



Chapter Chatter

Todd Robinson, Associate Editor

EMC: A History of Being Misunderstood

Many thanks to Dan Hoolihan, Chair of the EMC Society's History Committee, for this excellent little gem from the archives. The following excerpt was taken from the *IEEE Transactions on EMC*, Vol. EMC-20, No. 4, November 1978, from a Guest Editorial by Leonard W. Thomas, Sr.

"First, a few general remarks. Our chosen field of endeavor has been too frequently misunderstood and often ignored by many people. As an example, I will cite one instance of misunderstanding. Stan Bennett, an EMI/EMC engineer

with the Navy's Bureau of Yards and Docks, was directing a group of contractor engineers who were making field-strength measurements at a Navy installation on the West Coast. There were several naval officers observing the tests. One of them approached Stan Bennett and asked him what those men were doing with all of those instruments. Stan replied that "they were making field-strength measurements," to which the Navy captain, after stamping his feet on the ground several times, replied "this field appears strong enough to me."

Beijing

The Beijing Chapter of the IEEE EMC Society was active in 2008. Over April 22-24, it hosted one national meeting on EMC in Suzhou with 91 attendees. Suzhou is a beautiful city and famous for its gardens. There is a saying almost everybody knows in China. It says, "Shang-you-tian-tang, Xia-you-su-hang," meaning "There is fairyland in the heavens, but we have Suzhou and Hangzhou on earth." Attendees at the conference enjoyed the excellent technical presentation as well as the fantastic scenery. The opening ceremony was chaired by Professor Bihua Zhou, a delegate of the National People's Congress. Meizhuang

Zhao (vice secretary general of CIC), Lin Sang and Yougang Gao (chairman of the Beijing EMC Chapter) provided opening remarks. Five technical experts also gave keynote addresses. Notably, Professor Benqing Gao spoke on low frequency source in FDTD simulation and gave some guidelines on choosing the best low frequency simulation tools. Other keynote speeches focused on hot EMC topics and practical problem solving. The Chapter co-sponsored another national EMC meeting in Guiyang on October 14. This meeting was attended by more than 80 people. Besides hosting conferences, the Beijing EMC Chapter recruited several EMC experts to trans-

late papers for Interference Technology. Of course, Interference Technology publishes many excellent technical papers in English. In order to make them more convenient and readily understood by Chinese readers, the Beijing Chapter experts translated a number of papers for Interference Technology. It is also hoped that these activities will attract more engineers into the EMC field. On December 27, Professor Tzong Lin Wu, an IEEE EMC Society Distinguished Lecturer from National Taiwan University, delivered a lecture on power integrity and EMC design for high speed circuit packages. The meeting was held at the North China Electric Power University



Attendees pictured at the Beijing Chapter's April meeting in Suzhou.



Professor Gao, Beijing Chapter Chair, visited the “Fairyland” (Suzhou) with Professor Wang Chengsu (right) and Senior engineer Zhang Subui (left).



Professor Gao of the Beijing Chapter is pictured with a Miaozu (Chinese ethnic group) girl during the October symposium held in Guiyang.

in Beijing, China. His presentation covered the fundamentals of power integrity and EMC design. He also covered a number of new, recently developed techniques. Professor Wu’s DL talk was in conjunction with the “2008 Beijing Forum on Electromagnetics and its Applications.” Other speakers also gave excellent presentations on electromagnetics. These presenters included Professor Erping Li from Singapore, Professor ZhiJun Zhang and Professor Jiansheng Yuan from Tsinghua University, Professor Lezhu Zhou and Professor Mingyao Xia from Peking University, Professor Junhong Wang from Beijing Jiaotong University, Professor Xinqing Sheng and Professor Xiaowen Xu from Beijing Institute of Technology, Professor Donglin Su from Beihang University, Professor Guangyou Fang from Chinese Academy, Beijing, Professor Qingxin

Yang from Hebei University of Technology, Tianjin, and Professor Xiang Cui from North China Electric Power University, Beijing. The DL talk and forum was attended by 45 delegates, including professors, scientists, students and engineers from major universities in Beijing and Tianjin. The meeting was organized by Professor Xiang Cui, Director of the Electromagnetic Environmental Research Laboratory at the North China Electric Power University in Beijing.

Boston

John Clarke, Secretary of the Boston Section IEEE EMC Society Chapter, reports that they held a meeting on Wednesday October 15, 2008. The meeting was attended by 15 IEEE members and five guests. The speaker was Dr. Eric Bogatin of Bogatin Enter-

prises LLC, Olathe, KS. Eric is currently assigned to a two year term (2008-2009) for the EMC Society Distinguished Lecturer Program. The speaker advised that he was unable to attend in person due to a family emergency. Alternatively, the Chapter meeting was held as an interactive Webinar with Mr. Bogatin. This lecture introduced the idea of a myth and the principle that putting in the numbers is the way to separate myth from reality. The speaker applied this method to three myth examples: the flow of the return current in a differential pair; value of routing corners in transmission lines, and whether FR4 material is suitable for work at GHz speeds. Cases were then explored to determine if the myth might be true and how you can answer your own “it depends” questions.



The Distinguished Lecturer, Professor Tzong Lin Wu (4th from left in the front row) together with other distinguished speakers from left to right at front row, Professor Mingyao Xia, Peking University; Professor Donglin Su, Beihang University; Professor Erping Li from Singapore; Professor Xiaowen Xu, Beijing Institute of Technology; and Professor Guangyou Fang, Chinese Academy, Beijing. Speakers shown from left to right in the back row included Professor Xinqing Sheng, Beijing Institute of Technology; Professor Jiansheng Yuan, Tsinghua University; Professor Qingxin Yang, Hebei University of Technology; Professor Xiang Cui, North China Electric Power University, Beijing; Professor Lezhu Zhou, Peking University; Professor Junhong Wang, Beijing Jiaotong University; and Professor Zbijun Zhang, Tsinghua University.

Germany

The 15th annual meeting of the IEEE German EMC Chapter took place at the Institute of Basics of Electrical Engineering and Measurement Science of the Leibniz Universität Hannover, Germany. Frank Sabath, Chapter chair, welcomed the 18 members from industry, university and other authorities present. He started the meeting with a report on the status of the Chapter, including the regional distribution of members. On behalf of the Chapter, he congratulated members that received IEEE EMC Society awards in 2008. He presented a "Certificate of Appreciation" to Hermann Singer for "Outstanding service as an Associate Editor for the IEEE Transactions on Electromagnetic Compatibility from 2000 to 2008." The IEEE Member & Geographic Activities Board presented a "Certificate of Appreciation" to Frank Sabath for "Notable service and contributions towards the advancement of IEEE and the engineering profession." As part of the agenda, the German EMC Chapter recognized and awarded an outstanding Ph.D and Bachelor thesis. Stefan

Ballung received the 2008 Best Ph.D. Thesis-of-the-Year Award. The 2008 Best Bachelor Thesis-of-the-Year Award was presented to Sebastian Müller. One of the most important points of the meeting was Professor ter Haseborg's report about the EMC Europe 2008 conference. EMC Europe 2008 took place on 8-12 September 2008 in Hamburg. The activities of the German EMC Chapter were focused on this event. (For a summary of this conference, please see the article on page 77 of this Newsletter.) As a new activity, the German Chapter established a working group to prepare the application to host the 2015 IEEE International Symposium on EMC in Dresden.

Harbin

After months of preparation, the Harbin IEEE EMC Society Chapter was officially formed. The opening Chapter meeting and workshop will be held this Summer at the Harbin Institute of Technology, Harbin. The new Chapter officers are: Chairman, Professor Qun Wu of the Harbin Institute of

Technology and Vice Chairman, Professor Tao Jiang of the Harbin Engineering University. Harbin is located in the Northeast region of China. The area is rich with industry and academia; therefore, it is home to many with a keen interest in EMC issues. In 2010, a national symposium on EMC will be held at the Harbin Institute of Technology. The Harbin Institute of Technology also plans to apply for hosting an international symposium on EMC. The region is home to many EMC test laboratories located at the Harbin Institute of Technology and Harbin Engineering University for EMC education and training. The Harbin IEEE EMC Society Chapter will warmly welcome distinguished EMC guest speakers from abroad to Harbin. Please note the contact information for the Harbin EMC Chapter:

Dept. of Electronic & Communications Engineering
Harbin Institute of Technology, Harbin
Tel: +86 451 86413502
HP: +86 13936258378
Fax: +86 451 86403028
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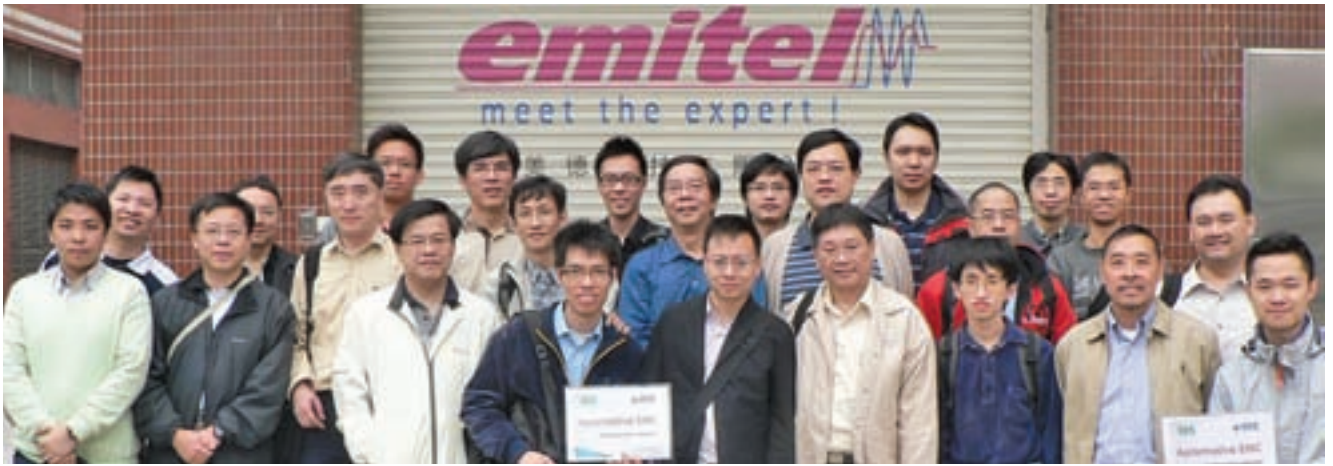
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More than 20 participants from the Hong Kong Chapter enjoyed the laboratory tour at emitel, Ltd.



Attendees at the Hong Kong Chapter meeting enjoy an introduction to automotive EMC given by Mr. Wilson Loke (far left).



Mr. Wilson Loke (center) demonstrated a typical setup for automotive EMC testing for the Hong Kong Chapter.



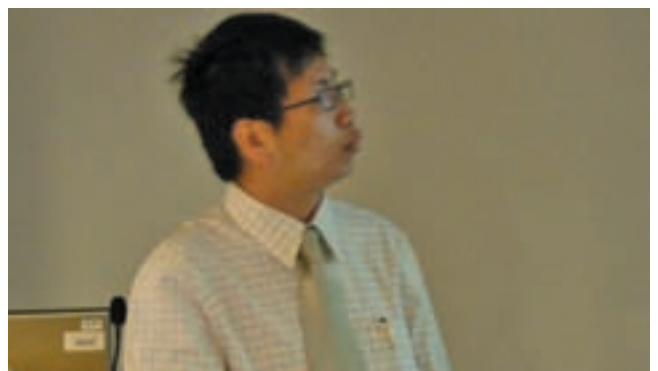
The Hong Kong Chapter meeting participants intently listen to Mr. Derek Leung's presentation.



Participants enjoy the technical presentation during the Hong Kong Chapter's half day seminar on automotive EMC.



Mr. Wai Leong is pictured during his presentation to the Hong Kong Chapter on "Automotive EMC Requirements and Product Liability."



Mr. Wilson Loke during his Hong Kong Chapter seminar on "ISO 7637-2: Electrical Transient Conduction along Supply of Road Vehicles."

Hong Kong

The Hong Kong EMC Chapter held a successful Automotive EMC seminar on November 8, 2008. The half day seminar brought out a total of 35 attendees. The seminar included two technical presentations including, "Automotive EMC Requirements and Product Liability," by Wai Leong and "ISO 7637-2 - Electrical Transient Conduction along Supply of Road Vehicles," by Wilson Loke. On November 22, the Hong Kong Chapter participated in a tour of the excellent EMC test facilities at emitel, Ltd. The tour focused on automotive EMC and included demonstrations of test set-ups and capabilities. A total of 24 attendees participated in the laboratory tour.

Long Island, New York

Thomas J. Schneider, Chairman of the Long Island Section, reports that on November 18, 2008, the LI, NY EMC Chapter held a meeting at RFI in Bay Shore, NY. Instead of having a "live" speaker, a video from the IEEE Distinguished Lecturer Video Series was utilized. The distinguished lecturer was Dr. Bruce Archambeault and the title of the presentation was "Effective Power/Ground Plane Decoupling for PCB." Twenty-six people attended this meeting which included 16 IEEE members and 10 guests. It was a great presentation. The Long Island Chapter encourages all the EMC Chapters to utilize this great resource that the IEEE has provided. The feedback received from the attendees indicated that the video was a good format. However, many felt it would be beneficial if someone was on hand to handle technical questions afterwards. The Chapter also held elections for the 2009 Chapter positions of Chairman and Vice Chairman with terms starting at the end of November. Mr. Donald Lerner of Retlif Testing Laboratories was elected to the position of Chairman while Mr. Martin Czuba of Dayton T. Brown was elected to the Vice Chair position. Congratulations to them both!



Bob Yff

The Long Island Chapter was also saddened by the recent loss of Bob Yff. Chapter member Brian Lawrence shared these memories of Bob, which gives a snapshot of a career that contributed greatly to the shielding and anechoic

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enclosure industry. "I first knew Bob Yff in the late 1970's when he was VP of operations at the old Ray Proof Corporation. I joined Ray Proof in 1979 myself and worked with and for Bob over the next 10 years. During those years, Bob was promoted to President of Ray Proof and under his direction we designed and completed many state of the art RF projects and anechoic chambers, such as the first ever FCC listed chamber in the USA, the first ever FCC listed chamber in Asia, and the largest anechoic chamber in the world for testing the B1B. Bob was a mechanical engineer rather than an EE, then later he was an operations manager and a business manager, (I guess he never saw himself as having the right background for IEEE EMC Society membership), but he encouraged his company and employees to fully support all IEEE EMC Society functions around the world. In 1989, the old Ray Proof empire was broken up by our corporate owners. Bob moved on and started his own RF shielding business: Panashield. He subsequently developed Panashield into a fine, customer oriented business, offering special design and construction services for many high performance and specialty rooms and chambers, in addition to a standard range of EMC/EMI test facilities. Bob devoted more

than 40 years of his life to supporting the EMC community with the finest test facilities and services. His customers and colleagues include many EMC Society members and a large number of non-members."

Malaysia

The Chapter chair, Professor Mazlina Esa, reports that they have been very active from October through December 2008. Three major events were carried out. The first event was the 2008 IEEE International RF and Microwave Conference (RFM 2008) held December 2-4 at The Summit Hotel, Subang USJ. This was the third in a series of highly successful RFM international conferences, first held in 2004, followed by 2006. Of the 250 papers submitted for the conference, 187 papers from 15 countries were presented. A plenary session was conducted on December 3 to address the topics: (1) 'Miniaturization of Ultra Wideband Antennas' by Professor Zhining Chen of I2R, Singapore. He is an IEEE Fellow and APS Distinguished Lecturer. (2) 'Microwave Antennas for Medical Applications' by Professor Koichi Ito of Chiba University, Japan.

He is an IEEE Fellow and APS Distinguished Lecturer. An Invited Paper was also delivered; 'The Future of Wireless Broadband' by Gail Heck-Sweeney of Agilent Technologies, China. This is the first RFM conference with two Keynote Speakers who are also IEEE Fellows. Best Paper Awards were presented during the conference dinner. The Best Paper Awards were selected by a panel of two IEEE Fellows, who were also the Keynote Speakers. The first three Best Paper Awards are as follows. The Best Paper (First Place) Award went to a paper entitled, "Novel Extrinsic Series Resistance Extraction Methodology for Nanoscale MOSFETs" by Gil-Bok Choi, Seung-Ho Hong, Hyun-Sik Choi, Rock-Hyun Baek, Kyong-Taek Lee, Min-Sang Park, Seung-Hyun Song, Jae-Chul Kim, Hyun-Chul Sagong and Yoon-Ha Jeong, Korea. The Best Paper (Second Place) Award went to a paper entitled, "A Compact Monopole Array with Decoupled Ports" by Jacob Carl Coetzee and Yantao Yu, Australia; and the Best Paper (Third Place) Award went to a paper entitled, "Compact Broadband PCML Bandpass Filter with Broad Upper Stopband," by Jayaseelan Marimuthu, Mazlina Esa, and Sharifah Kamilah Yusof, Universiti Teknologi Malaysia. The conference started with a full-day tutorial on December 2, Electromagnetic Compatibility, Human Immunity and Ecology given by Dr Alireza Kazemipour from the French National Laboratory of Metrology and Tests LNE, France. In conjunction with RFM 2008, an exhibition was held throughout the two-day conference - a total of 10 exhibitors took part, including the Chapter and IEEE Malaysia Section, and Microwave Technology Centre, UiTM. The Chapter exhibited conference series of successfully held APACE (Asia-Pacific Conference on Applied Electromagnetics) 2003, 2005, 2007 and RFM. During RFM 2008, the AP/MTT/EMC Malaysia Chapter has also given out trophy awards and plaques in appreciation to its long-serving executive officers and 2007 executive officers, respectively. The Silver Honor Roll award is newly introduced, as appreciation to 'Outstanding continuous 10-year volunteer service.' The recipients are Professor Dr Zaiki Awang, Professor Mohd Zarar Mohd Jenu and Profes-

sor Mazlina Esa. All are Chapter co-founders. It is hoped that more executive officers will continue to voluntarily serve the Chapter with integrity, commitment, and enthusiasm. During 2008, the Chapter also supported the 2008 Regional Student Conference on Research and Development (SCOREd 2008) over November 26-27. It was held at the Universiti Teknologi Malaysia (UTM), Skudai, Johor, SCOREd 2008. The conference received a record of close to 300 full paper applications. Of these, slightly over 200 were accepted for presentation. Best Paper Awards and Best Poster Paper Awards were presented. Professor Mazlina, who is also the Counselor of IEEE UTM SB since 2007, was the General Chair of SCOREd 2008. New events introduced include the IEEE Malaysia Section Forum, Undergraduate Poster Presentations, Best Paper Awards (for Post-graduates) and Best Poster Awards (for Undergraduates), Complimentary Short Courses (and were delivered by four women professionals). On October 22, the Chapter held the second annual IEEE Malaysia Section Annual Award and Appreciation Night 2008 at The Summit Hotel, Subang USJ. The Malaysia Section Chair, Professor Dr Mohd Nasir Taib, was the Guest of Honor. The special evening was a gathering of IEEE members and guests in Malaysia as well as Chapter supporters and friends. Attendees were from IEEE Chapters, including Student Branches, Faculty of Electrical Engineering UTM, Faculty of Industrial Engineering UNISEL, Faculty of Electronics and Computer Engineering UTEm, Faculty of Electrical Engineering UiTM, individuals, MIMOS Bhd., Advanced Power Solutions (APS) Sdn. Bhd., TLDM and Freescale. Awards and/or Certificates of Appreciation were given out by the IEEE, Malaysia Section, Chapters and Student Branch. The AP/MTT/EMC Malaysia Chapter was pleased to receive the Best Chapter Award 2007. In addition, the Chapter is proud of its Chapter Chair, Professor Mazlina Esa, who was honored with the Best Volunteer of 2007 Award. In addition to these major events, a series of Technical Talks, Short Courses, and Professional Talks were held. On October 14, Professor Mazlina gave the telecom

exchange before being brought to visit the microwave stations up the famous Telecom Tower in Kuala Lumpur, the capital of Malaysia. They had the rare opportunity to explore around the antenna installation set-up, outside the top part of the building. A presentation on 'Benefits of Professional Activities' in UTM was given. On November 26, a Technical Talk was also held in UTEm entitled 'Current Research in Information Theory: Lancaster University Experience' by Professor Bahram Honary from Lancaster Univ., UK. On December 1, an industrial visit with UNISEL students and staff was co-organized by Chapter executive committees from UNISEL and UTM, Mrs. Suhaila and Professor Mazlina. The visit was part of an educational activity of a microwave engineering undergraduate class from UNISEL. The Chapter is proud that its Chair, Professor Mazlina, is also a recipient of the 2008 Top Recruiters IEEE Member-Get-Member Award. The AP/MTT/EMC Malaysia Chapter has also awarded the Overseas Meeting Grant to Professor Mohd Zarar Mohd Jenu, Vice-Chair, to attend EMC 2008 in Detroit and represent the Chapter at the EMC Society Chapter Chair Meeting (CCM). Professor Mazlina Esa attended the International Steering Committee (ISC) meeting of the Asia Pacific Microwave Conference (APMC) during APMC 2008 held in Hong Kong and Macau. APMC is a major conference in Region 10, focusing on microwave research activities in addition to antennas, propagation and electromagnetics research. The ISC has unanimously approved Malaysia to be the host for APMC 2017. In an earlier meeting, the Chapter Chair proposed for Malaysia to host the International Symposium on Antennas and Propagation (ISAP) in 2013, during the ISC ISAP meeting at ISAP 2008 held in October in Taipei, Taiwan. The Chapter plans to carry out more activities in 2009. The IEEE AP/MTT/EMC Malaysia Chapter hopes to increase Chapter memberships including students. Increased efforts will be conducted to increase senior memberships. A major activity by the IEEE AP/MTT/EMC Malaysia Chapter will be the inaugural third series of conferences, IEEE International Conference on Antennas, Propagation and Systems 2009 (INAS 2009). It is planned for December 1-3 in Johor Bahru, with UTM as the main secretariat.

Oregon and SW Washington

Dave Britton reports that the Oregon and SW Washington Chapter had a very active 2008 with seven Chapter meetings and two social events. In October, Greg Kiemel of Northwest EMC Inc. presented an informative paper titled "The EMC Authorization of Wireless Modules in the US and EU." Attendees learned that wireless has become ubiquitous throughout the world with 2.4 billion cell phones fielded. This many transmitters in the world will ensure the safety of the EMC profession for years to come. In November, Membership Officer, Dr. Aziz Inan

from the University of Portland, presented a fascinating biographical treatise titled, "What did Gustav Robert Kirchhoff Stumble Upon 150 Years Ago?" Dr. Inan's presentation was a commemoration of Kirchhoff's contributions to spectroscopy and physics 150 years ago. The fervor of this talk transported us back to those times when many of the fundamental discoveries of electronics were made. The Chapter returned to a past tradition with its December Social. Members met at a restaurant with large windows overlooking the vast Columbia River on a night when the renowned "Christmas

Ships" were to sail past those same windows aglow with thousands of holiday light displays. The night began with doubt mounting relative to the Christmas Ships as the wind was exceeding 30 mph and the rain was horizontal. All fears were for naught as the hardy Northwestern guests came one and all to watch dozens of the ships pass by bobbing merrily about in the storm.

River Rock Valley

The monthly meeting of IEEE Rock River Valley Section (RRVS) in April



Tim Vegdahl, Ken Westby, Richard Gencev, Derick Skouby and Davin Tester (clockwise from upper left) keep current with Kirchhoff at the Oregon and Southwest Washington's Chapter meeting.



Oregon and Southwest Washington Chapter Officer, Professor Aziz Inan, presented a captivating biographical sketch of Gustav Kirchhoff.



Linda Britton, Derick Skouby, Lawrence and Shelly Copley, Richard Gencev, Davin and Kim Tester, (shown clockwise from lower left) enjoyed visiting during the Oregon and Southwest Washington's holiday social.



Sharing their stories at the Oregon and Southwest Washington Chapter's holiday social are (clockwise from lower left) Ed Blankenship (with back to camera), Brent DeWitt, Mrs. Jones, Jackie Benitez, Pat Henderson, Art Henderson, Henry Benitez, Henry Jones, Edith DeWitt and Linda Chan.



Wearing festive red at the Oregon and Southwest Washington Chapter's holiday social are (from left) Cece Westby, Sidney Chan and Ken Westby.



The River Rock Valley Section was treated to a tour of the impressive EMC test facilities at Ingenium Testing following its April meeting.



The Rockford Robotics Team demonstrated the design and operation of their robot for the River Rock Valley Section.



The River Rock Valley Section enjoyed a presentation on Integrated Circuit (IC) level EMC modeling by Dr. Daryl Beetner from the Missouri University of Science and Technology (MS&T) in April.

2008 was organized by the EMC Chapter and was held at Ingenium Testing in Rockford. The speaker was Dr. Daryl Beetner from the Missouri University of Science and Technology (MS&T) who gave a helpful presentation on Integrated Circuit (IC)-level EMC modeling. After the presentation, a tour of Ingenium Testing was conducted by the Ingenium staff.

The Rockford Robotics Team also brought their 2008 robotics design and demonstrated its operation. The topic of Dr. Beetner's presentation was Integrated Circuit (IC)-level EMC modeling. IC models allow prediction of emissions and immunity performance, optimization of IC and board design, and discovery of on-chip power integrity issues. Optimum power delivery requires integrated system analysis and cooperation among the chip designer, the board designer, and the package designer since each component impacts others. In the presentation, modeling of an Altera FPGA for power integrity, modeling of an automotive microcontroller for conducted emissions, and a modeling of a microcontroller for immunity were discussed. The MS&T EZPP cavity modeling tool for predicting board transfer impedance, and a dynamic current modeling tool for predicting IC power-pin current were used to predict the noise voltage caused by the Altera FPGA between the power and return planes on the Printed Circuit Board (PCB). Effects of decoupling capacitors on the Power Distribution Network (PDN) noise voltage were simulated both in frequency and time domain by utilizing the modeling tools. The comparison between the model simulation and measurement

were shown in each case. Power bus voltage noise was also simulated in both time and frequency domain for a microcontroller by using modeling tools for IC core, package, and the PCB. Power pin current was measured by using an embedded loop and compared with simulated current. For the full text of presentation, including the interesting graphics shown, please refer to: <http://iee.e.rackoneup.net/rrvs/08/IC%20Modeling%20Overview.pdf>

Santa Clara Valley

On November 11, 2008, Michael Hopkins of Hopkins Technical gave a presentation to the SCV Chapter regarding

“Lightning Testing for Aircraft Electronics.” The use of composite materials in new aircraft designs has driven the need for additional testing by manufacturers who supply electronic systems and sub-systems (avionics) to Boeing, Airbus, Bombardier and other aircraft companies. Although aircraft manufacturers have their own test standards, these requirements are generally based on and supplemental to the requirements of DO-160F published by the RTCA (Radio Technical Commission for Aeronautics). The reason composite materials pose additional problems for the lightning protection of aircraft systems was discussed, as well as some of the test



Chapter Chair Oscar Mabin Fallah of Cisco (right) presented a special Certificate of Appreciation from the Santa Clara Valley Chapter to Tom Cokenias for his presentation.



Tom Cokenias provided a very helpful presentation on WiMAX to the Santa Clara Valley Chapter in December 2008.

methods used to minimize the likelihood of lightning causing upset or damage to avionics. Mr. Hopkins also took a brief look at how the aircraft industry lightning testing compares to lightning testing done in other industries such as telecom, consumer products and process control. Key similarities and differences exist which might influence future standards development. In December 2008, Tom Cokenias of TNC Consultants gave

a presentation to the Chapter entitled, "WiMAX and White Spaces: What the EMC Engineer Needs to Know for 2009 and Beyond." Mr. Cokenias shared that the WiMAX standard for radio transmission has been in development for almost ten years, and is now beginning to get significant traction. There has been an exponential increase in the number of products and types of service available for WiMAX products this past year, and these products are being targeted to compete with WiFi for services and consumer dollars. Traditional base stations and subscriber units are being augmented by WiMAX products in handsets and laptops, which will eventually make them an ubiquitous concern for EMC in the way that cellular telephones have become. In February 2009, all analog TV stations in the United States will convert to digital. Several prime frequency bands will be vacated, the so called "White Spaces" between the digital TV allocations, and recent FCC rule making has allowed unlicensed devices to operate in these bands under new Part 15 regulations. The frequencies extend from low VHF to UHF channels, and

devices operating under the new rules are expected to be developed at a rapid rate, given the high penetration and low path losses possible for networks that will use these products. Again, it is expected that these white space devices will be everywhere WiFi is now, and so will require new scrutiny from the EMC community. Tom Cokenias is an independent consultant for EMC and radio approvals, and has been an IEEE member since 1983. After spending eight years at the FCC Laboratory in Columbia, MD, he moved to the San Francisco Bay Area and worked in senior engineering positions for several local EMC laboratories. He has served the Santa Clara Valley EMC Society Chapter in several capacities, including chairman. He can be reached at tom@tncokenias.org.

Seattle

For its final meeting of the 2008 technical program year, the Seattle EMC Chapter featured Mr. Patrick André of André Consulting on November 12. The meeting was held at Honeywell in Bellevue. After a wonderful buffet lunch generous-



Speaker Pat André of André Consulting presented an EMC troubleshooting seminar for the Seattle EMC Chapter's November meeting.



During a break in the seminar held at Honeywell in Bellevue, Steve Stimac (left) - the past Seattle EMC Chapter Secretary - visited with speaker Pat André and Bruce Thompson of Astronics (right).



Seattle EMC Chapter officers convene following the seminar including (from left) Chair Dennis Lewis of Boeing, Vice-Chair Janet O'Neil of ETS-Lindgren, Arrangements Chair Dean Shipman of Syntek, Treasurer Leo Smale of Lionbeart Northwest and Secretary Pat André.



Reza Nabcheri (left) and Glen Wildberger of Honeywell greeted attendees during the tour of Honeywell's EMC lab held following the Seattle EMC Chapter's November seminar.



Seattle Section officers Chair Joe Decuir of Cambridge Silicon Radio, Vice-Chair Erik Godo of Boeing and Jeff Rackowitz (from left) organized a great holiday banquet for members of the IEEE Seattle Section.



Enjoying the IEEE Seattle Section banquet are (from left) Fran Carlson, Len Carlson, who is a Past President of the IEEE EMC Society, Dave O'Neil of Boeing and Danny Odum of ETS-Lindgren.

ly hosted by Northwest EMC, Mr. André presented a half day seminar titled, “On a Deadline: EMI Troubleshooting under Pressure.” Over 60 Chapter members and guests attended the seminar. Attendees learned about many aspects of troubleshooting in an EMC test laboratory environment. When faced with time constraints and trying to find the source of the emissions or susceptibility, attendees appreciated learning techniques to help quickly find the problem and the tools needed to help resolve the issues. Case studies were reviewed of the most common EMI problems and their solutions. After this excellent, practical presentation, Brian McAdams of Honeywell led a tour of the new EMC test chambers at Honeywell. During the tour, Brian discussed the EMC test challenges facing the aerospace industry. The Honeywell test lab has two large all-welded shielded enclosures with performance of 100 dB up to 10 GHz. The chambers are primarily used to test in accordance with RTCA DO-160 and MIL-STD-461. Products tested include weather radar Traffic Collision Avoidance Systems (TCAS), ground proximity devices, flight and data recorders, as well as communication and navigation radios, to name a few of the most popular products tested. The Chapter officers wish to thank Dean Ghizzone of Northwest EMC for sponsoring the lunch and printing of the presentation handouts. Kudos go to Dean Shipman of Syntek for orga-

nizing the seminar and to Pat André for giving a great presentation. Thanks are also due to Honeywell for allowing the Chapter to meet at its excellent training center and for lending Brian McAdams to give the educational tour of the company’s EMC lab.

Taiwan

The 2008 International Workshop on Electromagnetic Compatibility (EMC) was held on October 10, 2008 at the Taipei World Trade Center (TWTC) Nangang Exhibition Hall, in Taipei, Taiwan. The workshop was chaired by Professor Tzong-Lin Wu (NTU, Taiwan) and was sponsored by the IEEE Taipei Section, the IEEE Taipei Chapter of the EMC Society, and the IEICE Taipei Section. The objective of the workshop was to accelerate the momentum of EMC research and provide knowledge sharing among EMC researchers from the Asia-Pacific region as well as from other parts of the world. The event was well received with 108 attendees; 59% were from academia and 41% were from industry. This marks a great success in bringing academia and industry together. Three international scholars and seven experts from Taiwan were invited to speak. The presenters and their topics included: Professor Todd Hubing (Clemson University, USA), “Modeling the Maximum Radiated Emission from Printed Circuit Boards”; Professor Hiroshi Inoue (Akita

University, Japan), “Basic Study on Undesired EM Radiation and Suppression”; and Dr. Erping Li (IHPC, Singapore), “Modeling of Electrical Package Signal Integrity and Power Integrity.” Dr. Erping Li’s presentation was included as a Distinguished Lecture activity sponsored by the IEEE EMC Society. In addition to the three “headline speakers”, seven other experts from Taiwan provided excellent material regarding signal integrity issues on PCBs (Dr. Shou-Kuo Hsu of Foxconn Corp. and Professor Chi-Wen Kuo), ESD issues and protection circuit (Professor Ming-Dou Ker of NCTU), EMI issues at power frequencies (Professor Chang-Fa Yang of NTUST), electromagnetic bandgap structure design (Professor Ray-Beam Huang of NCTU), and EMI/RFI issues in wireless communication products (Professor Han-Nian Lin of FCU and Dr. Daniel Lee of Sporten Inc.). The workshop was highly interactive with many questions and comments provided by the participants and the speakers. The EMC workshop was appreciated by those who participated; it was an inspiring and insightful experience with both technical depth and breadth. On behalf of the organizing committee, Professor Tzong-Lin Wu (Chairman) would like to thank all the attendees. Special thanks also go to Professor Ruey-Beei Wu (NTU, Taiwan), the chairman of IEEE Taipei Section, for the kind support he provided in every aspect. **EMC**