

SCANFAX

March 2001

Volume 53, Issue 3



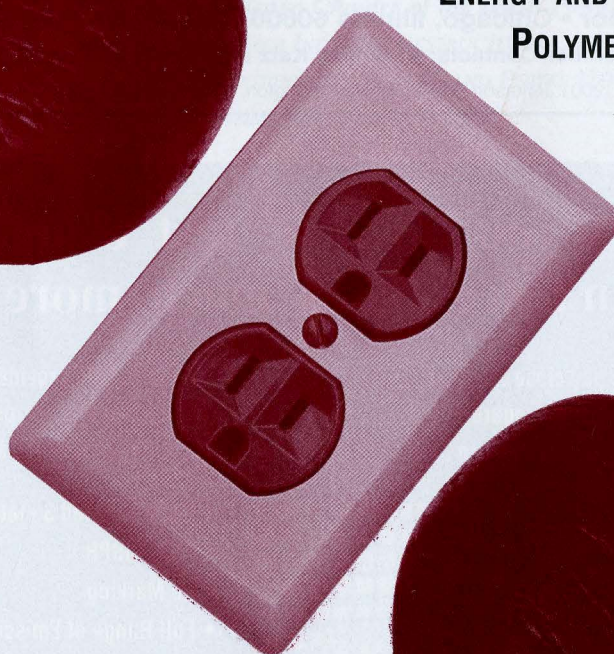
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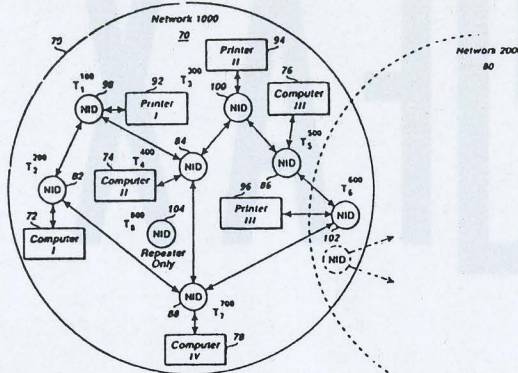
A publication of the
Institute of Electrical & Electronics Engineers
— Chicago Section —

COMBATING POWER DISTURBANCES

S&C ELECTRIC TEAMS UP WITH US DEPARTMENT OF
ENERGY AND SANDIA NATIONAL LABORATORIES AT
POLYMER PRODUCTS FABRICATION BUILDING



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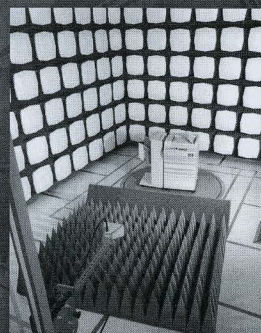
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A publication of the
Institute of Electrical & Electronics Engineers
— Chicago Section —

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Published for IEEE by
Slack Attack Advertising

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Printed By

Town & Country Printers
Columbus, WI

SCANFAX (ISSN #0018-1297) is a monthly publication (except July and August) of the Chicago Section Institute of Electrical and Electronics Engineers, 8196 Cass Ave., Darien, IL 60561, (800) 898-4333 or (630) 493-4333. It is published by Slack Attack Advertising, 6400 Gisholt Dr., Suite 203, Madison, WI 53713, (608) 222-7630. Printing is by Town & Country Printers, Columbus, WI 53925. For advertising information, contact Slack Attack Advertising.

Subscriptions included in IEEE membership dues; non-member subscriptions: \$25 per year.

Address corrections should be sent to the IEEE office, 8196 Cass Ave., Darien, IL 60561.

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Monday, March 26, 2001

CHICAGO SECTION EXECUTIVE COMMITTEE MEETING

Tuesday, March 13, 6:30 pm

DeVry DuPage, Room TBA, 1221 N. Swift Rd., Addison, IL

No registration needed.

ATTENTION! IEEE Chicago Section Chapter Chairpersons

Meeting notices and schedules are published **FREE** in SCANFAX!

DEADLINES: February 25 for April Issue

March 25 for May Issue

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IEEE 2001 CHICAGO

The 2001 IEEE-Industrial Application Society's Annual Meeting and Exposition is being held in Chicago this year. This conference will be held at the Hyatt Regency Hotel in downtown Chicago, from September 30 through October 4, 2001.

This conference will share the latest information in the areas of:
* ELECTRICAL MACHINES * INDUSTRIAL DRIVES * POWER CONVERSION
* POWER DISTRIBUTION * POWER ELECTRONICS

The exhibit area offers you an opportunity to view products and services of Local and National electrical equipment and service vendors. The IEEE is looking for Sponsors and Contributors and Vendors for this event if you are interested in participating, please contact Irwin Smiley at CTE Engineers (312) 938-0300 or email irwin.smiley@cte-eng.com.

Please reserve the dates on your calendar and plan on attending.
More information will be available as the date approaches.



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S&C ELECTRIC TEAMS UP WITH

US DEPARTMENT OF ENERGY AND

SANDIA NATIONAL LABORATORIES AT

POLYMER PRODUCTS FABRICATION BUILDING

BY SANDY RYAN



In order to address a series of power disturbances at its Polymer Products Fabrication Building, S&C Electric Company of Chicago recently installed a mobile PQ2000 Power Protection System (now known as the PureWave UPS System) to provide uninterrupted electrical service to the entire building. The system was installed in May of 1999 and performed from July 1999 through early January 2000.

The goal of the Mobile UPS Installation Project was to evaluate the economic benefit of installation and performance of the UPS system. The unit is designed to provide up to 2 MVA of uninterrupted power for up to 15 seconds at 480 volts. Units up to 20 MVA at voltages up to 38 KV are commercially available.

Basically the UPS system works by sensing a power disturbance on the utility side of the electrical supply and immediately isolating the utility from the building in the event of a power disturbance. During the time the UPS isolates the utility from the building, it provides the building with power until the utility is reconnected by the UPS system.

The power quality evaluation was sponsored by the United States Department of Energy through Sandia National Laboratories. Ernst Camm, S&C's project engineer, said the project involved two phases that included collecting and reviewing power disturbance data, the effects on process equipment and continuous

COMBATING POWER DISTURBANCES

monitoring of utility source and building load voltages and currents.

"During this time period a circuit breaker was installed between the UPS and the building's supply transformer to simulate utility-side interruptions to the load," Camm said. "This gave us an impression of the nature of the power disturbances that were being experienced at the building, the impact of the disturbances and then we were able to determine what equipment was affected by momentary disturbances (less than 15 second duration). The goal of the first phase was to assess the impact of power distribution and the economic impact of the disturbances."

Information reviewed included the serving utility's distribution system one-line diagrams for the S&C Industrial Complex and Polymer Products Fabrication building and the effects of power disturbances on the building's electrical and process equipment.

Ride-through characteristics of equipment affected by power disturbances were reviewed along with existing building power-disturbance records. Production losses associated with power disturbances were reviewed to determine economic impact.

Data reviewed throughout the first phase of the evaluation revealed that hydraulic pumps used for thermalset molding machines in the polymer products fabrication process were primarily affected by momentary interruptions and voltage sags. Those with sufficient depth and duration resulted in AC starter contractors of the motors driving the pumps dropping out.

Camm said the tripping of motors driving the hydraulic pumps could affect up to 12 molding machines, each holding up to 4 parts. If all molding machines were affected during momentary power disturbances, direct production losses could amount to around \$36,000 per disturbance. During the 13 power disturbances recorded in 1998, production losses equaled about \$468,000. He added that production delays associated with the disturbances could also severely impact production schedules of other S&C products, thus resulting in further losses.

The second phase of the evaluation monitored power quality provided by the system. Two Dranetz/BMI PQNode 7100 disturbance analyzers were installed to continuously monitor 480-V phase-to-neutral voltages on the source side of the UPS system. The analyzers registered RMS disturbances whenever any of the three phase-to-neutral voltages on either the source or load side of the UPS system dropped below 90% of the nominal voltage or increased about 110% of nominal voltage.

Camm said during the six-month monitoring period, 12 voltage sag events were recorded. It was considered an event when the nominal voltage descended under 90% of its nominal value and the voltages in that time ranged from 79 to 80% of nominal voltage.

"Normally you could also see interruption on the utility side and the voltage could also disappear all together," Camm said. "Unfortunately we did not experience that during the time period so we installed a circuit breaker in front of the UPS. We simulated several of these situations and the UPS system immediately kicked in and supplied the voltage to the load."

The UPS power quality evaluation showed that momentary power disturbances can affect the fabrication process; the economic impact of power disturbances based on direct production losses and that the UPS system can be effectively applied to provide uninterrupted power to the building's load during momentary power disturbances that included voltage sags, swells and interruptions.

"This was not a traditional engineering approach to a project—it was slightly different in the sense that we had a commercial interest to find this solution," Camm said. "We already had a piece of equipment that we needed to demonstrate that was working effectively and chose an application to do so. Through the measurements, the UPS system operated as intended to protect the load from shutdown from these momentary disturbances." ■

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LUNCH MEETING

Chicago Chapter of the IEEE Power Engineering Society **Power Industry Restructuring and its Effect on Distribution Systems and Power Users** Wednesday, March 14, 2001

John W. Estey, President & CEO, S&C Electric Company and President-Elect IEEE Power Engineering Society

About the Topic:

As the electric utility industry around the world lumbers toward a new, restructured environment, the strategies for success need to change from those that worked in the past. Unfortunately, the restructuring imposes different effects on the various segments of the industry but, too commonly, the same strategies are employed for multiple segments. The media have been reporting on the impacts on the generation and transmission segments and the trickle-down effect on power users, especially in California. This talk will examine the impact that the restructuring is having on distribution systems and the implications those changes have for power users. The talk will also provide a brief update on the Power Engineering Society, its organization, finances and plans.

About the Speaker:

John W. Estey is President and Chief Executive Officer of S&C Electric Company, Chicago, Illinois, and Chairman of the Board and Chief Executive Officer of S&C Electric

Canada Ltd., the Canadian subsidiary of S&C Electric Company.

Mr. Estey joined S&C Electric Company in 1972. At S&C, his career has included numerous and diverse responsibilities in the company's operations. In June 1988, he was elected President and Chief Operating Officer, and subsequently became S&C's Chief Executive Officer in June 1997.

John Estey has served on the IEEE/Power Engineering Society Governing and Executive Boards since 1992 and currently is President-Elect of this Society. John also is a member of the Board of Directors of the National Electrical Manufacturers Association and The Executives' Club of Chicago.

John was born and raised in Toronto, holds the degree of Bachelor of Science in Electrical Engineering from Queen's University in Kingston and received a Master's Degree in Business Administration from the University of Chicago in 1976.

Location:

Chicago Bar Association, 321 South Plymouth Court (Near Jackson & Dearborn), Chicago, IL 60604

Time:

11:30 Social
12:00 Lunch (optional)
12:15 Presentation
1:00 Adjourn

Reservations:

Lunch tickets can be purchased in the lobby bookstore (\$10.50). Please call the IEEE Business Office at (800)898-IEEE to make your reservation.

Information:

For more information, please visit the Chicago Chapter IEEE PES web site: www.ece.iit.edu/~flueck/chicago_pes/

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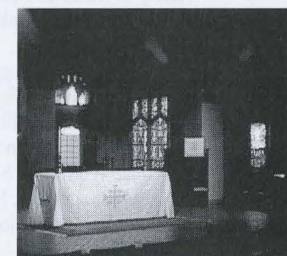
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EVENING MEETING

IEEE - IAS Dinner Presentation

Grounding Sensitive Electronic Equipment - IEEE Emerald Book

Wednesday, March 21, 2001

Douglas S. Dorr, Electrical Engineer

About the Topic:

The presentation will review the topic of grounding for facilities with sensitive electronic equipment such as computer rooms,

data processing, and telecommunications facilities. The presentation will review the integration of various functional grounding subsystems including NEC, Signal reference

systems, lighting protection, and telecommunications/data/signaling circuit grounding. Various equipment topologies will be reviewed including single point, multipoint grounding, and signal reference grids. In addition, grounding of power sources will be briefly reviewed.

About the Speaker:

Doug Dorr received his BS in electrical engineering from the Indiana Institute of Technology. Currently, Doug Dorr supervises all testing and research in the EPRI Power Quality Test Facility, leads EPRI PEAC's field investigation team, and has specialized in power quality testing. As director and manager of a national power laboratory for BEST Power Technology, he managed all aspects of a comprehensive power quality study for North America. Mr. Dorr is the current Chair for the IEEE "Emerald" Book on Power and Grounding Electronic Equipment.

NEW Location:

Note New Location! Meeting has moved! COSTA'S (GREEKTOWN) 810 WEST VAN BUREN, Chicago. Costa's is located in Greektown near Van Buren and Halsted.

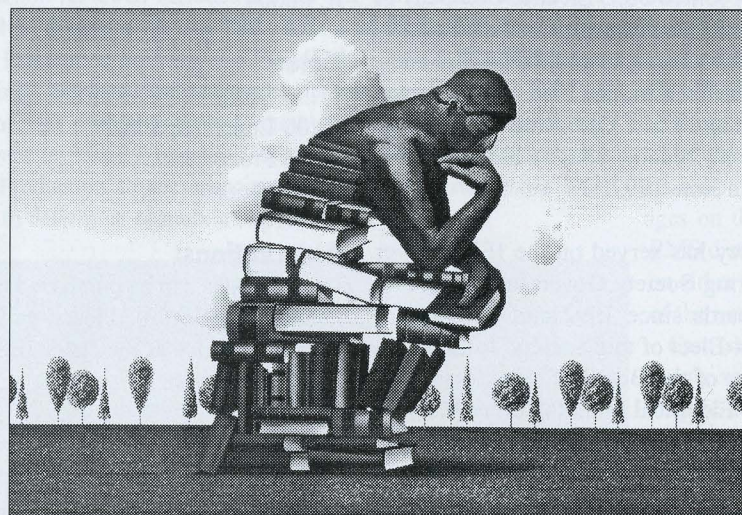
Time:

5:30 PM. Social
6:00 PM Dinner
7:00 PM Presentation

Reservations:

Your cost includes the presentation and a 4 course dinner with a roast lamb & grilled chicken combination platter (\$25 IEEE Member/\$30 non-member). Valet parking is included with your meal. Please call the IEEE Business Office at (800)898-IEEE or (630)724-0200 with your reservation by March 8.

Note: For P.E. licenses that require continuing education for renewal, attendance at IEEE Technical Meetings is acceptable as one Professional Development Hour (PDH) per meeting.



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The North Shore Radio Club Giant Hamfest and Electronic Job Fair Sunday, March 25, 2001

About the Event:

Electronic equipment, Amateur radios, Computers, parts and accessories will be featured at The NS9RCfest, Sunday March 25. This annual giant Hamfest and Electronic Job Fair is sponsored by the North Shore Radio Club and is attended by ham radio, electronic and computer hobbyists from all over the Midwest. It is a great place for young electronic enthusiasts to meet and for job seeking engineers and technicians to make connections.

NS9RCfest also features commercial exhibitors, amateur radio licensing testing (from 9 AM to noon), information displays and hourly prize drawings. North Shore

Radio Club President Jacob Fishman, Northbrook, says "Come on out and find a good deal, see the equipment and learn new applications of wireless and computer technology. This is an excellent opportunity to locate a missing part, instruction manual or connector. You will be able to purchase technical equipment, or take a ham radio license test. It is a good time to meet friends, check out collectibles, to buy or sell and just have fun."

Location:

Lake County Fairgrounds
Rtes 45 and 120
Grayslake, IL

An all indoor event, formerly known as LAMARSfest.

Time:

8 AM to 2 PM

Reservations:

Admission to the event is \$5 for a double-stub prize ticket in advance or \$6 for a single-stub prize ticket at the door. Seller's tables are \$10 - \$15. Parking is free.

Information:

To learn more, call 847/291-4160; or check www.ns9rc.org for ticket and table forms and more information

EVENING MEETING

Chicago/Rockford IEEE Consultants' Network Meeting Why Every Competitor Wants Your Good Customers Monday, March 26, 2001

Harvey Broadsky, Consultant

About the Topic:

In addition to networking and sharing leads and referrals, there is usually a guest speaker. In March our speaker will be Harvey Broadsky. Harvey will be speaking on "Why every competitor wants your good customers". Retaining your customers' loyalty requires planning and concerted effort. Harvey will share with us his 30 years of experience in consulting and retaining customers.

dinner. You are invited to join us for the optional informal dinner. We order individually from the menu.

Location:

Dinner: Bakers Square
270 E. Northwest Highway and North Court, just south of the library.
Meeting: Palatine Public Library
700 North Court, Palatine, IL

Reservations:

Reservations are not required. There is no charge for attendance at the meeting. Both members and non-members are invited.

Information:

e-mail: g.l.blank@ieee.org
and at our web site
<http://www.drblank.com/coaction.htm>

See you on March 26 and bring consultants and those who aspire to be consultants.

Meetings are usually held on the last Monday of odd-numbered months. Preceding the meeting, we will be getting together for our group

Time:

6:15 PM-Dinner
7:30 - 9:00 PM-Meeting

CALENDAR OF EVENTS

Date	Event	
March 13	Chicago Section Executive Committee Meeting	March 25
March 14	IEEE Power Engineering Society POWER INDUSTRY RESTRUCTURING AND ITS EFFECT ON DISTRIBUTION SYSTEMS AND POWER USERS	The North Shore Radio Club GIANT HAMFEST AND ELECTRONIC JOB FAIR
March 21	IEEE-IAS Dinner Presentation GROUNDING SENSITIVE ELECTRONIC EQUIPMENT - IEEE EMERALD BOOK	March 26
		Chicago/Rockford IEEE Consultants' Network Meeting WHY EVERY COMPETITOR WANTS YOUR GOOD CUSTOMERS

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