
November 2001

Rock River Valley Section
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Event

Sense

The Institute of Electrical and Electronic Engineers, Inc.

Joint Computer/Control Systems, IAS, PELS Chapters Meeting Wind Farm Power Systems

When

Thursday, November 29, 2001

Where

Northern Illinois University, DeKalb, IL; Engineering Building Auditorium, Room 101. Please call Don Zinger at 753-0540 if you need directions from outside DeKalb. Please see the map on page 2.

Parking will be allowed in the engineering parking lot behind the engineering building after 5:00 PM at no charge.

Agenda

- 6:00 PM Social Time
- 6:30 PM Dinner
- 7:30 PM Presentation

Program

Wind energy is a new type of power generation adopted into the power network. The capacity of wind turbine generation has increased over the past few years to approximately 10 GW worldwide. In spite of this increase in power the interaction between wind turbines/wind farms and the power grid is not widely known. The uncertainty of these interactions have caused utility companies to become concerned about the power quality delivered to its customers. There is a need, therefore, to understand the impact of wind generation on the surrounding network.

There are a number of elements that affect the quality of power in a

wind farm. One element is whether the grid connection is weak or stiff. The nature of electric load profile during the day is another important factor. The characteristics of wind turbulence at the site must also be taken into consideration. Attention must also be given to the type of wind turbines used. Other factors to be accounted for are the location, type and size of various power conditioning equipment. Even with all of these factors, the harmonic distortions in the existing wind farms are well below the disturbance level.

Details of these points will be discussed in this presentation. Simple solutions to many of these problems will be discussed. For example the wind farm output current could be controlled to keep output voltage constant with weak grid connections. Also, power converters interfaced with wind turbines, are capable of controlling the output voltage without additional equipment.

Speaker

Eduard Muljadi received his M.S. and Ph. D. (in Electrical Engineering) from the University of Wisconsin, Madison. He joined the National Re-

newable Energy Laboratory in Golden, Colorado. His current research interests are in the fields of electric machines, power electronics and power systems in general with emphasis on renewable energy applications. He holds two patents in power conversion for renewable energy.

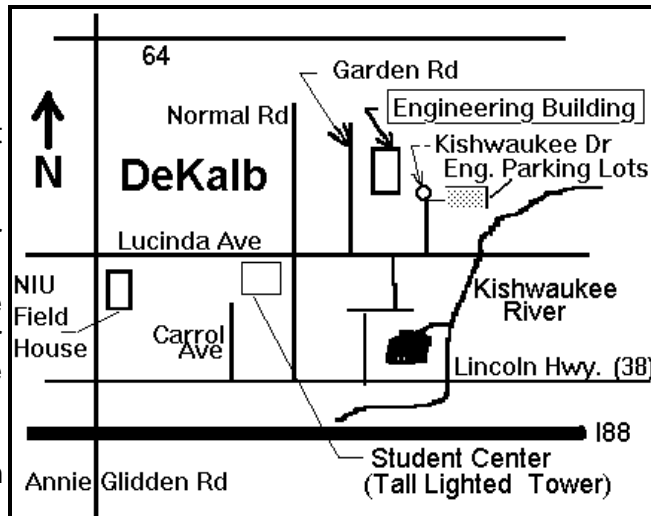
Meal/Reservations

Dinner will be a Chinese buffet from Yen Ching's in DeKalb. Please reserve your space, select your meal by **calling Jennifer (jthomas@ceet.niu.edu) at 815-753-9974 or sending her an email by Monday, Nov 26, at noon**. Please include the following information: your name, phone number, email address, IEEE member number and meal selection. The cost of the dinner is **\$5 for members, \$10 for non-members, and \$2 for students**.

Note The meeting is open to the general public. You need not be an IEEE member. Guests are welcome. However, please call to enable us to make appropriate arrangements.

Notice of Change to Electronic Delivery Only of RRVS Newsletter

Beginning with this newsletter, the November '01 edition of the *Event Sense*, delivery will be via electronic only. Email notification of availability of the newsletter at the newly updated section website (NOTE NEW WEB ADDRESS ON PAGE 1 IN UPPER RIGHT HAND CORNER OF THE TITLE BAR) will be sent to all members with whom we have a valid email address on file. So please make sure we have your email address. For those members without an email address and who would like assistance in obtaining one, please contact one of the RRVS Officers for assistance. Members who do not plan to have email, you will be sent a post card with a brief announcement of the meeting AND the availability and URL location of where the newsletter can be viewed via a web browser. This is dependent on the IEEE database having an accurate address for these individuals. Please check the accuracy of your address in the IEEE database (see pg 4 for access to your data in the IEEE database).



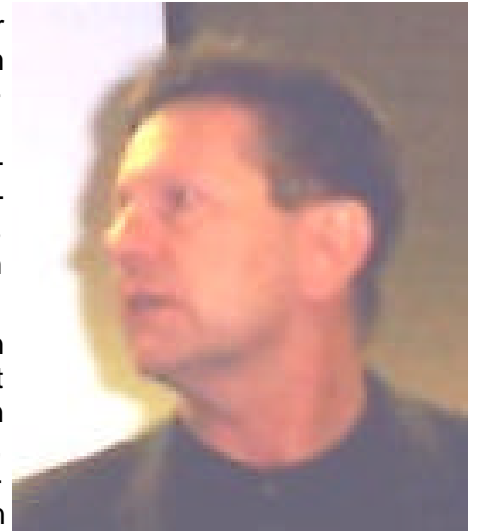
Chicago/Rockford IEEE Consultants' Network Meeting

The next meeting will be on Monday, November 19, 2001. The optional informal dinner is at 6:15 PM at Bakers' Square (270 E. Northwest Highway and North Court), and the meeting at 7:30 to 9:00 PM at the Palatine Public Library (700 North Court, Palatine, IL 847-358-1216). This month there will be an open discussion on "The 10 Rules for Entrepreneurs". Information about the network can be obtained by e-mail: g.l.blank@ieee.org.

Oct Meeting Recap

Advancements in ac industrial drives have been propelled through improvements in power electronics and control hardware. Improvements in IGBTs allowed faster switching speeds, which provides lower thermal losses. Digital signal processors and improved control algorithms allow ac drives to address applications previously handled by dc drives. The capacitive coupling between the IGBT, power structure and control platform components influence drive dynamics and contributes to signal and waveform distortion. This differential and common mode capacitance is often disregarded as "parasitics" and not considered in designing the control.

The speaker, Russel Kerkman who is an Engineering Consultant with Rockwell Automation/Allan Bradley Company in Mequon, WI, presented a number of major contributors to the waveform distortion applied to the motors, analyzed them, quantified them, and presented a strategy for correction. Simulation results were also presented to validate the analysis and experimental results demonstrate the strategy's benefits.



January Tour Preview

A tour is planned at Danfoss Corporation, now located on the northeast side of Rockford near Farm & Fleet on Riverside.

Submissions to *Event Sense*

Send articles and job ads to the *Event Sense* editor, Bob Parro, via e-mail (preferred), or fax. Job ads will run for two consecutive months. Contact the *Event Sense* editor if the ad needs to run longer. Please make submissions by the twenty-fifth of the month. All submissions are subject to editing for style, clarity, and space considerations.

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Calendar

November Section/Student Branch Meeting Nov 29

Ed Muljadi from the National Renewable Energy Laboratory will discuss Wind Farm Technology at NIU Engineering Building in DeKalb, IL

January Section Meeting Jan 31

Tentatively, a tour of Danfoss Corporation is planned



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Control Systems
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