



Chapter Chatter

Todd Robinson, Associate Editor

The following article appeared in the Winter 2002 issue. The story is perhaps one of the most interesting, and certainly the most epic, EMC stories to appear in Chapter Chatter over the past eight years. In the subsequent Spring 2002 issue, Steve Dyrnes, one of the participating engineers, provided further insight about the adventure and also provided us with four great photographs. I have edited the Winter 2002 text to incorporate information from Steve's "Letter to the Editor" from the Spring 2002 issue.

"This Week We Meet Up With Our EMC Heroes Testing Somewhere in the Aegean Sea..."

An EMC testing project can be a major undertaking. For those visiting an EMC lab, the project can involve days of collecting functional EUTs, gathering support equipment, scheduling the necessary support personnel and possibility arranging for shipment and travel. For those operating the laboratory, preparing for test programs can also be a major undertaking. The process can involve gathering test equipment, preparing test fixtures, calibrating equipment, scheduling personnel, etc. The whole process can, at times, be a daunting undertaking. If an EMC test project becomes overwhelming for you, let the following story remind you of how good you have it.

In the early 1960's, NATO decided to start a missile test range in the Aegean Sea. Genistron, a Southern California EMC testing and filter manufacturing company, was contracted to perform an RF survey of the area. The NATO folks were rightfully concerned about supersonic missiles heading in the wrong direction due to RF interference. Genistron sent two survey teams to the Greek Islands of Santorini and Rodhos. Joe Fischer, now the CEO of Fischer Custom Communications, was a member of Team Two which was sent to Santorini and Rodhos. According to Steve Dyrnes, now of Dyrnes Engineering Company, "some of the additional EE's that made the trip were: Don Stafford (deceased) who was part of Joe's team, James Senn, who

was the overall Team Leader, Noel Damon, and a great guy by the name of Charlie Ketteman (deceased) who was our senior engineer at the time (past 50)!"

Joe recalled that the going was tough. This wasn't a luxury pack trip to the high Sierra with fine china, white linens and gourmet cooking. To reach the RF survey area on Santorini, Team Two had to pack their sensitive test equipment 10 miles via mule train on a trail that traversed the side of an ancient volcano. If you check out the pictures from Steve Dyrnes, you can get a sense that this really was an Indiana Jones type adventure. According to Steve, he still considers this to be one of the biggest adventures of his EMC engineering career.

One piece of test equipment brought along was the new (at the time) Polarad 1 to 10 GHz Receiver. Evidently, bad connectors often made this instrument somewhat unreliable for the Genistron engineers - indoors at the lab. During the perilous trip, mule and Polarad receiver suddenly parted company. After bouncing, sliding and rolling 30 feet down a rocky slope, the runaway receiver was retrieved and reloaded. According to Joe, the Polarad performed better than ever after the accident! After reaching the survey location, our heroes discovered that one of their most reliable pieces of test equipment had been damaged in route. The Stoddart NM-10 had a broken control knob and their mission could not be accomplished without the instrument. Some have experienced the hassle of losing an important test-set during lab time, but the EMC adventurers from Genistron couldn't use their cell phone and call "Equipment Rents R Us." Instead, one of the team's Greek guides hiked 20 miles to the nearest radio phone and ordered a replacement to the NM-10. The instrument had to be shipped from Los Angeles, and amazingly enough, arrived on Santorini within 48 hours!

After overcoming the adversity on Santorini and also completing the survey on the Island of Rodhos, Team Two returned to Los Angeles after only 20 days. The next time you have to drive across town or even 100 miles to do EMC testing, be thankful that you don't have to travel by mule train to get there.



Team Leader James Senn at work. Note the Polarad RFI equipment on the left.



Steve Dyrnes taking a break. Actually, he was getting ready to head out for a swim!



One of the Greek helpers getting ready to hit the trail. Look at the size of those wooden crates!

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Team Leader James Senn adjusting the antenna.



One of the instruments used in the Greek Island Survey: The Stoddart NM-10, a 14 kHz to 250 kHz receiver. Photo courtesy of Ken Javor and the Museum of EMC Antiquities.



The 24 Chicago MiniSymposium exhibitors occupied a large area adjacent to the technical presentation room.



The first Chicago MiniSymposium speaker, Tom Braxton of Shure Brothers, lays out the fundamentals of EMC.



At the Chicago MiniSymposium, Bob Hofmann of Hofmann EMC Engineering explains changes to ANSI C63.4.



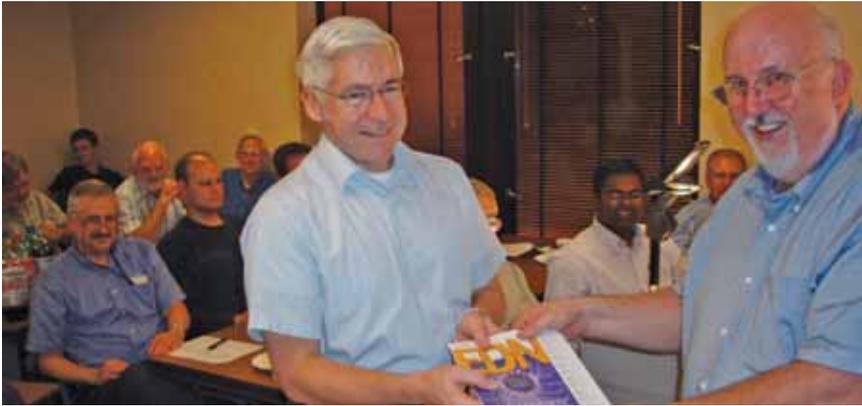
At the Chicago MiniSymposium, IEEE EMC 2008 Symposium Chair Kimball Williams (right) of Denso International America awards Rick Moritz a complimentary registration to the 2008 IEEE International Symposium on EMC in Detroit.



At the Chicago MiniSymposium, Chapter Chair Jack Black (left) of DLS Electronic Systems awards Frank Krozel of Electronic Instruments the Crystal Achievement Award for organizing the MiniSymposium for 10 years.



At the Chicago MiniSymposium, Vic Hudson of Rhode & Schwarz explains EMI receiver measurements.



At the Chicago September meeting, speaker Daryl Gerke (right) of Kimmel Gerke Associates awards an autographed copy of his EDN article to Bob Reed of GE Aviation in recognition of his traveling from Grand Rapids Michigan to attend the Chicago Chapter meeting.

Chicago

The Chicago Chapter of the IEEE EMC Society held its 10th Annual MiniSymposium on May 13, 2008, beautifully organized once again by Frank Krozel. Our new venue, the Itasca Country Club, has a large open space where the 24 exhibitors enjoyed a free-flowing exchange with the 60+ attendees. The presentations started with Tom Braxton of Shure Brothers on "The Fundamentals". Then Bob Hofmann updated us on standards, including ANSI C63.4 and C63.5.

Ray Klouda of Elite reviewed ANSI C63.10, MIL-STD-461F and DO-160. "Radiated Emissions" by Vic Hudson of Rhode & Schwarz covered the many details critical to successful CISPR detector measurements. Handouts of the talks were also provided. Multiple breaks with refreshments provided by generous Sponsor-Level exhibitors encouraged participants to browse the booths and kept the energy levels high, along with periodic raffles. Ray Klouda's classic EMC-Opoly game also kept the attendees

moving through the exhibits seeking clues. The lunch period program included awarding well-deserved recognition plaques for the speakers and outstanding Chapter contributors. Frank Krozel received the "Crystal Achievement Award" recognizing his 10 years organizing the MiniSymposium. A special visitor, Kimball Williams, of the EMC Society Board of Directors, promoted the 2008 IEEE International Symposium on EMC and raffled off a paid registration certificate. Jack Sherman of the Chicago regional organization also made some remarks. Back in the technical program, Clifford Kraft's talk on Legal & Intellectual Property concepts for EMC engineers was well received, judging by the number of follow-up questions. Finally our popular "Ask the Experts" panel fielded any and all questions from the audience. We closed with the general raffle distributing over 20 valuable prizes to lucky attendees. Frank Krozel is already planning for the 2009 event. We observed the traditional summer recess from general meetings, but Chapter Chair Jack Black organized a successful Executive Board brainstorming and planning meeting. Also, several of us met up at the "Big Symposium" in Detroit. Our September 29 season kick-off meeting featured Daryl Gerke of Kimmel

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Participants of the Region 8 Chapter retreat included (from left) Frank Sabath, Brian Jones, Vesna Roje, Francesca Maradei, Elya Joffe, John Norgard, and Milos Mazanek.

Gerke Associates, www.emiguru.com. He generously hosted the evening event at his training class venue in a Schaumburg hotel, convenient to the highway system. The Chapter provided a pizza dinner. All that resulted in a packed room and a very focused audience of over 30 people. Daryl explained his well developed problem-solving methodology and how it mirrors the finest medical diagnosis techniques. His many process points and laundry/tickler lists were skillfully intertwined with entertaining case study stories. He awarded an autographed copy of his EDN article to the attendee traveling the greatest distance from Grand Rapids, Michigan. The October 22 meeting will be hosted at Elite Electronic Engineering who will generously provide an Oktober-fest buffet dinner. The technical program will be "EMI Filtering" by James Price and Bob Meilleur of Corry Micronics. Scholarship Chair and Treasurer, Bob Hofmann, is now busy contacting regional universities' engineering departments to encourage worthy students to apply for our second and third awards. Individuals or businesses interested in contributing to the fund should contact Bob. Program chairs Tom Braxton and newly recruited Andrea Spellman of UL have the remaining 2008 and 2009 programs planned out. Please look to www.emcchicago.org where our web-master Frank Krozel has carefully organized all the information. We also thank Maxine Martin of DLS for her timely email meeting announcements to our membership and her support from Don Sweeney, our Chapter Angel. This report was cheerfully submitted by Jerry Meyerhoff, Chapter Secretary.

Germany

In September 2008, the German IEEE EMC Chapter had the honor to host EMC Europe 2008, a biannual European symposium on EMC. EMC Europe 2008 took place at the

Hamburg University of Technology, Hamburg, Germany, over 8 - 12 September. Jan Luiken ter Haseborg, the current vice chair of the German Chapter, did a marvelous job as symposium chairman by leading the local organizing committee and organizing remarkable social events and a great technical program. A detailed report on this event will be submitted for the next issue of the EMC Newsletter. Following a Region 8 tradition, Francesca Maradei of the University of Rome, "La Sapienza," Chapter Coordinator for the EMC Society, invited Region 8 Chapter representatives to a "Chapter Retreat," which was organized in conjunction with EMC Europe 2008. This half day event was held on 10 September 2008 and featured several presentations. Francesca gave a presentation on the structure of the IEEE and EMC Society, on membership development at the Chapter level and the Senior Member program. Elya Joffe, President of the EMC Society, gave a presentation on leadership recruitment and RAB/TAB Section/Chapter support. John Norgard, Vice President for Technical Services, gave a presentation on the opportunities for involvement in the technical activities of the Society. Chapter representatives in attendance each reported on their respective activities and on the best practices to make the Chapter successful. Since the EUROEM 2004 confer-

ence took place in Magdeburg, Germany, the members of the German Chapter meet for a Chapter lunch, whenever an international symposium on EMC takes place in Germany. Therefore, such a Chapter lunch was organized at the Hamburg University of Technology on 11 September 2008. The environment of the lunch was set by the scientific meeting centre and the participation of five members of the EMC Society Board of Directors. In spite of the informal atmosphere and the diversity of attendees, a lot of networking took place, including discussions on social issues as well as on main EMC topics, in between cold drinks and pasta.

Huntsville

The Huntsville Chapter of the IEEE EMC Society has had an exciting year. We have been very busy with six technical meetings as well as our own one day event in April. We have also scheduled one more Distinguished Lecturer presentation for November to finish off the year. The year started off with our January 10 meeting held at ADTRAN. There were a total of 55 attendees who came to see the technical session and enjoy the meal provided by Fair-Rite and Millennium Sales represented by Mr. Bob Wood. The timely presentation from



Jack McFadden from Wyle Laboratories discusses the changes to MIL-STD-461F during the January technical presentation in Huntsville.

Jack McFadden from Wyle provided an overview of the recent changes to MIL-STD-461F. The presentation stepped through the revisions with a focus on the two largest changes which were the addition of Conducted Susceptibility CS106 and the changes to RE102 Rod Antenna Setup and Calibration. The presentation provided for a lively discussion with the local audience. Our next meeting was held on February 21 at ADTRAN. We had another great turnout of 57 attendees. Intertek, represented by Michael Lehman, provided a great meal and the technical presentation was by Steve Robinson of ADTRAN. Steve's presentation was titled "Sources, Modes and Paths of Electrical Noise in Switch Mode Power Supplies." The presentation described the characteristics of Buck and Fly-back Converters. It detailed the ideal circuit, the "real" circuit, waveforms, spectral analysis, and components: capacitors (ideal vs. real), inductors (ideal vs. real), recommended printed circuit board layout practices, plus he provided switching power supply trouble shooting guidelines. Steve further explained common and differential mode noise within the switching power supplies. There

were many questions ranging from transformer construction, snubber use/limitations, the effectiveness of snubber circuits and their impact on the power supplies' efficiency, wire wound transformers versus planar transformers (cost vs. effectiveness), active PFC simulation, EECORE and toroids and definition of the "Y" capacitors. The detail of the presentation was well received and Steve did a great job of answering the questions from the audience. We kept the momentum going with two meetings in the month of March. In addition to the regularly scheduled meeting, we were provided with the benefit of an additional presentation by Daryl Gerke while he was in town for business. This bonus meeting was held on March 4 at Mind-Ready Systems. There were 42 people in the attendance. CoilCraft, represented by Bob Wood, provided a meal which was an excellent lead into Daryl's presentation on "How to Design Digital Systems to FAIL FCC & CISPR in 20 Easy Steps." The informative presentation from Daryl covered everything from "Using the Fastest Clock That You Can" to "Ignoring the Rules Altogether, and Never Asking for Help or Advice." One key

question came from the audience at the end of the presentation. "Now that we know how to design to fail, can you present a lecture on how to guarantee successful compliance testing the first time?" (paraphrased) Daryl Gerke's quick reply was: NO. The Huntsville Chapter really appreciates Daryl's support and willingness to put in the extra effort to support our Chapter. Our second meeting for March was held on the 13th at ADTRAN. We had 34 attendees who enjoyed the technical presentation and meal sponsored by ThermoFisher Scientific. Michael Hopkins' presentation was entitled "Updates on RTCA DO-160 Lightning Testing." Michael went through each change to this section of the standard one by one explaining the impact of each change. Several questions were asked regarding the various tests and waveforms in the standard and when they might become part of MIL-STD-461. We capped off a very busy first half of the year with the Chapter's "One Day Event" on April 29 at the Von Braun Convention Center in Huntsville. The Chapter arranged to have Dr. Bruce Archambeault present his "PCB Design Techniques for Real-World EMI Con-

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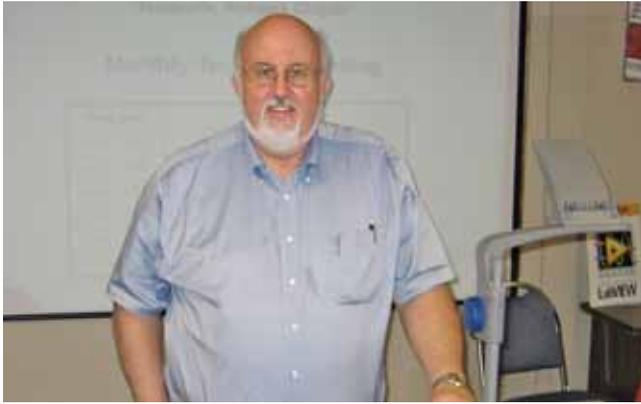
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Daryl Gerke from Kimmel Gerke Associates kept the emissions low during the Huntsville March technical presentation by using an old fashioned overhead projector!



Dr. Archambeault said that the Huntsville one day EMC event boasted the single largest crowd to which he had ever spoken!

trol.” There were over 190 registered attendees as well as an exhibit area with 41 exhibitors present. This is the second time the Chapter has put on such a large event and this year’s event was great. We exceeded the attendee and exhibitor participation of the last event while providing a top-notch venue! For the registration price, attendees not only had an

excellent technical presentation by Dr. Archambeault, but were served breakfast, lunch and an evening snack while being able to visit exhibitors in the exhibit hall. Door prizes were provided from vendors as well as the local Chapter, capping off the evening was the give away of an iPod Touch and a Tektronix oscilloscope. Comments from attendees

were very positive, everything from “like drinking from a fire hose” to “First class. Dr. Archambeault was perfect -- PhD education with a practical, down-to-earth approach.” Vendor response was very positive as well, with an excellent rating on the exhibit hall venue. We are already thinking ahead to our next event in 2010. We hope to see you all there!



The exhibit area during the Huntsville one day EMC event was packed with 42 exhibitors, 190 engineers, over 40 door prizes and all the food you could eat!



Angie Sullivan from Newark and Mike Broadwell from Tektronix presented the final drawing winner, Karsten Lowe (center) from ERC, with a brand new oscilloscope at the Huntsville one day EMC event.



Doug Parker from ADTRAN handed the August presenter, Glenn Shelby (right) from NASA, a certificate of appreciation after his presentation to the Huntsville Chapter.



Dr. Eric Bogatin (second from right) from Bogatin Enterprises was the IEEE Distinguished Lecturer for the September meeting. He graciously donated two copies of his book which were awarded to Mark McGuigan (far left) from ADTRAN and Scott Carver (far right) from Dynetics. Huntsville Chapter Chair, ADTRAN’s Doug Parker (second from left) joined the speaker and the lucky winners.

On August 14, we continued with our regular technical meetings. There were 60 attendees for this meeting held at ADTRAN. The meeting started off with a meal sponsored by Tektronix, represented by Mike Broadwell. Glenn Shelby from NASA followed with his presentation on "EMI Troubleshooting Commandments." The presentation provided some great tips for solving EMI problems. The Chapter hosted Dr. Eric Bogatin, IEEE EMC Society Distinguished Lecturer, for our September 11 meeting. Dr. Bogatin provided two presentations for the group at the ADTRAN training facility. Attendance was outstanding with a total of 82 people. The meeting started off with his presentation "From Bit Banger to Gigabit Guru." Dr. Bogatin covered issues of high speed signal interfaces with tips on how to implement effective designs. There was great interaction with the group where he answered many questions. After the first presentation was completed, the crowd was treated to an Italian buffet sponsored by Amplifier Research (Don Brown), EMC Compliance (Ken Javor) and ACS/Rubicon (Scott Proffitt). Following the meal, Dr. Bogatin delivered his second presentation "The Ten Habits of Highly Successful Board Designers." This was another excellent presentation with great interaction from the attendees. All came away with a better understanding of board design for high speed circuits as we all strive to be "one with the signal." We are now looking forward to having Dr. Stephan Frei come to Huntsville for an additional Distinguished Lecturer presentation in

November. Thanks go to Monrad Monsen with the Rocky Mountain EMC Society Chapter for thinking of us as they were trying to schedule Dr. Frei to present to their Chapter. It has been another exciting year. We are in the process of making plans for 2009 and beyond. Many thanks to all of the speakers, meal sponsors and local members who put so much into making this Chapter successful! To see everything going on with the Huntsville Chapter, check out our website at <http://ewh.ieee.org/r3/huntsville/emc/>

Long Island/New York

The spring of 2008 brought three diverse technical presentations to the LI/NY EMC Chapter. Presentations were given in the areas of shielding, antennas and pulse measurement. On March 11, Mr. Richard Mohr, an IEEE Honorary Life Member, gave a lecture on the "Fundamentals of the Plane Electromagnetic Shield." Mr. Mohr is well versed in electromagnetic wave theory and has published many papers on this subject matter over the last 30 years. We are lucky to have him residing in our Chapter! On April 8, Mr. Thomas Mullineaux of MILMEGA, Ltd. gave a lecture on "Multi-Antenna versus Single Antenna Solutions for 1-10 GHz RF Immunity Testing." Mr. Mullineaux came all the way from the other side of the pond to impart some of his RF design experience over the last 20 years. His lecture enlightened us on the use of antennas and RF amplifiers in the microwave range. On May 13, Mr. Mike Hertz of LeCroy Corporation gave a lecture on "EMC Pulse Parameter & Custom Thresholding." Mr. Hertz has four patents, either awarded or

pending, in oscilloscope measurement design. He shared his in-depth knowledge of oscilloscope measurement as it applies to EMC with all the lecture attendees. All of the above lecture viewgraphs and more are available for public viewing at the LI Section's website: www.IEEE.LI. We encourage other Chapters to take advantage of this great resource.

Los Angeles

The Los Angeles EMC Chapter supported the event organized by the Antenna Measurement and Techniques Association (AMTA) on Monday, September 15 at the Marriott Hotel in Manhattan Beach - the heart of Southern California's aerospace community. Titled "Advances in Antenna Testing for Aerospace Applications", the one day "tabletop" show attracted engineers from as far north as Fremont, as far east as Palmdale, and as far south as San Diego. Companies such as Northrop Grumman, Lockheed, Raytheon and The Aerospace Corporation were well represented among the attendees. In all, over 80 people from industry, academia and government organizations attended. The highlights of the day included the outstanding technical program, the generous support of the 23 participating exhibitors, and the excellent networking opportunities. Speakers included Dr. Vince Rodriguez of ETS-Lindgren, Tim Harris of Rohde & Schwarz, Distinguished Professor Yahya Rahmat-Sammi of UCLA, Dr. Dean Mensa of the Navy Point Mugu, John Aubin of Orbit/FR, and Greg Hindman of NSI. Topics addressed included anechoic chamber design and analysis, instrumentation, near-field measurements and diagnostics, and image formation processes.

LA PHOTOS BY JANET O'NEIL



Professor Yahya Rahmat-Sammi of UCLA lent a helping hand to EMC Society Regional Conference Coordinator, Janet O'Neil of ETS-Lindgren, at the start of the Los Angeles Chapter event. Professor Rahmat-Sammi is a former President of the IEEE Antennas and Propagation Society - in fact, he designed the Society's logo!



Speakers for the AMTA LA event included (front row from left) Dean Mensa - a consultant for the Navy at Point Mugu, Jeff Fordham of MI Technologies, Charlie Jackson of Northrop Grumman, and Ray Adams of The Boeing Company. Shown in the back row from left are speakers Tim Harris of Rohde & Schwarz, Vince Rodriguez of ETS-Lindgren, Yahya Rahmat-Sammi of UCLA, Greg Hindman of NSI, and John Aubin of Orbit/FR.



3M had many products on display at the LA event. Javier Lopez (left) and Toni Gurga were on hand to cheerfully answer questions from their tabletop exhibit.



LA EMC Chapter Chair Ray Adams (left) visited with the IEEE Coastal LA Section Chair, Charlie Jackson, during a break in the presentations.



Northrop Grumman engineers (from left) Dustin Broussard, Steve Fung, Richard Rose, and Tracy Anderson joined Lee Wengronowitz of Advanced Test Equipment Rentals for lunch.



Also enjoying lunch al fresco were (from left) David Emerick of Gigatronics, Danny Odum of ETS-Lindgren, and Dave Fischer of Fischer Custom Communications.



Exhibitor Tom Revesz of HV Technologies shows a new product to Marisa Donoghue of Advanced Test Equipment Rentals.



Don Hosmer (left) and Phillip Strong of SRC showed many of their principal's RFI/EMI shielding products at their tabletop display.



Dave Guzman of RFTEK traveled from Raleigh, North Carolina to LA to participate in the one day event.



John O'Brien (left) of WEMS was first in line at the carving station offered during the reception.

The day began at 8:00 am with continental breakfast inside one large meeting/exhibit room. Given the beautiful weather, lunch was set up outdoors overlooking the hotel's golf course. There were mid morning and mid afternoon breaks. A reception ended the day with heavy appetizers served and drink tickets offered for the hosted bar. A raffle held at the end of the reception featured some great gift cards and prizes from MI Technologies, Orbit/FR, AR RF/Microwave Instrumentation, Ophir RF, Rohde & Schwarz, AMTA and IEEE. Thanks also to the lunch sponsors - FEKO, Fischer Custom Communications, and Instruments for Industry - as well as the reception sponsors AR RF/Microwave Instrumentation and Chamber Services - for their generous contributions to the success of the event.

Oregon and Southwest Washington

Don Anderson reports that the Oregon and SW Washington Chapter held their Summer Social and had a fascinating time (at least to those of us who find old machinery fascinating) on August 7 at the Antique Powerland near Brooks, Oregon. Twice every summer they have a "Steam Up" where dozens of old gas and steam engines and engine powered machinery are fired up and operating. The September Chapter meeting had Yohei Tsuda and Simon Chan, Product Engineers from Murata Electronics, presenting on "Advanced Solutions and Technology of EMI" which is an overview of the current state of the art in EMI suppression components and their application. On September 24, two of the Chapter's members, Henry Benitez and Derrick Skouby, gave presentations on "Product Design and Regulatory Compliance Procedures" at the Annual October Best Regional High-Tech Conference & Expo: 2008, which was held on the Tektronix Beaverton Campus.

Pittsburgh

A technical meeting of the IEEE Pittsburgh EMC Society Chapter was conducted on September 4, 2008 at the Westinghouse Energy Center in Monroeville, Pennsylvania. Michael Oliver, IEEE EMC Chapter Chair, hosted the technical meeting with 18 people in attendance. The meeting started with a social at 6:30 pm prior to a 7:00 pm technical presentation. We had the privilege of having Mr. Dan Hoolihan as our technical speaker; Dan is President and EMC consultant with Hoolihan EMC Consulting. Discussions encompassed the up-coming technical presentation agenda and an introduction of Mr. Daniel Hoolihan. The technical presentation by Dan was titled "How to Determine the "Quality" of an EMC Laboratory." This presentation provided an overview, and in sufficient detail, on how to determine the quality of an EMC laboratory. Important areas to consider include lab accreditation and scope, management, and technical requirements. In addition, he addressed clarification of changes and requirements, clauses, and what's new in the 17025:2005 specification. About the speaker: Daniel D. Hoolihan is currently President of Hoolihan EMC Consulting. Mr. Hoolihan has been consulting in EMC engineering since January of 2000. He specializes in EMC laboratory evaluations, EMC standards, and EMC education. He is a consultant to the United States Department of Commerce National Institute of Standards and Technology (NIST) in the area of Telecom Certification Body (TCB) and Conformity Assessment Body (CAB) evaluations. He is also a laboratory assessor for the NIST National Voluntary Laboratory Accreditation Program (NVLAP) in the areas of EMC, Telecommunications, and Voting System Testing. Mr. Hoolihan has been a member of the IEEE and the EMC Society since 1983. He is a Senior Member of the IEEE and is on the Board of Directors of the



Dan Hoolihan shared his expertise as a laboratory assessor for the NIST National Voluntary Laboratory Accreditation Program (NVLAP) in the areas of EMC, Telecommunications, and Voting System Testing with the Pittsburgh Chapter.

Electromagnetic Compatibility Society (EMCS) of the IEEE. He is the past-president of the EMC Society (1998-1999) and has held many positions on the EMC Society Board in his years of service. On behalf of all of us in Pittsburgh, Pennsylvania, "Thank you Dan for your contribution to our EMC Society Pittsburgh Chapter!"

Santa Clara Valley

On September 9, the Santa Clara Valley Chapter hosted a very special group of engineering students from the University of California at Davis. Present were Josephine Sabado and Michael Miller, members of the 2008 IEEE Region 6 Central Area Micro-Mouse Contest. Their presentation focused on what the MicroMouse contest is and how the UC Davis team went about winning the contest. The issues they faced included design decisions, group dynamics, and the overall direction taken. The team designed the MicroMouse from scratch. They researched and decided on what type of microcontroller, motors, sensors, tires, and chassis material to use. The professor for the



Dan Hoolihan of Hoolihan EMC Consulting discusses how to determine the quality of an EMC laboratory with the Pittsburgh Chapter.



Following his September 8 presentation, speaker Dan Hoolihan (right) receives a certificate of appreciation from Pittsburgh Chapter Chair Mike Oliver of MAJR Products.



Josephine Sabado and Michael Miller, members of the winning Region 6 MicroMouse contest team, are all smiles as they pose at the Santa Clara Valley's September meeting.



The winning design for the 2008 IEEE Region 6 Central Area MicroMouse Contest.

class, Dr. Tak Auyeung, offered suggestions on designing the mouse, time management, and team organization. The initial task of choosing which materials to use for the MicroMouse was a team effort. Once the components were chosen, each member took on a portion of the mouse. PCB design, chassis design, high-level software, and low-level software were divided among the members according to their strengths and interests. Each team member provided assistance in the other areas as needed. Throughout the year, Professor Tak emphasized the importance of reliability of the mouse. With this in mind, they made the error correction algorithm the highest priority. Once this worked properly, the team was able to improve the speed, chassis design, and appearance of the MicroMouse. Throughout the design and manufacturing process, Professor Tak has provided them with his past MicroMouse experiences and offered suggestions as to how they could improve the design.

SE Michigan

The SE Michigan EMC Chapter hosted a Tech Tour on September 17. Held at the University of Michigan Dearborn (UMD)

Fairlane Center, the event attracted close to 100 Chapter members and guests. Speakers included Garth D'Abreu of ETS-Lindgren, Lee Hill of SILENT and Vic Hudson of Rohde & Schwarz. Mark Steffka of General Motors and the University of Michigan - Dearborn was the Tech Tour Master of Ceremonies. This cheerful, capable and tireless multitasker started the afternoon event with the introduction of the UMD Associate Provost, Dr. Shridhar. Dr. Shridhar gave the official welcome and extended his warm hospitality to the audience. He has been a generous supporter of the SE Michigan EMC Chapter for many years. The Chapter sincerely appreciates the use of the University's wonderful Fairlane Center for its meetings. Dr. Shridhar recognized the chair of the 2008 IEEE International Symposium on EMC, Kimball Williams, and his steering committee present for their excellent work on the August symposium. He also recognized Chapter Chair Scott Lytle for his great work with the Chapter. Then, it was time for the technical program to commence. The first speaker was Garth D'Abreu who presented the topic "Using Reverberation Chambers for High Field Strength Testing." He explained that one of the main differences

between EMC testing for automotive and commercial products is the necessity to test automotive products at very high field levels. The need is very serious. With automotive EMC, human lives are at risk if essential electronic safety devices fail during operation of the vehicle. Additionally, the vehicle is not a stationary device - vehicles move and operate in a variety of electromagnetic environments from driving close to substations, to under power lines, close to airports, or to TV and radio broadcast stations, to name just a few "noisy" environments. His presentation included an overview of immunity testing, concentrating on the ISO 11451-2 standard for full vehicle as well as the ISO 11452-2 standard for vehicle components. Next, Lee Hill of SILENT presented a number of demonstrations of electromagnetic shielding applications for electronic product design. Each demonstration was accompanied by a discussion of the underlying math and physics, as well as some commonly-held engineering assumptions. The demonstrations included cavity resonances in simple product enclosures, imperfect cable shield terminations, pitfalls of common retrofit techniques, and the characterization of the intrinsic shielding performance of materials.



Mark Steffka of GM and the University of Michigan-Dearborn (UMD), Kevin Baldwin of ETS-Lindgren, Scott Lytle of Yazaki North America, Lee Hill of SILENT, Kimball Williams of Denso, Dr. Shridhar of UMD, and Janet O'Neil of ETS-Lindgren (from left) enjoy the warm weather in SE Michigan.



The SE Michigan Chapter members turned out in force for the September 17 Tech Tour.

SE MICHIGAN PHOTOS BY JANET O'NEIL



Speaker Lee Hill shows a demonstration on the pitfalls of pigtails during his Tech Tour presentation.



Tom Hermann of Ford met up with Rich Wiese, Larry Banansky, Mark Wisnewski, and Laura Ball (from left) - all of GM - during one of the breaks.



Tony Seccia of Rohde & Schwarz was all smiles at the SE Michigan Tech Tour on September 17.



Mario Misfud (left) of Gentex visits with speaker Garth D'Abreu of ETS-Lindgren during a break in the Tech Tour.



Lee Hill's mystery revealed! That's Lee's secret kit of EMC tools tucked away in a circular tin. Wonder what's inside!



The panel discussion following the Tech Tour proved to be very popular based upon the number of questions posed to (from left) "Big Three" reps Don Seyerle of GM, Rob Kado of Chrysler, Keith Frazier of Ford, and speakers Lee Hill, Garth D'Abreu and Vic Hudson.



Master of Ceremonies Mark Steffka enjoys a lingering moment after the panel discussion with Keith Frazier and Lee Hill (from left).



Reception time! After all the food for thought at the Tech Tour, it was time for some delicious appetizers at the reception.



Nick Grilliot of Delta Technical Sales enjoyed catching up at the reception with Kristina Blasko (left) and Dee Dennis of Denso International America.

After a refreshment break, Vic Hudson of Rohde & Schwarz presented the topic "Optimizing MIL-STD-461 and CISPR Testing Using Test Receivers and FFT Detectors." The topics presented included improving accuracy, measurement time and documentation in performing all types of emissions testing. Real life examples and demonstrations of how tests are properly setup and performed were reviewed. He also addressed how the use of the FFT detector can decrease long measurements and improve test time without sacrificing overall accuracy. Other important topics covered included the new CISPR-A average detector and how it will affect future commercial emissions testing and measurement uncertainty - an increasingly important consideration. The technical program concluded with a panel discussion featuring the speakers and local industry experts Don Seyerle of GM, Robert Kado of Chrysler, and Keith Frazier of Ford Motor Company - the top three of "The Big Three." Based on the many questions raised, the panel discussion capped a stimulating afternoon of technical education. But, the day was not over! A reception followed where everyone enjoyed heavy appetizers, beer and wine. The networking was great as representatives from many different companies in the area "talked shop" about EMC. A raffle was held for prizes at the end of the reception. Finally, despite people lingering long after the raffle, it was time to end the reception and adjourn until next year's Tech Tour.

Twin Cities

Dan Hoolihan, Chapter Program Coordinator, checked in with a report on recent Chapter activities. A Chapter meeting was held on Friday, September 26, at the Ramada Mall of America Hotel in Bloom-



SE Michigan Chapter Chair Scott Lytle (left) and Rob Kado (right) relaxed after a big afternoon at the Tech Tour.

ington, Minnesota (a suburb of Minneapolis/St. Paul). It was a "Technical Download" session where the 2008 Minnesota EMC Event (held in the same hotel earlier in the day) and its entertaining and educational technical talks were discussed and revisited relative to their respective technical merits. There were fourteen people in attendance; eleven of which were IEEE



Sharon Smith (left) of Conformity Magazine was one the Tech Tour sponsors with ETS-Lindgren, Rohde & Schwarz and SILENT. She enjoyed meeting with Bunmi Babajide of Ford during the reception.

members and three who have not yet seen the advantages of carrying the "IEEE Kite" around in their billfold. Twin Cities Editor's Note: Chapter Chatter finds it very interesting that not much is reported by Mr. Hoolihan about the "2008 Minnesota EMC Event," other than the fact that it took place before a "Chapter meeting" at the Joke Joint. **EMC**



Members of the Twin Cities Chapter are shown during a "technical download session." All six individuals pictured are known as "Minnesota Jokesters" which is why they have the "Joke Joint Comedy Club" sign above their heads. Pictured from left to right, are Steve Wytaske (3M), Curt Sponberg (Medtronic), Dave Schaefer (TUV SUD America), Rich Chandler (Turck), Harold Rudnick (Nonin Medical), and Bob Schlentz (Consultant).



The waving Jim Blaha (Ingenium Testing Services from Rockford, Illinois) and his wife Mary Ellen are surrounded by the usual cast of characters from the EMC Chapter of the Twin Cities Section. Steve Wytaske (3M) is shown on the left and Harold Rudnick (Nonin Medical) on the right. Daryl Gerke is seen on the far right.



Harold Rudnick (Nonin Medical), Daryl Gerke and Bill Kimmel (Kimmel and Gerke Associates), Tim O'Shea and Kim Valeen (Northwest EMC), and Bob Schlentz (Consultant) from left enjoyed the recent Twin Cities "Chapter meeting."