IEEE is a section in Region 4 of the IEEE-USA organized to serve IEEE members in the Madison, WI area with over 600 members. The 2016 Officers and Board Members are Tom Kaminski - Chair, Scott Olsen - Vice Chair, Charles Gervasi - Treasurer, Steve Schultheis - Secretary, Nate Toth - Webmaster, Tom Kaminski - ECN Chair, Dennis Bahr - Engineering in Medicine and Biology Chapter Chair, Chuck Kime - Life Member Affinity Group Chair, Charles Cowie - Life Member Affinity Group Vice Chair, David Jensen - Life Member Affinity Group Secretary, Members at Large: Clark Johnson, Craig Heilman, Dennis Bahr, Sandy Rotter.

■ Job Openings

Check out WIEES.com for electrical engineering jobs in Madison and the surrounding region. This site is maintained as a service for electrical engineers. Jobs are displayed starting with the most recent postings first. You can filter results by location and job type. If you are hiring an electrical engineer in our area, for full-time or contract work, you can post the job in the **Contact Us** section on the WIEES.com site.

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The recently published 4th edition of the IEC 60601-1-2:2014 Standard has been recognized by the FDA and may now be used for electrical medical devices. This edition requires new emissions requirements, new test methods, and higher level/more stringent immunity tests for EMC compliance. These changes include new designated use environments, which are now split into three areas:

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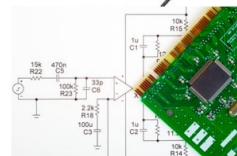


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Prof. Todd Hubing, IEEE Fellow and past-president of the IEEE EMC Society, is the primary instructor for LearnEMC short courses. His unique approach to EMC education uses real applications to demonstrate important fundamental concepts.



• Contact Us

The IEEE-Madison Section has a number of volunteer positions open if you are interested in helping out. Please direct any questions or comments to Tom Kaminski (Newsletter Editor) via email to [tjkaminski\(at\)ieee.org](mailto:tjkaminski(at)ieee.org).

The IEEE Madison Section Newsletter Published 9 times per year (Jan-May, Sep-Dec) by the Madison, Wisconsin Section of the Institute of Electrical and Electronic Engineers (IEEE), for its members in South-Central Wisconsin. Online at <http://ieee-msn.truenym.net/> For address changes: notify IEEE headquarters at: <http://www.ieee.org/> or address-change@ieee.org. Editorial or comments contact: Tom Kaminski <tjkaminski@ieee.org>. Permission to copy without fee all or part of any material without copyright notice is granted provided the copies are not made or distributed for direct communication advantage, and title of the publication and its date appear on each copy. To copy material with a copyright notice requires specific permission. Please direct all copyright-related inquiries or requests to the IEEE Copyright Office. Thank you.

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