

Dielectrics and Electrical Insulation

New chapter formed (see page 2)
and coming events.

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Committee Election



Closing 15 November 2013
Please vote!

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AGM 21 November



Register now for the IEEE NSW
Section AGM and dinner.

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Women In Engineering



Women in Engineering affinity
group report from Professor
Rodica Ramer

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Chair's Comments



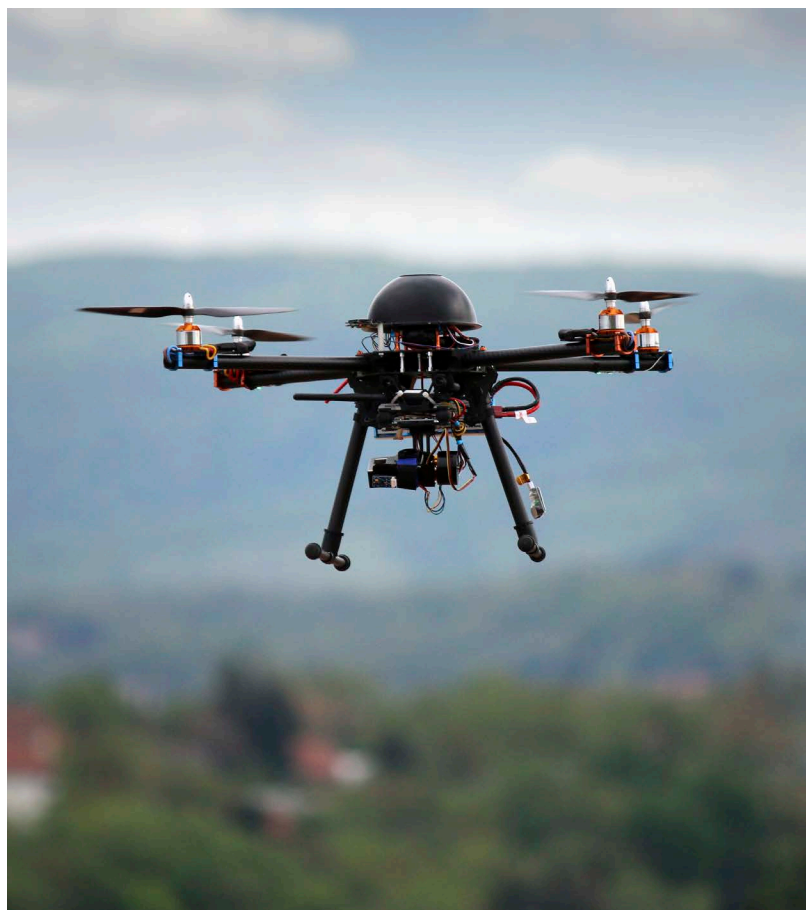
A busy and successful year. AGM.

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Australian Engineering Week

Report from Tony Zaglas.

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SSIT Workshop on Remotely Piloted Airborne Vehicles

Report – Page 7

IEEE Dielectrics and Electrical Insulation Society

A NSW Chapter of the IEEE Dielectrics and Electrical Insulation Society (DEIS) has now been established within the NSW Section of IEEE.

The IEEE DEIS provides leadership, coordination and communication among those members who are concerned with dielectric phenomena and measurements and with electrical insulating materials, including their behaviour as it impacts on their use in electrical and electronic apparatus. The areas of application and research covered by DEIS involve the development and characterization of the dielectric, chemical, mechanical and environmental properties of all vacuum, gaseous, liquid and solid electrical insulation, and the utilization of these material in circuits and systems under general conditions of use.

DEIS publishes a magazine (Electrical Insulation Magazine) and a Journal (IEEE Transactions on Dielectrics and Electrical Insulation). Both are published with six issues per year. The Electrical Insulation Magazine provides very high quality overviews of contemporary topics of interest in insulation materials and applications for the general reader.

Trevor Blackburn of the School of Electrical Engineering and Telecommunications at UNSW is the Chair of the new Chapter. The immediate work of the DEIS Chapter will be in assisting with the organization and running of the ICPADM 2015 conference to be held at UNSW in Sydney in July 20-22, 2015. The ICPADM organising committee is particularly keen to enlist the support of anybody who may be able to assist with the task of reviewing the submitted papers for ICPADM.

Any IEEE members wishing to know more about the Chapter or to join the DEIS should contact Trevor Blackburn at t.blackburn@unsw.edu.au

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Editor

John Aitken
John@jja.com.au

NSW Section Committee Election Candidates - Chair



Raymond Brown

Ray Brown has been a member of the IEEE for 23 years and is presently a Senior Member and Chair of the NSW Chapter of the IEEE Power & Energy Society (PES). He is active in the IEEE NSW Section, regularly providing articles for Circuit and facilitating member advancement to Senior Member grade.

He attended IEEE POCO (Panel of Conference Organisers) in Singapore this year and the PES Region 10 Chapter Chairs meetings in Bangalore in 2013 and Kuala Lumpur in 2014. He runs his own consultancy in power engineering and has a BE and BSc from the University of NSW.

Voting is easy
so vote now!

**Voting closes on 15
November.**

voting.vtools.ieee.org

Voting is through the IEEE vTools system, which makes it easy for you to vote.

The candidate statements here are also on vTools so you can refresh your memory when you vote.

Please contact me if you have any questions, comments or complaints about your voting experience.



Bruce Poon

Bruce.Poon@IEEE.org

**Membership Development
Chair, NSW Section**

Dapeng (David) Tien

Dr David Tien received his undergraduate, master's and PhD degrees in Computer Science, Pure Mathematics and Electrical Engineering from the Ohio State University, USA, and the University of Sydney, Australia, respectively.



David started serving IEEE from 1988 while he was teaching at the University of Sydney. Between 1993 and 2010, he served as Treasurer, Secretary, Vice-Chairman and Chairman at IEEE Singapore and IEEE NSW Sections. Dr David Tien has developed a unique partnership across Region 8 and 10 by signing a "Memorandum of Understanding and Sister Relationship Agreement between IEEE NSW Section and IEEE Russia Siberian Section on Collaboration".

As the Chairman of IEEE NSW Section, I have brought many real benefits to the IEEE members including the input into government decision making, enhance industry participation, Members' Forum, annual international IT conference in Sydney, job placement and APEC visa-free travel accreditation.

Based on my track record, I am seeking your vote to serve as the Chairman of IEEE NSW Section from 2015. I am looking forward to serving the large and growing community of IEEE NSW Section by providing benefits to all IEEE members.

IEEE NSW Chapter AGM - 21 November 2014

Sydney Hilton Hotel – 488 George Street, Sydney

6 pm Chapter and Affinity Group AGMs

7 pm IEEE NSW Section AGM

Annual dinner at the Athenian Restaurant following the AGM

PLEASE REGISTER – See Page 20



Election Candidates – Vice-Chair



Bill Sloman

Born in Burnie, Tasmania in 1942. Graduated with a Ph.D in Physical Chemistry from Melbourne in 1970. Worked in the UK as an electronic engineer from 1971 to 1993, on - amongst other things - phased-array ultrasound and electron microscopes.

Got dragged over to the Netherlands by my wife's career in 1993, and moved on to Sydney when she moved to a new job in 2012. I've been a member of the IEEE since 1980.



Karu Esselle

Karu Esselle - Professor in Electronic Engineering in Macquarie University; Past Associate Dean – Higher Degree Research; Director - Electromagnetic and Antenna Engineering; Chair, Management Board, Australian Antenna Measurement Facility; published over 400 scientific papers with 2500+ citations.

Elected to IEEE AP-S Administrative Committee (2015-17); IEEE NSW Section volunteer for 15+ years; current Section Vice-Chair; past Chapter Chair and Education Activities Chair; formed Macquarie University IEEE Student Branch, which received the Best Student Branch Award (2013) and second prize for the Exemplary Student Branch in Asia-Pacific (2011);

himself was awarded 2011 IEEE Outstanding Counsellor Award; detailed biography: web.science.mq.edu.au/~esselle/

Election Candidates – Treasurer



Bill Sloman

Born in Burnie, Tasmania in 1942. Graduated with a Ph.D in Physical Chemistry from Melbourne in 1970. Worked in the UK as an electronic engineer from 1971 to 1993, on - amongst other things - phased-array ultrasound and electron microscopes.

Got dragged over to the Netherlands by my wife's career in 1993, and moved on to Sydney when she moved to a new job in 2012. I've been a member of the IEEE since 1980.



John Ypsilantis

John Ypsilantis (M'1985) received his BSc degree (1984) in Pure Mathematics and Computer Science, his BE (Electrical) (1986) degree with First Class Honours and his PhD degree (1993) all from the University of Sydney, Sydney, Australia. He is Managing Director and Principal Consultant at Heuristics Australia Pty Ltd, an electrical engineering and ICT consultancy based in Sydney, Australia which provides design and consultancy services to large public and private utilities in Australia and overseas. Dr Ypsilantis has served as Secretary/Treasurer for the NSW chapter of the IEEE Power Engineering Society (2012) and currently serves as Secretary for the NSW Section of the IEEE in Australia (2013 and 2014). Dr Ypsilantis' specialisations include automatic control and communications systems and SCADA for gas,

water and electricity utilities, data communications and network security for utilities and the application of machine learning and intelligent systems to utility operations.

If elected, I will continue to work toward raising the visibility and status of our profession in the community, and promoting the importance of Electrical Engineering in contemporary society.

Election Candidates - Secretary



Dushmantha Thalakotuna

Dr. Dushmantha Thalakotuna obtained his PhD (2012) in electronic engineering from Macquarie University and BSc in Electronic and Telecommunication (2008) from University of Moratuwa, Sri Lanka. He has over 5 years of experience in telecommunication industry and currently a Radio Frequency Engineer at Commscope Australia.

Dushmantha Thalakotuna is an IEEE member. He is also an Antenna and Propagation (AP) and Microwave Theory and Techniques (MTT) society member. He held Chair (2011-2012) and Vice chair (2010-2011) positions at IEEE Macquarie University student branch. During his time Macquarie student branch was awarded the second best exemplary student branch prize.



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John Ypsilantis (M'1985) received his BSc degree (1984) in Pure Mathematics and Computer Science, his BE (Electrical) (1986) degree with First Class Honours and his PhD degree (1993) all from the University of Sydney, Sydney, Australia. He is Managing Director and Principal Consultant at Heuristics Australia Pty Ltd, an electrical engineering and ICT consultancy based in Sydney, Australia which provides design and consultancy services to large public and private utilities in Australia and overseas. Dr Ypsilantis has served as Secretary/Treasurer for the NSW chapter of the IEEE Power Engineering Society (2012) and currently serves as Secretary for the NSW Section of the IEEE in Australia (2013 and 2014). Dr Ypsilantis' specialisations include automatic control and communications systems and SCADA for gas, water and electricity utilities, data communications and network security for utilities and the

application of machine learning and intelligent systems to utility operations.

If elected, I will continue to work toward raising the visibility and status of our profession in the community, and promoting the importance of Electrical Engineering in contemporary society.



Colin Elston

Colin has spent his long career involved initially in the electronics industry, then satellite and mobile communications before moving to the television industry in both Pay and Free to Air. During these many years, he has had continual involvement with Standards setting, Government and other industry bodies, at both national and international levels, including Standards Australia, ACMA and ITU.

Colin is prepared to work hard to progress the work of IEEE in NSW. He is also a member of SMPTE (Society of Motion Pictures and Television Engineers).

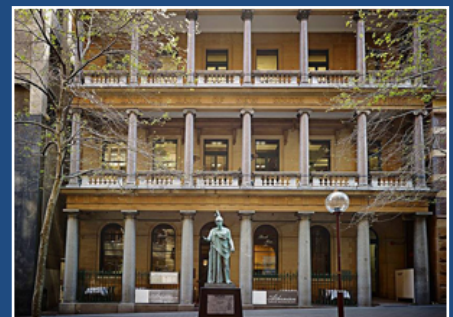
IEEE NSW Chapter AGM - 21 November 2014

Sydney Hilton Hotel – 488 George Street, Sydney

6 pm Chapter and affinity group AGMs
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Please register – See PAGE 20



Message from the Chair

It has been an honour and privilege to serve as the Chairman of IEEE NSW Section in 2014. I would like to thank all of you for your ongoing support over the last year and I am proud of our achievements. As 2014 is drawing to an end, I am excited to share with you the many challenges and goals ahead of us:

- **Industry Liaison:** As most of our members are working in industry, more efforts are needed to serve these members and gain government and industry support for IEEE. An industry liaison would allow government agencies and industry to provide expertise, assistance and sponsorship for IEEE and its activities.
- **Generate Funding:** Although IEEE NSW members pay over half a million membership fees, only a fraction of it (less than \$20K) comes back from HQ to serve our local members. As a result, there is a need to attract financial support through our technical activities and from industry.
- **Membership Services:** We need to provide incentives for new members to join whilst simultaneously ensuring that we retain our continuing members. To do this we must establish long-term programs to address the needs of our diverse membership across industries.
- **Input to Government Decision Making:** Following the model of AMA (Australian Medical Association) IEEE NSW should provide initiatives to serve our society and look after the rights of our members across industry and academic institutions.
- **Building a Strong Executive Committee:** We need to develop strategies to attract motivated and energetic people who will have an active interest in the outcomes of the Executive Committee. Engaging appropriate individuals on our Committee is the key to long-term success.

I look forward to working with you on these challenges and I urge you to take a pro-active interest in the governance of the IEEE NSW Society by participating in our technical conferences and serving on our Committees. I also encourage you to continue providing your valuable ideas and suggestions as we all work together for the betterment of our profession.



David Tien (Ph.D)
Chairman
IEEE NSW

Faculty of Business
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Education Chapter

The Education Chapter is growing and changing.

The chapter has developed new resources to benefit members, including:

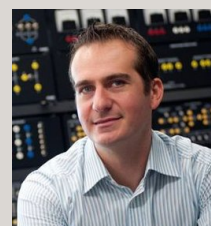
[Education Chapter Website](#)

[Education Chapter LinkedIn Group](#)

[Education Newsletter](#)

If you are involved in teaching, membership to the education society can bring substantial benefits. It can help you improve the effectiveness of your teaching, and provide you with new opportunities to undertake research.

When renewing your IEEE membership, please consider adding the Education Society.



Sasha Nikolic

Chair
Education Chapter

Society for the Social Implications of Technology

The Eighth Workshop in the Social Implications of National Security series, with the theme *Remotely Piloted Airborne Vehicles and Related Technologies*, was held at The University of Melbourne, Australia, from 29-30 September, 2014 as a side event of the Carlton Connect 2014 Conference: *Challenges, Partnerships, Solutions*.

The workshop was a joint activity of the SSIT Australia Chapter, the University of Wollongong (UOW), the Australian Council of Learned Academies (ACOLA)'s *Securing Australia's Future* Project 5 (SAF05), the Carlton Connect Initiative (CCI), the IEEE-USA Committee on Transportation and Aerospace Policy (CTAP), and the Australian Defence Science Institute (DSI).

The aim of the workshop was to further develop the dialogue promoted by the "*Unmanned Airborne Systems and Public Safety: Capabilities, Uses and Regulation*" conference held at Flinders University in February 2014. That conference, which was an initiative of Professor Andrew Goldsmith and Flinders University, was convened to examine the current state of Unmanned Aerial Systems (UAS) capabilities and applications in civilian contexts, and explore the implications of their use for the future.

The Melbourne workshop provided a forum for discussion around the properties of Remotely Piloted Airborne Vehicles (RPAVs), the different types of unmanned aircraft and aerial systems currently being deployed or in development, the challenges and risks posed by the use of RPAVs, safety regulation as applied to the manufacture and civilian use of RPAVs, and the nature of RPAV surveillance and other missions and how these impact on important societal values in Australia and the United States. The workshop considered the RPAV as a platform, the mission capabilities of platforms and their 'payloads' (current and potential), and the integrity of related technologies that enable them to operate remotely. The potential for future developments in those technologies and capabilities, such as the ability for hostile agents to take control of and autonomously direct airborne systems against the better interests of mankind, was also discussed as was the issue of operator integrity, including the potential for incompetent, reckless, mischievous, malicious and criminal use of RPAVs.

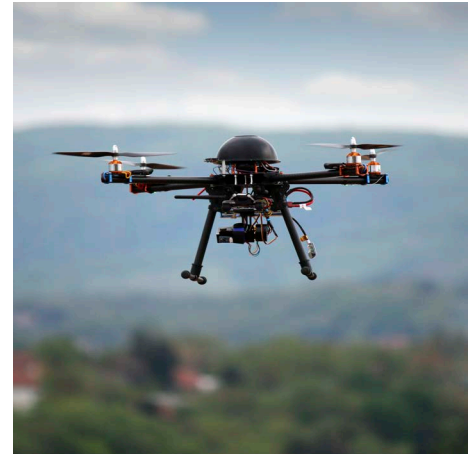
The workshop brought together a select group of experts and thought-leaders intimately familiar with the societal challenges and implications of the rapidly expanding use and sophistication of RPAVs and their related technologies. Participation was restricted to 20 invited experts (including two from the United States) and members of the Workshop Organising Committee, whose collective expertise covered the spectrum of legal, insurance, regulatory, operators (military, commercial and private), and technology (industry and academia) relevant to the technological development, manufacture, acquisition and operation of RPAVs and related technologies.

The top three key outcomes of the workshop were (1) there is a need for a universal vocabulary that facilitates the international dialogue on RPAVs at all levels; (2) there is a need for a clear and robust international framework for the certification of RPAVs and licensing for their intended use; and (3) while there are countless proposed uses across the vast range of RPAVs, not all are appropriate.



The major outcome of the workshop will be a communique that will inform the preparation of SAF5 reports and CTAP position papers on the social and national security implications of RPAVs and related technologies for submission to the Australian and United States governments.

Lyria Bennett Moses
NSW Co-ordinator, IEEE SSIT Chapter



ANZSCON 2014

IEEE Australia & New Zealand Congress University of Queensland 3-5 July 2014

The University of Queensland is surrounded with scenic views and turkey birds. It's surrounded with natural green grass and tress, which gives fresh breath. The university gave us a silent atmosphere to make the congress effective. The Congress was sponsored by the University of Queensland, Energex, Ergon Energy, Powerlink and IEEE Australia Council.

The Congress was initiated by the chair, Alexandra Price with a welcome speech. IEEE YP, Student branch and Women in Engineering (WIE) were introduced to the audience. An interesting talk was given by Liam Waldron (ACT IEEE) on "How to Influence Top Management". He pointed out senior management's requirements and how to approach them. The second day was packed with several talks and networking activities. The most interesting talk was given by Prof. Jan Recker, one of the youngest ever full professor in Australian history. His talk was regarding involvement in industry. His examples were Woolworths and Commonwealth Bank, which made the talk so interesting.

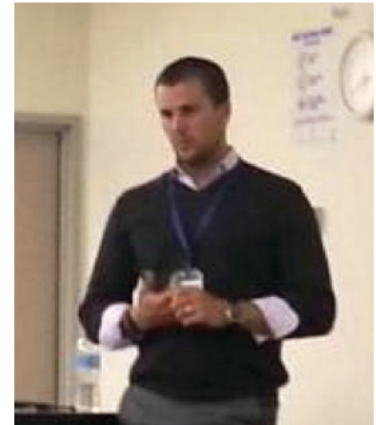
Many PhD students participated in the three-minute thesis competition. The poster competition gave the audience an idea of many PhD students' research. Apart from this, other talks given by Vince Garrone, Lan McLeod (Ergon Energy) and Sandra Mau covered different areas important to all the audience. The group photo was taken in the evening. At last the networking activity gave us a chance to get to know each other and about the university as well. The congress dinner was held at St Leo's College with the sponsors and department head. It was so fun and entertaining. Awards for the winners in the poster competition and three minute thesis competition were given after the dinner.

The last day started with a workshop in the IEEE Teacher In-Service Program (TISP) by Mike Robinson. He explained how we can have similar workshops with our school teachers and how IEEE can help this. Following the morning tea, Ariel Brinner (Ceo-Cartesian Co) gave us an introduction about his company and how he worked to build his own company. Similarly Alex Ghiculescu (Co Funder of Tanda) also gave an idea about his company. I had a chance to meet Om Pragash (Student Activities Chair Region10) and discuss the difficulties that YP face these days. He presented the activities held during 2013 - 2014, including the R10 student congress in Hyderabad, India. Finally congress came to an end with the speech by the chair.

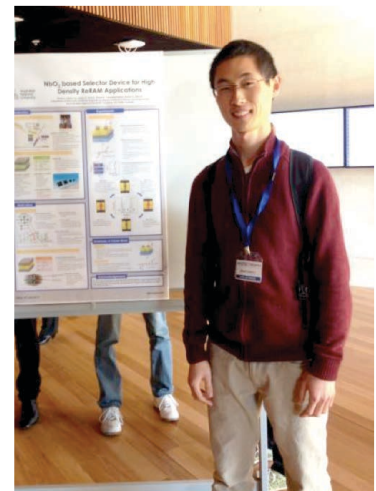
In the nutshell this congress gave me a good opportunity to meet new volunteers from different parts of

Not only I, but also YP NSW also will benefit from this networking. Moreover we had good experience in organizing such events.

Balakrishna Sarma
Chair - IEEE YP NSW



"Get Involved"
Jan Recker



Poster Competition



Women in Engineering

IEEE NSW Affinity Group

Women in Engineering Research Network Lunch



Wednesday 21 June, a meeting for an informal lunch, where female researchers shared tips, aired concerns and met each other in a relaxed setting took place. They spoke about the importance of communicating with influence and networking in their career.

Speakers shared their experiences traversing their careers as female researchers. They shared not only their highs, but also their lows – and the skills they picked up to manage these along the way. Speakers shared wisdom in our network of women engineers researchers and gained insight about work/family balance, research collaboration, leadership, service, supervision, professional networking. Other discussions included questions like: how do I know if I'm an effective researcher and a research supervisor? How do I

become active on a committee, rather than sitting on the sidelines? Great tips and messages were scattered throughout these discussions. There were honest talks and inspiring.

The meeting offered a chance to develop skills that left us with the feeling that we were more in control than ever before.

Tweet Society



Founded in 2014, Tweet aimed to connect female electrical engineering & telecommunications (EE&T) students, as well as build links with female alumni and related industry, research and professional bodies.

Tweet held three casual Women in EE&T events. These events aimed at allowing women across different years of study to mingle and celebrate the diversity that women studying engineering provides.

This year, two final year female undergraduate Electrical Engineering students Varuni Fernandez and Eric Barrett created the "tweet". Membership was free and opened to all students and professionals. The tweet is a new society at the University of NSW.



Senior Women in Research Get-Together

Senior professors joined and had an opportunity to speak of the importance of communicating with influence and networking in their careers. Discussions about the personal presence and active engagement were conducted.

The last meeting of the year is scheduled in mid-November.

Prof. Rodica Ramer

Chair WIE

ror@unsw.edu.au



Power & Energy Society

Chapter Update

NSW Chapter AGM

The annual general meeting of the IEEE PES NSW Chapter will be held at 6:00pm on Friday 21 November 2014 at the Sydney Hilton Hotel. This will be followed by the NSW Section AGM and the annual dinner. All PES members are very welcome to attend.

Committee Positions

At the time of writing, insufficient nominations had been received to fill all the PES NSW Chapter general committee positions (four positions in total). If anyone would like to volunteer for these roles, nominations will be accepted on a first-come basis. Nominations should be sent to nsw.pes@ieee.org or to Graeme Gwilliam at gb.gwilliam@ieee.org

Transformer Design Review Presentation

As part of the Joint Electrical Institutions (IEEE, EA and IET) lecture series, Derick van der Zwan of ABB gave a presentation on Transformer Design Review - Risk Management in Transformer Procurement and Design/Manufacture. The presentation was given on 9 October 2014 at Engineers Australia at Chatswood and attracted approximately 53 attendees.

PowerCon 2016 to be held in Wollongong

The University of Wollongong has been successful in their bid to host the IEEE PES PowerCon Conference in 2016. This conference is held every two years in the Asia-Pacific Region, alternating between locations inside and outside of China. This year's event was held in Chengdu, China, with the 2012 event being held in Auckland, New Zealand.

At this stage it is expected that PowerCon 2016 will be held in September or October 2016.

Senior Membership

IEEE Senior Membership is open to members who have been in professional practice for at least 10 years, with at least 5 years of significant performance. There is no requirement to have been involved in academic research or to have published papers or the like. There is no cost or any additional on-going fees.

Application for Senior Membership is via an on-line process and there is a requirement for three references from IEEE Senior Members. This can be a problem for some potential applicants. If this is the case, please contact the PES NSW Chapter at nsw.pes@ieee.org, preferably attaching a copy of your resume. We can arrange for references from PES Senior Members and also for nomination by the IEEE NSW Section.

All eligible members are encouraged to apply.

The Power & Energy Technology Systems Open Access Journal

The Power and Energy Technology Systems Journal submission site is now open. This new open access journal is intended to be a technical journal containing practice-oriented articles focusing on all power and energy topics.

AUPEC 2014 Report

The Australasian Universities Power Engineering Conference (AUPEC 2014) was held at Curtin University in Perth from 28 September to 1 October 2014, technically co-sponsored by the IEEE PES.

The conference included two tutorials, five keynote and two invited speakers, 11 exhibitors and an industry panel session. There were 179 accepted papers, with 122 oral presentations across 28 sessions and 57 poster presentations across two sessions. Delegates attended from Australia and 18 other countries, with India and Malaysia providing the greatest number of authors from outside Australia.

Jicable '15 Young Researchers Contest

Jicable is an international conference on power cables that is held every four years. The 2015 conference will be held in Paris from 21 to 25 June 2015.

In order to encourage the participation of students and researchers less than 28 years old, the organisers of Jicable'15 are setting up a Young Researchers Contest. Abstract submission closes on 15 November 2014 and more details can be found at http://www.jicable.org/2015/content/Jicable_2015_Call_for_Papers_YRC.pdf

Power & Energy Society

Continued

PECON 2014

The IEEE International Conference on Power and Energy (PECON 2014) will be held in Kuching, Malaysia from 1-3 December 2014. The conference is jointly sponsored by the Malaysian chapters of the Power & Energy Society and the Power Electronics Society (PELS).

APPEEC 2014

The 6th IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC 2014) will be held in Hong Kong from 8-11 December 2014. This year's conference will be held at the Shangri-La Hotel in Kowloon.

AUPEC 2015

The Australasian University Power Engineering Conference (AUPEC 2015) will be held at the University of Wollongong from 27 September to 30 September 2015. This long-running conference will be technically co-sponsored by the IEEE PES. The paper submission process opens on 1 December 2014.

ISGT Asia 2015

The IEEE Innovative Smart Grid Technologies Asia Conference (ISGT Asia 2015) will be hosted by the Thailand PES Chapter in Bangkok from 3-6 November 2015.



Ray Brown

Chair
Power & Energy Chapter

CIGRE Brochures Released

The following technical brochures have recently been issued by CIGRE:

- TB 581 Guide - Corona Electromagnetic Probe Tests (TVA)
- TB 582 Survey on Hydro Generator Cleaning
- TB 583 Guide to the Conversion of Existing AC Lines to DC Operation
- TB 584 Implications and Benefits of Standardised Protection and Control Schemes
- TB 585 Circuit Configuration Optimisation
- TB 586 Capacity of Distribution Feeders for Hosting DER
- TB 587 Short Circuit Protection of Circuits with Mixed Conductor Technologies in Transmission Networks
- TB 588 Operation & Maintenance of Telecom Networks and Associated Information Systems in the Electrical Power in the Electrical Power Utility
- TB 589 The Impact of the Application of Vacuum Switchgear at Transmission Voltages
- TB 590 Protocol for Reporting the Operational Performance of HVDC Transmission Systems
- TB 591 Planning and Optimization Methods for Distribution Systems
- TB 592 Guide for Assessment of Transferred EPR on Telecommunication Systems due to Faults in AC Power Systems
- TB 593 Past, Present and Future of IEC and IEEE High-Voltage and High Current Testing Standards
- TB 594 Guide to Minimise the Use of SF6 During Routine Testing of Electrical Equipment.

CIGRE Publications are available at
www.e-cigre.org

Communications Society

Chapter Update

Distinguished Lecture of the IEEE Communications Society

Topology Coordinate System: A Novel Domain for Self-Organizing Large-Scale 2D and 3D Sensor Networks

Speaker: Anura Jayasumana

Professor Dept. of Electrical & Computer Engineering Colorado State University, Ft. Collins, CO 80523 USA Web: <http://www.engr.colostate.edu/~anura>

Date/Time: Friday 14th, November 2014, 5:30-6:30pm

Location: G3, Electrical Engineering Building G17, University of New South Wales

The cost and size trends of motes, RFIDs and nano-devices point to future massive-scale sensor networks deployed in 2D and complex 3D spaces. Most techniques for self-organization, routing and tracking in sensor networks rely on distances and localization in the physical domain. However, geographic coordinates require analog measurements such as RSSI and time-delay that are unreliable, error prone and expensive. Most techniques based on geographical coordinates also do not scale well to 3D.

We present strategies for self-organization and routing using a novel localization-free coordinate system, the Topology Coordinates (TC). TCs are derived from a Virtual Coordinate System (VCS) that characterizes each node by its hop distances to a small subset of nodes. We demonstrate techniques for obtaining Topology-Preserving Maps (TPMs) of 2-D and 3-D networks, in which even the geographic voids and shapes are preserved.

This new topological domain combines the advantages of geographical and virtual coordinate domains. TC based Geo- Logical Routing (GLR), for example, significantly outperforms existing logical and physical coordinate based routing schemes in both 2D and 3D networks. A Directional Virtual Coordinate (DVC) transformation is proposed to restore the directionality lost in VCS and to introduce the concept of angles between virtual directions. Ability to specify virtual cardinal directions and angles is a radical change from the traditional VCS approaches. Mobility tracking in TC domain will be addressed. A novel self-learning algorithm is presented to provide network awareness to individual nodes, a step toward large-scale evolving sensor networks.

Anura Jayasumana is a Professor of Electrical and Computer Engineering at Colorado State University, where he also holds a joint appointment in Computer Science. He is the Associate Director of Information Sciences & Technology Center at Colorado State. He is a Distinguished Lecturer of the IEEE Communications Society.

His research interests span high-speed networking to wireless sensor networking, and anomaly detection to DDoS defense. He has served extensively as a consultant to industry ranging from startups to Fortune 100 companies. He received the B.Sc. degree from the University of Moratuwa, Sri Lanka and M.S. and Ph.D. degrees in Electrical Engineering from the Michigan State University. Prof. Jayasumana has supervised 20 Ph.D. and 50+ M.S. students, holds two patents, and is the co-author over 250 papers. He is the recipient of the Outstanding Faculty Award from the Mountain States Council of the American Electronics Association.

Jinhong Yuan

PhD, Professor

Wireless Communications Lab <http://www2.ee.unsw.edu.au/wcl/>

School of Electrical Engineering and Telecommunications

University of New South Wales

IEEE Dielectrics and Electrical Insulation Society

ICPADM 2015 to be held in Sydney on 20-22 July 2015

The IEEE Dielectrics and Electrical Insulation Society (DEIS) runs a number of fully-sponsored general insulation conferences covering the general areas of high voltage insulation and dielectric materials. Two of these conferences, CEIDP (Conference on Electrical Insulation and Dielectric Phenomena) and EIC (Electrical Insulation Conference) are held annually in the Americas. A third is ICDL (International Conference on Dielectric Liquids), which is a triennial conference based in Europe and the fourth is ICPADM (International Conference on the Properties and Applications of Dielectric Materials) which is a triennial conference based in the Asia-Pacific region. ICPADM started in 1985 at Xi'an Jiaotong University in China.

In 2015 ICPADM will be held in Sydney at the University of NSW on July 20-22. This, the 11th ICPADM Conference, will thus celebrate a 30-year milestone in the conference's history.

Although based in the Asia-Pacific region, the conference always attracts many attendees from Europe and North America and provides a learned forum for international exchange of the latest research progress in electrical insulation and dielectric materials, practical applications of these materials in electro-technology, particularly in power equipment and apparatus.

With the rapid development of higher voltage power systems in recent years, the necessary refurbishment and replacement of old grid equipment and the incorporation of renewable systems, with their different insulation requirements, electrical insulation and dielectrics research and their applications have developed at a very rate in recent years.

Developments in electrical insulation have been particularly rapid in China and the ICPADM's Prof Liu Ziyu Memorial Lecture will be given by Prof. Li Shengtao of Xi'an Jiaotong University. Prof Li Shengtao is also a director of the Chinese Government's State Key Laboratory for Electrical Insulation and Power Equipment.

Examples of the topic areas covered by ICPADM include electrical insulation in power equipment and apparatus (solid, liquid, and gaseous insulation); monitoring and diagnosis of degradation of insulating materials and systems; insulation for UHV AC and EHV DC applications; ageing and life expectancy; modeling and simulation studies of insulation systems; dielectric discharges and applications; partial discharges; electrical conduction and breakdown (solids, liquids, and gases); surface and interfacial phenomena; nanotechnology and nanodielectrics; space charge and its effects; eco-friendly dielectrics and recycling; test and measurement techniques; new and functional dielectric materials (ceramics, biological materials, soft matter, thin films, and multilayer dielectrics); dielectric materials for electronics and photonics; dielectrics in superconducting power devices; bio-dielectrics.

The ICPADM conference chairs are Toan Phung and Trevor Blackburn of the School of Electrical Engineering at UNSW.

E-mail: toan.phung@unsw.edu.au

Website: <http://www.icpdm2015.org>

**International Conference on
the Properties and Applications of Dielectric Materials (ICPADM)
19-22 July, 2015
Sydney, Australia**



CALL FOR PAPERS

Dear colleagues,

It is our honour and pleasure to invite you to participate in the forthcoming International Conference on the Properties and Applications of Dielectric Materials (ICPADM) in Sydney, Australia in 2015. The ICPADM is fully sponsored by the IEEE Dielectrics and Electrical Insulation Society. This triennial Conference, established since 1985, is the premier insulation and dielectric materials forum for Asia. Recent ICPADM venues have included India, China, Indonesia, and Japan. The 2015 Conference will be the eleventh ICPADM and will be held at the University of New South Wales (UNSW) in Sydney, Australia.

The ICPADM is a conference combining fundamental research and application practice in dielectrics covering the basic dielectric physics and the general areas of electrical insulation in power system equipment and components, monitoring and diagnosis of insulation degradation, insulation for EHV AC and HVDC systems, ageing and life expectancy of insulation, dielectric phenomena and applications, partial discharges, electrical and water treeing and surface tracking, electrical conduction and breakdown in dielectrics, surface and interfacial phenomena, nano-technology and nano-dielectrics, space charge and its effects, new and functional dielectrics, dielectric materials for electronics and photonics, eco-friendly dielectrics, bio-dielectrics, dielectrics for superconducting applications, new diagnostic applications, modelling and simulation of insulation systems, etc.

Papers submitted to ICPADM must not have been published elsewhere, and must be non-commercial and objective. An IEEE copyright transfer form is required for all submitted papers. Papers must be presented at the Conference in order to be considered for placement in IEEE Xplore.

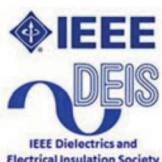
Critical Dates:

- | | |
|---|-----------------|
| ▪ Abstract submission deadline | 3 November 2014 |
| ▪ Notification of abstract acceptance | 12 January 2015 |
| ▪ Full paper submission for peer review | 12 March 2015 |
| ▪ Notification of final acceptance | 5 May 2015 |

The on-line system is now open for abstract submission. For further information, please follow our Conference website: www.icpadm2015.org

We look forward to receiving your original technical papers and welcoming you at ICPADM 2015.

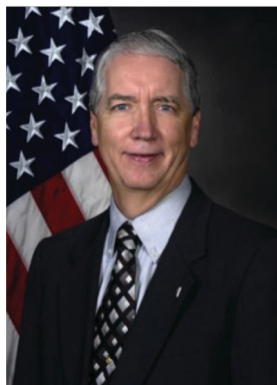
Toan Phung and Trevor Blackburn
Co-chairs of ICPADM 2015



AP/MTT Societies Chapter Update

IEEE NSW AP/MTTs Forthcoming Distinguished Lecture

In the recent past the New South Wales joint chapter of IEEE Antennas & Propagation Society / Microwave Theory and Techniques Society has organised technical events on emerging new developments in area of antennas and microwave technology.



In a coming event **Dr. Brian M. Kent**, Fellow, IEEE/AMTA/AFRL, is a Consultant in Aerospace, Science, and Technology, and an adjunct professor of Electrical Engineering with Michigan State University's Department of Electrical Engineering. He recently completed 37 years of Service to the United States Air Force having most recently served as the Chief Technology Officer of Air Force Research Laboratory, Wright-Patterson Air Force

Base, Ohio. As CTO, he was AFRL's principal scientific and technical expert for a 6,500 person organization while overseeing a \$2.2B+ research portfolio.

*The event is scheduled on **Thursday, 13 November 2014** from 5:00 pm to 6:00 pm at Building E6B, Room 136 Macquarie University NSW 2109.*

For more information on lectures and be part of community, please feel free to contact me or Prof Karu Esselle (karu.esselle@mq.edu.au).

Abstract

As NASA prepared the Space Shuttle Orbiter "Discovery" for its first return to flight mission (STS-114) in July of 2005, a number of new visual and radar sensors were used during the critical ascent phase of the flight to assess if unintentional debris was liberated from the Shuttle as it raced into orbit. New high-resolution C-Band and X-Band radars were used to help ascertain the location and speed of released debris. We also used both radars to monitor debris generated by routine flight events such as Solid Rocket Booster (SRB) separation. To assure these new radars did not interfere with flight-critical engine subsystems, an Electromagnetic Interference (EMI) measurement was performed on the Shuttle Orbiter "Discovery" in January 2005, using the Air Force Research Laboratory's Mobile Diagnostic Laboratory (MDL). This portable EM Measurement system performed a large number of attenuation measurements the night of January 17-18, 2005. This talk describes how the attenuation data was acquired, and the methodology used to reduce the data to predict average attenuation of the radar energy from the outside world to the inside of the aft engine bay of the Orbiter. This data was combined with a separate NASA- performed avionics EMI analysis to demonstrate that the new C and X-Band Debris Radars could be operated without adversely interfering with the Orbiter aft bay Avionics systems. After a through description of the AFRL aft bay EMI experiment, the talk will close with a brief overview and presentation of results from the separate NIST/NASA EMI experiment performed on the Orbiter Endeavour.

Good News IEEE Elections

It is my pleasure to inform you that in recent worldwide elections Professor Karu Esselle has been elected to the IEEE Antennas and Propagation Society Administrative Committee (AdCom) for a three-year term.

This is a great achievement for Asia-Pacific region, Australia, and NSW because no other person residing in the Asia-Pacific region (i.e. IEEE Region 10) has been elected to this AdCom at least for the last four years. Karu is scheduled to attend the last 2014 AdCom meeting to be held in France in November and the first 2015 AdCom meeting to be held in Hong Kong in February.



Karu is the current Vice-Chair of the IEEE NSW Section and Past Chair of the IEEE NSW Antennas and Propagation Chapter.



Yogesh Ranga

Chair, IEEE NSW AP/MTT Chapter Signals and Systems
CSIRO Computational Informatics

Macquarie University Student Branch/ MTTs Student Chapter Update

From June to September, a series of workshops has been organized. In June, one day workshop on Introduction to Latex has been arranged and conducted by PhD student, Tariq Khan. Purpose of this workshop is to introduce Latex to student intending to use it for report and thesis writing.

In August, a three days workshop on Synopsys Design Compiler has been arranged and conducted by PhD student, Niras Cheeckottu Vayalil. He also conducted two more workshops during September. A four days workshop (2-5 September 2014) has been arranged on Synopsys Prime Time while another four days workshop (9-12 September 2014) has been conducted on IC Compilers.

The series of workshops is jointly organized by IEEE Macquarie University Student Branch and IEEE MTT-S Macquarie University Student Chapter. These workshops were attended by IEEE members and students.

In September, other major activity was an invited lecture on “UWB Nano-Antenna Arrays”, delivered by IEEE fellow, Professor Amir Boag from Tel Aviv University, Israel. The talk is focused on Ultra Wideband (UWB) antennas and antenna arrays. How dual-vivaldi nano-antenna arrays are designed, fabricated, and optically characterized in the infrared (IR) and visible regimes. The antenna arrays are characterized by measuring the scattered light at IR and visible spectral ranges. A novel technique for antenna and load impedance measurements using scattering data has been developed. The radiation efficiency and the spectral response of the antennas were found to be in good agreement with numerical simulations. The results presented here demonstrate the extremely wideband nature of the dual-vivaldi nano-antennas and the strong impact of load at the antenna terminals on its scattering response. These properties, as well as their many degrees of freedom for design, render the dual-vivaldi nano-antennas excellent candidates for optical sensing applications and energy harvesting. The activity concluded with an interactive social session followed by refreshments.

As part of its social and networking activities IEEE student branch also arranged badminton competition in which branch members participated and have shown their sports skills.

Members of IEEE MQU SB provided voluntary support to IEEE NSW Section at IEEE International Conference on Communications, held in Sydney from 10-14 June, 2014. Branch members also provided voluntary support to IEEE NSW Section at Wireless Personal Multimedia Communications (WPMC'2014), held in Sydney from 7-14 September, 2014. During September, branch members assisted Macquarie University, Department of Engineering during open day held on 13th September 2014.



Syed Muzahir Abbas
IEEE Student Branch/IEEE MTT-S Student Chapter
Macquarie University

Australian Engineering Week 2014

This year Australian Engineering Week was held between 4 and 10 August 2014. Sponsors included Macquarie University, Hyder, IET, UNSW, Transgrid, NSW Trade and Investment, RTAA and IEEE NSW Section.

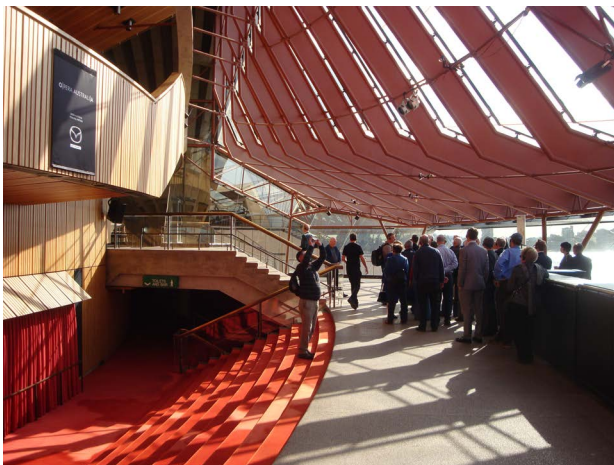
The Harrick's Address was given on Monday 4 August 2014 at the Museum of Sydney, AGL Theatre. The speaker was Australian, multi award winning, Technology entrepreneur Matt Barrie the founder and CEO of Freelancer.com.

Other major events and Site Tours included the Great Engineering Challenge at the UNSW, the Aurecon Bridge Building Completion at the Art Gallery of NSW, Opera House tour and other numerous site tours and events. The Engineering Forum covered the Sydney Light Rail and was held at the Powerhouse Museum the speaker being Chris Lock of ARUP.

This year attendance was generally up on 2013 and the event was a great success. Planning has already started for AEW 2015 with the main goal being greater participation by the Community and School age Students.

I volunteered for the West Ryde Boiler House site tour and went on the Sydney Opera House visit. Other IEEE NSW Section Volunteers on Site Tours included Bruce Poon, John Robinson and Olly D'Souza.

The West Ryde Boiler House tour was hosted by Myly, Louise and Phillip of Sydney Water. They provided a comprehensive tour of the Heritage Listed Facility and an excellent overview of the history from the start in 1891 to the date of completion in 1921, including the upgrading to electric driven pumps in 1982. We also visited the Archive and Records room in which are stored, records, photographs and plans not only of the Facility but also all of Sydney Water. More information can be obtained at [Ryde Boiler House](#). For more available Sydney Water Site Tours see [Sydney Water Tours](#)



I also went on the excellent Sydney Opera House Site Tour which Bruce Poon volunteered to Represent AEW. The tour was specially organised for AEW with additional engineering historical content. The tour guide Alan and Engineering Manager Bob Moffat were great and provided a wealth of information on the history, construction and current renovations of the world famous building. The history from the initial idea for a Sydney Opera House and site selection, the competition for the design, selection of winning proposal, design and construction problems and associated politics leading to the resignation of Jorn Utzen as Architect and opening by Queen Elizabeth in 1973 were all comprehensively covered. Innovations such as chilled ceiling air conditioning, plant rooms, lighting systems, stage designs and electricity supplies, problems posed to renovations by changing regulations such as

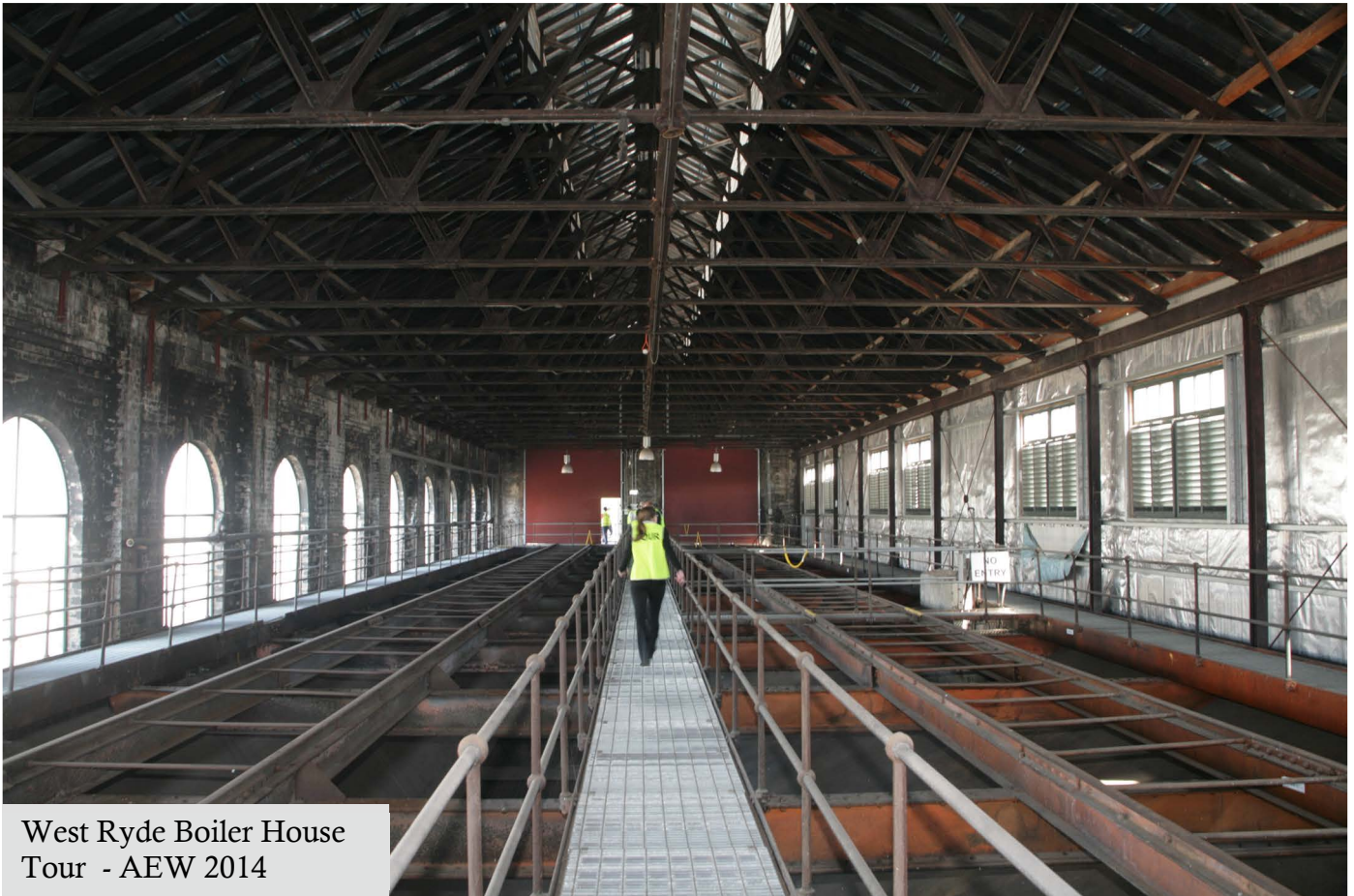
the BCA were discussed and questions were comprehensively answered by the hosts. The visit included the Playhouse, Drama Theatre, Joan Sutherland Theatre, Concert Hall and Bennelong Restaurant. For Sydney Opera House Tours see [Opera House Tours](#)



Many thanks to all the Sponsors, AEW Committee and Volunteers as well as all the Organisations and Staff facilitating the Site tours and Events.

For more stories and photos about AEW 2014 see [AEW 2014](#) and [Photos](#)

Tony Zaglas
antonyz@ieee.org



West Ryde Boiler House
Tour - AEW 2014



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Chapter & Affinity Groups AGM

IEEE NSW Section AGM

21 November 2014

6 pm to 7 pm Chapter and Affinity Groups AGM at the Sydney Hilton Hotel

7 pm to 8 pm NSW Section AGM at the Sydney Hilton Hotel

8:15 pm to late NSW Section Dinner at the Athenian Restaurant

Sydney Hilton Hotel – 488 George Street, Sydney

Athenian Restaurant – 11 Barrack Street, Sydney (off George Street, opposite Martin Place)

Although the dinner starts from 8:30 pm, spouses and guests are encouraged to go to the restaurant directly from 7:30 pm onwards and socialise with each other.

RSVP: Friday 14 November 2014

IEEE NSW Section will cover the cost of your dinner (partner included) for all registrations received before the RSVP date above. However, for those who do not attend the event, \$80 per person will be charged to your credit card.

Name:

Attending: AGM Dinner (Yes/No as applicable)

Tel: Membership No.:

Partner's Name:

Attending: AGM Dinner..... (Yes/No as applicable)

Credit Card No.: (This will be used if no show at the event)

Kindly e-mail the completed form to David Tien: dtien@csu.edu.au