

April 2008

Rock River Valley Section

www.ieee.org/rrvs

Event

Sense

The Institute of Electrical and Electronic Engineers, Inc.

RRV Section and EMC Chapter Meeting

Development and Validation of IC Models for EMC

WHEN Thursday, April 24, 2008

WHERE

Ingenium Testing, Rockford, IL. From the I-39/I-90 Interchange, exit west onto I-39/Hwy 20 West for 7 miles. Exit North on Hwy 2/North Main Street. Merge left, turn left at the Mobil Gas Station onto Southrock Dr. Go West 2 blocks to Central Ave and turn right. Ingenium is 2nd building on left.



AGENDA

5:00 PM	Networking
5:30 PM	Dinner
6:15 PM	Presentation
7:15 –9 PM	Tours/Demos

PROGRAM

While integrated circuits (ICs) are not typically large enough to be efficient sources of radiated emissions by themselves below a few GHz, ICs are often the root source driving emissions in a system and are often the end victim of immunity issues. One method for improving the electromagnetic compatibility (EMC) performance of ICs and systems that use them is by using IC models. IC models may be used by IC and PCB-designers to predict the emissions and susceptibility performance of an IC within the system even before the IC is manufactured. This talk will out-

line the development and testing of several IC models for EMC. Models for conducted emissions were developed for an FPGA and a microcontroller. These models were used to predict the conducted power-pin currents and the noise voltage caused by the IC between the power and return planes on the PCB. A similar model was developed to predict the electromagnetic immunity of a microcontroller to electrically fast transients. Comparison between the performance of this model and to measurements while the IC was subjected to transient events will be discussed.

SPEAKER

Daryl G. Beetner is an Associate Professor of Electrical and Computer Engineering at the Missouri University of Science and Technology. He received his B.S. degree in Electrical Engineering from Southern Illinois University at Edwardsville in 1990, and an M.S. and D.Sc. degree in Electrical Engineering from Washington University in St Louis in 1994 and 1997, respectively. He conducts research specializing in electromagnetic compatibility, including system-level EMC issues, and detection and neutralization of electronic devices.

TOUR OF INGENIUM

A Technical Tour of Ingenium Testing's EMC Testing Laboratory will cap the evening's activities. EMC Testing is now a critical test component for all product certifications and approvals. The world of EMC is very simply the happy medium in which products work together without disrupting each



other's operation. The question of determining if a product meets these EMC requirements will be addressed. Featured on the tour will be a 10 meter Semi Anechoic Test Chamber, High Frequency Compact Chamber and a Multi-Functional Reverberation Chamber.

MEAL INFORMATION

Dinner will consist of sandwich wraps (tuna, chicken chipotle, turkey/cheese, veggie), pasta, fruit & dessert. Costs are: member: \$5, non-member: \$8, student members: \$1, and student non-members: \$3. Please make your **dinner reservations** by calling **Ginger at 815-394-5696** or sending her an **email (ginger.spinasant@hs.utc.com)** by **Tuesday, April 22, at 5pm**. Please include the following information: your name, phone number, email address, IEEE member number, and choice of entree. Unemployed members may call the treasurer for special arrangements.

NOTE

You need not be an IEEE member to attend. Guests are welcome. Please call Ginger at 815-394-5696 for questions.

2009 Candidate Slate for RRVS Elected Positions

In accordance with the RRVS bylaws, the Nominations Committee has submitted the names of the following individuals (pictured at right) as nominees for the seven elected positions on the RRVS Executive Committee for 2009. The election will be held at the May 29th section meeting. This election is for offices to be held from January 1 thru December 31, 2009.

- Chair** Alkesh Patel
- Vice Chair** Paul Hofmann
- Treasurer** Adrian Vandergriff
- Secretary** Larry Wachowiak
- IAS Chpt Ch** Joe Etminan
- Comp/CS Ch** Don Zinger
- PELS Chair** Neal Clements
- EMC Chair** Jamal Shafii

Additional nominees can be submitted by petition from the section membership. A potential nominee must be an IEEE member in good standing and a member of the RRVS. A petition must be signed by at least 20 RRVS members. Deadline for petitions is May 15. Please submit petitions to Joe Etminan (see contact info on page 3).

Chair



Alkesh Patel

Vice Chair



Paul Hofmann

Treasurer



Adrian Vandergriff

Secretary



Larry Wachowiak

Computer/Control Systems Chapter Chair



Don Zinger

PELS Chapter Chair



Neal Clements

IAS Chapter Chair



Joe Etminan

EMC Chapter Chair



Jamal Shafii

March RRVS Meeting Recap

On March 27, 2008, Dr. Tom Jahns of the University of Wisconsin Madison gave a talk on the state of the art and the future of permanent magnet AC machines. Permanent magnet AC machines have become a very popular choice of machines for a wide variety of applications lately for several reasons. The ever increasing level of design knowledge has increased the performance of the machines while reducing the cost. The strength (as measured in terms of energy product) of permanent magnet materials has drastically risen while permanent magnet material costs have dropped. Dr. Jahns presented a large number of photographs depicting both historical and modern, state of the art permanent magnet machines of widely varying size.



May RRVS Meeting Preview

Please join fellow section members for the annual section election and picnic on the last Thursday in May, May 29th. Members will enjoy a free sumptuous feast featuring barbequed steaks and chicken, a wide assortment of fruit, vegetables and desserts. We will conduct an election for the RRVS officers and chapter chairs for 2009.



2008 IEEE RRVS Executive Committee



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Terry Johnson
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Mohsin Chowdhury—Treasurer



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Messages for student officers can be left at the NIU Dept of Electrical Engineering, (815) 753-9974 or e-mail at sb.niu@ieee.org

The Rock River Valley Section gratefully acknowledges the following companies and colleges for supporting Section Officers:

**Hamilton Sundstrand • Northern Illinois University •
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Rock River Valley Section
Established 1947

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RRVS Calendar

- April RRVS Section Meeting** **April 24**
Tour of Ingenium Testing, Rockford, IL
- Annual NIU Student Branch Networking Social** **April 25**
Eduardo's, DeKalb, IL (6pm Networking, 7pm Dinner, 8pm Informal Presentations)
- May RRVS Section Meeting** **May 29**
RRVS Election/Picnic, Hamilton Sundstrand Park, Belvidere, IL


Rock River Valley Section Chapters




Industry Applications Society Chapter
Established 1992



Joint Computer/Control Systems Society Chapter
Established 1995



Power Electronics Society Chapter
Established 1996



Electromagnetic Compatibility Society Chapter
Established 2007

Time-Sensitive Material

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