

Center for Power Systems Studies  
Spring Meeting  
MINUTES (Unofficial)  
Bismarck, ND - April 19, 2007

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1. **Call to Order:** Steve Hietpas called the meeting to order at 1:25 pm
2. **Recording Secretary: John Knofczynski – Heartland Consumers Power District**
3. **Roll Call:**

Steven Hietpas	CPSS Coordinator – SDSU
Dave Muggli	Basin Electric Power Cooperative
Terry Texley	Western Area Power Administration
Jim Edwards	East River Electric Power Cooperative
Larry DeKramer	East River Electric Power Cooperative
Mike Sydow	Northwestern Energy
Nate Jones	Heartland Consumers Power District
John Knofczynski	Heartland Consumers Power District

**Members Not Represented: Black Hills Power & Light, Missouri River Energy Services, MidAmerican Energy Company, Otter Tail Power Company and Xcel Energy**

4. **Approve Agenda:**

Larry DeKramer moved and Mike Sydow seconded to accept the agenda as submitted. Motion carried.

5. **Approve Minutes of Oct. 16<sup>th</sup>, 2006 Fall Meeting:**

Terry Texley moved and Nate Jones seconded to accept the minutes. Motion carried.

6. **Membership List:**

Dr. Hietpas circulated the list of members and associate members and requested that those present update the lists with any known changes.

7. **Coordinator's Report:** Report for the Spring Meeting was included in packet. Some of the highlights of the report were:

- *Teaching Activities during Spring 2007 Term*
  - Spring semester courses taught by Dr. Hietpas
    1. EE315 (3 credit) Linear Controls, 29 students
    2. EE434 (3 credit) Power System Analysis, 15 students
    3. EE343L (1 credit) Power Systems Analysis Lab, 15 students
      - New – includes use of PowerWorld Simulator an interactive power flow simulator. Hietpas plans to demo at the next meeting.
  - Mike Ropp will be on sabbatical at Sandia National Labs until May 31, 2007
- *Scholarly/Research Activity – additional detail provided in Coordinator's Report*
  - Steve Hietpas – Dr. Hietpas's activity has had an emphasis on motor drives and included presenting a paper at a NSF workshop in Sante Fe, NM in February and advising three new graduate students on this topic. Dr. Hietpas has served on the paper review committee for the IEEE Rural Electric Power Conference and will be attending the Rural Electric Power Conference in Rapid City, SD on May 6-8.

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- Mike Ropp – Dr. Ropp continues to be very active in the area of renewable energy sources (especially photovoltaic) and integration of renewables into the grid with numerous presentations, research projects, the third PV in the Parks student project and sabbatical work at Sandia National Laboratories. Dr. Ropp has served on the South Dakota Infrastructure Authority Board and the faculty search committee to support the new PhD program. He will be involved with NSF-CAREER projects for the next four years and received an NSF-EPSCoR Research Infrastructure Improvement grant which will be used primarily to support the new PhD program.
- *Scholarship Activity – See Coordinator’s Report*
  - Dr. Hietpas reviewed the scholarship recipients for spring 2007 and fall 2007 who were awarded the CPSS scholarships and other EE open power scholarships. An asterisk (\*) indicates the student was a recipient of the \$3,000 CPSS Scholarship.
    - Spring 2007 Scholarship Recipients:
      - Seniors – Austin Hoekman\*, Trevor Howard, Molly Houck, Lowell Dolney, Patrick Cisar
      - Juniors – Russel Halgerson, Derek Bryant, Braden Bills, Chris Graff
      - Sophomores – Corey Kramer
    - Fall 2007 Scholarship Recipients:
      - Seniors – Lowell Dolney\*, Molly Houck, Trevor Howard
      - Juniors – Corey Kramer, Chris Mouw
      - Sophomores – Todd Bockorny, Tyler Wulf, Aric Lowe, Seth McGill
    - EE Open Scholarship Recipients:
      - Seniors – Steve Grantz, Matthew Tesch
      - Juniors – Christopher Diede
      - Sophomores – Eric Boese, Steven Cozine, Kirby Wicks, Joshua Cahill, Derrick Galinat
- *Power Student Status (Fall 2006 and future) – See Coordinator’s Report*
  - Dr. Hietpas reviewed the employment status of the power students that graduated in fall 2006 and those graduating in spring 2007. He also discussed the upcoming graduates, the unique qualities of the students, and the internship and employment opportunities the students had found for the summer.
  - For the fall of 2006, two of the four EE graduates accepted jobs in the power industry. For spring 2007, five of the 14 graduating students have or are planning to take jobs in the power sector. Since spring 2000, approximately 42 of 182 (23 percent) of SDSU EE graduates are pursuing a career in power or working in the power industry. The trend for students pursuing careers in power has been increasing steadily for the past few years reflecting the increasing demand for engineers within the power industry.
- *Summer Activity – See Coordinator’s Report*
  - Dr. Hietpas has scheduled the Power Technology Tour for August 13-17. This summer he is the Program Coordinator for the EE program. He will be supervising two graduate students on new power systems and motor drive designs, and one undergraduate student in work on the CPSS website and on the Who’s Who in Power database. Dr. Hietpas encouraged the CPSS members to visit the CPSS website (<http://cpss.sdstate.edu>). Dr. Hietpas will also be presenting a paper at the American Society of Engineering Educator’s Conference and Convention in Honolulu, HI on June 22-27. Planning for the 2008 Regional Power Conference will be initiated with the Conference Committee.
  - Dr. Ropp will return from sabbatical on May 31, 2007. This summer he will continue his work with the Wind Resource Assessment Network, NSF-EPSCoR, NSF-

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CAREER, and other organizations. He will also be supervising eight graduate students on various projects.

- **Thank You Letters:**
  - Hietpas circulated the scholarship award winners' thank you letters.

8. **Proposed Power Career Brochure**

The proposed brochure, created by Tom Schoening of East River, was distributed to the group for comment. The purpose of the brochure is to recruit students interested in engineering and promote careers in the power industry. The members had several comments on the brochure including requests to add an environmental emphasis, inclusion of substation design and system protection to the list of technical areas, and a color scheme to more closely match SDSU's.

9. **CPSS Student Project for 2007/2008**

The members reviewed a proposal titled "Field Programmable Gate Array (FPGA) Development for an AC Induction Motor Drive" provided by Dr. Hietpas. There is considerable interest in the industry for this type of application. Over the past two decades, AC motor drive technology has advanced appreciably. For over 15 years, the sophisticated algorithms used for establishing optimal voltage and current control to the AC motor were implemented in application specific microcontrollers or digital signal processing ICs. The current trend within the industry is to implement these algorithms in FPGAs.

SDSU does not have this technology within the electromechanical systems course (EE430). SDSU has designed and constructed its own 3-hp, 3-phase Volts/Hz induction motor drive which uses a microcontroller. The objective of the student project would be to have the students investigate FPGAs and design and implement an FPGA to replace the existing microcontroller and all its functionality. Two or three students will be selected from the senior design I class for this project in the fall.

The existing laboratory equipment is well suited for the project. Additional equipment for the project will be purchased through CPSS support funds and funds from the SDSU Foundation as appropriate. The budget for the project is estimated to be \$1,000 for the purchase of equipment and materials.

Terry Texley moved and Jim Edwards seconded to accept the student project proposal as submitted. Motion carried.

10. **Proposed Budget for 2007/2008: Circulated by Coordinator.**

Jim Edwards moved and Dave Muggli seconded to accept the Proposed Budget  
Discussion:

- The Budget Report showed several members and associate members had not paid their dues. Hietpas reported that this is likely due to an accounting issue with the SDSU Foundation. He thinks that the issue has been resolved and will verify that the dues have been received.
- The account balance has been increasing due to lack of salary support requests from graduate and undergraduate students. Hietpas believes there will be requests this year.
- Hietpas also noted that last summer's PV in the Parks project had been more expensive than anticipated. The travel stipends provided by CPSS for the students was greatly appreciated.

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- Several organizations are considering CPSS membership including 3M, Ulteig Engineers, Montana Dakota Utilities and Minnesota Power. Burns & McDonnell has been removed from the associate membership list.

Motion carried.

11. ***Date for fall 2007 Meeting and Regional Power Conference***

The fall 2007 meeting will be held at SDSU during the third week of October with the date tentatively set for October 16<sup>th</sup>. The next power conference will be held during the fall of 2008.

12. ***Adjourn:*** The meeting adjourned at approximately 2:40 pm.

Respectfully submitted,

John Knofczynski – Heartland Consumers Power District  
Recording Secretary  
April 19<sup>th</sup>, 2007  
Typed and Submitted July 14, 2007