Education and Student Activities Committee (ESAC)

Bob Nelson, Associate Editor, Chairman of the ESAC

What a week! I don't know about you, but I found that there were so many interesting sessions to attend at the 2007 IEEE International Symposium on EMC that it was sometimes hard to decide which one to pick (let alone investigating things outside the convention center)! With the Global University, and the 50–year celebration of our Society, along with all the other great activities, it was indeed a very special week. (I think you can tell that by the pictures below!)

Although it was a lot of fun being in Hawaii, we actually did some work, too! In that light, let me highlight a few of this year's activities for you.

NARTE Activities

The National Association of Radio and Telecommunications Engineers (NARTE) is the organization responsible for certifying EMC engineers and technicians. Each year a NARTE exam is given following the EMC Symposium, and an Exam Preparation Tutorial is given earlier in the week. This year, the Examination Preparation Tutorial was held on Sunday, and was included as a part of "The Fundamentals of EMC" Tutorial. During that session, attendees were advised as to the format of the two-part examination, and were also provided with working examples of typical exam questions and hints of what might be the best approach to ensure success on the exam. This year, the NARTE exam was given on Saturday, culminating a very full and exhilarating week. Many thanks go to Jim Whalen (University of Buffalo) and Brian Lawrence (NARTE Executive Director) for heading up these important activities.

Experiments Manual

Ed Wheeler (Rose-Hulman Institute of Technology) continues to lead ESAC in the area of the experiments manual. The original experiments manual, along with several other experiments, are available via the ESAC website at http://www.ewh.ieee.org/soc/emcs/edu/eduresources.htm. We encourage folks to download these and use them! In addition, new submissions are always welcome! Instructions for submitting new experiments are available via a link at http://www.ewh.ieee.org/soc/emcs/edu/exper.htm. Ed also welcomes inquiries and can be contacted at e.wheeler@ieee.org. Thanks, Ed!

Hardware and Software Demonstrations

For the fifteenth consecutive year, this activity has provided interesting, hands-on illustrations of EMC-related phenomena. This year, Co-Chairs Andy Drozd and Colin Brench did another excellent job of putting together a slate of great demonstrations. If my count is correct, there were thirteen hardware demonstrations, provided by David Seabury (ETS-Lindgren), Michael Foegelle (ETS-Lindgren), Ken Wyatt (Agilent Technologies), Elya Joffe (K.T.M. Project Engineering), Patrick Webb (National Instruments), Norbert Kohns (NATO Airbase, Geilenkirchen, Germany), Oscar MahinFallah (Cisco Systems), Jeff Evans (Hewlett-Packard), Lauri Halme (Helsinki University of Technology, Espoo, Finland), Patrick Conway (Hewlett-Packard), Fred Heather (Joint Strike Fighter (JSF) EM Environmental Effects, U. S. Naval Air System Command), Dave Arnett (Hewlett-Packard) and Daryl Beetner

PHOTOS BY KEN WYATT

(From left) Harold Rudnick, Co-Chair of the ESAC Student Design Contest from Nonin Medical Inc., joins Leo L. Beranek winners Chris Solis, Sourabh Bhalerao and Robert Powelson from California State University, Chico, and Ahmad MahinFallah, Co-Chair of the ESAC Student Design Contest from Cisco Systems, Inc. Great shirts Harold and Ahmad!

Valerio De Santis (left) from the Department of Electrical and Computer Engineering, University of L'Aquila, Italy receives the Best Student Paper Award from IEEE EMC Society President Andy Drozd.

Joseph Dalrymple (left) represented his fellow students Dejan Lukajic and Mark Quayle from the University of Tennessee, Knoxville in receiving the Best Student Design Award from IEEE EMC Society President Andy Drozd.

Chris Solis (left) from California State University, Chico receives a certificate from Andy Drozd, IEEE EMC President, acknowledging his part in receiving one of the two 2007 Leo L. Beranek Student Travel Grants.

(University of Missouri-Rolla). We also had six software demonstrations, provided by Sungtek Kahng (University of Incheon - Korea), Irina P. Kasperovich (ANDRO Computational Solutions), Antonio Ciccomancini Scogna (CST of America, Inc.), Bruce Archambeault (IBM Corporation), Robert Kellerman and C. J. Reddy (EM Software & Systems), and Alexandre Boyer and Etienne Sicard (Institut National des Sciences Appliqués (INSA) of Toulouse, France). John Norgard (U. S. Air Force Research Laboratory and the U. S. Air Force Academy) also provided a demonstration that involved both hardware and software. Many thanks to all of you!

Tutorials

Attendees to this year's Symposium were provided with a large number of tutorial sessions that covered a very broad range of topics. In addition to the Fundamentals of EMC tutorial hosted by the Education and Student Activities Committee, additional tutorial sessions on the topics of "Limitations of Simulation Techniques and Proper Model Validation for Both Signal Integrity and EMC", "Introduction to EMI Modeling Techniques", "EMC and Modern Power Electronic Systems", "Basic EMC Measurements", "EMC Aspects of Lightning – with Part 1: Lightning Characteristics and Modeling, and Part 2: Lightning Interaction with Systems and Protection", "Fundamentals and Applications of Antennas and Field Probes in Radiated Measurements", "Electromagnetic Bandgap Structures for EMI/EMC Applications", "EMC in Modern Defense Systems", "International Advances In Site Validation Techniques and Related Activity above 1 GHz", "Design and Modeling Methods for Power Integrity", "Experiences in Crafting EMC Standards" and "IEC ACEC EMC Standards Tutorial: A Conversation with the IEC Advisory Committee on EMC" were chaired by Bruce Archambeault (IBM); Charles Bunting (Oklahoma State University); Firuz Zare (Queensland University of Technology, Australia); Don Heirman (Don HEIRMAN Consultants); Farhad Rachidi (Swiss Federal Institute of Technology), Vladimir Rakov (University of Florida) and Rajeev Thottappillil (Uppsala University, Sweden); Zhong Chen (ETS-Lindgren); Omar Ramahi (University of Waterloo, Canada); Eli Recht (EL-OP Industry, Israel); Janet O'Neil and Vince Rodriguez (ETS-Lindgren); Madhavan Swaminathan (Georgia Institute of Technology); Qiubo Ye (Communications Research Centre, Canada); and Bill Radasky (Metatech Corporation), respectively.

In addition to these fine tutorials, the annual Fundamentals of EMC Tutorial was, for the first time, combined with the NARTE Exam Preparation to provide attendees with some excellent material. This session, chaired by Randy Jost (Utah State University) featured presentations by John Norgard (U. S. Air Force Research Laboratory and the U. S. Air Force Academy) discussing "EM Radiation", David Pommerenke (University of Missouri-Rolla) discussing "Electrostatic Discharge", David Hockanson (Sun Microsystems) discussing "EMI Troubleshooting", and Lee Hill (SILENT Solutions) discussing "EMC Case Histories". The session concluded with an excellent "NARTE Overview and Exam Preparation" provided by Brian Lawrence (NARTE Executive Director). Many thanks to Randy Jost and Daryl Beetner for organizing this great session.

University Grant

The winners of the 2006 University Grant Awards were recognized during this year's Symposium. The proposals "Establishment of a Course in Electromagnetic Compatibility Principal Investigator" written by Dr. Bogdan Adamczyk of Grand Valley State University (Grand Rapids, Michigan) and "Development of a Senior-Level Class on EMC Principles, Techniques, and Applications in English Media" written by Dr. Tian-Lin Dong of Huazhong University of Science and Technology (Wuhan, China) were this year's winners. There is still time to submit a proposal for the 2007 award! Proposals submitted to Dr. Thomas Jerse (the Citadel) before November 1, 2007 will be considered. We encourage you to submit your proposals for consideration of this year's $5,000 award! Details can be obtained from Dr. Jerse (jerset@citadel.edu) or from the ESAC website (http://www.ewh.ieee.org/soc/emcs/edu/index.html).

Sourabh Bhalerao (left) from California State University, Chico receives a certificate from Andy Drozd, IEEE EMC President, acknowledging his part in receiving one of the two 2007 Leo L. Beranek Student Travel Grants.

Robert Powelson (left) from California State University, Chico receives a certificate from Andy Drozd, IEEE EMC President, acknowledging his part in receiving one of the two 2007 Leo L. Beranek Student Travel Grants.

Student Paper Contest

The annual student paper contest provides an opportunity for graduate and undergraduate students to share the results of their research with the EMC community. This is a venue for exposing students to the EMC Society, and encouraging them to consider a career related to EMC. Jim Whalen (University of Buffalo) and Aziz Inan (University of Portland), Co-Chairs of this activity, were assisted in the paper selection by this year's Symposium Technical Program Committee that was Co-Chaired by Todd Hubing (Clemson University) and Don Heirman (Don HEIRMAN Consultants). This year's student winner was Valerio De Santis from the Department of Electrical and Computer Engineering, University of L'Aquila, 67040 Poggio Roio AQ, Italy for the paper entitled "Numerical Prediction of SAR and Thermal Elevation in a 0.25-mm 3-D Model of the Human Eye Exposed to Handheld Transmitters" which he co-authored with Concettina Buccella and Mauro Feliziani. Congratulations to all of you on a very nice paper!

Student Design Competition

The annual student design competition provides Electrical and Computer Engineering students an opportunity to apply their knowledge of EMC and gain hands-on experience. The objective of the contest is to develop the best solution to a standardized broadband electromagnetic interference (EMI) problem. Each contestant receives a standardized "design kit", complete with a sample circuit diagram and electronic components. Using this as the starting point, the students design, construct, evaluate, and document the EMI mitigation techniques they employ to reduce radiated and conducted emissions. The completed kits are evaluated by impartial judges using the following criteria: satisfaction of the intended operation of the circuit; EMC performance of the circuit (i.e., the radiated and/or conducted emissions levels); cost associated with the mitigation techniques employed; the proposed solution's practicality and ease of manufacture; expression and clarity of the report; design rationale for implemented EMI mitigation technique(s) as described in the report; and adherence to competition rules and requirements. Harold Rudnick (Nonin Medical, Inc.) and Ahmad Fallah (Cisco Systems) head up this activity. Bob Hericks and Dennis Swanson (Lockheed Martin Maritime Systems and Sensors) assisted ESAC by arranging for and conducting all emissions measurements. This year's winners were Joseph Dalrymple, Dejan Lukajic and Mark Quayle from the University of Tennessee, Knoxville. Congratulations to all of you on a job well done! The Design contest is now "open for business" for this year! Please check the ESAC website (http://www.ewh.ieee.org/soc/emcs/edu/index.html or http://www.ewh.ieee.org/soc/emcs/edu/student-design-comp.htm) to download the contest rules and request a kit!

Leo L. Beranek Student Travel Awards

In case you missed the explanation last year, the Leo L. Beranek Student Travel Award is an award that honors Dr. Leo L. Beranek, who was a pioneer in radio, acoustics, electro-acoustics, data transmission and other IEEE related technical issues. He is a Fellow of the IEEE and a founder of the company Bolt, Beranek, and Newman. The awards provide assistance (partial reimbursement) for travel expenses to students traveling to the annual IEEE EMC Symposium to present their work (i.e., presentation of papers or design work). There were two awards given this year: (1) the first went to a team of students from California State University, Chico (consisting of Robert Powelson, Chris Solis, and Sourabh Bhalerao) to present the results of their Student Design, and (2) the second went to a team of students from France (consisting of Ali Alaeldine from Institut d'Electronique et de Télécommunications de l'INSA-Rennes and from the Engineering School ESEO-Angers, France, and Nicolas Lacrampe from the Laboratoire d'Analyse et d'Architectures des Systèmes (LAAS-CNRS), Toulouse, France) to present their paper "Efficiency of Embedded On-Chip EMI Protections to Continuous Harmonic and Fast Transient Pulses with Respect to Substrate Injection." All of you did a great job!

Ali Alaeldine (left) from Institut d'Electronique et de Télécommunications de l'INSA-Rennes and from the Engineering School ESEO-Angers, France receives a certificate from Andy Drozd, IEEE EMC President, acknowledging his part in receiving one of the two 2007 Leo L. Beranek Student Travel Grants.

Nicolas Lacrampe (left) from the Laboratoire d'Analyse et d'Architectures des Systèmes (LAAS-CNRS), Toulouse, France receives a certificate from Andy Drozd, IEEE EMC President, acknowledging his part in receiving one of the two 2007 Leo L. Beranek Student Travel Grants.

Education and Student Activities Officers

The Education and Student Activities Committee is here to serve you, the EMC community. Please check out our website at http://www.ewh.ieee.org/soc/emcs/edu/index.html and/or feel free to contact any of the following individuals:
Chair: Bob Nelson (r.m.nelson@ieee.org)
Vice-Chair and Webmaster: Randy Jost (r.jost@ieee.org)
Secretary: Larry Cohen (lawrence.cohen@nrl.navy.mil)
NARTE: Jim Whalen (jjw@eng.buffalo.edu)
Experiments Manual: Ed Wheeler (e.wheeler@ieee.org)
Hardware/Software Demonstrations: Andy Drozd (a.l.drozd@ieee.org)
Fundamentals Tutorial: Daryl Beetner (daryl@umr.edu)
University Grant Committee: Tom Jerse (jerset@citadel.edu)
Student Paper Contest: Jim Whalen (jjw@eng.buffalo.edu) and Aziz Inan (ainan@up.edu)
Student Design Contest: Ahmad Fallah (AhmadFallah@ieee.org) and Harold Rudnick (harold.rudnick@ieee.org)

I want to thank each of the officers, committee members, presenters, organizers, and all the other workers who volunteer their time and effort throughout the year to bring all of us the very best in EMC education. You are the ones who make it all happen. Thank you! **EMC**

iNARTE Activities at EMC 2007

By Brian F. Lawrence, Executive Director, iNARTE

iNARTE was pleased and privileged to help the EMC Society celebrate its 50th anniversary at the 2007 IEEE International Symposium on EMC in Hawaii this year. By coincidence, 2007 is also iNARTE's 25th anniversary and we would like to thank the Society for allowing us a place at the awards luncheon to honour our 25 longest serving EMC members.

The Symposium location in Hawaii was spectacular and that was both good news and bad news. The event certainly attracted good support, but it was difficult to convince attendees that they should spend the day in our examination room rather than sightsee with their families or laze on the beach.

However, a dozen or so really dedicated EMC engineers and technicians did step forward to obtain certification of their professional credentials and we would like to applaud each and every one who did so. We offer special congratulations to the many who achieved a passing grade for the Hawaii test, and we encourage the others to try again as soon as possible.

iNARTE was able to use the last session of the EMC Fundamentals Tutorial on Sunday, July 8th, to present our introduction and Examination Preparation Workshop. This subject matter was particularly suited to all of the registrants who planned to attend the Global University track during the upcoming week. We hope that as these GU attendees develop their EMC career, they will swiftly reach a point where iNARTE Certification will be their next jump forward. Maybe the 2008 IEEE International Symposium on EMC in Detroit will be their time.

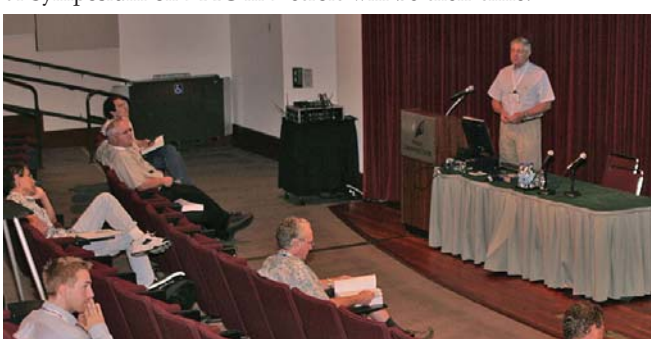

PHOTO BY KEN WYATT

Brian Lawrence, Executive Director of iNARTE, delivers information about the iNARTE certification program during the Fundamentals of EMC tutorial in Hawaii.