



Power Systems Engineering Research Center

Celebrating PSERC's First Decade

Industrial Advisory Board Meeting

May 31 – June 2, 2006

Madison, Wisconsin

The [Power Systems Engineering Research Center \(PSERC\)](#) is a university-industry collaboration focusing on research and education needs in the electric power industry. Having been a [National Science Foundation Industry/University Cooperative Research Center](#) since 1996, this IAB meeting marks a decade of operation for PSERC. Its Industrial Advisory Board (IAB), composed of PSERC's industry members, meets twice per year with PSERC researchers and students to conduct Center business, and to engage in discussions about the Center's research and education activities. This is a stimulating meeting with presentations on research and education activities, discussions of research ideas, and conversations on current issues facing the electric power industry. To mark PSERC's first decade, we will be reflecting on what we have learned through our collaborative efforts in research and education, and looking forward to new electric power industry challenges for PSERC to address.

Objectives

The objectives of this IAB meeting are to:

- Celebrate PSERC's first decade!
- Promote interaction among researchers, industry members, and students
- Communicate the status of current PSERC research projects and education activities
- Present research results and discuss ideas for new research projects.

Attendees

The IAB meeting is attended by university researchers (including project leaders and Center management from thirteen universities), industrial members, students, and invited guests.

Meeting Highlights

Highlights of this meeting include:

- Student presentations
- Final presentations on recently completed research projects
- Presentations and posters on current research projects
- Optional tours of labs for research in power electronics, plasma, and engines.

Our speakers from industry and academia bring a wealth of experience in many areas. With times for formal and informal discussions, this meeting provides an excellent opportunity for networking as well as for information gathering and dissemination.

Orientation Session

Everyone is invited to attend the PSERC orientation session on Wednesday afternoon, May 31. Our invited guests will have the opportunity to meet one-on-one with a university researcher after the poster session on Thursday afternoon to learn more about PSERC.

IAB Meeting Agenda

Wednesday, May 31 (Tong Auditorium, Engineering Centers Building)

- 1:00 - 3:00 p.m. **Optional Guided Tours** of UW-Madison engineering research facilities
- 3:00 - 3:45 **PSERC Orientation**
- 3:45 - 5:00 **Systems Stem Committee Meeting**
- 5:00 - 6:15 **T&D Technologies Stem Committee Meeting**
- 6:15 - 7:30 **Reception**
- 7:30 – 8:45 **Markets Stem Committee Meeting**

Thursday, June 1 (Tong Auditorium, Engineering Centers Building)

- 7:30 - 8:00 a.m. **Registration and Continental Breakfast**
- 8:00 - 8:20 **Celebrating PSERC's First Decade**
Vijay Vittal, PSERC Director, Arizona State University
- 8:20 - 8:40 **PSERC as a Collaboratory: What We've Learned**
Robert J. Thomas, Cornell University
- 8:40 – 8:50 **Keys to Success of Industry-University Research Centers**
Alex Schwarzkopf, IUCRC Program Director, National Science Foundation
- 8:50 - 9:10 **Markets Research: What We've Learned**
Shmuel Oren, University of California at Berkeley
- 9:10 - 9:30 **T&D Technologies Research: What We've Learned**
Mladen Kezunovic, Texas A&M University
- 9:30 – 9:50 **System Research: What We've Learned**
James McCalley, Iowa State University
- 9:50 - 10:10 **Break**
- 10:10 – 10:30 **Synergies of Research and Education in Addressing Pressing Energy Issues**
Chancellor John Wiley, University of Wisconsin-Madison
- 10:30 - 11:30 **Student Presentations**
Planning Reconfigurable Reactive Control for Transmission Enhancement
Haifeng Liu, Iowa State University
Economic Evaluation of Reliability for Electricity Markets with Demand-Side Bidding and Financial Market Participants
Teoman Guler, University of Illinois at Urbana-Champaign
A Unified Power Conditioning Architecture for Voltage Sag Tolerance for Wind Turbines Using Doubly Fed Induction Generators
Patrick Flannery, University of Wisconsin-Madison
Vijay Vittal, Moderator
- 11:30 – 12:00 **Future Technical Talent Needs in the Electric Power Industry**
Wanda Reder, VP, Power System Services, S&C Electric Co.

Thursday, June 1 (Tong Auditorium, Engineering Centers Building)

- 12:00 - 1:15 **Lunch and Conversation with Thomas Edison (Engineering Hall)**
- 1:15 - 2:15 p.m. **Industry Education and Research Challenges in PSERC's Second Decade**
Lawrence Jones, Manager, Utilities Practice and Strategic Initiatives, AREVA T&D
Peter Sauer, University of Illinois at Urbana-Champaign
Robert J. Thomas, Cornell University
Raymond Vice, Consulting Engineer, Southern Co. Services

Moderator: Gerry Heydt, Arizona State University
- 2:15 - 3:45 **Poster Session** with Discussions on On-Going Projects
- 3:45 - 5:30 **Closed IAB Meeting**
- 6:30 - 8:30 **Reception/Dinner:** University Club

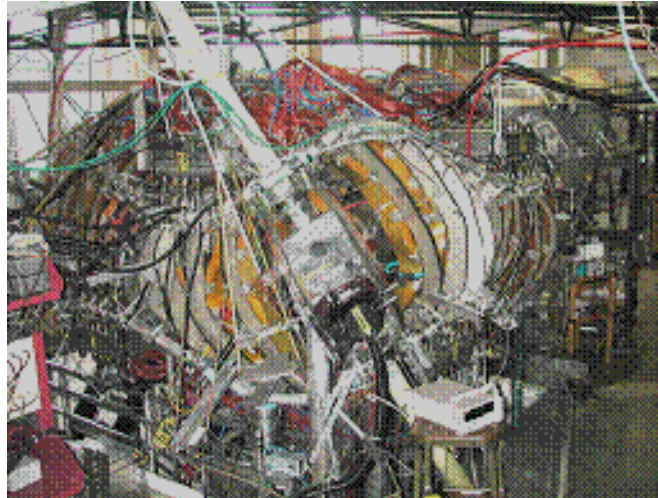
Friday, June 2 (Tong Auditorium, Engineering Centers Building)

- 7:30 - 8:00 a.m. **Continental Breakfast**
- 8:00 - 8:30 **Feedback from IAB Business Meeting**
- 8:30 - 9:00 **Automated Integration of Condition Monitoring with an Optimized Maintenance Scheduler for Circuit Breakers and Power Transformers**
Jim McCalley, Iowa State University
- 9:00 - 9:30 **Research on Cybersecurity in Power Systems**
Peter Sauer, University of Illinois at Urbana-Champaign
- 9:30 - 10:00 **Satellite Imaging for Vegetation Control**
Jerry Heydt and George Karady, Arizona State University
- 10:00 - 10:30 **Microgrid Research Directions**
Robert Lasseter, University of Wisconsin-Madison
- 10:30 **IAB Meeting Adjourns**
- 11:00-12:30 **Executive Committee Meeting**

Special Events for PSERC's Celebration of its First Decade

From 1-3 p.m. on May 31, there will be tours of the following College of Engineering facilities.

Plasma Energy Lab: HSX (the Helically Symmetric eXperiment) is a new concept in toroidal stellarators. It is the only device in the world that has a magnetic field structure termed Quasi-Helically Symmetric (QHS). Quasi-helically symmetric stellarators, to a good approximation, possess a direction of symmetry and therefore are topologically equivalent to a tokamak without plasma current.



HSX

Power Electronics Lab: The enabling nature of power electronics and its impact on factory automation, robotics, transportation, energy efficiency, electric automobiles, residential and commercial appliances, alternate energy and computers as well as other electronic equipment is increasingly providing important utility applications. The Wisconsin Electric Machines and Power Electronics Center (WEMPEC) has offered a power electronics and electric machines research and education program since the early 1980s. Tours will be given of the WEMPEC research and teaching labs. Student posters will be available.

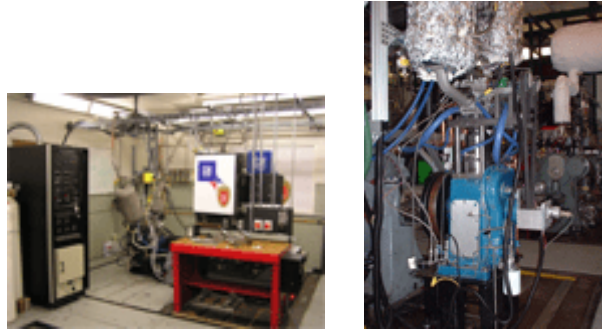


Grainger Teaching Lab



Research Lab

Wisconsin Engine Research Center: The Center conducts education in combustion engine research and fundamentals, to meet the important needs of the worldwide transportation industry, government and academia; provides research to meet the national goals of reduced emissions and reduced fuel consumption; and provides a national resource for information on combustion engine science and technology. A tour will be conducted of their experimental facilities that includes 8 engine test cells, equipped with electric dynamometers and speed controllers.



Gasoline and Diesel Engine Test Facilities

Thomas Edison Speaks: On June 1, we will celebrate Thomas Edison's inventive genius by having Edison himself give a short talk about his life and some of his 1,100 inventions including the phonograph, the motion picture projector, the practical incandescent light bulb, and the dc electric lighting system. The wizard of Menlo Park will then direct his technician to activate an 1880 Edison dynamo to power some carbon filament bulbs of the type that he invented. This antique Edison dynamo is on display in a glass case throughout the year in the lobby of the ECE Department. Hosted by [Professor Willis Tompkins](#).



Thomas Alva Edison



1880 Edison DC Dynamo

Information for Planning Your Attendance at the IAB Meeting

General Meeting and Registration Location: College of Engineering, University of Wisconsin - Madison, 1415 Engineering Dr., Room 1800, Madison, WI 53706. To get oriented to the UW-Madison and the Engineering Campus, you can follow these links: [Madison area map](#), [map from the Dane County airport](#), [detailed directions to the Engineering Campus](#), [UW-Madison campus \(slide show\)](#), [Engineering Campus](#), [Engineering Hall](#), and [Lot 17 parking](#). [Campus and local maps are available](#).



Hotel

Hotel lodging is available a little less than a mile from Engineering Hall ([map](#)). Lodging will be at:

[DoubleTree Hotel Madison](#)

525 West Johnson St., Madison, WI 53703
Phone: 608-251-5511. FAX: 608-251-4824

The room rate is \$99 for singles and doubles. To make reservations via phone:

1. 608-251-5511 (ask for Carrie)
2. give agent the dates of stay and name of your group (PSERC) or group code (IAB).

[Hotel information, maps, and transportation information are available at the hotel website.](#)

Registration (Please register as soon as possible, but no later than May 21.)

The registration fee is \$160 for all IAB members, faculty, staff and invited attendees. The fee is waived for students. The fee covers the continental breakfasts, breaks, receptions, dinner and materials. There is a \$40 charge for your dinner guest on Thursday night. You can pay by check or by credit card. A receipt will be available at the IAB meeting. All attendees are asked to register by submitting the meeting's [registration form](#) by mail, FAX or email. (Note: Download the registration form before adding your registration information. There is no on-line registration.)

Additional Information

For logistical questions and requests, contact Bonnie Johnson at 608-262-3934 or bjohnson@engr.wisc.edu. If you have general questions about registration, the meeting agenda or PSERC, please contact Dennis Ray, PSERC Executive Director, at 608-265-3808 or djray@engr.wisc.edu.

2006 Industrial Members

ABB	American Electric Power
American Transmission Company	AREVA T&D
Arizona Public Service	Baltimore Gas & Electric
British Columbia Transmission Co.	California ISO
CenterPoint Energy	Duke Energy
Entergy	EPRI
Exelon	FirstEnergy
GE Energy	Institut de recherche d'Hydro-Québec (IREQ)
ISO New England	Korea Electric Power Research Institute
Michigan Electric Transmission Co.	MidAmerican Energy
Midwest Independent Transmission System Operator (MISO)	National Grid USA
National Rural Electric Coop. Assn.	New York ISO
New York Power Authority	Pacific Gas and Electric
PJM Interconnection	PowerWorld Corp.
RTE – French Trans. Sys. Operator	Salt River Project
Siemens EMA	Southern Company
Tennessee Valley Authority	Tri-State Generation and Transmission
TXU Electric Delivery	U.S. Department of Energy
Western Area Power Administration	

Collaborating Universities and Site Directors

Arizona State (Jerry Heydt)	Berkeley (Shmuel Oren)	Carnegie Mellon (Sarosh Talukdar)
Colorado School of Mines (P.K. Sen)	Cornell (Robert J. Thomas)	Georgia Tech (Sakis Meliopoulos)
Howard University (James Momoh)	Illinois (Peter Sauer)	Iowa State (Jim McCalley)
Texas A&M (Mladen Kezunovic)	Washington State (Anjan Bose)	Wisconsin (Christopher DeMarco)
	Wichita State University (Ward Jewell)	