Novel System Designs and Controlled Experiments Key to Vibration Research

If you think vibration research is boring or simple, you need to talk with Brian Feeny and Steven Shaw. The duo heads up the Vibration Research Laboratory in the mechanical engineering department. Shaw has 30 years of experience on various vibration projects and Feeny is approaching 20 years of research. That depth of knowledge and experience, as well as a specialty in nonlinear systems, keeps representatives of automotive companies and other businesses, as well as entrepreneurs, knocking on their doors.

Both Feeny and Shaw received their PhDs at Cornell University—Shaw in 1983 and Feeny in 1990. At the time, Cornell was well known for its research in nonlinear systems. In linear systems, properties stay consistent; so, for example, a vibrating pendulum has the same frequency and the behavior does not vary as the scale changes. Nonlinear means that as the scale changes the actual behavior can change also. “With nonlinear systems more things can happen,” says Feeny. “If you change the parameters, there can be large changes in what happens.”

Their research involves many different kinds of projects, ranging from work with automobiles to wind turbines to micro- and nanosensors. The common theme is the modeling and tailoring of vibratory behavior of mechanical systems. In many systems vibrations are unwanted, while in others they are necessary for proper function. “The unique aspect of our work in these areas of research is the development of novel system designs that exploit nonlinear behavior to achieve performance not attainable by more conventional designs,” says Shaw who was recently named an MSU University Distinguished Professor of mechanical engineering. “We focus on analysis of mathematical models and verification using controlled experiments.”

One current project, funded by the National Science Foundation (NSF) and Chrysler, deals with the development of vibration absorbers for rotating machinery. “In particular we are working with engineers at Chrysler to design devices that will reduce torsional vibrations in automotive engines,” says Shaw. These vibration absorbers have the potential to significantly improve the fuel economy of engines by allowing them to operate in torque/speed regimes that are currently avoided due to noise-vibration-harshness (NVH) issues. Examples include low-speed operations of high torque four-cylinder engines and low-engine-speed cylinder deactivation in variable displacement engines.

“It sounds easy, but in order to design the absorbers to be stable, have low inertia, and behave the way we want them to, we have to understand their dynamics,” says Shaw. “That’s what we do. We understand the mathematical models, we understand the physics. We know how to design them so that they behave the way we want them to in different operating regimes.”

One piece of equipment that is aiding their research is an experimental rotor system in the lab. This was originally built by ME professor Alan G. Haddow, currently on leave from the department. “We can do controlled experiments that car companies cannot do,” says Shaw. “We can measure everything that is going on with the rotor and absorbers. That’s because the experimental engine has a lot of flexibility that a car engine doesn’t have in terms of analyzing what is going on. We can experiment in a very controlled environment. Car companies love it.”

Shaw points out that the absorbers themselves don’t save fuel, but they allow automobile engines to operate in more aggressive operating regimes where they can be more efficient. “Improving fuel efficiency is important to car companies these days,” says Shaw. “To do that you have to have new engine technologies and our absorbers are part of what will enable these technologies.”

Another project currently underway in the lab involves the dynamics of wind turbine blades. “The motivation is that in order to get more and more energy out of wind turbines, manufacturers are making the blades and the towers bigger and bigger,” says Feeny. Some wind turbines now stand over 100 meters tall and the blades can be over 40 meters long. However, as the blades get bigger, they can easily become too heavy, so
We are used to hearing that nothing endures but change. Inevitable, we embrace it as part of a strategy of our own design: control it when we can, adapt to it when necessary. In ME we are used to change and look forward to it as a vital and necessary engine of renewal. Changes take place constantly in our department. This year in August we welcomed two new faculty: Dr. Rodney Tabaczynski and Dr. Elisa Toulson.

Rod is a world authority on engines, engine modeling, and engine system performance. Previously he was director of Ford Powertrain and Vehicle Research Laboratory and a Ford Technical Fellow. In 2002 he was elected to the National Academy of Engineering, the most prestigious recognition offered to engineering leaders in the United States.

Elisa joins us as assistant professor after completing her PhD in mechanical engineering at the University of Melbourne. Also an engines person, her research interests include alternative energy systems, combustion, and thermodynamics. We are delighted to welcome Rod and Elisa to our department.

Earlier this year we had another addition to the faculty. Professor Nicholas Gianaris joined us in May as the new director of the Composite Vehicle Research Center. Most recently Nick was a senior engineering specialist for Advance Structures Development at General Dynamics Land Systems (GDLS). GDLS specializes in armored vehicles for the U.S. Army and Marine Corps. He is recognized for pioneering work in various areas of materials design, characterization, and processing. It is also with great pleasure that we welcome Nick to our faculty.

In the midst of change some things remain the same. Our core values in research and education remain firm. We topped $113 million in research expenditures in 2010, continuing on a path of steady growth. Our graduate program continues to grow too, and it now has more students than probably at any time in our past. Our undergraduate program is also growing, as more incoming freshmen express interest in pursuing mechanical engineering as their chosen field than in previous years.

Our faculty continues to excel in their work. Professors Harold Schock and Tonghun Lee were honored at the MSU Awards Convocation event in February. Harold received the 2011 Distinguished Faculty Award while Tonghun was honored with the 2011 Teacher-Scholar Award. Professor John Foss received the 2011 Fluids Engineering Award, the highest recognition given by the ASME Fluid Division for contributions to the field of fluids engineering. I was particularly happy when in July our colleague Professor Steve Shaw received from the MSU Board of Trustees the designation of University Distinguished Professor, in recognition of his accomplishments in the classroom and his contributions to research in nonlinear vibrations. Read more about these outstanding individuals and their accomplishments in this newsletter.

Yes, change is inevitable. I look forward to an opportunity to tell you more about how we continue to change at our next meeting, here on these pages. In the meantime, it is always great to hear from you. Drop me a note at diaz@egr.msu.edu.

from the Chair
ALEJANDRO DIAZ

Alumni @ ME

2011 Distinguished Alumni Awards

Two mechanical engineering alumni were honored at the annual College of Engineering Alumni Awards Banquet in May.

Thomas P. Gielda
(BS ’80, MS ’84)
received the 2011 Mechanical Engineering Distinguished Alumni Award, which is given annually to an ME graduate who has a minimum of 15 years of professional experience in an engineering or engineering-related field.

William A. Demmer
(BS ’70)
received the 2011 Claud R. Erickson Distinguished Alumni Award, which is given annually to a College of Engineering graduate with a minimum of 15 years’ professional experience who has attained the highest level of professional accomplishment; provided distinguished and meritorious service to the College of Engineering and the engineering profession; and engaged in voluntary service at the local, state, national, and/ or international level.

Gielda is the chief technology officer at Caitin, Inc., in Fremont, Calif., and an adjunct professor in the Department of Mechanical and Nuclear Engineering at Kansas State University. At Caitin, Gielda leads the effort to develop innovative, sustainable, and green technologies that have enabled the company to develop several breakthrough technologies, including high efficiency fluid transport pumps and a new refrigeration cycle that has been shown to effectively use water as the primary refrigerant, as well as more conventional fluids.

After receiving his BS and MS degrees from MSU, Gielda earned his PhD in aeronautical engineering from North Carolina State University.
Novel System Designs (continued from page 1)

In 1987. He began his career at the University of Dayton Research Institute, where he performed research in interdisciplinary computational fluid dynamics. He hired into McDonnell Douglas Research Laboratory as a senior scientist in 1988 and worked on a variety of aircraft and rocket programs. In 1993 he joined Ford Motor Company and was eventually appointed a technical specialist where he was responsible for the development of vehicle level climate control system performance and also developed a total vehicle simulation program. He is a fellow of the American Society of Mechanical Engineers and a member of SAE International.

Demmer knew from an early age—as the son and grandson of toolmakers, die makers, and engineers—that he was destined to become an engineer. Upon receiving his bachelor’s degree in mechanical engineering, he immediately began his formal career in the family manufacturing business—the Demmer Corporation. And for the past 22 years, he has been CEO of the corporation, which serves the defense, aerospace, and automotive industries.

Demmer is also the managing partner of two family real estate management and development companies—Airport Realty and Demmer Properties—and is board chairman of two additional family companies—Demmer Investments LLC and Palmer Engineering, a stamper of high-production precision components.

The success of these family businesses has allowed the Demmer family to create the Demmer Family Hall of History in the Skandalaris Football Center and provide funds for the construction of the John and Marnie Demmer Shooting Sports Education and Training Center on campus. Demmer and his wife, Linda—who is an accomplished artist—also funded the William and Linda Demmer Gallery for traveling art in the new Broad Art Museum.

An ardent outdoor sportsman and conservationist, Bill also contributed significantly to help endow the Boone and Crockett Club Professor of Wildlife Conservation in the Department of Fisheries and Wildlife at MSU and is currently executive vice president of the Boone and Crockett Club, a national organization founded by Teddy Roosevelt in 1887 dedicated to preserving wildlife and habitat.

Steven Shaw works with the lab’s experimental rotor system that allows the group to conduct controlled experiments that car companies cannot do.

A single package,” says Shaw, who describes the project as “really cool because it is high tech and a lot of fun.”

He points out that researchers and engineers of the future are going to need multidisciplinary training, as evidenced by one of his PhD students who is getting a dual doctorate in physics and mechanical engineering. “That’s the kind of training students need in today’s work force.”

Both Shaw and Feeny use the words “fun and exciting” when describing projects. That enthusiasm is contagious and inspires those working on projects and those listening to them talk about their work. Shaw sees plenty of projects in the future. “After all these years we keep finding ways to expand on the research we have done, and we find new projects involving vibrations.”

— Jane L. DePriest
Faculty & Staff @ ME

University Distinguished Professor

Professor Steven W. Shaw was named a University Distinguished Professor in recognition of his achievements in the classroom, laboratory, and community. The designation to Shaw and nine other MSU professors was recommended by President Lou Anna K. Simon and approved by the MSU Board of Trustees at its June 17 meeting.

This is among the highest honors that can be bestowed on a faculty member by the university. Those selected for the title have been recognized nationally and internationally for the importance of their teaching, research, and outreach achievements.

Shaw is recognized internationally for his research in nonlinear dynamics. His eclectic suite of contributions ranges from the extremely theoretical to the pragmatic. Valued by both the scholarly community and industry, his research has made fundamental and original contributions to the understanding of systems undergoing chaotic dynamics and nonlinear vibrations. His seminal works on dynamic vibration absorbers have been translated into contemporary practice in the automobile industry.

He is known for his excellent leadership of his department's mechanical systems group and his mentorship of undergraduate and graduate students. In 2002, he received the Withrow Distinguished Senior Scholar/Researcher Award from the MSU College of Engineering. His current research focuses on exploiting nonlinear behavior in MEMS for sensor and signal processing applications, and the development of order-tuned vibration absorbers for variable displacement automotive engines. He is a fellow in the American Society of Mechanical Engineers.

Office of Naval Research Young Investigator Program Award

Assistant professor Tonghun Lee has been selected to receive a grant from the Office of Naval Research (ONR) Young Investigator Program (YIP) for his proposal titled “Ignition and Oxidation of Bio-derived Future Navy Fuels.”

The Department of the Navy announced the award of $10.8 million to 21 scientists and engineers; each will receive approximately $170,000 in annual research grants over three years.

“The Young Investigator Program is an important part of the Department of the Navy’s science, technology, engineering, and mathematics (STEM) outreach programs,” said Secretary of the Navy Ray Mabus in the official announcement. “To our benefit, it attracts outstanding new faculty researchers to naval-relevant research. The program also plays a major role in the Navy’s outreach efforts by supporting diverse faculty at a critical point in their careers.”

The YIP award identifies and supports academic scientists and engineers who have obtained their doctorate, or equivalent degrees, and tenure-track positions within the past five years.

Withrow Awards

Professor Ranjan Mukherjee received the Withrow Distinguished Scholar – Senior Award—given to nominees who have more than five years of service to the university and hold the rank of professor—at the college’s annual awards luncheon in March. Mukherjee is an expert in robotics and controls. He has made significant theoretical and experimental contributions to the design of a broad range of systems including space and mobile robotic systems, medical telerobotic systems for surgery and diagnosis, nonholonomic systems, rotor systems with magnetic bearings, and flexible structures. His research captures the imagination of experts and novices alike by producing elegant, modern solutions to classical engineering problems.

Mukherjee, who joined MSU in 1996, has a long track record of producing seminal results at early stages of research that serve as a foundation for future generations of researchers. For example, his early work in the 1990s using Stokes theorem for motion planning in space robots is a basis for recent work at Carnegie Mellon in the development of generic algorithms for producing kinematic, dynamic, and kinodynamic gaits in robots. As a result, decades of research dealing with motion planning ranging from snake-boards to mobile robots have been united. His solution of the stabilization problem of the rolling sphere led to the design of a unique spherical robot platform that attracted world-wide attention in the popular press. His designs of haptic devices for remote medical diagnostics led the field and have also been covered widely in the scientific and popular press.

Academic specialist Scott F. Kiefer was honored with a Withrow Teaching Excellence Award at the college’s annual awards luncheon in March. Kiefer is an exemplary teacher who always goes the distance for his students. He has the ability to present material in a way that is understandable to his students, clearly expressing his desire to facilitate their learning.

One student says, "Dr. Kiefer has taught three of the courses I have taken in ME and they were the best I have had at MSU." Another says, "Dr. Kiefer is the best instructor the college has. His dedication, patience, and ability are unrivaled." Contact with his students is not limited to his courses. As one student states, "Dr. Kiefer has willingly offered his assistance on my work when I was not even in his class!" Students know that he will always make time for them; and for that, he is highly respected.

continued on page 5
Lee earned his PhD (’06) and MS (’02) in mechanical engineering from Stanford University and his BS (’00) in mechanical engineering from Yonsei University in South Korea. Prior to coming to MSU in 2006, he worked as a graduate research assistant in the High Temperature Gasdynamics Laboratory at Stanford University. His research interests include laser spectroscopic imaging of advanced propulsion and energy conversion systems. In 2008, Lee received a YIP award from the Air Force Office of Scientific Research. Lee also received one of six Teacher-Scholar Awards at the 2011 MSU Awards Convocation. This award, supported by the MSU Foundation, is given to instructors, assistant professors, and associate professors who early in their careers have earned the respect of students and colleagues for their devotion to and skill in teaching. The purpose of the award is to recognize the best teachers who have served at MSU for seven years or less.

To expand learning opportunities for students at all educational levels, Lee created a seminar series and workshop in alternative energy that has been integrated into many key outreach and diversity support functions at MSU. To date, more than 1,500 K-12 students in Michigan have participated in the workshop with much enthusiasm and positive feedback. For his exceptional commitment to teaching both on and off campus, Lee was awarded the Withrow Teaching Excellence award by the College of Engineering and the prestigious Ralph R. Teetor Educational Award from the Society of Automotive Engineers International.

Lee participates in numerous high profile research projects, including two $2.5 million dollar projects from the U.S. Department of Energy for the formulation of next-generation biofuels and the development of a novel energy conversion system.

**Initiative Boosts Advanced Battery Industry**

U.S. Senator Debbie Stabenow recently unveiled a major new initiative that she authored to expand Michigan’s advanced battery industry and create new clean energy jobs. Stabenow unveiled her new legislation, the Battery Innovation Act, during a press conference at the MSU Energy & Automotive Research Laboratories, part of the Department of Mechanical Engineering. Stabenow’s Battery Innovation Act is the first comprehensive plan offering Michigan companies the support they need to expand advanced battery production and job growth and ensure that America wins the race in the development of new advanced energy technologies.

“When we make things here in Michigan, we create jobs here in Michigan,” says Stabenow. “That is exactly what is happening with the emerging advanced battery industry, beginning with the critical research and development being done right here at MSU to support companies across our state. This new innovation initiative will create the conditions to ensure our high-tech companies can continue to expand and Michigan can lead the world in advanced battery production and job creation for years to come.”

Satish Udpa, dean of MSU’s College of Engineering, says that advanced energy storage technology is one of the top priorities at MSU. “The work being carried out by our researchers holds great potential for furthering clean energy initiatives throughout the state and across the nation,” says Udpa.

ME professor Harold Schock believes that hybrid vehicles represent a great opportunity for saving energy, reducing dependence on foreign oil, and providing jobs for highly skilled students. “The development of new battery technologies for advanced hybrid powertrains is essential for both civilian and military applications,” he says. “We are grateful that Senator Stabenow supports the innovations that will enable the next generation of transportation systems to be designed and manufactured here in Michigan.”

**Distinguished Faculty Award**

Professor John D. Foss has been selected to receive the 2011 Fluids Engineering Award from the American Society of Mechanical Engineers (ASME). This award is bestowed for outstanding contributions, over a period of years, to the engineering profession and especially to the field of fluids engineering through research, practice, and/or teaching.

Foss was selected for this award “for the sustained advancement of flow measurement/diagnostic methods and fluid mechanics-based inventions and applications in the automotive and aerospace fields, underpinned by fundamental research in shear flows. This is one of the most prestigious awards conferred by ASME. Foss joins the ranks of a small group of exceptional individuals recognized by ASME for outstanding contributions in fluid mechanics.”

The formal presentation of the award took place in July at the 2011 ASME-JSME-KSME Joint Fluids Engineering Conference in Hamamatsu, Japan.

**Professor Harold J. Schock** was recognized with a Distinguished Faculty Award at the 2011 Awards Convocation held in February. Schock, who is the director of the Energy & Automotive Research Laboratories, is responsible for establishing MSU as one of the premier universities for automotive research. He has led various teams in groundbreaking research on turbine, diesel, and rotary engines. His expertise centers on improving engine efficiency using advanced design, the utilization of biofuel, and the conversion of waste heat to electricity.

Schock’s successful efforts to attract substantial funding for automotive research recently culminated in the establishment of the Energy & Automotive Research Laboratories at MSU: a $10 million automotive research center. He has also evaluated more than 100 research proposals for NASA, the U.S. Department of Energy, and the U.S. Army, and his professional status has been recognized by his election to fellow of the Society of Automotive Engineers.
Students @ ME

President’s Award

Brian Rockwell, who maintained a perfect 4.0 GPA while double majoring in mechanical engineering and economics, was named Academic All-Big Ten in men’s swimming and diving. He also received a President’s Award from MSU’s Student-Athlete Support Services (SASS), the most prestigious award given by SASS to a male and a female graduating senior with the highest cumulative grade point average and who has exhausted their eligibility in the 2010-11 school year.

Rockwell was presented with the President’s Award during the 14th annual Academic Gala on April 11, an event that honors Spartan athletic teams and the student-athletes for their tremendous success in the classroom during the 2010-11 academic year. Student-athletes with at least a sophomore academic standing and a 3.0 or better cumulative GPA were honored, as well as a number of individual award winners who excelled not only in the classroom, but in other endeavors as well. In all, 267 student-athletes were honored, up from 240 a year ago.

At the Gala, Rockwell also received a Scholar-Athlete Award for men’s swimming and diving; this award is presented to the individual from each team who has reached at least junior academic status, has received a minimum of one varsity letter, and while meeting these requirements, maintains the highest cumulative grade point average on their team.

A top student-athlete, Rockwell has embraced every aspect of his college experience while executing his path of success. He is a two-time Academic All-Big Ten selection and Honors College member. In addition to his excellence in the classroom, Rockwell has demonstrated leadership in the community as the president of Pi Tau Sigma (a mechanical engineering honor society) and as a member of Tau Beta Pi (an engineering honor society founded in 1885).

During the summer, Rockwell, of Houston, Texas, interned at Chrysler in the powertrain division. In the fall he will begin working on his master’s degree in mechanical engineering at Stanford University. He is the son of Jim and Kathy Rockwell.

Rockwell’s advice to incoming students: “Do everything you can to take advantage of the incredible opportunities that MSU and the College of Engineering have to offer.”

Outstanding Graduate Students

Kazuko Fuchi was named the 2011 Outstanding Mechanical Engineering PhD student. At left, Kazuko Fuchi receives the award from her adviser ME professor Alejandro Diaz (center) and associate dean Manoochehr Koochesfahani.

Feng Wei (left) above, was named the 2011 Outstanding Engineering Mechanics PhD student. His adviser is professor Roger Haut (right).

2011 Fitch Beach Award

PhD student Shahrokh Zeinalidavarani received honorable mention in the 2011 Fitch Beach Award competition. He received a BS degree in mechanical engineering from Isfahan University of Technology and a master’s degree in biomechanics from Sharif University of Technology, both in his native Iran.

The focus of his research is primarily with vascular biomechanics with an emphasis on the estimation of material and geometric parameters of the arterial wall, as well as the extension of computational models of vascular growth and remodeling to patient-specific models of abdominal aortic aneurysm. This research provides a computational tool that may help predict the rupture potential of the aneurysms and facilitate treatments. His adviser is assistant professor Seungik Baek.

Zeinalidavarani hopes to earn his PhD by December 2011 and then would like to pursue his research interests in the field of biomechanics as a post-doctoral fellow.

NSF Fellowship

Stephen Hammack, a PhD student in the Energy & Automotive Research Laboratories, has been awarded a prestigious National Science Foundation (NSF) Graduate Research Fellowship.

Hammack is recognized for his research in laser and optical diagnostics of advanced plasma enhanced combustion systems, which he carried out in collaboration with the Air Force Research Laboratory at Wright Patterson Air Force Base. The NSF Graduate Research Fellowship will provide funding for Hammack’s PhD studies for the next three years.

Hammack is studying energetically enhanced flames using laser diagnostics. “To put it simply, a flame is enhanced using electromagnetic energy like a microwave magnetron, not much different than the one in your kitchen,” says Hammack. “There are numerous benefits to applying microwave energy to an oxidation reaction, but my research was initially funded by the AFOSR (Air Force Office of Scientific Research) in the interest of examining how a microwave plasma (ionized gas created from very strong and focused microwaves) could aid in igniting and maintaining combustion in hypersonic flows for next generation aircraft, including scramjets.” Laser diagnostics are used to evaluate the enhancements in the plasma assisted flame in a non intrusive manner, allowing Hammack to make many measurements without disturbing the reaction.

In his NSF application, he explained how he will use his research experience to examine plasma assisted combustion as an option for hydrogen generation. “This includes a novel approach...”
and efficient method of spatially coupling the plasma and flame together, first used in studies performed by my group and me." In practice, microwave plasma can be used to reform less valuable or "dirty" organic fuels into hydrogen, becoming a cornerstone in a new energy infrastructure.

Originally from Chicago, Hammack lived in Howell, Mich., until attending MSU. He is now married to Micquella and has two sons—Carter, 1, and Tavin, 4. The family lives in the Lansing area.

**Distinguished Service Awards**

ME juniors J.T. Whitman and Russell Tindall received Distinguished Service Awards for notable service to the College of Engineering, Michigan State University, and the community during an awards banquet in February hosted by the Society of Women Engineers.

Whitman, who was nominated by Drew Kim, assistant to the dean for recruitment, scholarships, and K-12 outreach, chose to major in mechanical engineering because he enjoys "taking things apart and learning how they work." Math and science were always his favorite subjects. "So mechanical engineering seemed like a good fit for me, and I definitely feel like I made the right choice," says Whitman.

He is involved with the K-12 Outreach Program with the College of Engineering and works with K-12 students in various different engineering programs. He also does undergraduate research, is involved with MSU VEX Robotics, and is a member of Tau Beta Pi. In his free time he plays intramural sports.

Originally from DeWitt, Mich., he is the son of Mike and Mary Jo Whitman. He is still deciding what to do after graduation, but is leaning toward graduate school.

Whitman’s advice for younger students is to get involved in as many activities on campus as possible. “There are so many great opportunities available at MSU, and it would be a waste not to get involved. While academics are important, college is more about the experiences you gain.”

Russell Tindall, who was nominated by academic specialist Timothy Hinds, had a summer internship at General Motors in their Pre-Production Operations (PPO) at the Tech Center in Warren, Mich. Being a mechanical engineer is rooted in his early childhood. "When I was very young, my dad read to me from my favorite book, The Way Things Work, by David Macaulay. This book fascinated me as I visualized the mechanics of how things worked. I began to wonder how other devices worked beyond those in the book. As a toddler, my curiosity led to exploration and the near-destruction of several small kitchen appliances," says Tindall.

In an effort to encourage his curiosity of mechanical things—and to discourage him from taking apart home appliances—Tindal’s dad, Bob, would search out used engines on anything from weed whackers to lawn mowers. "I took the engines apart until I was able to open the crank case and see inside. Turning the engine over by hand enabled me to see all of the moving parts and I really grasped an understanding of the mechanical process. I was fascinated by the engines then and have since taken a number of engines apart, fixed or redesigned them, and put them back together. I am currently driving one of my handiworks."

Originally from Romeo, Mich., he is the son of Bob and Elia Tindall. He has worked for ME technician Roy Bailiff in the engineering machine shop and has assisted other engineering students with their design projects.

**Outstanding Diversity Programs Awards**

Jarreau Jackson, an ME senior, received an Outstanding Diversity Programs Award at an awards banquet in February. The award was sponsored by Perrigo Company. The Outstanding Diversity Programs Awards are presented to students who are active in Diversity Programs Office activities and student groups. Students must apply for the awards and award winners are chosen by committee for the quality of their overall application and dedication to the organization in which they are involved.

**High-Achieving Student Recognition**

Congratulations to 18 high-achieving students from the ME department. Students with the highest grade point average in each engineering department and program were recognized for their academic efforts at an awards banquet hosted by the MSU Society of Women Engineers in February. The ME students are Thamer Alshuabibi, Mairin Chesney, Caitlyn Cubba, Peter Dolce, Steven Gerdeman, Jared Grubka, Robert Jakubowski, John Jess, Marcus Johnston, Kyle Justus, Craig Miller, Shenli Pei, Brooke Peruski, Brian Rockwell, Alexander Tollis, Jason Wagnitz, Nicholas Wilson, and Matthew Witmer.

**Consumers Energy Diversity Scholarships**

Last winter, Consumers Energy presented two students from the ME department—along with 12 other engineering students—with scholarships through the college’s Diversity Programs Office. The scholarships are given to help increase the number of students who will potentially become part of the energy workforce. The ME students are Rebecca Hannon and Mariah Krebs, both juniors.

**Solar Car**

For the first time in its history, an MSU team successfully designed, built, and raced a solar car. Five members of the solar car team competed in May in the 2011 Formula Sun Grand Prix (FSGP) held at the Indianapolis Motor Speedway. Their car, named Brasidius II, completed 207 laps over two days, totaling 186.3 miles. The MSU team tied for 7th place with Western Michigan University, out of ten teams.

ME students Josh Dewalt and Kyle Urban are the chief mechanical engineers for the team; Manila Ounsombath is the team’s business manager. Associate professor Norbert Müller is the adviser for the solar car team.

The American Solar Challenge is a competition to design, build, and race solar-powered cars in a cross-country event. The Formula Sun Grand Prix is a track style event that provides teams the opportunity to test and compete off the open road.

University of Michigan (yellow car) and MSU compete in the 2011 Formula Sun Grand Prix.

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DEGREE

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**Solar Car Team Makes History**

See story page 7.

**ME Alum Encourages Students to Maintain Personal Collections**

William G. Carlson (BS ’47) presented the Department of Mechanical Engineering with a collection of books that he used in his studies at Michigan State University in the College of Engineering during the 1940s. Along with the books were historical memorabilia including letters from then-President Hannah and then-College of Engineering Dean H.B. Dirks. The importance of maintaining personal collections and using them throughout one’s life was stressed with this donation. It is hoped that students seeing the Carlson display will gain a historical perspective along with their studies. ☒