Center for Power Systems Studies
Semiannual Meeting -- Milbank, SD
COORDINATOR'S REPORT
April 13, 2000

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

As we close the 32nd year of operation of the Center for Power Systems Studies we can be proud of the center's accomplishments and look with anticipation to the future.

I. Project and research activities during fall 1999 and spring 2000 Terms

a. Casey Sichmeller, junior EE student, under my guidance has been supervising three senior mechanical engineering students in the design of a mobile dynamometer unit for use in the new energy conversion laboratory. Casey has also helped with the web page development of the Spring 1999 North Central States Power Technology Tour at

http://learn.sdstate.edu/shietpas/cpss/fieldtrp/tour99/tour99.htm

b. Senior design project -- *Prevention of islanding of distributed generators using a power line carrier communications system,* advisor Dr. Michael Ropp.

c. Completed the contractual requirements of the American Public Power Association DEED grant awarded for the 1999 year. Many thanks to the sponsor Missouri River Energy Services and Jerry Tielke. Mark Naden finished his Thesis *Voltage Sag Correction Using an AC Voltage-Voltage Converter* and passed his oral exam in December of 1999. Mark is now working as a research and design engineer for Onan Generator Co, MN.

d. Awarded a National Science Foundation (NSF) EPSCoR Equipment grant in the amount of $19,680 towards the purchase of a 10kVA 3-phase programmable power supply, a 3kVA programmable load bank, a PC, and National Instruments LabVIEW software. This equipment is for use in the on-going AC Voltage-Voltage Converter and related research.

e. Awarded an NSF Course, Curriculum and Laboratory Improvement (Adaptation and Implementation, A&I) Grant for the period from January 1, 2000 to December 31, 2001. The title of the grant is *Improving Undergraduate Power Engineering Education: A System-Level Approach to Teaching Electromechanical Energy Conversion.* The grant is co-authored by Michael Ropp. The award amount is $139,987 with matching from the SDSU Foundation, Alumni and Corporate sponsors in the amount of $155,615.

II. Other scholarly activities

a. Presented a paper at the IEEE Rural Power Conference in Indianapolis, May 2-5, 1999.

b. Will attend the IEEE Rural Power Conference in Louisville, KY, May 6-10, 2000.

c. Co-Chaired the South Dakota Electrical Council 2000 Convention, April 2-3, Brookings, SD.

d. Submitted proposal to Governor Janklow's Faculty Awards for Teaching with Technology titled *Redesign of Energy Conversion -- EE430 -- Using Electromagnetic Simulations and Animations.* Waiting for reply.

e. Reviewed Electric Machines: Principles, Analysis, and Design, Jimmie J. Cathey, for McGraw-Hill. Found this book to be quite useful for the NSF project.

III. New/Additional student opportunities and power/power related graduates.

a. Continued the offering of scholarships to:
freshman/sophomore level (less than approximately 50 credits completed)
sophomore/junior level (less than approximately 80 credits completed)
junior/senior level (less than approximately 110 credits completed)
These opportunities resulted in awards to the following individuals:
    1. Jim Steinmeyer (ME Senior)
    2. Scott Hoberg (EE Senior)
    3. Scott Sibson (EE Senior)
    4. Casey Sichmeller (EE Junior)
    5. Jason Voeltz (EE Junior)
    6. James Ziebarth (EE Sophomore)
    7. Troy Metzger (EE Sophomore)
    8. Andy Koob (EE Sophomore)
    9. Tonya Nielsen (EE Sophomore)

b. Removed the section on the CPSS homepage for power-related companies to advertise full-time and internship positions. Not enough response from member companies to maintain this part, although I did have a record number of inquiries by power companies for upcoming graduates.

c. Section on the CPSS homepage for students to make available their resume is maintained and updated regularly -- please take a look here when searching for interns or new-hires. The web address is: http://learn.sdstate.edu/shietpas/cpss/interns/Stdnt_res/res_pg.htm. Have had great success working with power companies in locating internship positions for power oriented students. Please see inside cover of packet and note the number of power students and summer positions obtained -- still a few looking.

d. Continued the 1998/99 senior design project involving the Automated 3Φ Water Rheostat Load bank. Current group has unit working in closed-loop, will complete in fall of 2000.

e. At a time when the number of companies seeking power grads is at an increase, we find ourselves at the lowest number of graduating seniors in recent history and fewer power-oriented graduating students, as a direct consequence. We have one power student at present, Nail Sabbah.

f. The only student to graduate in 1999/2000 school year and take a position with a power-related company is Brian Schuldt, who graduated in December and took a position with Dana Larson and Roubal in MN.

IV. Faculty and the Power Program

EE Power Faculty are Dr. Steven M. Hietpas and Dr. Mike Ropp.

Fall 1999

a. Taught Circuits II (EE221) for both fall and spring terms. This has allowed me considerable contact with students early in their career and have identified prospect power engineering

b. Taught Energy Conversion (EE430) with 17 students (1/2 the number of students from previous year).

c. Seminar in Power Systems was cancelled due to low enrollment (need greater than or equal to 10 students for a course to be taught).

d. Have arranged for three possibly four students to take Power Systems Analysis next fall (very encouraged by the students response/desire to take this course). The course will have to offered as either a 2 or 3 credit Special Topic EE492 course however.

e. The Spring Power Technology Tour should take for May 15-19.

Spring 1999

a. Seminar in Power Systems was cancelled due to low enrollment (need greater than or equal to 10 students for a course to be taught).

b. Dr. Mike Ropp taught Linear Control Systems in the spring 2000 term. Is willing and ready to teach Energy Conversion and Power Systems courses.

c. Dr. Ropp is working on offering a power electronics course for those interested.

V. Research Laboratory

The laboratory has recently been upgraded in the following areas:

a. 10 kVA 3-phase Programmable Power Supply ($35,000)

b. Programmable Electronic DC Load Bank ($1,900)

c. Programmable Electronic 3-Phase AC Load Bank ($7,900)

d. New PC ($3,500)

e. New lab bench ($8,000)

These additions/upgrades were partially funded through CPSS funds, but primarily through EPSCoR, SDSU equipment dollars, either through capital or foundation funds.

VI. New Energy Laboratory

a. See COE and EE reports.

Respectfully submitted,

Dr. Steven M. Hietpas
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