MESSAGE FROM DONALD FISHER

It is hard to believe that the summer is over. I hope you were able to find time for family and friends and all that summer has to offer. The accomplishments of our students, alumni, staff and faculty continue to be extraordinary. We are just putting the finishing touches on the Innovation Shop, a space that provides students with the very latest in machine shop tools, comfortable areas to work collaboratively on their dream designs, and the facilities that they need to work on the ever popular Supermileage Vehicle. We have added two new research faculty to our ranks, Beka Kosanovic and Matthew Romoser, and look forward to the arrival of a new Assistant Professor, Stephen Nonnenmann, this fall. Our student numbers are now the highest they have ever been, over 700 undergraduates alone. Businesses are snapping up our seniors. And our alumni remain generous to a fault. Welcome to the fall semester one and all!

SUPERMILEAGE TEAM GETS A COOL 1010 MPG

In June, the streamlined, three-wheel car built by the UMass Amherst Supermileage Vehicle (SMV) Team, rolled smoothly through the Society of Automotive Engineers (SAE) Supermileage® competition in Marshall, Michigan, while getting a tightfisted 1010 mpg and running mainly on true grit, improvisation, and elbow grease. The Zoom Mass team finished in fourth place out of 28 crack collegiate teams.

PERRELL RECEIVES DISTINGUISHED ACHIEVEMENT AWARD AT COMMENCEMENT

Alumnus Charles F. Perrell, investor and principal in Perrell Ventures, received a Distinguished Achievement Award, recognizing high accomplishment in a given field or profession and notable contributions to society, when 5,500 graduating seniors gathered at McGuirk Alumni Stadium on May 10 for UMass Undergraduate Commencement. Now retired, Perrell has been a prominent engineer, businessman, venture capitalist, philanthropist, and recipient of the University of Massachusetts Amherst Distinguished Alumni Award. After stepping down as a fulltime technology executive, Perrell remains energetically active as an angel investor and vineyard operator.
**MIE Students Show Off Fascinating Inventions**

On May 1, 15 student teams of seniors from the MIE department demonstrated the prototypes of their useful, inventive, and brilliant designs for all to see. Some of the projects included a wind turbine blade composed of environmentally friendly composite fibers; an assembly line station for a new mechanical power-transmission product; and a collapsible, multi-purpose tower for U.S. Army basecamps. The Army tower won first prize in the competition. The winning team of Joseph Boisvert, Michael Covino, Christopher Dinan, Brandon Hicks, and Kyle Pereira conceived, designed, and built the scale model of a mobile tower for the U.S. Army Soldier Research Development & Engineering Center in Natick, Massachusetts. The task of the students was to conceive a portable tower that can be quickly assembled or broken down by four soldiers, is lightweight, can be stored in a small pack, is at least 20-feet tall when assembled, can support a 30-pound load at the top, and can withstand steady winds of 50 mph and gusts of 65 mph. Many of the projects were sponsored by businesses throughout New England, including Hyperion Systems, Mercury Systems, ERS, Prima Electro, Kollmorgen Electro-Optical, Altra Electric Clutch Brake Group, Sola Block, Savage Arms, New England Wire, and the Black Island Wind Turbine Company.

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**Company of Alum Takes Winner of Winners Competition**

The New England Clean Energy Council Institute (NECEC Institute) has announced that Black Island Wind Turbines of Springfield, a startup company founded by MIE alumnus Patrick Quinlan ’82, has been awarded $50,000 as part of the institute’s Cleantech Innovations New England Winner of Winners competition. The award is meant to help clean-technology startups move closer to commercialization. Black Island is one of Quinlan’s two recently established companies that have been doing very well in business plan and accelerator competitions. Both of Quinlan’s startups are spinoffs of Celadon Innovation, founded by Quinlan to provide consulting services and renewable energy technology development.

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**Grosse Named Fellow of American Society of Mechanical Engineers**

Ian Grosse, the director of the Intelligent Modeling, Analysis, and Design Laboratory, has been named a Fellow of the American Society of Mechanical Engineers (ASME). According to ASME, “The Fellows Grade is the highest elected grade of membership within ASME, the attainment of which recognizes exceptional engineering achievements and contributions to the engineering profession.”

As Grosse has said, “For over 25 years I have been engaged in research in the area of finite element analysis and engineering design.” He added that “Much of my research has focused on improving the ability of engineers to effectively use finite element analysis as a design tool, and more recently using it to help understand the evolution of biological systems from a mechanical perspective.”

Finite element analysis is a computer-based analysis technique widely used by engineers to predict how engineered products perform.
ELITE Program Trains MIE Students for Elite Leadership Positions

Last year the MIE department added a powerful new leadership component to its curriculum, the Engineering Leadership, Innovation, Teaching, and Entrepreneurship Program. Call it ELITE for short! The ELITE Program equips some of the department’s most promising students with the leadership, entrepreneurial, and communications skills to expand the pool of engineers who become CEOs, founding officers, supervisors, directors, managers, and teachers. “We look at the ELITE Program as the first step along swelling the pipeline of leaders,” says MIE Department Head Don Fisher, who started the program at the beginning of 2012 with the help of some very generous donors, led by alumnus Bob Hagerty.

First Lloyd Fellowship Awarded to Rachel Koh

Rachel Koh, who completed her B.S. degree in Mechanical Engineering at the University of Vermont, is the first recipient of the Kenneth A. Lloyd Fellowship, awarded to this highly-qualified incoming doctoral student in the MIE department. Mr. Lloyd graduated from the MIE department in 1973 and is currently the vice president and general manager of Electro Switch Corporation in Weymouth, Massachusetts.

IGERT Program Catches the Wind of Change

The UMass IGERT Offshore Wind Energy Program, started with a $3.2-million grant from the NSF in August of 2011 to Professor Erin Baker in MIE, is now spinning at full speed as it generates an interdisciplinary graduate program in offshore wind energy engineering, environmental science, and policy. The goal of the program is to create a community of researchers who understand the technological challenges, environmental implications, and socioeconomic and regulatory hurdles of offshore wind farms. The program will eventually train 24 doctoral students over the course of five years. One of the program’s doctoral students, Wystan Carswell, was in Norway this year for five months serving on a research post at the Norwegian Geotechnical Institute in Oslo.

Balasubramanian’s CAREER Award Aims to Streamline Primary Care Delivery

Hari Balasubramanian has been issued a $400,000 grant from the prestigious National Science Foundation (NSF) Faculty Early Career Development (CAREER) Program. The award represents the 34th NSF CAREER grant issued to faculty members from the UMass College of Engineering, and the fourth during the 2012-2013 academic year. The title of Balasubramanian’s industrial engineering NSF project is “Stochastic Models for Designing the Patient Centered Medical Home in Primary Care.” In essence, the project will streamline the delivery of primary care to patients.

As MIE Department Head Don Fisher said, “Hari’s research is taking us to a new level in the development and application of Industrial Engineering and Operations Research methodologies to the solution of a critical national problem, in this case healthcare costs.”

“My long-term research goal,” Balasubramanian said, “is to establish the quantitative and optimization frameworks that underpin the operational aspects of healthcare delivery.”
MIE Covered Twice in One Month by Scientific American

Sandy (Alexander) Pollatsek, co-director of the MIE’s Arbella Insurance Human Performance Lab, was one of two researchers in the MIE department covered within a month by the prestigious and venerable Scientific American. As the article notes, “Pollatsek has been working with colleagues in the university’s engineering school to systematically analyze the behavior of older drivers—including their visual scanning of the roads—and his evidence challenges the presumed connection between crashes and these well-known deficits.” The Pollatsek article, posted on June 25, 2012, picked up on research reported online in the journal Current Directions in Psychological Science.

Meanwhile, the July 23, 2012 issue of Scientific American featured the work of Anthony McCaffrey, a postdoctoral research fellow at the Center for e-Design. The Scientific American article continued the international coverage for the method developed by McCaffrey to enhance anyone’s problem-solving skills, especially engineers, inventors, and other innovators. Additional media coverage includes articles in The Guardian of London, The Atlantic, Psych Central, Red Orbit, Science Daily, Science Codex, and the San Francisco Chronicle.

Center for e-Design Gets NSF Grant to Support Innovation Accelerator

McCaffrey was also the mastermind behind Innovation Accelerator, a toolkit of techniques for helping engineers and many other creative people overcome the barriers to innovation. Innovation Accelerator received an NSF Innovation Corps, or I-Corps, award, the first such grant ever awarded at UMass Amherst. Sundar Krishnamurty, the director of the Center for e-Design, led the multidisciplinary team of researchers developing Innovation Accelerator.

Research Team Attempts to Synthesize Industrial Supermagnets

Professor Joseph Goldstein of the MIE department is part of a research team on a fast-track Department of Energy (DOE) program to develop bulk quantities of commercially viable, environmentally sound supermagnets, which can be used in electric vehicles, wind-turbine generators, and many other machines. The researchers are attempting to synthesize and produce the kind of magnetic, iron-nickel, crystal structure that until now has been found only in meteorites, taking billions of years to develop in space.

More Than 3,600 New Drivers Have Used Distractology 101

Distractology 101, an interactive driving simulator program developed by the Arbella Insurance Human Performance Laboratory in the MIE department, has now trained at least 3,621 new drivers about the dangers of distracted driving since it began touring the Northeast in 2010 (http://www.distractu.com/Tour.aspx). The technology for Distractology 101 was developed under the leadership of Donald Fisher, head of the MIE department and director of the Arbella Insurance Human Performance Laboratory, for the Arbella Insurance Group.