



IEEE NEWSLETTER

KITCHENER - WATERLOO

SECTION



March 1995

MEETINGS

Mark these dates on your calendar:

February 27, 7:00 p.m., Rogers Cable, Channel 20: IEE UK, Faraday Lecture on Mobile Communications.

March 8, 7:00 p.m., University of Waterloo, Davis Centre Room 2577: IEEE Student Papers Night.

March 15, 5:30 p.m., University of Waterloo Davis Centre Room 1302: Susan Ferguson Carreon of AT&T Global Information Solutions.

March 24, 9:15 a.m., University of Waterloo, Davis Centre Room 1302: 1995 Grounding System Design (GSD) Workshop.

For details see pages 2 and 3

Feature Articles

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The Kitchener-Waterloo Section of the Institute of Electrical and Electronics Engineers serves all members whose mailing address is in Bruce, Grey, Perth, Waterloo or Wellington Counties.

FARADAY LECTURE

Presented by IEE, United Kingdom.

Date: Monday February 27th, 7:00 p.m.
Rogers Cable, Channel 20, (K-W and Cambridge)

Subject: Mobile Communications

This lecture will present a history of electronic communications. It will consist of a 1 hour lecture followed by a 1 hour question and answer period. The intended audience is senior high school students.

IEEE STUDENT PAPER NIGHT

Date: Wednesday, March 8th, 7:00 p.m.

Place: University of Waterloo Davis Centre,
Room DC 2577.

Presented by: K-W Section; Student Branch B, University of Waterloo; and Student Branch, Conestoga College.

You are cordially invited to the annual Student Papers Night.

Students from Conestoga College and the University of Waterloo will deliver oral presentations of their technical papers. The best paper from the College is awarded the Ken McKenzie Award and the best paper from the University receives the George Dufault Award; the awards include cash prizes.

Refreshments will be provided.

SUSAN FERGUSON CARREON ON SOFTWARE QUALITY ASSURANCE

Presented by the K-W Section.

Date: Wednesday, March 15th, 5:30 p.m.

Place: University of Waterloo Davis Centre,
Room DC 1302.

Speaker: Susan Ferguson Carreon, AT&T Global Information Solutions

Subject: Software Quality Assurance

Dinner: Meet the speaker for dinner after the seminar. Please contact Shesha Jayaram for details (519-885-1211 ext 5337).

Refreshments will be served at 5:15 p.m.

Speaker: Susan Carreon received a BSc. in Computer Science and Systems from McMaster University in 1987. She has since been employed at AT&T Global Informations Solutions - Imaging Systems, initially as a Software Quality Analyst and currently as Director of Quality Assurance. Susan is a member of the American Society for Quality Control and is certified by that organisation as a Quality Auditor.

Subject: Quality is a rapidly growing issue in the software industry. The definition of quality software is expanding beyond purely the absence of defects. Proposed solutions to the problem of software quality such as new languages, tools and environments have been ineffective. This lecture will discuss these issues and the role of the evolving field of Software Quality Assurance in addressing them.

1995 GROUNDING SYSTEM DESIGN (GSD) WORKSHOP

Date: Friday, March 24, 1995
 Location: DC 1302
 W.G. Davis Centre for Computer Research
 University of Waterloo
 Waterloo, Ontario

This one day workshop addresses the grounding system design procedures. It discusses the substation grid and rod designs in a single as well as two-layer soil. The effect of the grounding system parameters on the grounding resistance, touch, step and mesh voltages are evaluated. The proximity of the nearby objects and rocks are also included. In the afternoon a hands-on software training session for designing the ground system is offered.

The workshop is free to participants from utilities, industry and universities.

Schedule of Activities

- 9:15 a.m. Welcome to the University of Waterloo. Address by Dr. W. Loucks, Associate Chair, Department of Electrical and Computer Engineering, University of Waterloo.
- 9:30 a.m. "Grounding Systems Essentials" by Dr. M.M.A. Salama, University of Waterloo.
- 9:45 a.m. "Fast Moment Method for Grounding Systems" by Dr. Y.L. Chow, University of Waterloo.
- 10:15 a.m. "Grounding System Software - Moment Method" by Dr. M. Elsherbiny, University of Waterloo.
- 10:45 a.m. Coffee and donuts
- 11:15 a.m. "Some Electrostatic Field Computations in High Voltage Insulation Engineering" by Dr. K.D. Srivastava, University of British Columbia, B.C.
- 12:00 noon Lunch (at participant's expense)
- 1:30 p.m. "Grounding Systems - Practice and Design" by Dr. M.M.A. Salama, University of Waterloo.
- 2:00 p.m. "Formulas for Grounding Systems" by Dr. Y.L. Chow, University of Waterloo.
- 2:30 p.m. "Grounding Systems Software - Formulas" by Dr. M. Elsherbiny, University of Waterloo.
- 3:00 p.m. Coffee and donuts.
- 3:30 p.m. Software - Training Session #1.
- 4:30 p.m. Software - Training Session #2.
- 5:30 p.m. Tours of the Power Engineering Facilities at the University of Waterloo.

Inquiries or replies should be addressed to:

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THE FIRST CAPACITOR

by Tom East

This year we celebrate the discovery of the first capacitor in 1745. Pieter Musschenbroek of the University of Leyden or Leiden (in south Holland near the Hague) was holding a glass jar full of water, and applied charge to a wire which was dipping into the water. When he touched the wire with his other hand, there was a spark: he must have got quite a shock! However, this discovery has also been attributed to Dean E.G. von Kleist of the cathedral of Kammin in Pomerania (north-east Germany near the Baltic sea).

The equipment was soon developed into a glass jar coated with metal foil inside and out, with a wire through a cork in the neck, and a metal chain to connect the wire to the inside foil: this was the classical design of the Leyden Jar, as it came to be known.

In later versions of the capacitor (at first known as a condenser), the dielectric consisted of a flat sheet of mica (silver plated for very stable capacitors), or various plastics such as polythene or polycarbonate, or of course paper. The whole device could be oil filled for high voltages. Variable capacitors, used for tuning radios, have air as the dielectric. The varactor, a back-biased diode, is a voltage-controlled capacitor used for tuning phased locked oscillators (PLOs). In integrated circuits, the dielectric is formed by electrodeposition or other means.

However, if you think the Leyden Jar is a relic, remember that a very close relative can be found in your TV set or computer. The output capacitor of the high voltage supply consists of conducting layers on the inside and outside of the glass envelope of the CRT.

ENGINEERING

It is a great profession. There is the fascination of watching a figment of the imagination emerge through the aid of science to a plan on paper. Then it moves to realization in stone or metal or energy. Then it brings jobs and homes to men. Then it elevates the standard of living and adds to the comforts of life. That is the engineer's high privilege.

The great liability of the engineer compared to men of other professions is that his works are out in the open where all can see them. His acts, step by step, are in hard substance. He cannot bury his mistakes in the grave like the doctors. He cannot argue them into thin air or blame the judge like the lawyers. He cannot, like the architects, cover his failures with trees and vines. He cannot, like the politicians, screen his shortcomings by blaming his opponents and hope the people will forget. The engineer simply cannot deny he did it. If his works do not work, he is damned...

On the other hand, unlike the doctor, his is not a life among the weak. Unlike the soldier, destruction is not his purpose. Unlike the lawyer, quarrels are not his daily bread. To the engineer falls the job of clothing the bare bones of science with life, comfort and hope. No doubt as the years go by the people forget which engineer did it, even if they ever knew. Or some politician puts his name on it. Or they credit it to some promoter who used other people's money... But the engineer himself looks back at the unending stream of goodness which flows from his successes with satisfactions that few professions may know. And the verdict of his fellow professionals is all the accolade he wants.

Herbert Hoover
 31st President of the United States

Herbert Clark Hoover (1874-1964) attended Stanford University studying geology and mining, and worked for a number of years in the field. He was appointed chief engineer for a mining company in Australia, and then became director-general of mines for the Chinese government. After that, he was in demand throughout the world as a mining expert. He was president from 1929 to 1933 and was succeeded by F.D. Roosevelt.

CONFERENCES IN CANADA

1995

- Feb 20-22 IEEE MTT-S International Topical Symposium on Technologies for Wireless Applications. Vancouver. George Heiter, 410-647-1591.
- Feb 20-23 INTERCOMM95 Congress and Exhibition. Vancouver. 604-669-1090.
- May 9-11 IEEE Intelligent Networks Workshop - IN95. Ottawa. J. Erfanian, 905-615-6486.
- May 17-19 IEEE Pacific Rim conference on Communications, Computer, Visualization and Signal Processing. Victoria. D.G.Goodenough, 604-721-7209, e-mail: pacrim@csr.uvic.ca
- May 30-Jun 2 15th International Conference on Distributed Computing Systems. Vancouver. Jane Liu, 217-333-0135, e-mail: janeliu@cs.uiuc.edu
- Jun 4-11 IEEE Holm Conference on Electrical Contacts CPMT. Montreal.
- Jun 12-16 IEEE Pulp and Paper Industry Conference. Vancouver.
- Jun 14-16 International Workshop on Quality in the Telecommunications Network. Victoria. W. Hoberg, 708-224-7754 e-mail: hoberg@nwsca.att.com
- Jun 19-22 1995 IEEE Digital Cross Connect Systems Workshop VI. Banff, Alberta. R. Hamley, 613-781-7969.
- Jul 9-14 CASE 95, Eighth International Workshop on Computer-Aided Software Engineering. Toronto. Hausi Muller, 604-721-7630, e-mail: hausu@csr.uvic.ca
- Sep 17-22 IEEE International Symposium on Information Theory. Whistler, BC.
- Sep 20-23 17th International Conference - IEEE Engineering in Medicine and Biology Society. Montreal.
- Sep 24 IEEE International Workshop on Software Evolution Processes and Measurement. Victoria.
- Sep 27-29 PIMRC '95 - Personal, Indoor and Mobile Radio Communications. Toronto. J. Erfanian, 416-964-9476, e-mail: javan@comm.toronto.edu
- Oct 22-25 1995 IEEE International Conference on Systems, Man and Cybernetics. Vancouver. Venue West Ltd, 604-681-5226.

1996

Jun 16-19 1996 IEEE International Symposium on Electrical Insulation. Montreal.

1997

Jun 8-12 ICC 97 - IEEE International Conference on Communications. Montreal. Celia Desmond, 905-615-6507.

Jul 14-18 IEEE AP-S International symposium and URSI Radio Science Meeting. Montreal. Stanley Kubina, 514-848-3492.