



## K - Factor Rated Distribution Transformers

Nigel P McQuin

Electrical Power Consultant



Distribution transformers loaded with non-linear loads are subjected to harmonic currents that result in increased heating losses and temperature rises. These loading conditions are becoming more important with the widespread use of variable speed drive systems, electronically controlled equipment and “smart” office loads. This loading has been identified as a potential source of failures of transformers not specifically designed, and hence worthy of special attention by certification and standards organizations.

Underwriter’s Laboratories (UL) were the first to recognize this problem as a special application class, and define a calculation method to quantify the severity of the harmonic loading by a single factor K. Subsequently the IEEE Transformer Committee C57.110 working group has developed the work further with application guides, de-rating calculations and transformer K factor rating verification test methods.

Mr. McQuin, as a member of the C57.110 working group, and primary author of the test verification clauses, will begin by explaining the origin of harmonic currents in typical applications. His talk will include a description of the calculation methods for the factor K, and the new harmonic loading factor Fhl. An overview of the standard will be presented, which will include test methods and equipment performance evaluations.

Place: Westinghouse Energy Center, Monroeville  
Date: January 22<sup>nd</sup>  
Social: 6:30 PM  
Program: 7:00 PM

This meeting will be of particular interest to members who belong to the PES and IAS societies. Reservations are required for your attendance. If you have questions or you would like to RSVP, please contact Charles Urso at (412) 338-4871 or by email at [curso@llitechnologies.com](mailto:curso@llitechnologies.com) by January 15<sup>th</sup>, 2004.

Directions: From downtown Pittsburgh, take the Parkway East Outbound to Exit 14A (Monroeville). Cross the traffic light (Business 22) and proceed on Rt. 48 South for two traffic lights. Turn left onto Northern Pike. Proceed East ~ 0.2 miles and turn right at the first traffic light onto Westinghouse Drive. Travel 0.7 mile to the three flags where the main entrance is located. Parking in the evening will be plentiful in the large area in front of the building. Enter the main entrance. Check with the security inside. You will be directed to the proper auditorium for the presentation.

From PA Turnpike, take Exit 57 (Monroeville). After the toll plaza, get in the left lane (Business-22). At the first light, turn left on to Rt. 48 South and follow the directions shown above.

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## Preparing for Your Major Career Changes, Voluntary and Forced Occurrences

Nigel P McQuin

Electrical Power Consultant

During the course of the careers of virtually every single professional, voluntary and forced occurrences of changes will transpire. These can be pleasant experiences of new hope and opportunity for the future, or they can be devastating events that shake you to the very core. The effects can cause major upheavals in your life, including the complete relocation and re-settling of your whole family. All previous connections and acquaintances can be severely strained, and financially major hardship may be experienced during a period of transition. During such events the preparation and structure of your whole career strategy can have a profound effect on your response, and the survivability, to the change process.

Mr. McQuin who has had personal experience of several major career changes, family relocation and being laid-off, will discuss this important subject. The elements of a successful career plan will be developed, which will stress the importance of professional networking, financial planning, family and community support. Advice will be offered on how to be prepared to handle the company downsizing or relocation announcement, and how to come out of this situation with a new sense of hope in your career.

Place: Westinghouse Energy Center, Monroeville  
Date: February 18<sup>th</sup>  
Social: 6:30 PM  
Program: 7:00 PM

Reservations are required for your attendance. If you have questions or you would like to RSVP, please contact Aftab Khan at (724) 696-1426 or by email at [aftab.khan@us.abb.com](mailto:aftab.khan@us.abb.com) by February 12<sup>th</sup>, 2004.

For directions to the meeting location see the notice directly above.



## Power Factor and Harmonics

Keith H. Sueker, P.E.



The use of power electronics equipment has often put the user in the position of having to meet strict power company limits on harmonic currents and to pay attention to avoiding or minimizing power factor penalties. Yet these two items are not always well understood by those responsible. For example, did you know there are two kinds of power factor? Or why do power factor correction capacitors sometimes cause damaging harmonic overcurrents? This program will explain the basics of both power factor and harmonics and will explain workable measures to assure conformance to standards. It should be helpful to most engineers working with power electronic equipment. A reference booklet will be supplied.

Mr. Sueker has designed high power harmonic mitigation filters for industrial clients and has conducted tutorials on harmonics at national IEEE/IAS meetings. He holds an M.S.E.E. (1950) degree from Illinois Institute of Technology and is a Professional Engineer in the Commonwealth of Pennsylvania. Mr. Sueker has forty years of experience in power electronics and is currently working with Curtiss-Wright Electro-Mechanical Company on electromagnetic aircraft launching systems for carriers.

Place: Westinghouse Energy Center, Monroeville  
 Date: February 5<sup>th</sup>  
 Social: 6:30 PM  
 Program: 7:00 PM

This meeting will be of particular interest to members who belong to the PES and IAS societies. Reservations are required for your attendance. If you have questions or you would like to RSVP, please contact Charles Baker at (412) 374-5425 or by email at [bakercf@westinghouse.com](mailto:bakercf@westinghouse.com) by January 30<sup>th</sup>, 2004.

For directions to the meeting location see the notice on the front page.



## Advanced Meeting Notices for IAS and PES



**Basics of Load Flow Analysis**  
**Thomas J. Dionise, P.E.**  
 Senior Power Systems Engineer  
 Eaton Electrical

The load flow study is one of the common tools used in power system analysis. Analysis of the steady-state performance of a power system benefits planning, design and operation. In this talk, the basics of load flow analysis will be presented. The topics will include an overview of the types of load flow studies, discussion of data requirements, brief review of common solution methods and analysis techniques. Practical examples from industrial, commercial and utility power systems will be used to illustrate the concepts. After the presentation, there will be an opportunity to work an example case study on the computer.

Place: Eaton Electrical, Warrendale  
 Date: March 4<sup>th</sup>  
 Social: 6:30 PM  
 Program: 7:00 PM

**Power Protection and Conditioning**  
**Alan Chiste**  
 Product Manager  
 Eaton Electrical

The Quality Industry is rapidly changing due to the demand for increased reliability, the heightened sensitivity of loads, and new Power Quality products and solutions. This talk will provide an update on these issues, as well as new surge protection and power conditioning products available. Topics will include designing a facility-wide protection plan, effective power quality solutions, and new technologies. A mix of theory and applications will be discussed.

Place: Eaton Electrical, Pittsburgh  
 Date: March 23<sup>rd</sup>  
 Dinner: 6:00 PM  
 Program: 7:00 PM

Detailed information for these seminars, along with directions to the meeting location will be in the February Bulletin. Mark your calendar now, and look for the details next month.

### Section Officers

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**The IEEE Pittsburgh Section**  
and  
**The Pittsburgh IEEE Professional Activities Committee for Engineers (PACE)**  
present a workshop on:

***Leadership Skills for Engineers in the Workplace***

conducted by

**Charles P. Rubenstein, Ph.D.**

Sponsored in part by IEEE Regional and Division/Society PACE Project Funds

**Overview**

The IEEE Pittsburgh Section PACE committee is presenting a workshop on leadership skills for engineers. There will be one section of the workshop as a single all-day session.

**Who Should Attend**

This course is intended to help engineers and engineering managers achieve advancements for themselves, and successes for the companies they work for.

**Key Benefits**

This workshop will help participants recognize and develop interpersonal, group, team and individual leadership skills. The format is through interactive participation, also using exercises and case studies. The skills developed are appropriate for application in management or leadership positions in various types of organizations, including business, industry and volunteer activities.

**Content**

The course will address such issues as: What are the attributes of a leader? What does a leader do? What motivates people? What motivates volunteers? What is the relationship between management and leadership? Holistic communications and active listening. Keys to leadership problem identification and solution techniques. Identification of personal interactive skills (Jungian types). Identifying conflict styles and managing conflict. Brainstorming for building teams and consensus. Coaching and persuasion. Basic presentation skills.

**Instructor**

Charles Rubenstein is a tenured professor of Engineering and Information Science at the Pratt Institute graduate School of Information and Library Science. He has an earned doctorate in Bioengineering from the Polytechnic Institute of New York and master's degree in Library and Information Science from Pratt Institute.

Dr. Rubenstein is a senior member of the IEEE. He has been a member of the IEEE-USA PACE Committees since 1999, currently serving as Vice-Chair, and a member of the Engineering Management Society Board

of Governors since 1988, currently serving his fourth term as Vice President, Member Relations. Dr. Rubenstein has been an Engineering Management Society Distinguished Visitor since 1997.

**Seminar Coordinator**

Harry Hagerty is currently the Chairman of the IEEE Pittsburgh Section.

**Location and Times**

Place: To Be Determined

Date: April 17<sup>th</sup>

Program: 8:00 AM to 4:00 PM (Lunch served)

For further information contact Harry Hagerty at (412) 492-0943 x226 [hhagerty@ieee.org](mailto:hhagerty@ieee.org).

**Registration Fees**

	By March 17 <sup>th</sup>	After March 17 <sup>th</sup>
Member	\$50	\$75
Non-Member	\$75	\$125

Registration Form

**Leadership Skills Workshop, April, 2004**

Make checks payable to "IEEE Pittsburgh Section". Submit check and registration form to Harry Hagerty, 1659 E Sutter Road, Glenshaw Pa 15116

Mr./Mrs./Ms. \_\_\_\_\_

All-day session Apr 17: \_\_\_\_\_

Home Address: \_\_\_\_\_

City and Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Member #: \_\_\_\_\_ Grade: \_\_\_\_\_

Amount enclosed: \$ \_\_\_\_\_

**Nomination of Officers for 2004**

The following individuals have agreed to be listed as nominees for the 2004 IEEE Pittsburgh Section. Any other member that would like to be considered for a position should contact Harry Hagerty at (412) 492-0943 x 226 [hhagerty@ieee.org](mailto:hhagerty@ieee.org).

Elections will take place at the ExComm meeting on January 15<sup>th</sup>, 2004 at Point Park College. Please return your written ballot to the IEEE address on the cover, or by email to Harry Haggerty as noted above.

**Chair** – Elena Schreiber

**Secretary** – John Twigg

**Vice Chair** – Kalyan Sen

**Treasurer** – Ralph Sprang or Dave Vaglia

## 2003-2004 Pittsburgh Section IEEE Program Calendar

Group/Society	September	October	November	December	January	February	March	April	May
ExecCom Harry Hagerty (412) 487-8235	20 South Park	16 WVU	20 Point Park	18 Point Park	15 Point Park	19 Point Park	17 Point Park	15 Point Park	20 Point Park
Section Mtngs Harry Hagerty (412) 487-8235	20 Fall Picnic	10 Student Tour at Respironics				Engineer's Week - Robot Car Race	23 Power Protection & Cond.	17 Leadership Skills for Engineers	
Upper Mon Matt Valenti			3 Biometrics 12/17 Image Processing						
Industry Application Kal Sen (724) 696-1611	11 Model. & Simul. of Fuel Cell	9 & 16 Transformer Tutorial	6 Starter Tutorial	17 Electrical Safety	8 Intellec. Prop. 22 Trans. K- Factor	5 Power Fact/ Harmonics 18 Career Dev.	4 Load Flow	1 EMC 22 Tour - Alleg. Energy	6 Power Qual. 12 & 19 Med. Voltage Drv.
Magnetics Miklos Gyimesi (412) 268-2308			14 Wall Watching						
Computer John Twigg (724) 387-2772									
Communication Prashant Krishnamurthy (412) 624-5144		3 Negative Effect of Technology on Speech							
Power Eng. Kal Sen (724) 696-1611	11 Model. & Simul. of Fuel Cell	9 & 16 Transformer Tutorial	6 Starter Tutorial	17 Electrical Safety	8 Intellec. Prop. 22 Trans. K- Factor	5 Power Fact/ Harmonics 18 Career Dev.	4 Load Flow	1 EMC 22 Tour - Alleg. Energy	6 Power Qual. 12 & 19 Med. Voltage Drv.
PACE Joe Kalasky (724) 838-6492		27 Grassroots Lobbying							
Signal Processing Patrick Loughlin (412) 624-9685		22 Geometry in Signal Processing	25 Postural Control						
EMBS Bob Brooks			25 Postural Control						

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