Chapter Chatter

Todd Robinson, Associate Editor

I have often pondered or at least once thought of doing a "Best of Chatter" or "Past Great Chatters." The idea was mainly born out of the pressure of an impending deadline, not any desire to nostalgically reminisce or remind my few readers about the good old days. In any case, with the Spring 2008 editorial deadline dead and gone, a beautiful revelation appeared in my inbox. Actually it was an E-mail from Chief telling me to get my act together. Fortunately, her 'get to work' admonition also included an aid package in the form of an "old" Chatter by Dr. Todd Hubing. Chief thought that a particular past Chatter headline was worthy of reprint. And, after reading it, I agreed (complied) wholeheartedly.

Dr. Hubing noted in his Fall 1998 Chapter Chatter column that digital design engineers view things quite differently than EMC engineers. To illustrate his point, Dr. Hubing asked one EMC engineer and two digital designers to briefly describe their experiences at an EMC lab. He had to edit the responses a little to remove profanity and identifying remarks. The "interview" responses were also reduced to 7 or 8 syllable rhyming phrases. Other than this minor editing, the responses are just as Dr. Hubing received them.

AN EMC ENGINEER'S VIEW
Set the unit on the table.
Then connect the power cable.
Boot it up if you are able.
Wait until the level's stable.

Check the spectrum analyzer.
Watch the peak sprout like a geyser.
Find the marker. Utilize her.
Quantify the noisy riser.

If the peak's above the line,
Now's the time to redesign.
Grab some copper tape and twine.
This is when you really shine.

Reach into your bag of tricks.
Add a ferrite, maybe six.
Try to find that perfect fix,
Like the one in '86.

Keep close tabs on where you've been.
When the peak is down by ten,
Have a cup of coffee, then
Move the cable. Start again.

A NOVICE DIGITAL DESIGNER'S VIEW
After months of toil and sweat,
This is my best product yet.
All objectives have been met.
One approval still to get.
This design, from my perspective,
Is quite fast and cost-effective.
Now you say that it's defective.
What's this EMC Directive?

Your lab's very interesting.
Let's begin the EM testing.
Yes, I see those peaks are cresting.
Just what is it you're suggesting?

Your demands are quite unyielding.
I don't like this question fielding.
Or this talk of EM shielding.
What's that copper roll you're wielding?

My design was working great.
Now you've slowed down every gate,
Added parts and increased weight.
I might miss my shipping date!

AN EXPERIENCED DIGITAL DESIGNER'S VIEW
Please look over my design.
It won't ship 'til '99.
But I want an early sign.
Please tell me that all is fine.

I've reduced the lengths of traces.
Put small caps in lots of places.
Hope I've covered all the bases.
Bless my board with all your graces.

Yes! The system is quite good.
Passed your tests, as it well should.
Please stop cheering, if you would.
Let's tell no one, understood?

If my management should hear,
The reward would be severe.
For the rest of my career,
I would be an EMC'er.

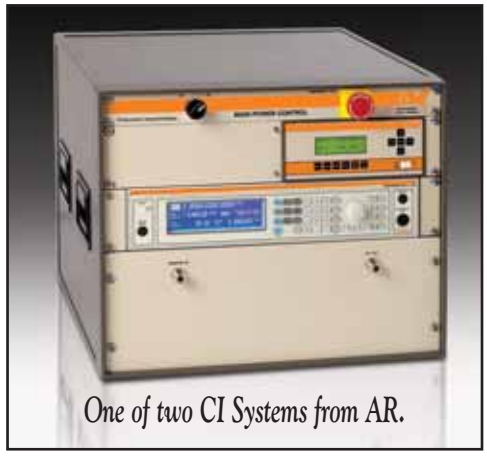
Associate Editor's note to Dr. Hubing: Ouch! That last rhyme still hurts.

Chicago

The Chicago Chapter of the IEEE EMC Society opened its 2008 season of programs on February 20, hosted at Elite Electronic Engineering in Downers Grove, Illinois with 40 attendees. Bob Hofmann, Treasurer and Scholarship Chair, introduced the winner of the chapter's 1st $1000 Student Scholarship, John Stushek. John is a student of the University of Illinois at Chicago. Upon acceptance of the scholarship, John spoke of his role as a leader in the campus IEEE Student Chapter and expressed his gratitude for the award. Jerry Meyerhoff, Continental Automotive Systems, spoke on "Selecting Electromagnetic CAE Tools." Three different commercial solvers were benchmarked against the CISPR 25 Radiated Emissions test, commonly used on automotive modules as the SAE J1113 method. One of the solvers could not handle the whole problem at once, while the other two gave "similar, yet different" outcomes. Resonances in the cable harness were clear below 300 MHz and some housing resonances popped up

Chicago Chapter Scholarship Chair Bob Hofmann (right) presents the first ever $1000 scholarship award check to John Stushek, UIC IEEE Student Chapter leader, at the February meeting.

Introducing The Conducted Immunity Test System... And Its Closest Competition.



One of two CI Systems from AR.

All competing conducted immunity test systems that even come close.

The new CI self-contained Conducted Immunity Test Systems from AR stand alone. No competing products even come close. Not when it comes to ease of use, flexibility, reliability, or any other features that really matter. Among the features that set the CI Systems apart are a higher level of accuracy, a wider sensitivity range, excellent speed, and the ability to do accurate margin testing. The CI Systems make it easy to conduct customized tests; and reports are generated directly into Microsoft® Word or Excel.

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Of course, it's the AR components that make these systems so accurate and reliable. The AR amplifier and signal generator are state-of-the-art equipment. And you can use them independently, apart from the system. So when you purchase a CI System you also get a stand-alone AR amplifier and signal generator! Talk about value!

Two CI Systems are currently available and more are on the way:

Model CI00250 (75 watts, 10 kHz – 250 MHz) – Provides complete testing solutions to the following standards: EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, and EN 55024.

The CI00400 (100 watts, 10 kHz – 400 MHz) – Designed to test to MIL-STD-461D & E CS114, DO160D & E, EN/IEC 61000-4-6, IEC 60601-1-2, EN 50130-4, EN 61000-6-1/2, and EN 55024 standards.

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Jerry Meyerhoff, Continental Automotive Systems, talks about a 3D EM model tool benchmark exercise at the Chicago Chapter's February meeting.

Yaquing Liu, Co-Programs Chair, introduces the speaker at the Chicago March meeting and breaks the news she will soon move to New England.

Speaker Roger Swanberg of DLS Electronic Systems says PCB EMC estimates do not require heavy math at the Chicago March meeting.

Roger Swanberg takes a question during his PCB EMC talk at the Chicago March meeting.

above 400 MHz. Some *virtual* DOE (design of experiments) introduced variations in the setups, to expose key contributors to the effects. The conclusion is that modern EM tools can run on laptop computers and handle significant problems, giving good insights with reasonable compute times. A significant learning-curve investment is necessary for the tool itself, but even more importantly, one must learn about modeling and simplifying the problem to be solved. The industry is constantly evolving and improving; jump in and get started today! The March 19 program was organized by Co-chairs Tom Braxton of Shure Brothers and Yaquing Liu of DLS Electronic Systems and hosted at DLS in Wheeling, Illinois. Roger Swanberg of DLS Electronics spoke on "Estimating Emissions From Your Printed Circuit Board." Roger harnessed his extensive experience in design, measurements and tutoring to clearly explain the roots of the problem and its underlying technology, using just the right amount of mathematics. Examples and design guidance rounded out the session. The audience walked away with valuable and readily applicable techniques. The April 16 meeting featured Bob Piemonte of ETS-Lindgren on "RF Shielding Enclosure Technologies" at Elite Electronic Engineering. Details of his presentation were not available at the time of publication. The 2008 EMC MiniSymposium to be held on May 13 will be the 10th annual edition of our capstone event! Frank Krozel of Electronic Instruments Central is again tirelessly organizing the EMC MiniSymposium. This year's new venue will be the Itasca Country Club, which is convenient to the I-90 / I355 expressways. The 2008 EMC MiniSymposium will include integrated vendor exhibits and a full day of tutorials covering the basics of EMC followed by the four fundamental quadrants of EMC. Coffee breaks and lunch are included, all at one low price. A vendor puzzle / contest and prizes will round out the event. Please see www.emcchicago.org for more information on all the Chicago Chapter events! Also, thanks to Maxine Martin of DLS for managing all our email notices and Webmaster Frank Krozel. We wish the best to Yaquing Liu, Programs Co-chair who will be relocating to New England. Thanks to Jerry Meyerhoff, Chapter Secretary, for submitting this report.

Germany

The 14th meeting of the IEEE German EMC chapter took place in Hamburg, at the headquarters of Airbus Deutschland. Robert Kebel extended the invitation to Airbus's largest site in Germany, which employs more than 10,000 persons. Hamburg will carry out the complete interior furnishing of the A380 cabins, as well as the exterior painting of the aircraft. In addition, final acceptance and delivery of A380s to customers in Europe and the Middle East takes place in Hamburg. It is really exciting to watch the Beluga and Super Guppy that transport airplane components between different sites of the Airbus concern. Frank Sabath chaired the meeting with 15 members from industry, university and other authorities present. The meeting started with an announcement because some members of the EMC Chapter received honorable "Certificates of Appreciation", including Heyno Garbe for his activities

as "Distinguished Lecturer in 2005-2006" and "Service to the EMC Society as Member of the EMC Society Board of Directors 2003-2005," as well as Frank Sabath for his "Service as the 2007 IEEE EMC Symposium Secretary." Adrien Schoof received the "2007 Best PhD Thesis of the Year" award that is provided by the German EMC chapter. One of the most important points of the meeting was Professor ter Haseborg's report about the EMC Europe 2008 conference. The EMC Europe 2008 takes place 8-12 September 2008 in Hamburg. The activities of the German EMC chapter have been focused on this event. Some workshops with technical and educational content will be organized. This is an excellent opportunity to get in contact with representatives of industry and to present the activities of the EMC Chapter. For further information, please take a look at: www.emceurope2008.org. Also, different workshops have been organized or supported by the chapter in the last year. For example, courses took place at the TU Hamburg-Harburg, the EMV Zentrum Berlin Brandenburg and the Leibniz Universität Hannover. The workshop "Lightning Protection" at the airport Paderborn/Lippstadt and the workshop "EM Hazard of IT-infrastructure" Munster, as well as the workshop "EM Protection of Networks" at Emscreen in Taufkirchen are only some of the activities. All of these workshops combined a high scientific degree with practicable methods.

The German Chapter gathers for a meeting at the headquarters of Airbus Deutschland.

Philadelphia

On Tuesday, April 2, the Philadelphia chapter of the EMC Society met for the first time since the early 1990s! During the last six months, local members formed a new executive committee – Graham Kilshaw (Chair) the Publisher of Interference Technology, along with Fin O'Connor (Vice Chair) from Alion R&B Lab, Richard Reitz and Joe Maiello (Retlif), Nissen Isakov and Rafik Stepanian (LCR Electronics), John Zimmer (Knex), and Gil Condon (LMCO). The first meeting was held at Amplifier Research headquarters in Souderton, PA.

The Chair of the newly revitalized Philadelphia Chapter, Graham Kilshaw of Interference Technology magazine, kicks off the first meeting.

The first presentation, by Jason Smith at AR's headquarters in Souderton, Pennsylvania, is on "Bulk Current Injection Testing."

The local high school presents their Cybersonics robot design at the Philadelphia Chapter meeting.

Over 50 attendees at the Philadelphia Chapter meeting gather round for the BCI demo.

The evening kicked off with tours of the AR microelectronics lab and facility, and with AR kindly providing the meeting facilities, dinner and refreshments. Over 50 EMI and electronic engineers showed from the region, including folks from Lockheed, Boeing, Kulicke and Soffa, Motorola, Siemens, Mikros and Exelon. The meeting started with a presentation and exhibit by the local high school's "Cybersonics" robot team, showcasing a robot they had built in only six weeks, as part of an international robot competition (pictures at www.cybersonics.com). Although the presentation was not specific to EMC, AR sponsored the team. And, judging by the length of the Q&A session which followed, the attendees were clearly fascinated by the design ability of the high school team and even found a couple of EMI issues to debate! The key presentation of the evening was by Jason Smith, Supervisor of Application Engineering at AR, who presented "Simplifying Bulk Current Injection (BCI) Testing to Meet Today's IEC 61000-4-6, DO-160 and MIL-STD-461 Specifications." This was immediately followed by a software demonstration of the test, clearly appreciated by those in attendance. The evening closed with a short Q&A panel, hosted by Graham Kilshaw, and questions fielded by Rafik Stepanian of LCR and Jason Smith of AR, helping attendees from Siemens to solve some issues of grounding related to their current pre-compliance testing procedures. Also helping attendees from the Kulicke & Soffa semiconductor testing company to find local EMI testing facilities. And finally, answering questions on filter choices to the attendees from Motorola. The (paper) survey conducted after the meeting showed that 19 of the 20 responses submitted ranked the evening "good," and indicated they would very likely attend future events. Many also submitted names of colleagues and peers to contact for future meetings. The next meeting for the newly revitalized Philadelphia chapter is planned for May 20, 2008 at Retlif, Harleysville, PA. The subject of the meeting will be the revised 2007 EMC Directive. Please contact Graham Kilshaw at gkilshaw@interferencetechnology.com for details.

Phoenix

Harry Gaul reports that the January 2008 meeting was hosted by General Dynamics AIS at their Arizona Space Center Manufacturing Facility in Gilbert. Thirty-five people enjoyed the barbeque dinner and then listened to presentations on EMC design and testing of satellites by General Dynamics EMC engineers, Glen Gassaway and Brian Daniel. Glen explained the history on the development of their state-of-the-art EMC test chamber where they test everything from box level to subsystem level to actual spacecrafts at the system level. Efficiency in testing is especially important because of the critical timelines in space programs. Glen mentioned that any delay in the testing of a spacecraft could translate to a cost of $100,000 per day. One technique to quickly assess the EMC of a spacecraft is to connect the output of on-board antennas directly to a spectrum analyzer in order to determine if there are any in-band unintentional emissions present. Brian Daniel outlined the engineering aspects of satellite development including the definition of test

The Phoenix Chapter enjoyed a tour of the EMI/EMC Laboratory at General Dynamics AIS in Gilbert, Arizona. This facility was built in 2004 and has already been used to test six space satellites.

limits with special tailoring for receiver notches. Generally, vehicle compatibility while in orbit is the biggest concern although one must also consider the high RF levels that are present at the launch site. Brian said that 10% to 15% of a space vehicle's weight could be attributed to the copper wiring. Cables are typically shielded by wrapping mesh tape around them. Following the presentations, the attendees were escorted on a tour of the facility including the EMC test chamber that measures 27' by 30' by 21' high. This chamber is equipped with a 14' wide by 20' high mechanized sliding door plug that enables test articles to be rolled into the chamber over a smooth level entry. This facility not only supports in-house work but it is also available for outside business. Information on future meetings is available on the Phoenix EMC Chapter web site at http://www.ewh.ieee.org/r6/phoenix/phoenixemc/.

Oregon and Southwest Washington

The January 2008 meeting of the Portland, Oregon and SW Washington Chapter featured Fred Weiss from Avnera. Fred holds a Bachelor's Degree in Physics from the University of Washington (Seattle), and MSEE and PhD degrees in Electronic Engineering from the University of California at Los Angeles. Since finishing graduate school he has been privileged to work for Tektronix Laboratories, TriQuint Semiconductor, Analog Devices, and Avnera. The microwave community has for many years used the technique of Mechanical Scale Modeling to aid in the design of relatively simple 2- and 3D structures such as compensated vias, couplers, waveguides, and the like. This technique uses scaling relationships to correlate the electrical characteristics of macroscopic – and, therefore, easily manipulated – models to those of the actual, much smaller, structures used on circuit boards and hybrids. The result is essentially an analog simulator that gives one the ability to quickly, accurately, and inexpensively develop microwave components. Mechanical scale modeling has been found to be a useful, inexpensive, and relatively fast tool for a variety of IC-related design tasks including package modeling, inductor design, and even on-chip IC interconnect analysis. Fred's lecture described his experiences with this technique, included a brief review of the theoretical underpinnings and also gave the limitations of the method. The most

Some participants from Hamilton Sundstrand at the Rock River Valley EMC Chapter meeting.

The speaker, Mr. Harry Skinner of Intel, presented an interesting topic at the Rock River Valley Chapter's November 2007 meeting.

interesting part was his description of model construction, measurement techniques, results, and examples of actual hardware. In February, the Chapter was privileged to have Patrick André give a talk on the recent changes to RTCA DO-160F and MIL-STD 461F. Patrick received his physics degree in 1982 from Seattle University, has worked in EMC for almost 25 years and is a NARTE Certified Engineer in both EMC and ESD. He has worked with military electronics, aerospace equipment and with commercial electronics. In December of 2007, both RTCA DO-160F and MIL-STD 461F were published. DO-160F introduced several significant changes that will impact future designs for commercial aircraft. Patrick gave an overview of the changes made in Sections 15 through 22 and Section 25 and discussed changes made in MIL-STD 461F. He also discussed aspects of HIRF test standards and test methodology, which are important to equipment and subsystem manufacturers.

River Rock Valley (Illinois)

Jamal Shafii, Chapter Chair, reports that the IEEE Rock River Valley Section (RRVS) EMC Chapter inauguration meeting was held in November 2007 on the campus of Northern Illinois University (NIU) in DeKalb, Illinois. The EMC Chapter and NIU student branch sponsored the meeting. There were about 50 people who attended the meeting with good representation from NIU students, local companies such as Hamilton Sundstrand and Ingenium Testing in Rockford, and Honeywell in Freeport. The speaker was Harry Skinner from Intel Corporation. Mr. Skinner traveled from Portland, Oregon for the meeting. At the end of the meeting, Professor McGinn of the Electrical Engineering Department at NIU, who teaches an EMI course, gave a brief overview of the EMI laboratory used for class experiments and projects. The subject of Mr. Skinner's presentation was on the risk of platform-generated interference. There is a growing trend to have multiple radios in one wireless device such as cell phones with Bluetooth, combined cellular with Wi-Fi devices, and so on. Platform noise can severely impact wireless performance and will get worse because of more victim radios, higher GHz sources, and UMD (ultra mobile devices) devices that force radios closer to noise. When interference enters the receiver, it can desensitize the receiver, reducing the performance - as much as 50% range reduction due to platform noise. Wireless sensitivity requirements must be orders of magnitude more stringent than EMI regulations. Mr. Skinner went on to say that platforms should be designed with radios in mind (making platform radio friendly such as reducing emissions from clocks) and radios should be designed with platforms in mind (making radios platform robust.) Not all platform noise is created equal and not all platform noise is narrowband, hence platform noise properties must be comprehended by radios.

Dr. Don Zinger (right), Northern Illinois University (NIU) student branch counselor, and Randy Gruberman (center), NIU student branch chair, presenting Harry Skinner (left) with a certificate of appreciation following the meeting at the University.

Professor McGinn talking about EMI activities at NIU.

Chapter members enjoying themselves at the November 2007 meeting of the River Rock Valley Chapter.

Mike King covers circuit board EMI reduction to a packed house at the Santa Clara Valley Chapter meeting on March 11.

The "Three Stooges" enjoyed the buffet at the Seattle EMC Chapter meeting on March 25 at The Boeing Company.

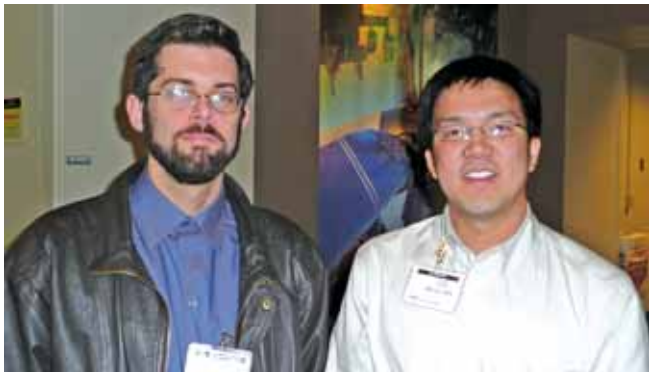
Fortunately, following the "Three Stooges" there was still plenty of good food at the taco bar buffet for the Seattle EMC Chapter members.

Santa Clara Valley (California)

On March 11, W. Mike King spoke to a large group at the SVC Chapter meeting. Nearly 70 persons were in attendance to hear Mr. King's presentation entitled, "Minimizing EMI & Noise - Coupling Among Circuit Regions in Circuit Boards." Mike kicked off his presentation by noting that he hadn't spoken to the SCV EMC Chapter since 1986, so he said that, "you can't be tired of me yet!" According to Mr. King, circuit boards increasingly have a diversity of circuit "block" regions that are not necessarily functionally compatible for noise from region to region in terms of performance margins. High speed "digital circuit regions" will demand high impulse currents from power planes that produce EMI and potentially high "noise" when compared to the sensitivities of "analog regions." Some of this coupling can transfer back and forth due to electromagnetic field currents transferred across chassis! The presentation covered layout topology concepts in not just the X & Y axes, but the Z-axis as well where coupling "through" chassis is one consideration of the Z-axis! W. Michael King is a systems design advisor with a career spanning over four decades. He has been engaged in the definition, design, evaluation, implementation, management and execution of well over (an estimated) one thousand projects and systems. He has held positions that have spanned the range from Systems Engineer to Director of Systems Engineering, and Chief Electronics Engineer. He is generally recognized for his work in systems integration, EMC emission and susceptibility control for all forms of systems, and occasionally serves as a manager or systems integrator. He has also collaborated on the formations of many networks and standard practices, including the study group for 10/100BASEt. He serves an international client base as an independent design advisor. Many thanks to Jerry Ramie of ARC Technical Resources for submitting this report.

Seattle

The March meeting for the Seattle chapter was a spectacular success. With over 50 attendees, and five excellent vendors, the afternoon was highly valued by everyone. The event started at 12:00 pm with a tasty Mexican buffet lunch of tacos, chips, salsa, rice and beans sponsored by The Boeing Company. At 1:00 pm, Chapter Chair Pat André welcomed the attendees and thanked The Boeing Company for hosting the lunch and providing the meeting facilities. He noted the speakers present were of the highest caliber and thanked them for visiting the Chapter. First to speak was Mr. David Walen of the FAA. Mr. Walen gave a riveting discussion entitled, "Aircraft and Interference from Personal Electronics – A New Approach." Starting with a history of electronic devices on commercial aircraft, he continued into current work, including the use of cellular telephone and wireless devices on present day aircraft. Mr. Walen included data on back door coupling and aircraft immunity, and the progress of current standards in this area. After a refreshment break, the concluding speaker was Mr. Michael O. Hatfield of the Naval Surface Warfare Center Dahlgren Division (NSWCDD), Dahlgren, VA. Mr. Hatfield spoke on



Daniel Homiak of Astronics (left) visits with fellow Seattle EMC Chapter member Allan Yeung of Intel.

Pat André of André Consulting, Mark Chase, and Jarred Burchard of CKC Labs (from left) enjoyed visiting at the Seattle EMC Chapter half-day seminar.

Speakers Dave Walen of the FAA and Mike Hatfield of the Navy Dahlgren relax before the start of the Seattle EMC Chapter seminar with host Dennis Lewis of Boeing and Chapter Chair Pat André (from left).

A full house was treated to two extended technical presentations at the Seattle EMC Chapter half-day seminar.

Chapter Chair Pat André thanks Dave Walen (left) for his excellent presentation to the Seattle EMC Chapter.

Dean Shipman (left) of Syntek takes a break with Jim Brophy of Tektronix between speakers at the Seattle EMC Chapter event.

Long time Seattle EMC Chapter member John Kuras (left) of Boeing visits with Leo Smale of Lionheart Northwest.

Mike Hatfield (left) is acknowledged with thanks for his excellent presentation by Seattle EMC Chapter Chair Pat André.

SEATTLE PHOTOS BY JANET O'NEIL

"Reverberation Chambers - A Statistical Approach for Conducting System Electromagnetic Vulnerability Assessments." A noted expert in the field of reverberation chambers, Mr. Hatfield showed how HIRF (High Intensity Radiated Fields) levels were found and expected on aircraft carriers and other aircraft environments. The development of reverberation chambers allows the generation of HIRF levels while minimizing the need for raw amplifier power. Through the use of extensive graphics, photographs, and mathematical modeling, he showed the assurance and reliability of these chambers to reproduce high quality tests. The presentations concluded at 5:00 pm. Chapter Chair Pat André then conducted elections for the new Seattle EMC Chapter. Dennis Lewis of Boeing was elected Chapter Chair, Janet O'Neil of ETS-Lindgren was elected Vice-Chair, Leo Smale of Lionheart Northwest was elected Treasurer, and Pat André of André Consulting was elected Secretary. The attendees were then led on a tour of Boeing's EMC and Lightning Labs. As an added bonus to this great half day technical meeting, vendors from ETS-Lindgren, CKC Laboratories, Cascade Tek, Lionheart Northwest, and Del Black Associates supplied product information and lively discussions for the attendees. The Seattle Chapter wishes to thank The Boeing Company for providing the meeting space and catered lunch as well as access to its EMC and Lightning Labs. Based upon the success of this complimentary, half-day event, the Seattle EMC Chapter has decided to forgo holding monthly evening meetings and instead organize quarterly half day meetings with top notch speakers. The next such event will be on Wednesday, June 11 at the Museum of Flight with speaker Todd Hubing of Clemson University. Interested attendees and exhibitors may contact Dennis Lewis for more information: dennis.m.lewis@boeing.com.

Victoria (Australia)

On 26 June 2007, the IEEE EMC-S Victoria Chapter was pleased to welcome a delegation from the EMC Society for the inaugural meeting of the local chapter. The delegation led by President Andy Drozd included John Norgard, Francesca Maradei and Barry Wallen, all members of the EMC Society Board of Directors. The meeting was held at the laboratories of EMC Technologies and commenced at 4:30 pm. It continued until 10:30 pm! Mr. Drozd gave a President's Message covering the current state of the EMC Society including membership levels, technical programs and new initiatives. He discussed the spread of the Society on a global basis emphasizing the fact that 45% of membership was now outside of USA and in fact the Victorian Chapter had become Chapter No. 65. In stressing the need to expand, he offered first year free membership in the EMC Society to all IEEE members present. Dr John Norgard spoke on future aims for expanding new technology fronts including closer ties with other technical societies, the provision of standards and high quality technical publications. Future symposia plans and chapter activities were addressed by Mr. Wallen and Ms. Maradei with the possibility of EMC Society sponsored symposia in Regions 7 – 10. A recent survey of member satisfaction on activities, products and services was also presented. After a break for refreshments, two technical papers were presented. Dr Norgard's subject was "Comparisons of CEM Field Predictions to IR Images of EM Fields for Complex Systems." CEM Modeling (Predicted Results) was compared with a new IR/Thermal System of Measurements (Experimental Results). The test cases presented were for canonical scale-model aircraft geometries. The experimental results were obtained by illuminating a model with a radar source and photographing the IR image (temperature) on a carbon loaded membrane positioned in front of the model. Dr Norgard presented results showing that the IR measurements verified the original computer modeling predicted results. The second technical paper was presented by Mr. Drozd on "Spectrum Management." He stated that the existing spectrum was becoming overloaded and therefore it was necessary to develop new paradigms for efficient spectrum utilization of RF resources. Mr. Drozd of course did not have the answer, however, he discussed various avenues of concern that could be looked into including the length of time of any transmission and the particular areas of coverage. He pointed out that any transmission on a particular frequency was using that part of the spectrum for a very short time of its possible utilization. He was of the opinion that it could be possible to use up to 100 times with frequency reuse and stressed the need for policy reform as driven by technological advancement and consumer needs. At the completion of the technical presentations, the 44 participants who attended the meeting were led on a tour of the EMC Technologies labora-

It's a Boeing reunion with Erik Godo, Michael Kaiser of Ball Aerospace, Dennis Lewis, Rob Steinle, and John Windell (from left). Rob led a fascinating tour of Boeing's Lightning Lab to conclude the Seattle EMC Chapter seminar. A tour of the EMC Lab was also held.

Members of the IEEE EMC Society Board of Directors join members of the newly founded Victorian IEEE EMC Chapter at the inauguration meeting in Melbourne (Australia). Chris Zombolas, Paul Payne, Mark Mifsud, Barry Wallen, Andrew Drozd, Jack Pluck, John Norgard, Francesca Maradei, John Hyne, and Franz Schlagenhaufer (from left) enjoy the celebratory meeting.

tory complex. All enjoyed the evening's proceedings including the refreshments and thanked Andy and his team for their participation. John Hyne, committee member, did a great job of organizing the event in the absence of the Chapter Chair, Malcolm Mulcare, who was unable to attend the event. EMC

EMC in South America

by Franz Schlagenhaufer, EMC Society Distinguished Lecturer and Carlos Sartori, Past EMC Society Board Member

Region 9 (Latin America) has two IEEE EMC Chapters, in South Brazil and Colombia. During a trip to South America in November 2007, Professor Franz Schlagenhaufer was invited by both Chapters to give talks in Manizales, Colombia, and São Paulo, Brazil on the topic: "Numerical Field Simulation for EMC." At the same time, Professor Carlos Sartori, chair of the South Brazil EMC Chapter, was also invited to give a lecture in Manizales regarding the fundamentals of EMC.

Manizales, the capital of the department Caldas, is a young city (founded in 1849) with a population of about 400,000 in the Andean region of Colombia. The important industries are growing coffee and educating students. The Manizales campus of the Universidad Nacional de Colombia was host to the IV Simposio Internacional sobre Calidad de la Energía Eléctrica (SICEL 2007: International Symposium on Power Quality) from 19-22 November 2007, and part of this event was dedicated to the topic of electromagnetic compatibility.

On Wednesday 21 November, the third day of the four-day symposium, an EMC workshop was organized. A welcome address from the IEEE EMC Society President, Andrew Drozd, was read who congratulated the young Colombian EMC Chapter on its recent formation. The presentations covered computation of lightning induced transients in power lines, fundamental EMC strategies, and numerical field simulation. A second round of talks focused on research and EMC activities in Colombia, other South American countries, and Australia. A