Tennessee Tech overall winner at Mini Baja East

Scoring error leads to post-event results shakeup.

Tennessee Tech University (TTU) took top honors at this year’s Mini Baja East competition held at Auburn University, April 13-15. The win marked the 25th time since TTU began competing in 1978 that it finished in the top five.

At the conclusion of this year’s event, the team left thinking it had to settle for another top-five finish. A scoring miscalculation led the team to believe it had finished fourth, and it was not until days after and scores had been re-calculated that it was declared the overall winner.

“When I first heard that the scores were being recalculated, I was hoping that we wouldn’t drop out of the top five,” said Team Captain David Ballard. “With the complex scoring system, there was no way of knowing how it would come out. We just knew we had performed well.”

TTU placed first in the engineering design category and tied for first with Clarkson University for the water maneuverability award. It also placed third in both the acceleration and total dynamic events categories.

More than 60 teams participated in Mini Baja East. Events included design evaluation, log pull, acceleration, land and water maneuverability, and suspension and traction, culminating in a five-hour endurance race on a specially built 2.1-mi (3.4-km) off-highway course at the National Center for Asphalt Technology test facility in Opelika, AL.

Inspiring the next generation

Brazilians best Aero Design East field

UFMG claims title at year’s first Aero competition.

A pair of teams from Brazil captured the top two spots in the regular class at the 2006 SAE Aero Design East competition, April 21-23 in Marietta, GA. A total of 48 teams competed in the event, which tasks students to conceive, design, fabricate, and test a radio-controlled aircraft that can take off and land while carrying the maximum cargo.

Università Federal De Minas Gerais (UFMG) claimed first place overall and received the award for the best design report and presentation. It had the second-most payload lifted, with 27.7 lb (12.6 kg), outmatched only by fellow Brazilians the Federal University of Uberlandia. Its payload of 28.88 lb (13.1 kg) propelled it to a second-place overall finish.

This was the first of three Aero Design events of the year, with Aero Design West and Aero Design Brazil, following June 1-3 and September 21-24, respectively.
Message from the President

What’s in a name?

Last year our 2005 SAE President, Ted Robertson, informed you of a pending change to the name of your society. The proposal was to change SAE from the “Society of Automotive Engineers” to “SAE International.” Many other societies and companies have done something similar and are now using strictly the acronym and not the words or phrase behind the acronym. The change was made official this year at the annual business meeting held at the SAE World Congress in Detroit. What this means to the membership and the world at large is that the legal name of SAE has changed and this is now reflected in the bylaws of the organization. SAE staff is currently going through the myriad of Web site pages and official SAE documents to reflect this change universally throughout the society structure.

As addressed by Ted in his article, the change was made to reflect the broader scope of SAE including its three sectors, Aerospace, Automotive, and Commercial Vehicle. Also, the senior leadership of the society is increasingly referring to SAE as the “automotive” really means “automobile” and not the intended meaning stipulated by Elmer Sperry in 1916 (“prime mover” or “automated mobility” if you will). For aerospace and commercial vehicle engineers, the change is particularly important. For example, since the public perception is so strong with regard to the word “automotive,” numerous SAE members in aerospace companies have actually reported the automotive term has been counterproductive to the society’s interests. Company management would often deny support of SAE since the perceived meaning was that SAE meant an automobile society, and why should an aerospace engineer be interested or want to divert the company’s resources? I am pleased to report that SAE’s name change has already led to some positive feedback regarding the aerospace and commercial vehicle sectors and the broader intended scope of SAE.

To complement the change to the SAE name, I am also pleased to report that we are taking the next logical step and are developing a marketing and branding strategy to help convey a more accurate brand image of the numerous activities to which SAE is involved. I feel that this is so important that I am involved and engaged personally. I can tell you this is not as simple a task as it might first seem. As you know, SAE involves the dissemination of engineering and technical information associated with automobiles, airplanes, trucks, buses, tractors, bulldozers, and many other vehicles. SAE also has two core competencies: lifelong learning and consensus standards. Furthermore, given the broader scope of the SAE Enterprise described above, the job of transmitting the fundamental brand image of SAE becomes ever more complex and challenging to capture in just a few words or phrase. However, I am confident with the member leadership and staff working together on this we will be able to devise the right brand image that will take us through the 21st century.

Perhaps you have some thoughts regarding the marketing and brand image of SAE. I solicit your comments and thoughts regarding this subject and what you think SAE’s brand image should be. I’d like to hear from you. If you have some ideas that could help us, please send your comments to branding@sae.org. Thanks!

Commercial Vehicle Congress

SAE Commercial Vehicle Congress names Chairs through 2008

Executives from International, Deere, and Cummins to oversee events.

As a sign of its growth and increased importance within the commercial vehicle industry, the SAE Commercial Vehicle Engineering Congress & Exhibition has confirmed Co-executive Chairs through 2008. The 2006 SAE Commercial Vehicle Engineering Congress will be held October 31-November 2 in suburban Chicago.

Co-executive Chairs for the 2007 event will be John Deere executives H.J. Markley, President, Agricultural Equipment Division—Europe, Africa, South America, and Global Harvesting Equipment Sourcing; and Bharat Vedak, Senior Vice President, John Deere Intelligent Equipment Technologies (Worldwide Agricultural Operations). F. Joseph Loughrey, President and Chief Operating Officer, and John C. Wall, Vice President and Chief Technical Officer, both of Cummins, have agreed to serve as Co-executive Chairs for the 2008 event.

“‘The commitment that we have for the next three years from some of the commercial vehicle industry’s top executives speaks volumes to the importance of this event,’” said Herb Kaufman, Director, Commercial Vehicle Business and Chief Technology Officer, SAE International. The SAE Commercial Vehicle Engineering Congress & Exhibition was created primarily to serve as a networking and learning opportunity for industry professionals, including engineers, suppliers, and manufacturers from both the truck and off-highway sectors.
From the PAMA President

UAVs: A modest proposal for future cockpit staff

Unmanned aerial vehicles (UAVs) are really not unmanned at all; only their cockpit systems are uninhabited. By that, I mean there are no pilots controlling an aircraft in-flight. The movements physically onboard. But all UAV flights are piloted from somewhere, whether it is from one control tower or from halfway around the world; whether by computer or by an actual person manipulating the controls at a video game-like workstation. The future will see us adjusting our views of what a pilot does and where he or she works. As we begin to assimilate UAVs into our airspace—and into our consciousness—there are a few keys to the future of the UAV industry that must guide our actions. Clearly, these are keys to be maintained to a very high standard. Advanced technology requires advance knowledge, and we must continue to invest in the expertise of our maintenance workforce. The importance of this demographic will increase exponentially in the not-too-distant future.

Even though there will no longer be a post-flight pilot briefing to describe an in-flight anomaly, quite a few maintenance professionals now report a general aversion by many pilots to these briefings anyway. And in reality, those briefings never have been as exhaustive as necessary to effectively troubleshoot a problem. Technicians are increasingly referring to electronic reports and codes to troubleshoot a problem. We have been relying on this accurate data for a long time and then returning aircraft to service without much input from those manipulating the controls. From a troubleshooting perspective, a lack of pilots flying UAV’s will not pose much of a problem for technicians. In looking at operations, much of the flight planning is already automated with crews only providing oversight. The same is true in the cockpit as en-route profiles and system monitoring is handled quite effectively—and efficiently—by onboard and data linked ground-based computers—with crews only providing oversight.

This is also true at the flight altitudes where Reduced Vertical Separation Minimums rule the airspace. With only 1000 ft (305 m) of vertical separation between airways, supercritical wings efficiently minimizing fuel flow and maximizing airspeed, the days of hand flying aircraft are well behind us. There really is not much flying going on up in the cockpit anymore. Press a few buttons, watch for the blinking red lights, and transmit “Mayday” as necessary. Even during an emergency landing, modern electronic aircraft, without the weight of a burden of cables, bell cranks, or push-pull tubes, will be nearly impossible to control without computer assistance. The best a pilot will be able to do is avoid population areas by aiming the aircraft out to sea or away from a school. Even those functions can be accomplished automatically. What we will really need in the cockpit is a maintenance professional with the skills of a software engineer—a true aviation maintenance engineer—to upload a fix from ground-based designers.

Passengers’ willingness to actually board an aircraft is based on their sense that there will be no emergency that cannot be handled by the flight crew and, no matter what happens, that crew will successfully and safely return the aircraft to Earth. Someday that comfort will be based on the technical expertise of the maintenance professional in the cockpit.

Damage tolerance proposal may cause rift

The Federal Aviation Administration (FAA) is seeking comments on a proposal dealing with damage tolerance that could divide the maintenance community. It would require all holders of type certificates (TCs) and supplemental type certificates (STCs) to perform damage tolerance analysis for all past and future alterations. This is a complicated proposal, but there are several key points to consider. First, all past alterations would need to have damage tolerance analysis performed for them over the next three years. This is likely to serve as a tremendous burden on those who have performed alterations. The requirement may also “sneak-up” on some people in the industry who focus on field approvals and 8110-3 approvals. Because of the way the proposed rule is written, it applies to all alterations that came from the party if that person holds even one STC, even if most of those alterations were not covered under separate STCs. Finally, the damage tolerance analysis may require engineering resources that some parties just do not have.

Why might the damage tolerance proposal split the industry? Because it is vital to those developing continuous airworthiness maintenance programs (CAMPs) and performing maintenance under such CAMP systems. In particular, air carriers flying Part 25 aircraft will need to modify their maintenance programs to reflect damage tolerance issues by 2010, and the damage tolerance engineering requirements being imposed on TC and STC holders are meant to support this requirement.

Without the information required by the new proposal, it is possible that air carriers may not be able to meet the damage tolerance obligations under existing aging aircraft rules.

New life limits on old aircraft

The FAA has issued a proposed rule for comment that would require TC and STC holders to establish life limits on airframes for large Part 25 (transport category) aircraft. As written, these new life limits will be mandatory, as they will be placed in the airworthiness limitations section of the appropriate manuals. The proposed rule applies to existing airframes as well as to new designs, so existing aircraft will be affected. This may have the effect of “timing-out” some airframes as soon as the rule is issued. Older airframes may have their useful life severely curtailed.

Mechanics who make their living keeping older airframes in the air should be sure to comment on this proposed rule. Do not miss this proposal—it was issued about the same time as the damage tolerance proposal, but it is a separate requirement, with separate burdens and challenges. The Notice of Proposed Rulemaking link can be found at www.pama.org.

Next-gen GPS

Several months ago, it was reported that the government’s radio-navigation strategic plan focused heavily on GPS technologies.

A new GPS signal known as L1C is being formally defined. The interface specification for L1C will be known as IS-GPS-800. This specification will provide detailed and necessary information for the new proposed L1C signal, which is planned to be broadcast from the next generation of GPS satellites. The draft interface document is available for review online at: http://gps.losangeldes.af.mil. Click on “System Engineering,” then “Public Interface Control Working Group (ICWG).”

This L1C GPS interface is a result of the June 26, 2004, GPS/Galileo agreement between the United States and the European Union. Adding this L1C signal is expected to resolve deficiencies in the existing L1 C/A signal. The government expects L1C to offer better signal reception with decreased susceptibility to interference and will be primarily available for civilian use. This is likely to facilitate improvements in aviation.

Unapproved parts notices

The FAA has issued an unapproved parts notice claiming improper maintenance on Scintilla (Bendix) magnetos, model D9LN-2. The FAA claims that overhauls performed by C.P. Aero Accessory of Paradise, CA, were improper.

The FAA also issued an unapproved parts notice claiming improper maintenance on oil coolers. It accused Southwest Cooler Service of Dallas, TX, of improperly maintaining oil coolers that would be installed on various types of aircraft. The link to the full text of the unapproved parts notice is available at www.pama.org.

New export tag exemption

Need an export 8130-3 tag to move a part to foreign station? Because this information is vital to those developing new CAMP systems. The government is seeking comments on a proposal to exclude specific CAMP systems from the information. The proposed rule will also exclude optional parts from future export tags. A new FAA exemption now permits non-manufacturers to apply for class III export tags.

Midcoast Aviation’s (from left to right) Tim Kennon, Brian Bauwens, and Bill Fields led their team to a first-place finish for the third consecutive year at the PAMA Olympics. Fields also won top honors in the individual skills competition.

PAMA Olympics

The 2006 PAMA Olympics were held March 28-30, 2006, at the Las Vegas Convention Center, in Las Vegas, NV. Teams of three competed in a variety of events and were scored based on time and accuracy. Winners included:

First place:
Midcoast Aviation
Brian Bauwens, Bill Fields, Tim Kennon, Vinnie Venditto (Coach)

Second place:
Bomber Aircraft Services
Mark Dumas, Michael Zina, Robert Hunter, Anthony Masciota (Coach 1) John Carleton (Coach 2)

Third place:
Southwest Airlines
Scott McNabb, Mark Woodhall, Kyle Acuna, Dennis Pelleiter (Coach 1) Tom Zollars (Coach 2)

Overall Technathlete
Bill Fields, Midcoast Aviation

Troubleshooter of the Year
Kyle Acuna, Southwest Airlines

Safety Wire
Bill Fields, Midcoast Aviation

From the PAMA President

Update

The record shows that accidents attributed to pilot error—flight into icing or other unsafe weather, ignoring warnings, take-off and landing errors in judgment, etc.—far outstrip the stratospheric reliability we now enjoy with modern computerization and manufacturing techniques. It is now time to seriously examine staffing the cockpit of modern airliners with the men and women who have long strengthened and ensured our aviation safety infrastructure—highly skilled and educated professional aviation maintenance technicians and engineers.

Brian Finnegan
President, Professional Aviation Maintenance Association
Standards & Committees

Aircraft lighting subject of new standard

In the dark of night or through storm clouds, external lighting plays a crucial role in the safety of an aircraft. High-intensity discharge (HID) light sources on aircraft are becoming more popular. Basically, in HID sources, a capsule of gas replaces the traditional filament at the light source. HID lights generally last longer and last a lot longer and offer a whiter, brighter light.

SAE Aerospace Recommended Practice (ARP) 7947—High Intensity Discharge Light Sources, recommends best practices when using HID lamps and power supplies in aircraft applications.

“For lighting applications, this is the first document that outlines some of the safety considerations that need to be looked at,” said Philippe Lapuajade, Optical Engineer of Team Lead, Goodrich Lighting Systems, and ARP5647 document sponsor. “[HID] is a new technology that operates differently than traditional halogen bulbs. We need to be aware of how it is used and how it behaves.”

One of the main differences between HID and halogen lamps is the time it takes to get to full luminous output. The HID can take several seconds to reach maximum output. Such qualities are addressed in the ARP5647 document. “We’ve addressed UV safety and high-voltage safety. To my knowledge, this is the first document that addresses these HID applications,” Lapuajade said.

ARP5647 was written and created by SAE International’s A-20 Aircraft Lighting Committee.

New standard addresses service translation

Evaluating the quality of the translation of service information previously was largely subjective, but SAE International now offers automobile manufacturers and their translation providers a consistent standard.

The J2450 Quality Metric for Language Translation of Service Information became an SAE standard in 2005 following eight years of development involving automotive and translation companies in North America and Europe.

Evaluators use J2450 on translated text to identify eight distinct categories of errors. Those errors can be deemed serious or minor, and associated categories and weights produce a score. The score gives automotive manufacturers and their translation suppliers an agreed-upon convention to examine translation quality. The J2450 metric can be used regardless of how the translation is produced, whether by human translation, machine translation, or translation memory.

Copies of the J2450 standard are available for purchase at the SAE Web site. Training materials on how to use J2450 to examine the quality of service information in translation will also be available.

Notice to owners of new H-Point Machine

The SAE Human Accommodations and Design Devices Committee has made three improvements to the new H-Point Machine (HPM-II) for future builds. These improvements include revisions to the knee angle scale, modifications to placement of H-Point dovets for better accessibility, and smaller screws for foot bottoms to ensure flatness on hard surfaces. These changes will be made to any new HPM-II made and sold by SAE International. Those interested in making these improvements to their HPM-II machine should contact SAE for details and cost. While entirely optional, the modifications improve usability and do not affect the accuracy of the measurements.

SAE would like to create a database of responsible owner contacts so detailed descriptions of the above changes can be sent. This list will also be used for any future notices regarding the HPM-II that would be of interest to the owners. Please contact either Gary Pollak (gary@sae.org or 724-772-7196) or Kien Siddall (kien@sae.org or 724-772-7107) with your complete contact information.

A-6 holds first meeting in South America

The SAE A-6 Committee, Aerospace Actuation, Control, and Fluid Power Systems, held its biannual meeting in Sao Jose dos Campos, Brazil, on April 3-6. This was a continuation of plans to hold international meetings “offshore” every 2½ years. The first offshore meeting was held in Toulouse, France, in 2002, and Shanghai, China, is being looked at as a site for the next offshore meeting in the fall of 2008.

Sao Jose dos Campos presents a dynamic technological development environment. Besides being the largest aerospace center in Latin America, Embraer is its main city, the city is geographically and market positioned between the two most important cities in Brazil: Rio de Janeiro and Sao Paulo. Approximately 100 people attended the four-day meeting, and there was good participation and support from Embraer. It provided attendees with a tour of its engineering and manufacturing facility complete with a virtual-reality lab where CATIA drawings are displayed three-dimensionally, its iron bird complete with full-up cab, and the final assembly bays where interiors are completed in about 30 days.

The meeting included an all-day symposium on Hydraulics for the Future. Eight technical presentations covered various concepts on meeting the current and projected systems and components needs for future aircraft development. Topics ranged from engines with no gearboxes or accessories to advanced scaling techniques. A new symposium format included a roundtable of international experts offering responses to questions from the audience.

Committee A-6 will hold its fall 2008 meeting in Vancouver, British Columbia, Canada, October 8-12. The topic for this symposium will be Sensors for Control and Health Monitoring.

New reference book covers CVT developments

“The Lightweight Magnesium Technology 2001-2005,” a new book published by SAE, collects 46 technical papers that cover the technology behind the expanded usage of magnesium in the global automotive industry.

Edited by Thomas Ruden, the book looks at the development of new alloys, process technologies, mechanical and physical properties, and case studies of applications placed into production.

“Lightweight Magnesium Technology 2001-2005” (Product Code: PT-131) is available for $89.95 ($71.96 for SAE members). To order, or for more information, visit store.sae.org, phone 877-606-7323 (in the U.S. and Canada) or 724-776-4970, or e-mail customerservice@sae.org.

The latest technology on the development of vehicles with continuously variable transmissions is covered in the new SAE book “Continuously Variable Transmission (CVT),” edited by John Maten and Bruce Anderson.

In addition to covering transmission assembly design and performance, the 38 papers in the book also detail the five major components of CVT technology: launch device, variator systems, geartrains, control systems, and lubrication.

“Continuously Variable Transmission (CVT)” (Product Code: PT-125) is available for $119.95 (95.96 for SAE members). To order, or for more information, visit store.sae.org, phone 877-606-7323 (in the U.S. and Canada) or 724-776-4970, or e-mail customerservice@sae.org.

Advances in magnesium explored in book

“Lightweight Magnesium Technology 2001-2005,” a new book published by SAE, collects 46 technical papers that cover the technology behind the expanded usage of magnesium in the global automotive industry.

Edited by Thomas Ruden, the book looks at the development of new alloys, process technologies, mechanical and physical properties, and case studies of applications placed into production.

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Publications
Calls for Award Nominations

Arch T. Culwell Cooperative Engineering Medal
Open to: SAE technical committee members
Description: This award recognizes a unique and outstanding contribution over a period of time to the work of the technical committees under the SAE Technical Standards Board in developing standards, specifications, technical reports, and data through cooperative research.
Nomination deadline: July 1, 2006
Submission: Visit www.sae.org/news/awards/list/culwell/

Max Bentele Award for Engine Technology Innovation
Open to: Engine technology professionals (land, air, space)
Description: This award recognizes an SAE member whose work has furthered innovation in the manufacture, design, and improvement of engine technology for ground, air, or space vehicles. It is designated for engineers under the age of 35 who have made a major contribution through a new idea, concept, innovation, or application that provides a recognized improvement in engine technology and which has been verified through proof-of-concept demonstrations.
Nomination deadline: July 1, 2006
Submission: Visit www.sae.org/news/awards/list/bentele/

SAE Fellow Grade of Membership
Open to: SAE Member grade individuals
Description: Fellow Grade of Membership was established as a prestigious and honorary grade bestowed on individuals whose extraordinary leadership, engineering, or scientific achievements have brought about meaningful advances in the various fields of mobility engineering. Eligible candidates will have been members of SAE for at least 10 years.
Nomination deadline: July 1, 2006
Submission: Visit www.sae.org/news/awards/list/fellow/

Myers Award for Outstanding Student Paper
Open to: Student authors of SAE technical papers
Description: This award is given annually for the best SAE technical paper presented by a student. The paper must be based on work done by the lead author(s) while a student and must be presented by the student at an SAE meeting between June 1, 2005, and May 31, 2006. Papers can be on any topic and from students worldwide.
Nomination deadline: July 15, 2006
Submission: Visit students.sae.org/awdscholar/awards/myers/

Henry O. Fuchs Student Award
Open to: College students working in the field of fatigue research and applications
Description: This award promotes the education of engineering students in the area of fatigue technology. The winning student(s) will be required to discuss his/her work related to the field of fatigue research and applications in the form of a half-hour presentation, with time for questions and answers, at the SAE Fatigue Design and Evaluation Committee meeting in Fall 2006.
Nomination deadline: July 31, 2006
Submission: Nominations are to be made by submitting a one-page summary explaining the students’ work. Nominations can be submitted by e-mail to rchernen@ford.com, fax 313-390-0514, or contact 313-594-4626.

J. Cordell Breed Award for Women Leaders
Open to: Women in engineering
Description: This award recognizes a woman active in the mobility industry who exhibits the best balance of life through outstanding performance or significant contributions both professionally and personally. The intent of the award is to recognize the role of women in the mobility industry, and selection is based primarily on how the nominee creatively deals with the challenges that face professional women today.
Nomination deadline: July 31, 2006
Submission: Visit www.sae.org/news/awards/list/wec/

Arnold W. Siegel International Transportation Safety Award
Open to: Safety engineers—land, air, space, or sea
Description: This award recognizes individuals whose accomplishments include outstanding international research, innovation, and contributions to crash injury protection, biomechanics, and design for all mobility vehicles. Nominees should be those persons in leadership positions who have made a significant transportation safety impact on their organizations or on society worldwide.
Nomination deadline: August 1, 2006
Submission: Visit www.sae.org/news/awards/list/siegel/

Delco Electronics Intelligent Transportation Systems Award
Open to: Intelligent transportation system (ITS) engineers
Description: This award distinguishes an individual or team whose outstanding technical accomplishment is judged to have significantly advanced ITS. It may also recognize the author(s) of the best paper relating to the invention, design, construction, or operation of vehicle-related equipment or systems operating within an ITS context.
Nomination deadline: August 1, 2006
Submission: Visit www.sae.org/news/awards/list/delcoets/

Edward N. Cole Award for Automotive Engineering Innovation
Open to: Innovative design engineers
Description: This award recognizes an SAE member whose innovative design is described in an SAE paper or whose lifetime of accomplishment is judged to be a significant achievement in automotive engineering. Judgment is based upon the value of the work as an original innovative contribution, not upon the application of some development or invention already known.
Nomination deadline: August 1, 2006
Submission: Visit www.sae.org/news/awards/list/cole/

Henry Ford II Distinguished Award for Excellence in Automotive Engineering
Open to: Passenger car, truck, or bus engineers
Description: This award recognizes SAE members and teams who use their engineering skills to achieve product or manufacturing process contributions that are assessed to have had the greatest positive effect on the passenger car, truck, or bus industries.
Nomination deadline: August 1, 2006
Submission: Visit www.sae.org/news/awards/list/fordii/

SAE/InterRegs Standards & Regulations Award for Young Engineers
Open to: Standards and regulatory engineers
Description: This award recognizes a practicing engineer under the age of 40 who is involved in standards, regulations, or conformity assessment systems that improved safety or reduced emissions in a ground vehicle mobility product.
Nomination deadline: August 1, 2006
Submission: Visit www.sae.org/news/awards/list/interregs/

Education and industry: A partnership that works

ArvinMeritor’s Light Vehicle Systems (LVS) plant sponsored an A World In Motion (AWIM) Challenge 2 program for 83 eighth-grade students at four Marion County, SC, middle schools. Twenty-eight LVS volunteers and three outside guest judges participated.

Each team was tasked with making a new, motorized toy vehicle for a fictitious toy company. During the 10 weeks of this project, the teams completed a market survey to determine their toy design and developed visual aids based upon the market survey information.

Students then began using their knowledge to develop and troubleshoot their designs. The vehicles were then decorated and a presentation was made to the toy company. The team process allowed participation of the students in science, mathematics, marketing, communication, graphic design, and physics.

New York
SAE International’s AWIM program was represented at the 29th Annual Science Council of New York City (SCONYC) Conference, offering a display and workshops on all four challenges. This year, the theme was “Strengthening Partnerships to Promote Quality and Accountability in Science Education.”

Partaking in the conference has given AWIM the opportunity to exchange information with other professionals and identify new partners and resources that will improve the quality of science education.

In the 29 years as a science education organization, SCONYC has stayed the course in focusing on the science educational needs of over 1 million children in the Greater Metropolitan Area of New York City.

Illinois
Lakeview Museum of Arts & Sciences in Peoria, IL, recently held its National Engineers Week activity to encourage young children to pursue careers in math, science, and engineering. Five engineers from Caterpillar coordinated an SAE display booth and worked with each child to build and test his/her own JeffToy balloon-powered car.

Hawaii
Noelani Elementary School has adopted the AWIM JeffToy as an integrated part of the curriculum for the entire fifth grade. This is the second year that Randy Akiona, from the civil engineering faculty, has provided the engineering support and mentoring.

AWIM exhibited at Congress

A World In Motion had an exhibit booth at the 2006 SAE World Congress in Detroit. The booth was staffed by George Chene from ArvinMeritor; Yolanda Raymond, Rich Mandle, Mark Johnson, Kimberly Rowe, and Greg Brazunas from Detroit Diesel; Jennifer Goforth from General Motors; and retired Ford employee, Ed Debler (shown). Detroit Diesel volunteers have participated in AWIM for the past eight consecutive years, spending time with fourth and fifth graders in local schools to pique their interest in math and science.
Teetor Award Presented to 10 educators

Professors representing universities across the globe have been selected to receive SAE International’s Ralph R. Teetor Educational Award. Ten were presented their award during the SAE 2006 World Congress in Detroit, April 3-6.

The award, established in 1965, recognizes outstanding engineering educators and offers them the opportunity to meet and exchange views with practicing engineers in their fields. The award is funded by the late Ralph R. Teetor, 1936 SAE International President, who believed that engineering educators are the most effective link between engineering students and their future careers.

- Gregory D. Buckner is an associate professor of mechanical and aerospace engineering at North Carolina State University. Previously, Buckner was a Research Engineer at the University of Texas at Austin’s Center for Electromechanics. His research interests include electromechanical systems, intelligent system identification and control, and precision engineering. Buckner has researched active and semi-active vehicle suspension systems since 1997, and has demonstrated innovative and effective control strategies for implementation on military HMV/HHVs and other off-highway vehicles.

- Kuang-Hua Chang is a professor at the School of Aerospace and Mechanical Engineering, Oklahoma University (OU). He is also the faculty adviser for the OU Formula SAE team. Previously, Chang worked at the University of Iowa and Northern Illinois University. He has co-authored with his students more than 100 technical papers, 35 of which are in referred journals. His research led to the publication of "Mechanism Design and Analysis," a textbook widely used by engineering students.

- Wei Chen is an associate professor in the mechanical engineering department at Northwestern University and the Director of the Integrated Design Automation Laboratory. She is also an Associate Editor for the Journal of Mechanic Design for the American Society of Mechanical Engineers and an editorial board member for the Journal of Engineering Optimization and the Journal of Structural and Multidisciplinary Optimization. She has published more than 50 refereed journal papers.

- Adelbert Cheng is an assistant professor of mechanical engineering at San Francisco State University and the faculty adviser for the SAE College Chapter and SAE Mini Baja team. His research focuses on alternative fuels and advanced combustion strategies for compression-ignition engines. In his most recent work, carried out in collaboration with Sandia National Laboratories, Cheng investigated the mechanisms that contribute to increased NOx emissions from biodiesel fuels.

- Jim Cowart is an assistant professor of mechanical engineering at the U.S. Naval Academy. Previously, he taught at the University of Connecticut and worked aford as a Product Development Engineer. He is a member of the American Society of Mechanical Engineers.

- Hong Im is an associate professor of mechanical engineering at the University of Michigan. Previously, he worked at the Combustion Research Facility at Sandia National Laboratories and was a Research Fellow at the Center for Turbulence Research, Stanford University. He has published more than 40 papers and technical reports in the areas of combustion, propulsion, and engine research.

- Valentin Ivanov is an associate professor of automotive engineering at Belarussian National Technical University in Minsk. He also supervises the school’s young research group on vehicle safety and collaborates as a senior researcher with experts from the National Academy of Sciences of Belarus. In 2001, he was one of the founders of the Academic Automotive Association, an SAE International partner in Belarus and member of the International Federation of Automotive Engineering Societies.

- Brad Kinsey is an assistant professor of mechanical engineering at the University of New Hampshire and the faculty adviser for the school’s Robotics Club, which supports FIRST Robotics programs. He is a member of SAE International, the American Society of Mechanical Engineers, the American Society for Engineering Education, and the North American Deep Draw Research Group.

- Charles Koch is an associate professor of mechanical engineering at the University of Alberta in Edmonton, Canada. He is involved in student vehicle projects and served as the faculty adviser for Future Truck. Previously, he worked for Daimler/Benz/DaimlerChrysler and General Motors. He is a member of SAE International and the Institute of Electrical and Electronic Engineers.

- John-David Yoder is an associate professor of mechanical engineering at Ohio Northern University and the adviser to the school’s SAE chapter. During Yoder’s 20-year career in the automotive industry, he has started a small research and consulting company and worked for Grob Systems, a machine tools and automation supplier. He has published more than 25 documents and authored four NASA Small Business Innovation Research reports. He holds a patent in the area of vision-guided robotics.

University of Toledo student recognized for research

Fengjie Yin recently received SAE International’s Henry O. Fuchs Student Award. She was presented the award at the SAE 2006 World Congress in Detroit, April 3-6.

The award, established in 1991, recognizes a graduate or recently graduated student who is working in the field of fatigue research and applications. The award honors the memory of professor Henry O. Fuchs. Yin is a research assistant working in the Fatigue and Fracture Research Lab in the mechanical engineering department at The University of Toledo. She has been working with the cyclic deformation and fatigue behavior of case-hardened steels.

She received her bachelor’s degree in mechanical engineering from Tsinghua University in Beijing. She was expected to receive her doctorate in mechanical engineering from The University of Toledo in May 2006.

Member Update

Nariso Omori (Fel’91), former Executive Vice President, will step down from the Board of Directors of Denso following the June 27 shareholders meeting.

Douglas Knoll (Asc’91) has joined Lydall’s North American Automotive group as Vice President—Engineering. Knoll will work out of Lydall’s Detroit Sales and Technical Center in Troy, MI, where he will centralize the engineering and leverage the design and engineering synergies throughout Lydall’s automotive business.

Robert Pelachyk (Mbr’98) has been named President of Heller Machine Tools, based in Troy, MI. Pelachyk will oversee day-to-day operations at the Troy facility. He was previously Executive Vice President and General Manager of CrossHuller.

Michael P. Simon (Asc’95) of Delphi has been elected to serve as 2006-07 President of the Equipment and Tool Institute.

Dave Schara (Mbr’03) of SFPX was elected Vice President, Marketing, for the Equipment and Tool Institute.

Special acknowledgment

Joseph D. Spielman (Mbr’95), General Motors Vice President and General Manager for Manufacturing in Pontiac, MI, was selected to receive the Distinguished Alumni Award from the Kettering University Alumni Association.

Mark A. Perlick (Aff’00), Vice President of Technology at BorgWarner in Auburn Hills, MI, was honored with the Engineering Achievement Award from the Kettering University Alumni Association.

Fred J. Schaafsma (Mbr’78), General Motors, retired, was selected to receive the Alumni Service Award from the Kettering University Alumni Association.

John Michael Gant (SAS’03), Steven Gerhard (SAS’04), and James W. Ryan (SAS’03) were among 123 students selected to receive scholarships from Tau Beta Pi, the engineering honor society. Gant is studying aerospace engineering at the University of Wisconsin-Rolla, and Gerhard and Ryan are studying mechanical engineering at Florida A&M University and the University of Wisconsin-Milwaukee, respectively.

July 2006
Aerospace engineers win TSB award

A team of engineers has been selected to receive SAE International’s Technical Standards Board Outstanding Contribution Award.

The award, established in 1953, recognizes individuals for outstanding service in SAE International’s technical committee activities. The team is being honored for its contributions to the Aerospace Council.

- **Peter Keenan** is a landing gear systems expert at Airbus. He also leads the team developing the Airbus A380 landing gear extension/retraction system. Prior to Airbus, Keenan worked for British Aerospace in the design of flight controls (including pneumatic and hydraulic systems). He has five published documents with SAE International.
- **Peter Keenan** is retired as a Senior Specialist from Lockheed Martin’s Advanced Design Programs, also known as the Skunk Works, in Palmdale, CA. He began his 40-year career in the aerospace industry with Lockheed California, where he directed research on the fatigue enhancement and stress corrosion characteristics of high-strength steel alloys used on aircraft landing gears. He was later responsible for the application of metallic materials for programs such as SR-71, U-2, F-117, and the Joint Strike Fighter competition. Pengra is an honorary lifetime member of SAE International.
- **Pengra** is Senior Design Specialist from Lockheed Martin’s Advanced Design Programs, known as the Skunk Works, in Palmdale, CA. He began his 40-year career in the aerospace industry with Lockheed California, where he directed research on the fatigue enhancement and stress corrosion characteristics of high-strength steel alloys used on aircraft landing gears. He was later responsible for the application of metallic materials for programs such as SR-71, U-2, F-117, and the Joint Strike Fighter competition.

Team of engineers to receive Colwell Merit Award

A team of marine engineers has been selected to receive SAE International’s Arch T. Colwell Merit Award. It will be presented at the SAE General Aviation Technology Conference & Exhibition (GATC) in Wichita, KS, August 29-31, 2006.

This award, established in 1965, annually recognizes the authors of papers of outstanding technical or professional merit. Papers are judged primarily for their value as new contributions to existing knowledge of mobility engineering. The award was funded by the late Arch T. Colwell, who served SAE International in many capacities for nearly 30 years, including a term as President in 1941. Seven papers were selected from 2,677 published at SAE International meetings in 2004, including a paper authored by this team: “Predicting and Optimizing Two-Stroke Engine Performance Using Multidimensional CFD” (2004-32-0039).

- **Yangbing Zeng** is a Senior Research Engineer at General Motors’ Research & Development Center. Previously, he worked for Bombardier Recreational Products and was a core member of the project team that developed fuel-efficient and low-emission marine engines that won the 2005 Clean Air Award from the U.S. Environment Protection Agency. He has published more than 30 technical papers for international journals and conferences. He is a member of SAE International and the Institute for Liquid Atomization and Spray Systems.
- **Inyo Sheth** is a Senior Project Engineer at the Boats and Outboards Division of Bombardier Recreational Products, where he leads a team of designers and technicians working on Evinrude E-TEC outboard engines. Previously, he worked on gasoline direct-injection outboard engines at Johnson and Evinrude. He is a member of SAE International.
- **Todd Craft** is an engineer at Bombardier Recreational Projects. Previously, he worked as a project engineer for Outboard Marine. He received his bachelor’s degree from the University of Wisconsin at Madison. He resides in Pleasant Prairie, WI.
Differentiating yourself during the recruiting and selection process

When you are looking for a job, you need to advertise your skills and experience, but also really play up what makes you stand out from the rest. You may have relevant experience, solid technical skills, or be at the top of your class, but leading industry companies sometimes get several hundred resumes per day.

“A good resume still faces a lot of competition,” said Sky Foster, Manager, Recruiting, Payroll, Compensation, and Working Structures, BMW Manufacturing, at the SAE 2006 World Congress Career Development Session.

The first step in demonstrating you are the best person for the job is to do your research and find out about the products and operations of the company and as many details as you can about the position for which you are applying. Then you should tailor your resume and cover letter to meet the specific requirements of the company and position. “Make your first effort your best,” said Foster, and that includes online application systems and e-mail. “If I see mistakes on your resume and cover letter, I am forced to conclude your work will be the same.”

In addition to showing a history of career progression, experienced professionals should show their ability to solve problems and specific results achieved, such as increased production, savings, customer satisfaction, etc. This should be included on the resume as well as expanded upon during the interview. “Innovation is key,” said Foster. “Show me what you have developed up your claims and use these tips to help yourself really stand out from the crowd.

Fedkoe, Product Manager for SAE Career and Member Services, said, “Determine if the relationship will be mutually beneficial. Be honest and be able to back up your claims and use those tips to help yourself really stand out from the crowd.”

Career Corner articles are written by Tracy Falkove, Product Manager for SAE Career and Member Services. If you have a topic you would like to see covered in Career Corner, please e-mail careersresources@sae.org.

SAE World Congress

Technology Trip Ticket winners

Technology Trip Tickets, a program launched at the SAE 2006 World Congress to help connect attendees with exhibitors marketing products and services of interest to them, did their job. Qualified engineers interested in electronics and testing/simulation participated this year. Participating attendees were offered the incentive to win a drawing for prizes by completing a “full trip”—visiting with all exhibitors listed on a ticket. The Technology Trip Ticket program is expected to grow to include more technology areas in the coming year. Congratulations to the winners listed below:

$5000 David Palechek, Engineer, Design Concepts
$3500 Anh Burrowes, Senior Compounder, Goodyear
$1000 Hiroaki Ito, Technical Specialist, Yazaki North America
$1000 Raymond Krupa, Sr. Staff Engineer, retired, General Motors
$1000 James Parkinson, Automotive Engineer, Cambustion
$1000 John Stawarz, Electrical Portfolio Manager, Ford

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Meetings Update

France hosts Aerospace Manufacturing Conference

The 2006 Aerospace Manufacturing and Automated Fastening Conference and Exhibition, to be held September 12-14 at Centre De Congres Pierre Baudis in Toulouse, France, will provide an international forum for the aerospace manufacturing community.

Technical sessions will feature the presentation of more than 100 papers on the following topics:

- Automated fastening technologies
- Composites processing and fabrication
- Design analysis and simulation
- Intelligent technologies in a production environment
- Lean manufacturing and supply chain management
- Metal processing and fabrication

SAE has merged the Aerospace Manufacturing Technology Conference (AMTC) with the Aerospace Automated Fastening Conference (Aerofast) to create this new event, which will cover innovations and engineering solutions for future aircraft. Technical sessions and an exhibit will enable attendees to explore the latest in both subassembly and final assembly technologies and processes.

Airbus, headquartered in Toulouse, is offering a tour of its facility on several days during the conference, providing attendees with a chance to see the final assembly plant of Airbus A380/A330/A340/A340-500/600.

The keynote speakers September 12 are scheduled to be Michel Milecan, Vice President of Marketing, SONACA, and Karl-Henz Hartman, Vice President of Operations, Airbus. The Thomas H. Speller Award will be presented to a distinguished industry leader at a luncheon September 13. The invited speaker for the luncheon September 14 is Pierre Froment, Senior Vice President—Head of System, Airbus.

A welcome reception will be held on the evening of September 11, and receptions will be held in the exhibit hall September 12 and 13.

To register, or for more information, visit www.sae.org/events/amaf; phone 877-606-7323 (in the U.S. and Canada) or 724-776-4970, or e-mail customerservice@sae.org.

Attendees who pre-register by August 18 will save $100 off the registration fee.

Meetings and symposia schedule

For more information about meetings and symposia, call SAE Customer Service toll-free at 877-606-7323 (or 724-776-4970 outside the U.S. and Canada). Additional meeting details can be found on SAE’s Web site at www.sae.org/calendar/meetings.htm; symposia details at www.sae.org/calendar/topics.htm.

SAE Ground Vehicle Design and Manufacturing Events

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<tr>
<th>Event</th>
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<th>Location</th>
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<tr>
<td>Digital Human Modeling for Design and Engineering Conference</td>
<td>July 4-6, 2006</td>
<td>Lyon, France</td>
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<tr>
<td>AWD Vehicle Symposium &amp; Ride &amp; Drive Event</td>
<td>August 21-24, 2006</td>
<td>East Liberty, OH</td>
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<tr>
<td>Onboard Diagnostics Symposium 2006 Update</td>
<td>September 12-14, 2006</td>
<td>Toulouse, France</td>
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<tr>
<td>Homogeneous Charge Compression Ignition Symposium</td>
<td>September 24-26, 2006</td>
<td>San Ramon, CA</td>
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<tr>
<td>North American International Powertrain Conference</td>
<td>September 27-29, 2006</td>
<td>Toronto, Canada</td>
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<tr>
<td>28th Annual Brake Colloquium &amp; Exhibition</td>
<td>October 8-11, 2006</td>
<td>Grapevine, TX</td>
</tr>
<tr>
<td>Convergence 2006</td>
<td>October 16-18, 2006</td>
<td>Detroit, MI</td>
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<tr>
<td>Powertrain &amp; Fluid Systems Conference &amp; Exhibition</td>
<td>October 16-19, 2006</td>
<td>Ontario, Canada</td>
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<tr>
<td>DOD Maintenance Symposium &amp; Exhibition</td>
<td>October 23-26, 2006</td>
<td>Reno, NV</td>
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<tr>
<td>SAE Commercial Vehicle Engineering Congress &amp; Exhibition</td>
<td>October 31- November 2, 2006</td>
<td>Rosemont, IL</td>
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<tr>
<td>Cost Effective Low Carbon Powertrains for Future Vehicles*</td>
<td>November 6-7, 2006</td>
<td>London, UK</td>
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<tr>
<td>Small Engine Technology Conference</td>
<td>November 13-16, 2006</td>
<td>San Antonio, TX</td>
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<tr>
<td>4th Styrian Noise, Vibration, &amp; Harshness Congress</td>
<td>November 15 - 17, 2006</td>
<td>Graz, Austria</td>
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SAE Aerospace Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
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<tbody>
<tr>
<td>36th International Conference on Environmental Systems</td>
<td>July 17-20, 2006</td>
<td>Norfolk, VA</td>
</tr>
<tr>
<td>General Aviation Technology Conference</td>
<td>August 29-31, 2006</td>
<td>Wichita, KS</td>
</tr>
<tr>
<td>Aerospace Manufacturing and Automated Fastening Conference &amp; Exhibition</td>
<td>September 12-14, 2006</td>
<td>Toulouse, France</td>
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<td>Reno, NV</td>
</tr>
<tr>
<td>Power Systems Conference</td>
<td>November 7-9, 2006</td>
<td>New Orleans, LA</td>
</tr>
</tbody>
</table>

(*) Co-sponsored by SAE

Conference focuses on Digital Human Modeling developments

Leading international digital human modeling experts, biomechanics engineers, software developers, ergonomics specialists, researchers, and experts from government and academia will convene at the 2006 Digital Human Modeling for Design and Engineering Conference and Exhibition, July 4-6 at ENS a Gerland in Lyon, France.

The event, which includes technical presentations and an exhibition of products and services, will be an international forum for the exchange of new and significant technical information about developments and applications of digital human models.

The technical sessions will feature presentations by representatives from Boeing, Ford, BMW Group, General Dynamics, U.S. Army Research Laboratory, U.S. Air Force Research Laboratory, NASA Ames Research Center, Transportation Research Institute, National Institute of Advanced Industrial Science and Technology, Purdue University, and the University of Michigan.

Additionally, a session July 5 will feature authors (including those from Volvo, Ford, and Toyota) giving their presentations in a small-group setting.

The opening reception July 4 features a guided tour of Lyon’s City Hall, and a networking reception will be held July 5.

The event’s attendees represent a wide range of industries, including automotive, aerospace, defense, off-highway, heavy-duty trucking, farm equipment, ergonomics, service, manufacturing, human factors, medical, and fashion.

To register for the 2006 Digital Human Modeling for Design and Engineering Conference and Exhibition, or for more information, visit www.sae.org/events/dhm; call 877-606-7323 (in the U.S. and Canada) or 724-776-4970, or e-mail customerservice@sae.org. Attendees registering before June 23 will save $100 off the registration fee.

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SAEInternational

“The premier society dedicated to advancing mobility engineering worldwide”

SAE administers more than 50 awards and recognition programs that recognize individuals for outstanding achievements in engineering. Information and nomination forms for SAE awards can be found at www.sae.org/awards.
Formula SAE teams provide
cars for racecar setup class

The Continuing Professional Development Group conducted another successful offering of the two-day Hands-on Racecar Suspension Setup seminar at World Congress in April. But it would not have been possible had it not been for two Formula SAE teams loaning their cars for use in the class.

Oakland University’s FSAE team loaned two of its cars and a set of wheel scales while University of Michigan-Dearborn’s team loaned one of its cars for use in the lab portion of the class. A significant portion of the class is devoted to practicing setup on real racecars. The open-wheel design of the student cars made them ideal for suspension adjustments not only because the adjustable parameters are easily accessible, but also because groups of attendees can crowd around and see what is being done.

In exchange for use of their cars, three seats in the class were extended to students from the schools. All three students attending provided positive reviews of the class and appreciated the opportunity to gain deeper knowledge of hands-on practice on real racecars. The open-wheel design of the student cars made them ideal for suspension adjustments not only because the adjustable parameters are easily accessible, but also because groups of attendees can crowd around and see what is being done.

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Courses from SAE

Registration now for this must-attend event!

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2006 Theme: Convergence Reinvents the Automobile

Convergence 2006 features an electrifying line-up of speakers and panelists, the leading showcase of transportation electronics technologies and the exclusive opportunity to network with the “who’s who” of the industry.

Keynotes
Larry Burns, Vice-President Research and Development and Strategic Planning
General Motors Corp.
Kazuo Furukawa, President Hitachi LTD.
Frans Johannsson, Author of The Media Effect

Blue Ribbon Panel
Hear from industry leaders on the challenges and opportunities of cooperation between the OEM and Suppliers in the field of embedded electronic software contents to enable a “win-win” situation, leveraging their collective strengths.

Moderated Panel: “Car Makers Speak”
This popular plenary session moderated by Paul M. Hansen, The Hansen Report on Automotive Electronics provides a lively discussion on some of the major trends of the day as well as global E/E standards, the challenges carmakers face, how suppliers can help, and the commoditization of operating systems and electronic control units.

Total Vehicle Panel
Industry leaders from the automotive, electronics, aerospace & defense industries will explore the convergence of business and technology, global boundaries, best practices, and ultimately, the convergence between industries.

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JULY 2006
Professional Development

- Geometric Dimensioning & Tolerancing - Level I
- Fundamentals of Modern Vehicle Transmissions
- Vehicle Dynamics for Passenger Cars and Light Trucks
- Vehicle Accident Reconstruction Methods
- Fundamentals of Gear Design and Application
- Advanced Diesel Particulate Filtration Systems

- Noise Diagnostics Using Nearfield Acoustical Holography
- NEW! The demand for better and quieter vehicles in terms of NVH performance is increasing every year. This seminar presents a new methodology for performing non-invasive vibration and acoustic analyses of a complex vibrating structure using nearfield acoustical holography (NAH). This new approach allows for identification of noise sources and transmission paths, and analyses of both structure-borne and airborne sound radiation from a complex structure vibrating under its natural operating condition. Unlike traditional noise diagnosis, this new approach allows one to see where sound is generated and how sound is propagated from a vibrating structure into 3-D space. It takes away any guesswork of where and how sound is generated and provides a significant amount of insight into how to suppress sound radiation in a very cost-effective manner.

- Hybrid Electric Vehicles: Control, Design and Applications
- NEW! One of the fastest-growing automotive fields, hybrid electric vehicles (HEVs), presents both opportunities and challenges. HEVs are more fuel-efficient and environmentally friendly compared to conventional vehicles. Optimizing the power intake in HEVs allows the engine operation to be kept within the range that achieves highest fuel economy and lowest emission, while the motor/generator system either provides additional power input, or generates electricity using the excess power from the engine. The challenges presented in HEVs include power electronics, electric motors and generators, batteries, power management, thermal management, and system integration. This three-day seminar will cover the fundamentals, design, and special topics of HEVs. In an easy-to-understand format, the course will explain the engineering of HEVs, including the components, design, modeling and control of HEVs. Some existing HEV models such as the Toyota Prius, the new Honda Civic, Mercury Mariner, Saturn Vue, and 2007 Toyota Camry will be used as case studies. The course will include lectures, simulations, hands-on examples, and design exercises utilizing Ansoft Simplorer software, Matlab-Simulink, and Advisor.

- Acoustic Holography
- NEW! Acoustical holography (NAH) is generated and how sound is propagated from a vibrating structure into 3-D space. It is generated and how sound is propagated from a vibrating structure into 3-D space. It allows one to see where sound is generated and how sound is propagated from a vibrating structure into 3-D space. It takes away any guesswork of where and how sound is generated and provides a significant amount of insight into how to suppress sound radiation in a very cost-effective manner.

- Aerodynamic Principles & Tools
- NEW! Aerodynamic considerations in the design phase of a road vehicle have significant implications for fuel economy, vehicle stability, safety, engine cooling, interior noise, and overall aesthetics. Both governmental regulations and customer requirements for comfort must be taken into consideration. Just as an airplane in flight is subjected to several forces, including lift, drag, and lateral forces, the same is true of ground vehicles although the lift component is, in general, not as prominent as in flight vehicles. The aerodynamic characteristics of a vehicle are determined by the combination of the vehicle overall shape and the shape and location of its components. This seminar will introduce you to basic aerodynamic principles and tools to evaluate aerodynamic features including wind-tunnel testing, flow visual testing, track testing, and computational methods. Testing of scale models, measurement methods, and data interpretation will also be covered. Real life situations and problems will be discussed and attendees will have the opportunity to solve problems utilizing skills learned.

- Introduction to Road Vehicle Aerodynamics
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- Catalytic Converters: Design and Durability
- Diesel Emissions and Aftertreatment Devices: Design and Durability
- Design of Experiments (DOE) for Engineers

- Hydraulic & Pneumatic Fluid Power Seals
- Vehicle Noise Control Engineering Academy - Vehicle Interior Noise

- Vehicle Noise Control Engineering Academy: Powertrain Noise Track

- Metal Corrosion and Its Prevention
- Cost, Finance, and Economics for Engineers

- Wet Brake & Clutch Technology
- Leading High Performance Teams

- Introduction to Road Vehicle Aerodynamics

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- Vehicle Noise Control Engineering Academy - Vehicle Interior Noise

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Utilize engineering and automotive industry skills to manage vehicle exterior composite components/systems programs for a Tier 1 supplier, within cost, timing, safety, reliability, quality and advanced manufacturing feasibility. Gather and research customer requirements, develop program plan, create specifications, authorize technical studies, prepare and present prototype and production quotations, direct design completion, coordinate product launch and maintain program reports. Function as technical liaison with customer and manufacturing. Candidate must possess a Masters degree in Automotive Systems Engineering. Please forward resume to M. Hicklin, Magna Advanced Technologies, 600 Wilshire Drive, Troy, MI 48084.

General Motors Corp. seeks Sr. Research Engineers for its Warren, MI facility to lead development of state and parameter estimation for vehicle dynamics control using GPS incl. responsibility for design, implementation, analysis, and verification and conduct research and development in automotive active chassis/vehicle control using mechatronics, among other duties. Ph.D. or foreign equivalent in Mech. Eng., varying levels of experience. Please send resumes to: General Motors Corporation, Resume Processing Center-TSR-60012, 300 Renaissance Center, Mail Code 482-C31-B36, Detroit, MI 48265-3000. EOE.

General Motors Corporation has an opening for an available position of Development Engineer—Advanced Emission Controls in Milford, MI. The position requires an individual with a Doctor of Philosophy (Ph.D.) degree in Mechanical Engineering & 1 year experience as a Mechanical Engineer &/or University Research Assistant. Job also requires: 1) Experience performing combustion analysis; 2) Exp. developing vehicle emissions calibrations; & 3) Exp. preparing & delivering oral & graphic presentations. Job duties: Lead the development & integration of automotive active emissions controls system. Perform combustion & emissions analyses, develop vehicle calibrations for performance, fuel economy, & customer features. Prepare & deliver oral & graphic presentations. Qualified applicants should send resume & verification of req. to: General Motors Corporation, Resume Processing Center-TSR-60012, 300 Renaissance Center, Mail Code 482-C31-B36, Detroit, MI 48265-3000. General Motors is an Equal Opportunity Employer.

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