

21st Century Electric Machines

Date: **April 12, 2011**

Time: 6:00pm - 7:00pm

Speaker: **James R. Hendershot**

Agenda: Informal networking will begin at 5:30pm.

Mr. Hendershot 's presentation will begin at 6:00pm.



Location: UW Madison Engineering Centers Building, room 1025, 1550 Engineering Drive

Parking: Free after 4:30pm, Lot 17, between Engineering Hall and Engineering Centers Building.

Menu: Dinner meal provided: \$5 for IEEE members, \$10 for non-members, **free for students.**

RSVP: Deadline: April 4. Go to http://meetings.vtools.ieee.org/meeting_view/list_meeting/6007 to register. Please send questions or difficulties to Mark Vincent at mvincent@ecw.org.

Non-member guests are always welcome!

Abstract

The electric machines used around the world for the last 150 years were either battery powered DC motors or grid powered AC induction motors. We will review 21st century machine needs for all sorts of rotating and linear motion applications and how future developments are possible due to new magnetic materials and other inventions such as the transistor. Traditional designs are not well suited to electronically controlled machine (e.g. standard Nema motors were optimized to be grid powered at constant voltage and frequency). To take advantage of the possibilities of inverter fed machines, the entire AC induction motor must be revised, including new lamination materials and rotor slot design, plus different windings in both stator and rotor. We will also focus on the current serious shortage of electric machine design engineers -- The current needs for alternative energy sources is seriously restrained because very few if any undergraduate E.E. or M.E. departments in American universities offer a single course in electric machine design!

Biography

James R. Hendershot is the CEO of MotorSolver, LLC -- the designer & supplier of teaching Dyno-Kits to domestic and foreign universities for the ONR/NSF sponsored Curriculum Courses called Reforming Electric Energy Systems Curriculum for Renewables/Storage, Smart Delivery and Efficient End User. Mr. Hendershot was tutored in the design, development and testing of PM brushless motors and generators by Mr Gene Aha, (the original developer of PM brushless machines for the Apollo Space Program). He was one of the early developers of Switched Reluctance motors and generators. His research interests include developing generators and alternators for wind-turbines, EV's, and gas micro-turbines.

IEEE Entrepreneurs & Consultants Network, Madison Networking Meeting

Date: **April 7, 2011**

Time: 11:30am to 1:00pm

Purpose: **Sector67 -- a Madison, WI non-profit collaborative for providing an environment for creating next generation technology. One of its members will speak about its concept and funding.**

Agenda: Informal networking will begin at 11:30am.

The presentation and panel will begin at 12:00 noon.

Location: Madison Area Technical College (MATC **West Campus**)

302 S. Gammon Road (Across from West Towne Mall)

Madison, WI 53717 ... Telephone: 608-246-6100



Parking: Open parking, so come early to get a closer spot.

Process: Members are encouraged to make introductions, describe endeavors, and make request for: contacts in target companies, needs, resources. Bring your elevator speech and rolodex!

RSVP: Tim Chapman (PrettyGoodGUIs@TrueNym.NET)

Monthly Section Meetings

The third Thursday of Jan.-May and Sep.-Dec. is reserved for a meeting to provide recent research, developments, trends and/or innovations in one of our membership's technical areas.

Section Meeting Schedule for 2011

(schedule subject to change)



(past) **January 19**, Wind Turbine Generators.

(past) **January 20**, Capitol Heat & Power Plant Rebuild Project.

(past) **February 17**, Tesla Coil Design and Construction ... live demo!!

(past) **March 17**, Privacy of Electronic Health Information.

April 12, 21st Century Electric Machines

May 19, TBD

August 18, TBD

September 1, Consumer Digital Storage: Personal, Shared, Hierarchical, Virtual

September 15, TQM Experiences in the High Precision Instrumentation Industry (this talk may move to November)

October 27, Distinguished Lecturer on Signal Processing: Dr. Patrick Flandrin on time-frequency energy distributions .

November 17, TBD

December 15, TBD

Monthly Networking Meetings

The first Thursday of every month is reserved for a meeting to provide networking opportunities for members who are consultants or entrepreneurs. Bring your elevator speech and rolodex!

Networking Meeting Schedule for 2011

(schedule subject to change)

(past) **January 3**, Kickoff meeting for 2011.

(past) **March 3**, SBIR Process and Panel.

April 7, Sector67 – Overview of Madison innovation environment.

June 2, iPhone and iPad Development Experiences.

August 4, Working on the Network.

October 6, Telepresence.

December 1, IEEE Tools for Self Promotion.

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Section Notes

We encourage our Section members to bring guests to our monthly meetings. We also ask that Section members to consider suggesting becoming a member of the IEEE to their colleagues. Our section is one of roughly a dozen who have celebrated 100 years of continued service to IEEE members. We are proud of our service to the Engineering community of Southern Wisconsin, and invite engineering professionals in our area to any and all of our events!

Our Section runs on the generosity of our members in the donation of their time, skills and efforts. We invite anyone in our Section to consider becoming a Section Officer in 2012. Please send your thoughts and considerations about possibly serving on the Board of Directors for our section to this year's chairman: David Marca, dmarca@openprocess.com. Thank you!

IEEE Membership Level 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 (cj@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.

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For more information, contact Mitch Brandt at 608-263-1085 or brandt@wisc.edu.

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