

Center for Power Systems Studies -- Annual Meeting  
COORDINATOR'S REPORT  
September 20, 2000

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To: Members of Center for Power System Studies  
Associate Members of Power System Studies  
All those in attendance at this meeting

The Center for Power System Studies is entering into its 33<sup>rd</sup> year of operation, and much like the power industry, has experienced change over the last several years, yet has seen important goals accomplished and looks with anticipation to the future.

I. CPSS Related Activities for Summer and Fall 2000 Terms

- a. Spring Technology Field Trip went very well during the week of May 15-19. We had 8 students attend and all were very pleased with the tour and would recommend this field trip to other fellow students. All of the students were EEs ranging from their junior to their senior year. The students helped construct a WEB page to highlight the trip and it will be found early next spring at the following URL address:

<http://learn.sdstate.edu/shietpas/cpss/fieldtrp/tour00/tour00.htm>.

This year we took with us a 10 Motorola Talkabouts (walky talkies) with headsets (mics included). These proved very helpful for a number of the tours where the noise was excessive or the distance between individuals and the tour guide was great.

- b. Met with Greg Vaselaar (WAPA) and Jim Edwards (EREPC) on the planning of the next CPSS sponsored conference to be held on April 3, 2001.
- c. Will be taking 5 undergraduate students to the Minnesota Power Systems Conference in November 7-9 of this year. Prof. Wayne Knabach will be attending.
- d. Professor Emeritus Wayne Knabach was hired to teach Power Systems Analysis as a 2-credit course. Five students are enrolled. The ability to hire Prof. Knabach was through generous financial support by member and associate members of the CPSS (outside of their regular CPSS contributions).

II. Students and the Power Community

- a. There remains considerable competition within our department for attracting and keeping students in the power program. While we remain sensitive to the student's needs and desires, we are actively recruiting students to the program via the following tools:
  - i. CPSS scholarships and financial assistance (WEB Scholarship Form).
  - ii. The Seminar in Power Systems course.
  - iii. The Minnesota Power Systems Conference.
  - iv. Special courses for limited number of students.
  - v. Design projects relating to electric power area.
  - vi. Field Trips/Tours.
  - vii. Summer work experience.
- b. While good design projects are important, field trips continue to have a significant and positive impact on student's perception of the power community.
- c. The number of power related companies inquiring about prospective new hires continue to increase. I am working hard on providing this information to the students, and have noticed in increase in number of students obtaining both intern and coop positions. This year we had five junior and senior standing students obtain cooperative and internship positions with

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power companies located in this region. The number of power-oriented students has been increasing in the last few years as well; in spite of low enrollment numbers we have been experiencing over the last several years.

- d. Last year I communicated my desire to teach sophomore level courses in order to expose students sooner to opportunities available in the power community. Starting in the Fall Term of 1999 I assumed responsibility for teaching Circuits II and have seen positive results. Several of the students who went on the Power Technology Tour last spring were students just finishing Circuits II and entering their junior year, and a few have expressed a newly found interest in the power area as a possible career path.

III. Faculty in the power program and some highlights of their activities

• Steve Hietpas

- Received a Governor's Teaching with Technology grant for the summer titled *Redesign of Energy Conversion -- EE430 --Using Electromagnetic Simulations and Animations*. The grant enabled the development of the new Energy Conversion course material described in the recently awarded NSF CCLI A&I grant.
- Submitted a proposal to the Student Technology Fellow Program (SDSU) titled *New Software/Hardware Platforms for Use in Instruction of Energy Conversion Laboratory EE431*. Recently notified that the project was adopted and have two students assigned to the project by the names of James Ziebarth (junior in Electrical Engineering, summer intern for Sioux Valley Electric Coop) and Jeremy Sneed, (freshman in EE).
- Supervised three undergraduate students on a power related senior design project, partially supported through the CPSS.
- Submitted a paper titled *Using Multimedia Tools for Teaching Electric Drives*, for presentation at an NSF Workshop entitled *Multimedia Delivery of Modern Power Electronics Curriculum*, November 11-13, 2000.
- Attended a 2-day workshop in Pittsburgh, PA at Ansoft Corp. covering the fundamentals of their electromagnetics software package.
- Managed the NSF grant for the redesign of all the electrical machine laboratory exercises. Supervised one graduate student in the design of an AC Induction motor Drive.
- Worked with the building committed overseeing the development of the CEH building addition.

• Michael Ropp

- Supervised five undergraduate students and one graduate student working on power-related projects. One of these projects was sponsored by the CPSS.
- Acquired an experimental photovoltaic (PV) array, which has been assembled by students and is presently being used in a power-related Masters thesis project.
- Published one journal paper, "Determining the Relative Effectiveness of Islanding Prevention Techniques Using Phase Criteria and Nondetection Zones", *IEEE Transactions on Energy Conversion*, to be published in December 2000.

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- Along with graduate student Dan Hohm attended the 28<sup>th</sup> IEEE Photovoltaic Specialists Conference in Anchorage, AK, and presented two papers at that conference regarding SDSU activities in the areas of photovoltaics, utility interfacing, and power electronics. The paper Dr. Ropp presented resulted from work supported by the CPSS during the 1999-2000 academic year, a Senior Design project entitled "Islanding Prevention Using Power Line Carrier Communications".
- Teaching a new course entitled "Wind Energy Conversion Systems Technology" in the first summer session of 2001.
- Teaching another new course, "Photovoltaic Power Systems", during the Spring Semester 2001. SDSU engineering students will learn about practical uses of photovoltaic systems. As their final design project, the students will design a system to provide power for the Lewis Lake Ranger Station, Yellowstone National Park. Late in the summer of 2001, students will have the opportunity to actually go to Yellowstone and install this system under the supervision of the Park's master electrician.
- Actively working with groups interested in constructing high-voltage DC (HVDC) transmission lines in South Dakota. These HVDC lines would allow export of wind power and ease transmission constraints on the regional network.
- Designed a transmission line that would allow transfer of 3 GW of power at 700 kV (bipolar) under aesthetic constraints specified by the members of County Commissions in counties that could be in the path of the HVDC line.

Respectfully submitted,

Dr. Steven M. Hietpas, Coordinator  
Center for Power System Studies