



Education: An Important Responsibility for IEEE

*John Shen, IEEE/SEM Educational Activities Director
University of Michigan-Dearborn*

WAVELENGTHS

The IEEE has a vital interest in the competence and quality of those engaged in electrical engineering. As such, we must work with educational institutions that prepare individuals to enter the profession and that provide continuing education to electrical and electronic engineers. The IEEE, therefore, supports activities that will attract high quality students—including women and minorities—to electrical engineering, works with institutions providing electrical engineering education, and fosters programs that advance the professional development of practicing engineers.

As the director of educational activities of the IEEE southeast Michigan section, I would like to share with you some of the ideas that we have been discussing for enhancing our educational activities. I would also like to hear from our chapter officers and our members on how we can help you in planning and facilitating educational events.

Here is the list:

Conduct a survey to determine the need for continuing education programs that will help our members advance professionally and improve their productivity. The focus would be on determining the needs of engineers working for small and medium-sized firms that currently do not offer comprehensive internal training programs. If you or your employer is interested in taking part in this

survey, please don't hesitate to contact me. We need your input!

Develop short courses, workshops, seminars, and field trips—independently or in conjunction with local educational institutions—that address the needs of our members. We think IEEE/SEM can provide a valuable service to companies in our region and their employees at a reasonable cost by leveraging the expertise of our local members. Our members can teach courses on almost any electrical engineering topic, including automotive electronics, computing, communication, and power engineering. In addition, we would cover career development topics, such as e-business, project management, and patents and intellectual property. Again, if you have any input on this, please don't hesitate to contact me. Enhance the IEEE/SEM web page by including education resource contents (i.g. establishing links to all available short courses in SEM, offered by either IEEE or other institutions). Support the section's involvement in technology educational programs for pre-college students and student's branch activities for college students.

Like all IEEE programs, the most important ingredient is your input and your involvement as a member. I am eager to hear from you. I can be reached at 313-593-5525 or by email: johnshen@ieee.org.

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IEEE Southeastern Michigan Section Award Recipients

By John M. Miller, IEEE/SEM Past Chair

The Southeastern Michigan Section of IEEE is pleased to announce the 2001 – 2002 recipients of our Outstanding Engineer, Outstanding Section Involvement, Outstanding Chapter Involvement, and Outstanding Student Branch awards. These awards are given to recognize these individuals for their service to IEEE and to our section.

We will honor all of our award recipients at the Spring Section Meeting. Members are encouraged to attend and celebrate these outstanding accomplishments. The Outstanding Engineer will also be honored at the ESD Gold Awards Banquet during National Engineers Week.

This year, the awards go to:

Outstanding Engineer



Professor Janie M. Fouke, Dean of the College of Engineering Michigan State University.

We are honoring Professor Fouke for “outstanding contributions to the engineering profession, engineering education and service to the IEEE.” Dr. Fouke research interests include sensors, devices, and instrumentation, particularly in regards to evaluation of the pulmonary system. Dr. Fouke has

published over 100 papers, articles and books, and is the editor of the IEEE press book, *Engineering Tomorrow*. Dr. Fouke served as the first director of Bioengineering and Environmental Systems Division in the Engineering Directorate of the National Science Foundation. Prof. Fouke has also served on IEEE’s Board of Directors, and has twice served as president of the Biomedical Engineering Society (BMES).

Outstanding Section Involvement

Mr. Walter Schilling, Visteon Corporation.



Mr. Schilling’s “development and maintenance of the IEEE/SEM website has made it possible for the section to move forward in using the web for communicating with IEEE/SEM membership.” Mr. Schilling has also served the section for several years as secretary. His service has been professional and dedicated to finding means to help section members learn more about the IEEE and the profession.

Outstanding Chapter Involvement

Mr. Martin J. Biancalana, Veridian Company

Mr. Biancalana has “demonstrated leadership in energetically promoting chapter X (Engineering Management Society), while ensuring that chapter members benefit from high quality presentations and exciting and beneficial activities.”

Outstanding Student Branch

University of Windsor, Ontario, Canada

The University of Windsor Student Branch has demonstrated “exemplary volunteerism during the IEEE/SEM 2001 Fall Section Meeting and overwhelming participation in section activities.” Nearly 70 students attended the meeting and assisted with logistics.

Automotive EMC Component Test Laboratory

- European Standards 95/54/EC and 72/245/EEC
- DaimlerChrysler Certified for PF-9326
- Ford Certified for ES-WX7T1-A278-AA and -AB
- General Motors GM9100, GMW 3097GS, GMW 3100GS
- SAE J1113, J1725, J1455
- CISPR, IEC, ISO and EN Testing
- A2LA and NVLAP ISO Guide 25 Certified Laboratory
- MIL-STD 461
- NARTE Certified Engineers and Technicians



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248 354-5245

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<http://www.eaton.com/EMC>



Visit our website at

http://ewh.ieee.org/r4/se_michigan/

**for the latest
information on section events**



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- I Circuits & Signal Processing:** Acoustics, Speech & Signal Processing (ASSP-01), Circuits & Systems (CAS-04), Information Theory (IT-12) and Control Systems (CS-23)
- II Vehicular Technology:** Vehicular Technology (VT-06)
- III Comm. & Aero. Electronics:** Aerospace & Electronics Systems (AES-10) and Communications (COM-19)
- IV Trident:** Electron Devices (ED-15), Microwave Theory & Techniques (MTT-17) and Antennas & Propagation (AP-03)
- V Computer:** Computer (C-16)
- VI Geoscience & Remote Sensing:** Geoscience & Remote Sensing (GRS-29)
- VII Power Eng. & Ind. Apps.:** Power Engineering (PE-31) and Industrial Applications (IA-34)
- VIII EMC:** Electromagnetic Compatibility (EMC-27)
- IX Power & Ind. Electronics:** Power Electronics (PEL-35) and Industrial Electronics (IE-13)
- X Engineering Management:** Eng. Management (EM-14)

Wavelengths

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1/4 page	\$1000	\$160
1/2 page	\$1900	\$300
1 page	\$4000	\$650

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Visit the following IEEE World Wide Web sites:

Section: http://ewh.ieee.org/r4/se_michigan

IEEE: <http://www.ieee.org>

IEEE Region 4: <http://ewh.ieee.org/reg/r4/>

Calendar of Events

Wednesday March 27 Event: Southeastern Michigan Section Meeting
Time: 5:30 - 9:00

Location: Visteon Corporation
17000 Rotunda Drive
Dearborn, MI 48121
Contact: Kimball Williams, k.Williams@ieee.org
248-354-2845

Friday April 5 Event: Automotive Software
Time: TBA

Location: Veridian Systems, Ann Arbor
Bruce Emaus will present a talk on modern software development for automotive applications.
Contacts: Liang Downey, Steven Kishok, or Martin Biancalana

Monday April 8 or Tuesday April 9 Event: SEM Executive Committee Meeting
Time: Dinner at 6:00 pm, Meeting 6:30 pm

Location: Eaton Corporation
26201 Northwestern Highway
Southfield, Michigan
Contact: Kimball Williams, k.Williams@ieee.org
248-354-2845

Wednesday April 10 Event: Detroit Science Fair of Metropolitan Detroit (SEFMD)

Location: Wayne Hall on concourse level of Cobo Center, Detroit
Contact: Don Bramlett, d.bramlett@ieee.org
313-235-7549

Saturday April 27 Event: RoboFest 2002: Playful Learning Environments for Science, Engineering, and Technology

- Lego Robot Competition
- Lego Robot Exhibition
- Advanced Robot Competition
- Advanced Robot Exhibition

Time: Team check-in 8:30am, opening ceremony 10:30am (tentatively), closing ceremony at 4:20pm (tentatively)

Location: Lawrence Technological University
21000 W. Ten Mile
Southfield MI 48075

Contact: Chan-Jin Chung, chung@ltu.edu
248-204-3504

Website: www.robofest.net

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For Technical Information :

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EMC Fest 2002

*A Colloquium and Exhibition on
Designing for EMC &
Reverberation Chambers*

Monday, April 22, 2002

Dearborn Inn
Dearborn, Michigan

7:30 am-8:30 am
Registration & Continental Breakfast

8:30 am-5:00 pm
Technical Sessions

5:00 pm-6:30 pm
Reception, Exhibits & Demonstrations

Featuring Industry renowned speakers:

Chris Kendall & Mike Hatfield

The focus of this colloquium will be on

**Design Considerations for EMC in
Electronic Modules**

And

**Using Reverberation Chambers for
EMC Testing.**

Registration Fees

\$150 March 2 to April 1

\$175 after April 1 and at the door
Non-IEEE attendees, add \$30

ATTENDANCE IS LIMITED

***** Register early *****

Fees include one copy of the colloquium record, continental breakfast, a 'networking' lunch and a "Happy Hour" reception immediately following the Technical Sessions.

PLUS! Hands on participation during the demos. Vendor tabletop exhibits of the latest EMC related products and services.

For further information:

Kimball Williams, Chairman:
e-mail: k.williams@ieee.org

Janet O'Neil, Vice-Chair Exhibits:
Ph: 425-868-2558 e-mail: j.n.oneil@ieee.org

Home page: <http://www.emcsociety.org/>

Register On-Line!

*Sponsored by the Southeastern
Michigan Chapter of the IEEE
Electromagnetic Compatibility
(EMC) Society.*

IEEE/SEM 2002 Spring Section Meeting

Spring Section Meeting Announcement

The IEEE Southeastern Michigan Spring Section meeting will be held on March 27, 2002 at Visteon Corp., 17000 Rotunda, Dearborn, MI. Those who attended our last meeting at Visteon will remember what a great place it is for a meeting like this. Let's make it another great meeting. Bring a colleague or two and introduce them to our events. Who knows? You may be doing them a big favor by introducing them to their next employer!

Our featured speaker will be Dr. Janie Fouke, Dean of Engineering at Michigan State University. Dr. Fouke will discuss "The Future of Engineering Education". This is certainly a topic important to the continued growth and economic development of our country. In addition, there will be seven chapter presentations on topics ranging from MEMS technology to the development of embedded systems in automobiles. See the descriptions on the following pages for details.

There is no charge to attend the chapter technical sessions or hear our main speaker, but dinner costs \$30 (\$35 if you register after March 15). We would like you to register whether or not you'll be having dinner, so that we can provide adequate accommodations for all our attendees.

You can register online by going to

http://ewh.ieee.org/r4/se_michigan/events/spring_2002_section_meeting/main.php

Page down to the registration section and register online by clicking the appropriate link. You can also register by mailing in the registration form on page 8.

Please plan to join us for all the activities. I look forward to seeing you all there. Registration and social hour begins at 5:30, with the chapter presentations, starting at 6:30.

Kimball Williams
Section V-Chair

*Location of the
Spring Section
Meeting:*

Visteon Corp.
1700 Rotunda
Dearborn, MI



Keynote Address: Future of Engineering Education

by Dr. Janie M. Fouke

Dean of the College of Engineering at Michigan State University

Several national trends in American higher education have direct impact on colleges of engineering. The consequences of these trends affect recruiting and retention of students and faculty, instruction and the instructional setting, the research agenda of the institutions and the way that this agenda is achieved, even the roles that alumni and friends play.

What are these trends? How does their natural extension affect society? How should the engineering profession respond? Some trends are specific to the engineering schools. Is there an interplay or leverage opportunity with other disciplines?

We will consider the issues of globalization, “hands on” or practical curriculum, multiple employers over a career, start-up companies, “distance” demands on educational institutions, the H1B visa issue, multidisciplinary design teams, the role of “bio” in engineering, the changing role of computing in engineering, etc. All this played against a backdrop of reality, including the reality of a “state assisted” university in Michigan in the current economic climate!

Janie M. Fouke is dean of the College of Engineering at Michigan State University. Before arriving at

Michigan State, she served as division director of Bioengineering and Environmental Systems at the National Science Foundation. Dr. Fouke was previously a faculty member of Case Western Reserve University’s Department of Biomedical Engineering, a position she had held since 1981.

Her research interests are in respiratory mechanics and instrumentation for the evaluation of the lungs. She has published roughly 100 peer-reviewed manuscripts and conference papers and dozen book chapters, editorials and proprietary reports. Instrumentation that she has built has been critical to the understanding of the etiology of airway diseases such as asthma and the pulmonary effects of insults such as environmental pollutants.

Dr. Fouke is a Fellow of both the American Association for the Advancement of Science and the American Institute for Medical and Biological Engineering and a Senior Member of the Biomedical Engineering Society. She is also a fellow of the Institute for Electrical and Electronics Engineers. She served two terms as President of the IEEE/Engineering in Medicine and Biology Society, the largest professional society of bioengineers in the world.

IEEE/SEM 2002 Spring Section Meeting

Chapter I, VI

Overview of MEMS Technology with applications to RF Communication

Professor Mona E. Zaghloul, George Washington University

MicroElectroMechanical Systems (MEMS) have been used in the development of sensors and actuators Microsystems. Micromachining techniques such as surface and bulk micromachining are used to realize MEMS devices. The integration of MEMS devices with interface circuits to realize Microsystems provide the use of such systems in many commercial applications. This talk gives an overview of MEMS commercial applications. CMOS technology has been used in realizing MEMS devices such as gas sensors, RF –

Chapter Presentations

power sensors, and RF – microwave passive components. WE discuss the challenges in micromachining CMOS technology to realize MEMS devices. A new monolithic CMOS micromachining approach is proposed suitable for realizing RF components for RF communications.

Professor Mona E. Zaghloul is a Distinguished Lecturer of the IEEE/CAS Society, and a Fellow of the IEEE. She received a Ph.D. in Electrical Engineering from the University of Waterloo, Waterloo, Ontario, Canada, (1975) and is a Professor in the Electrical and Computer Engineering Department of George Washington University. Dr. Zaghloul has published over 180 technical papers and reports in the areas of

circuits and systems theory, nonlinear system theory, micromachining MEMS sensors design and their circuits interfaces, and micro-electronic VLSI analog and digital circuits design, and has contributed to four books. Her research interests include: design and test of microelectronic circuits; design and integration of various technologies for MicroElectro-Mechanical Systems (MEMS); sensors, and their interface circuits. In 1996, she founded the Institute of MEMS and VLSI Technology at The George Washington University, which she now directs. The Institute of MEMS and VLSI Technology encompasses several interdisciplinary faculties from several schools at GWU and over a dozen graduate students.

Chapter II

Automotive Liquid Crystal Display Backlighting Issues and Solutions

Paul Weindorf, Visteon Corp.

A number of backlighting problems face developers of automotive Liquid Crystal Display (LCD) products utilizing cold cathode fluorescent and light emitting diode technologies. User comfort, safety, and back-light life can be addressed through the design of automatic luminance control circuits. Additionally, extended temperature performance must be assured. The topics for backlighting Active Matrix Liquid Crystal Displays to be discussed will include:

- Automatic Luminance Control including Logarithmic Light Sensing
- Photopic Feedback Luminance Control
- Thermal Efficiency Feedback Luminance Control
- Cold Cathode Fluorescent Lamp (CCFL) Cold Temperature Boost Methods
- Cold Cathode Fluorescent Lamp Life Predictions
- Cold Cathode Fluorescent Lamp Antiflicker Control
- LED, Xenon and CCFL Lighting System Comparison
- LED Backlighting Methods

Paul Weindorf received a B.S. in Electrical Engineering from the University of Washington in 1978. The same year, he was hired by Honeywell's Defense Avionics Systems Division (formerly a division of Sperry Corporation) to assist in the design of electronics for various cathode ray tube cockpit displays including the F-15, B-52, F-16, and C-17

Multifunction Displays. In 1993, he became the Director of Module Engineering at Optical Imaging Systems (OIS) where he managed the development of numerous Active Matrix Liquid Crystal Display projects. In 1999, Paul joined Visteon where he is currently a Display Technical Specialist involved in the development of automotive navigation and entertainment display products. He has published numerous papers for the Society of Information Displays (SID) and holds several display related patents. Paul and his wife, Christie, have four children ages 11 through 16.

Chapter III, V, X

Technical and Business Aspects of Automotive Distributed Embedded Systems

Bruce Emaus, Vector CANTech

In the next five years, the automotive industry will be providing expanded capabilities to the consumer using multimedia data communications and in-vehicle software. Drive-by-wire, smart sensor and smart actuator networking, vehicle telematics, and other technological advances are dependent upon robust and reliable high-speed networks and distributed processing. The development of these networks and software must consider not only technical issues but business, legal, testability, safety, and performance issues as well. This presentation will cover these issues with respect to the current state-of-the-art in the automotive industry, and future developments and directions of research already underway, some spearheaded by the speaker himself.

Bruce Emaus is the president of Vector CANTech, a company developing off-the-shelf software components and tools for the Controller Area Network (CAN). He is the chairman of the Society of Automotive Engineers Software Task Force and is a member of the Vehicle Architecture For Data Communication Standards Committee, playing a leading role in the development of many key automotive standards. He has been a pioneer in the automotive industry, developing Ford's first trip computer, Ford's first integrated circuit, and Ford's first peer-to-peer UART-based protocol during his 30 year career in microcontroller software, hardware, and systems. Bruce's comfortable and engaging speaking style will make the evening entertaining and enjoyable for all.

Chapter IV

Using Maple in the Education of Electrical and Computer Engineers

Dr. Richard Johnston, Lawrence Technological University

This talk will discuss the use of computer algebra systems in the electrical and computer engineering curriculum. These programs allow us to greatly expand the range of problems that can be attempted by undergraduate (and graduate) students. Several examples from various courses will be given.

Dr. Johnston spent three years in the U.S. Navy as a RADAR Technician before finishing the BSEE from Wayne State University in 1978. He spent two years at Motorola as an Electronic Engineer and two years at the Gulbransen Organ Co. as Manager of Advanced Circuit Design before finishing the MSEE from Wayne State in 1984. Dr. Johnston spent 6 years on the faculty of Wayne State University, finished the Ph.D. in 1993 also from Wayne State, and is currently Associate Professor of Electrical Engineering at Lawrence Technological University. His research interests include Power Electronics, Variable Speed Drives, and the use of modern personal computers and software in the practice of Electrical Engineering,

Chapter VII

Electric Choice

Jim Gessner, Detroit Edison

Electric Choice is a statewide initiative giving customers the option to choose the company that generates their electricity. Supplying electricity includes three separate activities—all of which Detroit Edison historically performed. Generation is the production of electricity at a power plant. Transmission is the movement of high voltage electricity from a power plant to the local distribution system near the customer. The large wires on tall steel towers are the transmission system. Distribution is the delivery of power to homes, businesses and factories and includes the poles, wires and substations (or local distribution system).

James J. Gessner is director, electric choice at Detroit Edison, an electric utility serving 2.1 million customers in southeastern Michigan. Detroit Edison is the

principal operating electric subsidiary of DTE Energy (NYSE: DTE), a diversified energy company involved in the development and management of energy-related businesses and services nationwide. Gessner is responsible for the \$100 million effort to develop the organizational capability and supporting information systems to enable Detroit Edison customers the opportunity to select an alternative electric supplier. Gessner earned his bachelor of science in chemical engineering and juris doctor from Wayne State University. He is a member of the Michigan Bar Association, the vice president of the board of Leadership Oakland and a member of the Detroit Economic Club.

Chapter VIII

Statistical Process Control in an EMC Test Laboratory

Kimball Williams, Eaton Corporation

Measurement system setup variability in a test laboratory can be a source of discomfort for the test engineer. The use of Statistical Process Control (SPC) methods to gage, and track the variability of system measurements can provide confidence in the repeatability of the test system setup, and in the data it produces. Once the system is shown to be stable, it is possible to also utilize SPC historical information to assist in confirming the validity of the data gathered using the system's control software.

Kimball Williams is a principal EMC engineer for Eaton Corporation at the Eaton Engineering and Research Center in Southfield, Michigan where he directs the technical operation of its Electromagnetic Environmental Effects laboratory. He holds a BSEE degree from Lawrence Technological University in Southfield, Michigan and is pursuing a master's degree through the National Technical University. He is a member of the IEEE, a National Association of Radio and Telecommunications Engineers (NARTE) certified EMC engineer and a member of the Board for NARTE, a member of the SAE EMI and EMR Committees, and a member of the US Technical Advisory Groups to CISPR/D and ISO/TC22.

Student Track

Residue Number System Arithmetic Logic Unit

Dr. Pepe Siy, Wayne State University

The Residue Number System (RNS) offers a promising future for highly parallel computing hardware because of its carry-free addition, subtraction and multiplication operations. However, unless the problems of its complex sign detection, and number comparison are solved, general computing RNS will not be reality. With proper selection of moduli set, one can simplify sign detection in RNS. This, in turn, can improve the performance of number comparison, and with this

progress, division in RNS can be done easily and fast. Dr. Pepe Siy received his B.S. degree in Electrical Engineering from Mapua Institute of Technology, Philippines, in 1965, the M.S. degree in Electrical Engineering from University of California, Berkeley, in 1967, and the Ph.D. degree in Electrical Engineering from University of Akron, in 1973. He is currently an Associate Professor in the Department of Electrical and Computer Engineering at Wayne State University, Detroit. His current research interests include image processing, residue number system, smart sensors and VLSI.

IEEE/SEM 2002 Spring Section Meeting

REGISTRATION FORM

Complete and mail the following form with an early registration fee of \$30 per person. The registration fee includes technical session attendance and dinner. If this form is for multiple people, you must provide full contact information for one person plus Name, Technical Session Preference, and Meal Selection for each additional registrant. *Please make check payable to IEEE/SEM* and forward along with a completed registration form before March 15, 2002 to: **Sat Basu**, P.O. Box 4928, Troy Michigan 48099

There will be express check in for pre-registered attendees.

Please type or print:

Name: _____
 Company: _____
 Address: _____
 City/State/Zip: _____
 Phone #: _____ H W

Technical Session # _____
 (* Select from list at right, 0 for none)
 Meal Selection: None, Chicken, Vegetarian

Total amount enclosed: \$ _____ Registration (\$30 per person)

Check enclosed Visa Master Card

US dollars \$ _____
 Credit Card Number _____
 Expiration Date _____ (Mo/Yr)
 Signature _____

Credit card registrations are non-refundable after Mar. 15
Fees: AmountDeadline
 Pre-registration \$30 US Received by mail before March 15.
 Late registration \$35 US Contact Sat Basu at 313-235-6523 or satbasu@ieee.org by 5:00pm March 20.
 Student branch \$15 US Register and pay through student branch. Contact: Hassan Hassan at 248-204-2554 or email: ic_design@excite.com by Mar.15.

Technical Sessions Indicate session you wish to attend:

- ___ Chapter I - Circuits & Signal Processing
- ___ Chapter II - Vehicular Technology
- ___ Chapter III - Communications and Aerospace
- ___ Chapter IV - Trident
- ___ Chapter V - Computers
- ___ Chapter VI - Geoscience & Remote Sensing
- ___ Chapter VII - Power Eng/Industrial Applications
- ___ Chapter VIII - EMC
- ___ Chapter IX - Power and Industrial Electronics
- ___ Chapter X - Engineering Management
- ___ Student Track/Professional Development

Additional Registrants (Non Students Only)

Name: _____
 Company: _____
 * Technical Session # _____
 Meal:
 Select Chicken Veg. None

Fee: \$30 ea

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Abbas Youssef

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 Kent Stiles

Print name and member number at top of page
 Sign here to validate your ballot: _____

IEEE/SEM Electro-Technology Award Michigan Regional Future City Competition

By Don C. Bramlett, PE, IEEE/SEM Section Advisor

The 9th Annual Michigan Regional Future City Competition, coordinated by ESD-The Engineering Society and sponsored by Ford Motor Company, was held on Wednesday January 23, 2002 at the Ford Conference & Event Center (previously known as the Spirit of Ford) in Dearborn. The Future City Competition is held each year in association with National Engineers Week (NEW), with winners from the 30 regional competitions participating in the finals in Washington D.C. during NEW. Teams of students from 32 middle schools in Michigan participated in the regional competition this year.

The IEEE/SEM judging team was composed of William Quinlan of Compuware and Scott Amman, PE, Ph.D., Mike Blommer, and Davis Ashland, all from Ford Motor Company. Don C. Bramlett, PE of Detroit Edison (DTE Energy) was lead judge for the competition and Laurence G. Dishman of Wayne State University and Christopher Mushenski of US Army - TACOM served as general category judges

The judges had the opportunity to evaluate some outstanding futuristic design projects, including some very interesting electrotechnology applications. The judges and the students had the pleasure of discussing in depth some of the design principles applied, problems encountered, and teamwork principles used.



Grand Blanc Middle School received the IEEE SEM-sponsored Electro-Technology Award this year. Their future city designed featured a number of interesting attributes. For example, their city—set in the year 2031—uses fuel cells as its major source of power.

Each building has its own bank of fuel cells, which use a hybrid metal sponge storage system. Specific buildings have solar power backup systems for critical loads. Fuel cells are a major industrial product for the city. Overall, we found that the students had a very good understanding of the technology.

Other features of the city included mass transportation provided by a magnetic levitation subway system and personal taxi cabs (PTCs) that are voice-activated and equipped with GPS for navigation. For personal communications, citizens of the city use a device called POYOZOS, which combines the features of a PDA, cellphone, PC, digital camera, video camera, and has a functional holographic keyboard for data entry.

Overall, the first place winner was St. John Lutheran School of Rochester, for the second year in a row. St. John Lutheran School will represent Michigan in the National Engineers Week Future City Competition finals in Washington D.C. during National Engineers Week, February 17-23, 2002.

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