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IEEE NEW SOUTH WALES SECTION
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1. CHAIRMAN'S COLUMN

The 2002 New South Wales Section Committee met for the first time in February. The membership of the Committee and office bearers is summarised elsewhere in this issue of CIRCUIT.

At this meeting I had the opportunity to set out my goals for 2002, which are listed below.

- **Major Conferences** – Plan to hold at least one major International Conference in Sydney every year.
- **Seminars & Workshops** - Attract more IEEE Distinguished Lecturers to Sydney.
- **Affinity Groups** – Establish a GOLD affinity group and have at least two successful meetings. A coordinator has been found as reported below.
- **Education and Professional Activities** – Prepare a CDROM promoting the profession and IEEE for distribution to schools and universities.

- **Students' Activities** – Revitalise the activities of our existing Student branches.
- **Senior Grade Membership** - Upgrade ten Members to Senior grade in 2002.
- **Engineering Management Society** - Submit a petition to establish this new chapter (see advertisement back page).
- **Chapter Activities** - Encourage greater Chapter activity through a range of new initiatives.
- **E-mail and Newsletter Activities, Home Page** – Work towards placing all member communications on the Section website.
- **Long Range Planning and Finances** - Develop a long-term strategy for the Section for providing better member activities and services.

This list of goals leads me to a major issue and that is the future of the Electrical Engineering (EE) profession. Two major roles of the IEEE NSW Section are the promotion of IEEE and the EE Profession in general. In the past, EE has not had to work very hard at promoting the profession because this happened naturally through media interest, government authority support and university participation. However, these days there are many competing interests and being 'high tech' is not enough to get noticed.

The IEEE NSW Section has been and continues to be involved in promoting the profession through sister societies, local universities and schools. It has contributed to Professional Engineers week, attended careers evenings and provided student prizes. Many activities are important networking opportunities for electrical engineers to interact with students, and vice versa, with a view to providing them with information on career opportunities. Although valuable, these activities have been limited and somewhat ad hoc. A more strategic approach is needed to raise the profile of EE and the IEEE.

The Section Committee is now working on a plan to promote the EE profession. Clearly, we will need to work with the other professional

organizations and the IEEE membership at large for the plan to be successful. In that regard, I would welcome your comments and suggestions on what should be incorporated in our plan and what outcomes you would like to see.

Whatever happens in 2002, the goals we have set ourselves should make for a very challenging year!

Trevor Bird (email: ts.bird@ieee.org)

2. REPORT OF IEEE NEW SOUTH WALES SECTION ANNUAL GENERAL MEETING

The highlights of the report presented by the Chairman, Trevor Bird, to the Annual General Meeting held on 30 November 2001 at The Castlereagh Inn, Masonic Club, 169 Castlereagh St, Sydney, were:

- The APMC2000 Conference organised by the local MTT/AP Joint Chapter and held in December 2000 was a resounding organizational and financial success, with 459 delegates registered from 30 countries
- A successful PICA 2001 Conference, organised by the local PES Chapter, was held in May. This Conference attracted 255 delegates from 26 countries.
- The Section was a Technical Co-sponsor of the highly successful 39th IEEE Control & Decision Conference held at Darling Harbour in December 2000.
- The Section is in a very sound financial position as a result of surpluses generated by Globecom 98, APMC 2000 and several Workshops.
- Prestigious IEEE Awards were received by four members during 2001.
- Membership numbers were steady across all categories
- A volunteer, Jon P Agnew, has been appointed as a Webmaster, and he has commenced the development of the Section's web site.
- A GOLD (Graduates of the last decade) Affinity Group is being formed with Filita Barker as Co-coordinator (see article below).
- Region 10 seed funding has been secured to produce promotional material for Electrical Engineering and IEEE.

The Treasurer, Graeme Gwilliam, reported on the Section's healthy financial position, which will be improved, when the PICA Conference finances are reconciled.

Chairmen of the Chapters also presented reports to the meeting, which concluded at 7:55 pm. An excellent dinner in Cello's Dining Room followed the meeting. Thanks to all who made this event such an enjoyable occasion.

3. NSW SECTION COMMITTEE 2002

Chairman: Trevor BIRD
Vice-Chairman: Graeme GWILLIAM
Secretary: Andrew PARFITT
Treasurer: David BURGER
Membership Communication: Kate CARRUTHERS,
Nominations & Life Members: Jim VASSELEU,
Student Activities: David TIEN
Education Activities: Karu ESSELLE
Fellow Search: Walter LACHS
Professional Activities: Jim LOGOTHETIS
CIRCUIT Editor: Trevor BIRD
Past Chairman: John ROBINSON
Web Master: Jon AGNEW
Membership Development: Bruce POON
General: Tim HESKETH, Stefan MOZAR, Philip OGUNBONA, Faz RAHMAN, Sam REISENFELD, Zak ZAKAREVICIUS

NSW CHAPTERS

POWER ENGINEERING:

Chairman: Graeme GWILLIAM
Vice-Chairman: Mark EDMUNDS
Secretary: Antony ZAGLAS
Treasurer: Dan CANDOTTI
General: Walter LACHS, Jim LOGOTHETIS, Vic MORGAN, John ROBINSON, S. SATHIAKUMAR, Jim VASSELEU, Joseph ZHU

COMPUTER:

Chairman: Kate CARRUTHERS

COMMUNICATIONS/SIGNAL PROCESSING:

Chairman: Philip OGUNBONA

ANTENNAS & PROPAGATION/ MICROWAVE THEORY & TECHNIQUES:

Chairman: Karu ESSELLE
Vice-Chairman: Andrew PARFITT
Secretary: Alan McPHAIL
Treasurer: Graham TOWN
General: Trevor BIRD

INDUSTRIAL APPLICATIONS, POWER ELECTRONICS / INDUSTRIAL ELECTRONICS:

Chairman: Faz RAHMAN

CIRCUITS & SYSTEMS:

Inactive

4. NSW SECTION WEB NEWS

WEB SITE GIVEN FACELIFT

The new NSW Section Web Master, Jon Agnew (jpagnew@ozemail.com.au), has been quick to start improving the NSW Section web site. A new layout was installed in December and new content was added in January. With this face lift the web site now has the look of other IEEE web sites. The latest contact details of the Section Committee and the Chapters can be obtained.

Also, in the 'News' section, upcoming lectures, meetings, workshops and other activities will now be listed as they are announced. The latest and past issues of CIRCUIT can be downloaded as well. The Section web page gives a direct link to all Chapter web pages. Place the website address (<http://ewh.ieee.org/r10/nsw>) in your Bookmarks so as to keep up to date with the latest Section news and information.

CIRCUIT AVAILABLE ON THE WEB <http://ewh.ieee.org/r10/nsw>

For the remainder of this year, CIRCUIT will be mailed to members and will also be available from the website. Next year, CIRCUIT will be mailed to only those members requesting a printed copy. If you require a printed copy of CIRCUIT to be mailed to you in 2003 please contact the Editor via email (ts.bird@ieee.org) or the Secretariat at the address on the front page of this issue.

REGISTER FOR A PERSONAL EMAIL ALIAS "name@ieee.org"

Many IEEE members do not realise that the IEEE offers an Alias service with free Virus Scanning. IEEE members can register or update a personal alias of their choice (subject to availability), which will forward email to their real Internet email address. This overcomes the need to notify the IEEE (or the Section) if you change your home email address. To obtain an email alias go to the IEEE website (www.ieee.org), click on "Web Account" and follow the directions.

In 2001 IEEE's Email Alias service with virus scanning stopped 158,126 viruses from being delivered to members. This is more than six times the 24,000 infected messages stopped in 2000. This free benefit offered to IEEE members is one of many advantages of an IEEE Email Alias. To continue to have access to this service, members in Region 10 must have renewed their membership by the end of April. To find out more about the IEEE Email Alias, visit <http://elecomm.ieee.org/personal-aliases.shtml>.

5. USEFUL IEEE WEB ADDRESSES

Increasingly, the IEEE is relying on the Internet to deliver services to members. Some useful web addresses are summarised below for your information.

- IEEE Operations Centre: www.ieee.org
- IEEE Regional Activities: www.ieee.org/ra
- Region 10: www.ewh.ieee.org/reg/10
- IEEE Senior Member upgrade: swww2.ieee.org/organizations/rab/md/smprogram.html
- Region 10 Student Branch activities: www.cairo.utm.my/ieee/r10student.htm
- IEEE Contract administration: www.ieee.org/contractsonline
- Volunteer travel accident/medical plan. This is available to all IEEE volunteers and applies outside your normal country of residence. It starts and ends when you leave/arrive in your own country. For details see www.ieee.org/organizations/vols
- IEEE GOLD (Graduates of the last decade) program: www.ieee.org/organizations/rab/gold/programs.html
- Educational activities: www.ieee.org/eab/
- Professional development: www.ieee.org/pdi
- Career resources: www.ieee.org/eab/education.htm
- IEEE Award programs: www.ieee.org/about/awards, www.ieee.org/organizations/rab/rab/Awards/rabawards.htm

6. HOW TO BECOME AN IEEE SENIOR MEMBER

Many members may not be aware of the benefits of IEEE Senior Membership. As well as recognizing your performance and contribution to the profession in a tangible way, each new Senior Member receives an attractive fine wood and bronze engraved Senior Member plaque and a US\$25.00 gift certificate toward one new Society membership. Who can become a Senior Member? Anyone with ten years in the profession (not 10 years of IEEE membership.) Your educational experience is counted towards this ten-year requirement. Other criteria are five years

of significant performance and have three IEEE Senior Member or Fellow references. If you are nominated, only two references are needed. Now it is even easier to become a Senior Member via the IEEE website. Details and application forms are obtained at swww2.ieee.org/organizations/rab/md/smprogram.html.

7. GOLD AFFINITY GROUP TO BE FORMED IN NSW

A GOLD affinity group is in the process of being formed. Thanks to several people volunteering as

a result of a recent article in CIRCUIT, this is about to become a reality. The Coordinator of the GOLD Affinity Group is Filita Barker and she is looking for people to assist her to establish the group and organise activities. Filita received the Bachelor of Engineering (Electrical) from the University of New South Wales in 1999 and currently is employed by TNA Australia Pty Ltd. GOLD (Graduates of the last decade) is a relatively new initiative of IEEE and it seeks to encourage participation of recent graduates in IEEE and electrical and electronic engineering professional activities more generally. GOLD groups around the world are involved in many activities ranging from liaison with the Student Branches to organizing conferences. Anyone who has graduated in the last ten years and is interested in participating in the GOLD Affinity group, please contact Filita Barker, email filita.barker@ieee.org.

8. NSW CAS/SSC CHAPTER – LIKELY DELISTING

The NSW Chapter for Circuits & Systems / Solid State Circuits is likely to be delisted following an unsuccessful attempt in November 2001 to attract interest in members forming a Committee. For a Chapter to be active the IEEE requires at least two meetings per year. No meetings have been held since the Chapter was formed in 2000.

However, it is not too late! If anyone is willing to take on the role of Chairman in 2002, please contact the Section Chairman.

9. THE OPERA IS ALMOST OVER

On 1 March, the IEEE Transactions/Journals Online Periodicals and Research Area (OPeRA) will be taken down. Members may access their personal subscriptions via IEEE Xplore (TM) at <http://www.ieee.org/ieeexplore>. An IEEE Web Account is required for access. IEEE Computer Society members must go to its website at <http://www.computer.org/> for full-text access to conference publications.

10. JOINT TECHNICAL MEETINGS FOR 2002

All members are invited to attend the listed joint meetings with the I.E. Aust., ITEES and IEE. All meetings are held at 5.30 for 6.00 pm (with light refreshments) at the Institution of Engineers, Australia Lecture Theatre, Eagle House, 118 Alfred St, MILSONS POINT unless otherwise shown.

2002 Dates	Sponsor	Subject	Speaker
Mar. 14	IEEE	<i>Dual Lecture Night - Power Quality: 5.30 - 8.00 pm</i> Power Quality Monitoring to Establish Utility Performance	Prof. Vic.
Gosbell		Power Electronic Technology for Power Quality Improvement	Mr Saki
Apr. 11		Virtual Surgery (ITEE's AGM)	Dr Laurie Wilson
May 9		The Powerformer	TBA
May 23		Greenhouse & Emissions Trading-Implications for Energy Industry	Ben Kearney
June 13		Risk – Safety - Causation: Asking the Law Question	Dr Ron Stillman
June 27		Modern Air Traffic Control Systems	TBA
July 11		Hybrid Electric/Petrol Vehicle	Dr H. Lovatt
July 25		Metropolitan Fibre Networks	TBA
Aug. 8		Steel Lifting Magnets	J. Richard
Aug. 22	IEEE	<i>Seminar from 12.00 – 5.30 pm</i> Recovery from Five Power Plant Accidents and an Insurer's View	TBA
Sept. 12		Photonic – Processing of Microwave Signals	Prof. Robert Minasian
Sept. 26		Embedded Generation – A Distribution Perspective	Guy Grunwald
Oct. 10		Intelligent Transport Systems	TBA
Oct. 24		Microwave Topic	Dr Graeme James
Nov. 14		Repairable Systems Reliability – Analysis of Failures	Dr Platfoot
Nov. 28		Professional Liability of Engineers – IEAust. Elec. Branch AGM	
Nov. 29		IEEE AGM	

11. DETAILS OF UPCOMING JOINT TECHNICAL MEETINGS

DUAL LECTURE – POWER QUALITY Thursday, 14 March 2002, 5.30-8.00 pm

1st Speaker: Professor Vic Gosbell, the Technical Director of the Integral Energy Power Quality Centre, School of Power Engineering, at the University of Wollongong, will speak on ***Power quality monitoring to establish utility performance.***

Synopsis: Electricity regulators see one of their tasks as the maintenance of appropriate levels of customer quality of supply, including voltage variations, unbalance, harmonics and voltage dips. It is impractical to measure the supply quality of each customer and some sampling technique has to be applied. The detailed methodology of cost-effective evaluation of an entire utility network is being studied at the University of Wollongong in association with several distribution companies. The talk will give an overview of issues such as which disturbance types to measure, whether to measure at low or medium voltage and how to characterise the mass of resulting data so that performance acceptability can be easily established. If a utility is required by regulators to set up a monitoring program, the data can be used for much more than just to satisfy regulatory requirements. Some promising forms of PQ data analysis such as trends and correlations and their application will be briefly discussed.

2nd Speaker: Mr. Sakai, the Senior Design Engineer/Manager of Toshiba's Fuchu manufacturing complex and an advisor to the Japanese Government on solar energy systems, will speak on ***Power electronics technology for power quality improvement.***

Synopsis: Power quality is becoming an important subject. Improvement of power quality is a challenge to the modern engineer. The causes of poor power quality are well understood and with more comprehensive standards being implemented, measurement and compliance will be an important issue in future. Commercialisation of developing technology, such as dedicated microprocessors for controlling semiconductor-switching devices and improved power electronic switching devices, have enabled a number of innovations for improving power quality. Modern power electronic switching devices such as IGBT, LLT, GTO & IEGT are revolutionizing the synthetic γ conversion of

power. These devices have enabled the commercialisation of Static Var Compensators, Active Power Filters, Solid State Switches and Circuit Breakers which, when integrated into power system design, can improve power quality. In the future, IEGT devices will enable more powerful energy conversion and NAS MW Class battery storage systems are expected to have a key role in the improvement of power quality. This lecture will overview the present state of power electronic development and introduce new innovative ways to improve power quality. A key point of this lecture will include comparing both equipment level and system level solutions.

VIRTUAL SURGERY Thursday, 11 April 2002

Speaker: Dr. Laurie Wilson works in the areas of home telemedicine and virtual surgery at CSIRO Telecommunications and Industrial Physics.

Synopsis: Image-guided surgery, where the surgeon navigates via previously recorded 3D images, is becoming increasingly common. Robotic surgery replaces the sometimes uncertain and inaccurate hand movements of a surgeon with precisely-computed robotic movements. New user interfaces allow surgeons to use virtual reality techniques to manipulate instruments by remote control in keyhole surgery. In CSIRO, we are working on a number of initiatives in this area. We are using artificial intelligence techniques to interpret medical images, so as to produce 3D models, on which surgeons can plan and rehearse surgery. CSIRO's haptic workbench creates stereoscopic views of organs, which simulate the precise sense of touch associated with different tissues, and promises to be an important part of surgical training and rehearsal. New communications technology being developed by CSIRO is making it possible for a number of surgeons to work in the same virtual space, and eventually to perform true telesurgery for patients in remote or inaccessible locations.

THE POWERFORMER Thursday, 9 May 2002

No details provided at time of printing. Please view the 'News' page of the Section web site for details in the weeks preceding the meeting.

GREENHOUSE EMISSIONS: INDUSTRY IMPLICATIONS Thursday, 23 May 2002

Speaker: Ben Kearney is the Director Renewable Energy at Sustainability

Synopsis: The greenhouse effect has been a topic for discussion for many years now; with

trends suggesting major industry shifts once emissions become a part of daily life. Fossil fuels are a principal cause of greenhouse emissions. With 90% of Australia's electricity coming from coal, can we continue to enjoy the low-cost electricity that we have come to rely on? What are the alternatives? Can renewable energy and other fuels fill the gap? What is the size of the task asked of Australia at Kyoto, and what will it cost?

RISK - SAFETY – CAUSATION: ASKING THE LAW QUESTION Thursday, 13 June 2002

Speaker: Dr Ron H. Stillman is currently Adjunct Professor, Department of Electrical Engineering and Telecommunications, University of New South Wales and partner in a consulting practice specialising in power system risk engineering, forensic and statistical analysis.

Synopsis: During the course of a year there will be tens of thousands of outages to power supplies in Australia. Some will involve a serious component or equipment failure and some will involve injury to persons, and or damage to property. The question which inevitably arises if pursued in a court of law, is, that based on the premise that negligence is a failure to recognise an obvious risk - could such a failure have been avoided, and why did the cause leading to failure go undetected? It may also be suggested that the supply authority, knowing of the risk, simply proceeded no matter what the outcome - the basis for criminal negligence.

This discussion attempts to explore some of the underlying concepts of risk, safety and causation in a legal action for negligent liability as the result of an accident in which persons are injured and or property damaged. The legal worldview of risk is different from that of the engineer, consequently it is vital to appreciate its importance and to understand the practical constraint placed on the usefulness of reliability theory and risk analysis techniques.

The legal system is concerned with judgments which involve probabilities. In civil cases the standard of proof is expressed in the context of the "balance" or "preponderance" of probabilities. In criminal proceedings, it is enunciated in terms of "beyond" reasonable doubt, both of which are expressions of uncertainty without necessarily stating the degree of doubt in statistical or mathematical terms. Risk is the chance or possibility of danger, loss, injury, or other adverse consequences arising out of uncertainty. The single most important question which engineers have to address is concerned with safety; what can be delivered and what does society expect? Whilst an engineering system may be reliable, it may not necessarily be safe, nor risk free. Safety is the elimination of danger where danger is the balance between the chance of an undesirable event ending in an accident and the cause and consequences of an accident.

The restructuring of the electricity supply industry in Australia has drastically changed the legal nature of the old quasi-state power authorities. Statutory immunities inherent in the doctrine of policy considerations are now subsumed into the ordinary law of liability for negligence.

MODERN AIRCRAFT CONTROL SYSTEMS Thursday, 27 June 2002

No details provided at time of printing. Please view the 'News' page of the Section web site for details in the weeks preceding the meeting.

12. FREE MEMBERSHIP OFFER FROM POWER ENGINEERING SOCIETY

Did you know that the Power Engineering Society (PES) offers free membership to IEEE Student Members for one year? If you are in the first year of IEEE Student membership and following a four-year undergraduate program in Electrical Engineering (Power), you may be eligible for this benefit. Some students in Region 10 have already received one year's IEEE membership free by becoming PES members. More are sure to follow in the future as the scheme becomes more widely known. To apply, complete the coupon on the PES web site at: www.ewh.ieee.org/soc/pes/membership/chapters/Web/pages/Student_coupon.html and follow the instructions.

13. MEMBER PROFILE – THE NSW SECTION SECRETARY ANDREW PARFITT



Andrew Parfitt has been Secretary of the New South Wales Section since 2000. Before coming to Sydney, he was a long standing member of the South Australia Section and was Chairman in 1998. For this commitment to the South Australia Section, he was presented with a 10 Year Service Award in 2001. As well as the position of NSW Section Secretary, he is Vice Chair of the NSW Antennas & Propagation /Microwave Theory & Techniques Chapter.

Andrew Parfitt received BE and PhD degrees from the University of Adelaide. From 1987 to

1992 he was with the Defence Science and Technology Organisation at Salisbury in South Australia before joining the Electrical and Electronic Engineering Department of the University of Adelaide as a member of academic staff in 1992. He was Associate Dean (Undergraduate Matters) in the Faculty of Engineering at the University of Adelaide from 1995 to 1997. In 1998 he joined CSIRO Telecommunications and Industrial Physics in Sydney where he is currently a Principal Research Scientist. Andrew's research interests include antenna and radio frequency engineering, and he has published widely in the areas of printed circuit and integrated circuit antenna technology and numerical electromagnetics. He is currently leader of CSIRO's Space & Satellite Communications Team and the Advanced Radio Frequency Subsystems project in the Cooperative Research Centre for Satellite Systems. He holds adjunct Associate Professor positions at the University of Sydney and with the Institute for Telecommunications Research at the University of South Australia. From 1998 to 1999 he was a Visiting Fellow at Macquarie University. Andrew is

a senior member of the IEEE, and was Chairman of the Technical Program Committee of the 2000 Asia-Pacific Microwave Conference.

ADVERTISING PAYS!

This issue of "Circuit" reaches over 2000 IEEE members across New South Wales. Why not advertise your company or your next event to engineering professionals via Circuit?

For further information, please contact Andrew Parfitt (Tel: (02) 9372-4187).

14. INTERNATIONAL CONFERENCES

For details of the conferences listed below and other forthcoming international events, visit the IEEE web address www.ieee.org/conferencesearch/.

2002 IEEE/IEEEJ Joint IAS Power Conversion Conference – Osaka Int. Conf. Center, Japan, 2-5 April

2002 International Underwater Technology Symposium The Sanno Hotel, Tokyo, Japan, 16-19 April

2002 Cool Chips V Computer Society Tokyo Prince Hotel, Japan, 18-20 April

2002 IEEE Int. Joint Symp Applications of Ferroelectrics New Public Hall Nara, Japan, 28 May-1 June

2002 IEEE Power Electronics Specialist Conf. Cairns Convention Centre, Queensland, 23-27 June

2002 IEEE Intelligent Transportation Systems Conference, Mandarin Hotel, Singapore, 3-6 September

2002 11th International Symposium on Electrets, Monash University, Clayton, Vic., 2-4 October

2002 IEEE Speech Coding Workshop Tsukuba Intl Congress Centre, Japan, 6-9 October

2002 IEEE/PES Transmission & Distribution Conference, Yokohama, Japan, 6-10 October

2002 International Conference on Power System Technology, Kunming, China, 13-17 October

2002 International Power Quality Conference, Singapore, 21 October

GLOBECOM 2002 IEEE Global Telecommunications Conf Taipei Int. Convention Centre, Taiwan, 18-22 Nov

2002 Pacific Rim Int. Symp on Dependable Computing Tsukuba-city Ibaraki, Japan, 16-18 December

2003 IEEE 7th Int Conf Properties & Applications of Dielectric Materials Nagoya, Japan, 1-6 June

2003 INTELEC-IEEE International Telecommunications Energy Conference, Yokohama, Japan, 19-23 Oct

A New Chapter!

ENGINEERING MANAGEMENT SOCIETY - NSW

Join now!

Wade H Shaw, President, IEEE Engineering Management Society, was formally advised of plans to form a **NSW Chapter of EMS**. We have his personal support. **A core group of members already exists**. To find out more, **contact Claude LeCompte on (02-8925 1624) or Stefan Mozar (02-8850 4454)**.

Trevor S. BIRD
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