



## Implementing an Electrical Safety Program

Bruce McClung  
IEEE Distinguished Lecturer



Following development of an Electrical Safety Program, it must be accepted and implemented. Developing an Electrical Safety Program is an Employer's responsibility. "Implementing an Electrical Safety Program" is a joint responsibility of the employer and the employee. Partnering in the implementation process leverages the assets of all individuals involved. Employers provide the resources needed to motivate and train employees regarding safety related work practices. Employees recognize the benefits, assimilate the training, become "qualified", and take personal responsibility for the safety of themselves and their co-workers. Implementation is based on all parties understanding the program, the policy, the philosophy, the principles, the procedures, the performance metrics, and the overall planning needed in advance and just prior to every job. The design, and function of the electrical system and equipment as well as how it is to be operated must be on record. The construction and operation of the equipment as well as the potential hazards involved must be reviewed prior to starting any job. Best of all - a shared culture of "safety first" i.e. "if it is not safe - don't do it" develops. Changes may be needed to existing electrical systems and equipment and intermediate changes may be required in new design and construction to facilitate electrical safe work practices that protect personnel from making contact with exposed energized electrical conductors and circuit parts, as well as protecting them from any electrical arc flash hazards.

Place: Westinghouse Energy Center, Monroeville  
Date: December 17<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 Dr. Kal Sen at (724) 696-1611 or e-mail at [senkk@ieee.org](mailto:senkk@ieee.org) by December 10<sup>th</sup>.

Directions: From downtown Pittsburgh, travel Parkway East - Rt. 376. Take Exit 14A to Monroeville. Cross the traffic light (Business 22) and proceed on Rt. 48 South (Mossdale Boulevard) approximately 1/2 mile (two traffic lights). The second traffic light is at a four-way intersection with Exxon Station on the right and Sunoco Station on the left. 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 to get on Business-22. At the first light, turn left on to Rt. 48 South (Mossdale Boulevard) and follow the directions shown above.

L. Bruce McClung, IEEE Fellow, retired from Union Carbide Corporation (UCC), now Principal Consultant with Electrical Safety Consulting Services, Inc. He joined UCC in 1960 and in 1997 he became the first electrical engineer to be named a Corporate Fellow there. Widely respected as a technical leader in the application of electric power systems on an industrial scale, Mr. McClung has provided electrical technology support for the design, construction, operation and maintenance of large chemical and plastic plants. His work in advancing technology, standards, and work practices has dramatically improved electrical safety. Safety-enhancement technologies he helped to develop include high-resistance grounding, arc-resistant switchgear, zero-halogen insulating compounds for wire and cable, and thermal protective clothing. Mr. McClung presently serves IEEE as a member of the Standards Association Board of Directors and as the Distinguished Lecturer on Electrical Safety Issues for IAS/PES 2002-2003. Mr. McClung has authored or co-authored 28 technical papers, 18 of which have made IEEE-IAS Transactions Status, while 9 earned IEEE-IAS prize paper awards. He received the IEEE Standards Medallion, the IEEE Charles Proteus Steinmetz Award, the 2000 PCIC Electrical Safety Excellence Award, the 2001 IEEE Medal for Engineering Excellence and the 2001 IAS Outstanding Achievement Award. He also received Union Carbide's Chairman's Award, and has been elected a member of West Virginia University Academy of Electrical and Computer Engineers. He is a Registered Professional Engineer in the State of West Virginia.

### Upper Mon Subsection News

The Upper Mon Subsection is hosting a series of seminars throughout the year. Please check [www.csee.wvu.edu/ieeeeum](http://www.csee.wvu.edu/ieeeeum) for the latest information. Upcoming seminars are:

Nov. 3<sup>rd</sup> - Biometrics

Nov. 12<sup>th</sup> - Image Processing

Nov. 17<sup>th</sup> - Image Processing



## Human Postural Control

Patrick Loughlin and Mark Redfern  
University of Pittsburgh



Human balance is critical to many aspects of our daily lives. Even the act of standing quietly requires a complex integration of multiple sensory inputs, decision processes and motor planning. For many of us, these complicated control processes generally work well, and are consequently taken for granted. However, balance disorders can be a serious and significant health problem that cuts across ethnic and socioeconomic groups. For example, disorders of the vestibular system and dizziness are one of the most common complaints of elderly persons. Falls can be a very serious consequence of balance disorders, particularly in the elderly where hip fractures due to falls are common and debilitating. The annual costs associated with falls are exceeded only by motor vehicle injuries, with significant cost increases projected in the future if effective interventions are not found. Thus, an understanding and identification of the causes of and treatments for various balance disorders could have a great impact on public health.

New testing, modeling and analysis techniques have emerged over the past decade that have begun to give new insights into the workings of the human postural control system. These techniques have employed traditional control systems modeling, non-linear modeling techniques, various signal processing methods, and novel testing equipment tailored to assess particular aspects of balance function. As the models, equipment and techniques have become more sophisticated, they have helped form a framework for improved understanding of the balance system. In this seminar, we will provide an overview of some ongoing research in human postural control.

Place: Rm 1175, Benedum Engineering Hall  
University of Pittsburgh  
Date: November 25<sup>th</sup>  
Program: 5:00 to 6:00 PM

This is a joint meeting of the Signal Processing Society and the Engineering in Medicine and Biology Society. If you have questions or you would like more information, please contact Patrick Loughlin at (412) 624-9685 or [pat@ee.pitt.edu](mailto:pat@ee.pitt.edu) or Bob Brooks at [rbrooks@medrad.com](mailto:rbrooks@medrad.com).

### Harry's Happenings

### Proposal to Merge IAS/PES Chapters

The executive committee intends to merge the Industry Applications Society and the Power Engineering Society chapters at the next executive committee meeting on November 20<sup>th</sup> at Point Park College (6:30 PM). Members are encouraged to write, call or e-mail us on agreement or disagreement of this merger. In the past the two chapters have had joint meetings, but for the most part the IAS was the more active chapter until a few years ago. Recently, Kal Sen has been running joint chapter meetings even though his main interest is power engineering. Kal has been working hard to get many meetings and tutorials together and doing a fine job, but frankly needs more help in organizing and running the meetings. Several people have expressed interest in helping, but few have actually decided to participate in running a meeting. Perhaps many of you are feeling the pinch of the economy in terms of job loss or pressure from your employer to work more hours, and thus may feel that the IAS/PES chapter meetings will be too demanding. The truth is that most of the meetings require very little time in the form of ADCOM planning meetings or setting up and running a meeting. For the most part, it is introducing a speaker and buying him or her dinner before the meeting (the chapter reimburses the costs). The result of a lack of meetings has led us to propose merging the two chapters in order to keep both of them functioning. If you agree or disagree, please let us know. We need to hear from you, the members and need your help in participating in the section. Perhaps some of you who have run meetings in the past can mentor new members and show them how to run a meeting.

### Executive Committee Nominations for 2004

The year is ending fast and it is time to elect a new slate of officers for the Pittsburgh section executive committee. We need a Chair, Vice-Chair, Treasurer and Secretary. Please contact me at (412) 492-0943 x226 if you are interested or by e-mail at [hhagerty@benshaw.com](mailto:hhagerty@benshaw.com).

- Harry Hagerty

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## Wall Watching: The Progress of Domains in Small Elements

John Chapman  
University of Glasgow

An understanding of magnetization processes is of direct interest to physicists and is crucial for developing high performance magnetic devices. The domain structure, and the way it changes under the influence of a magnetic field, depends not only on basic material parameters but also on the physical shape and size of the magnetic material. Thus, quite different domain configurations are found in bulk materials, thin films and small magnetic elements made from the same material. The same is true of domain walls whose structure can change markedly as one or more of the dimensions of the material under investigation moves into the (sub)-micron regime. Given the extreme miniaturization that is occurring in magnetic storage and sensing devices, as detailed a knowledge as possible of the magnetization configuration in small elements is essential.

For many years, the Lorentz imaging mode of transmission electron microscopy (TEM) has yielded high-resolution magnetic images of domains and walls in magnetic films and elements. However, only a modest amount can be learned from a single image of an element so recent advances, whereby in-situ magnetizing capabilities within the TEM have been enhanced, have made a considerable impact.

This talk will illustrate the radical changes that occur as the dimensions of magnetic elements are reduced from a few microns to tens of nanometers in extent. However, whilst size is a very important parameter, the detailed shape can also exert a major role, and changes here offer a way of tailoring properties to meet specific requirements. Other important influences are coupling between layers (if the element is formed from a magnetic multilayer) and the nature of the substrate. It is hoped that many of the images, as well as revealing in a very direct way how the magnetization process proceeds, will appeal to the aesthetics of the audience!

Place: Segate  
Date: November 14<sup>th</sup>  
Lunch: 11:45 AM  
Program: 12:30 PM

John Chapman received both the M.A. degree in Natural Sciences and the Ph.D. degree from the University of Cambridge, United Kingdom, in 1973. Following a Research Fellowship at Fitzwilliam College, Cambridge, he became a Lecturer at the University of Glasgow in the Department of Physics and Astronomy. Promotion to readership in 1984 and full professorship in 1988 followed; currently he is Head of Department. Professor Chapman's main research interest concerns the characterization, development, and application of advanced functional materials. Overall his aim is to gain understanding at a microscopic level of how various physical properties relate to material nanostructure and how the former can be improved by the ways in which materials are grown and processed. He studies magnetic materials extensively, with particular emphasis on magnetic nanostructures and multilayer films. Much of his work uses electron microscopy and related analytical techniques. He has co-authored about 250 papers. In 1991 Professor Chapman was elected a Fellow of the Royal Society of Edinburgh. He is also a Fellow of the Institute of Physics and of the Royal Microscopical Society.



## Patents: Value to Inventors, Employees, and Corporations

George Baier, Esq.  
Buchanan Ingersoll, PC



Twenty-five years ago, the term 'Intellectual Property' was unknown in most business circles. Today, Intellectual Property protection is of high concern to people from Corporate Boardrooms to research laboratories. Some of the most important components of an intellectual property portfolio are the patents. This presentation discusses the basics of patents, ownership, rights, and their value to private inventors and business entities. In addition, the basics of obtaining a valid US patent will be discussed along with the terms and conditions and cost to take an invention to the level of a US patent grant.

Who owns what is in your head? The basis of all patents is the conception of an idea in the creative inventor's mind. From the time of conception, ownership can be legally determined. The legal obligations and ownership rights of employed inventors will be discussed along with possible alternatives for both companies and inventors. Both inventors and businesses should be aware of the value that invention conceptions represent. While the ownership interests of corporations and employed inventors can often appear to be opposing, both should take steps prior to the invention disclosure to assure that the value of the inventive concept is maximized and the ownership rights are clear.

Place: Buchanan Ingersoll, PC. One Oxford Center, 301 Grant St, 20<sup>th</sup> Floor  
Date: January 8<sup>th</sup>, 2004  
Social: 6:00 PM (no charge buffet dinner)  
Program: 6:45 PM

The IEEE Pittsburgh Section thanks Buchanan Ingersoll, PC for bearing the costs associated with this meeting. Reservations are required for this meeting. Reservations are required by December 22<sup>nd</sup>. If you have questions or you would like to register, please contact Dr. Kal Sen at (724) 696-1611 or e-mail at [senkk@ieee.org](mailto:senkk@ieee.org). Parking is available (for a fee) in One Oxford Center in the evening. Check with security on the first floor to get your pre-assigned nametag. You will be directed to the auditorium on the 20<sup>th</sup> floor.

## 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			
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 19 Career Dev.	4 Power System Simulation		
Magnetics Miklos Gyimesi (412) 268-2308			14 Wall Watching						
Computer Gerry Kumnik (412) 487-1430									
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 19 Career Dev.	4 Power System Simulation		
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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