

AME Highlights

Department of Aerospace and Mechanical Engineering
Alumni Newsletter



Academic Year 06-07

Letter From The Chairman

Dear AME Alum,

Welcome to the 5th edition of **AME Highlights** - I guess it should be able to attend its first "reunion" this year. Each year **AME Highlights** provides a snap-shot of some of the activities and accomplishments in the Aerospace and Mechanical Engineering Department and shares with you some of the information we have received from our AME alums. We appreciate your comments and observations and encourage you to share your accomplishments with us. There are many exciting and interesting activities in AME and via **AME Highlights** we try to update you on developments in the Department as well as notable accomplishments of alums, students and faculty. We hope you enjoy this year's edition

I haven't used this letter to share personal experiences but thought this one might be appropriate. Some of you may have noticed that my name appeared in the "Deaths" section of last winter's issue of the Alumni Magazine. Fortunately the notice was in error - a somewhat longer and not too interesting story - but it did bring about a number of interesting emails and phone calls to the Department office and gave me the chance to catch up with a few people with whom I had not interacted in years. I might suggest that if there is a classmate who you haven't contacted for a while, go ahead and call or write them before you see their name in a similar notice and it is true!

As I've noted in prior newsletters, one of the important parts of our student's undergraduate experience is an industrial internship during the summer so if your organization provides intern opportunities and you would like to assist a current AME student in securing an internship, please let us know and we will share that information with our students.

Thank you for your ongoing interest in and support of the AME Department and the University. May Our Lady, patroness of Notre Dame, watch over you.

Sincerely, **Stephen Batill, Professor and Chair**

New Bioengineering Ph.D. Program and Major Research Project in Orthopaedic Implant Design and Manufacturing for Traumatic Injuries

The Academic Council approved a new Ph.D. program in Bioengineering in late 2006. This represents a key step in the continued development of the AME programs in bioengineering. With this new degree program, the continued development of the facilities in the new Multidisciplinary Research Building and the development of strong collaborations with colleagues across the University, the AME Department is poised to make key contributions to the University's educational and research programs in this critical area. To illustrate the program's growth a team of AME faculty was recently awarded a 3-year, \$1.6M grant by the U.S. Army's Telemedicine and Advanced Technology Research Center. This project involves the design and manufacture of a woven composite material for use as a replacement for cartilage defects. Successful completion of the research will lead to advances in the manufacture of woven composites, an improved understanding of fundamental factors that lead to cartilage wear and degradation, and a new framework for innovative orthopaedic implant design. The research project builds on Department strengths in implant manufacturing, tribology, biomaterials, and tissue mechanics, and is an important extension of established programs in orthopaedic biomechanics. Participating faculty members are **Professors Glen Niebur, Tim Ovaert, Ryan Roeder, Steve Schmid, and Diane Wagner.**



AME Statistics for the 2006-07 Academic Year

- 101 B.S. Degrees were awarded in May 2007 - 32 AE and 69 ME
- Sophomore through Senior enrollment - 291 representing 37% of the College of Engineering in 2006-07
- On graduation day, 92% of the 2007 B.S. graduates had definite career plans in either industry, post-graduate education or military service
- 26% of the 2007 B.S. graduates were pursuing post-graduate educational opportunities
- 32 full-time, regular faculty with 10 Fellows in AIAA, ASME or AAAS, and one member of the NAE
- 104 graduate students with 26 M.S. and Ph.D. degrees granted in 2006-07
- Faculty and students located in 3 buildings: Fitzpatrick/Cushing Hall, Hessert Laboratory for Aerospace Research and the Multidisciplinary Research Building
- \$43.2M in research proposals submitted and \$5.28M in research awards

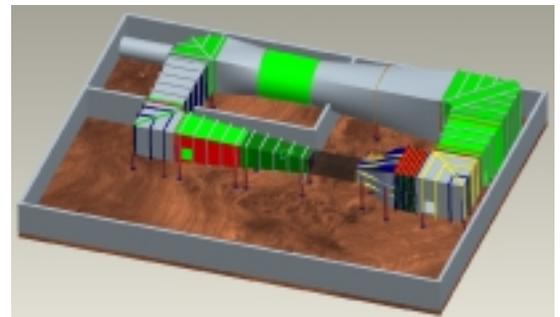
White Field Experimental Facility

This spring construction began on yet another AME facility. Located in White Field - the primary football parking area - this new building will house three new experimental test facilities. Upon completion of the building in early October, the Transonic Compressor Facility will be relocated from the Hessert Laboratory and the process of installation of two new facilities will begin. A Transonic Turbine facility and a new Mach 0.6 closed circuit wind tunnel will add to the already unique experimental capabilities in the AME Department. The tunnel will have a specially designed 9 square foot test section with large optical viewing areas to allow non-obtrusive aero-optic measurements. The turbine, compressor and new tunnel facilities represent a \$5.0M investment in new research capabilities. The AME faculty who will use this facility are part of the Center for Flow Physics and Control. FlowPAC is a University Research Center engaging faculty from various academic departments but it is most closely aligned with AME and it has been built upon the Department's long-standing tradition of research in fluid-thermal science. FlowPAC has experienced significant growth since its formation in 2002 and this new facility will add to its ever-expanding capabilities.

For those alums who recall when the Aero "Shack" (1947-1991) represented the aeronautics research capabilities in the (then AE and now) AME Department they may remember that it was located adjacent to the football parking lots and thus this new facility is a step "back to the future" for AME. It will help establish Notre Dame as a national resource in compressible flow aerodynamics, aero-optics and gas turbine engine research and allow us the opportunity to provide world-class research facilities for our students and faculty.



White Field Building



Mach 0.6 Closed Circuit Wind Tunnel



Bryan Marek, ME '08 programs an interactive xylophonic keyboard at the display of the Fall 2006 ME Capstone design projects

Faculty

Professor Robert Nelson received the AME Faculty Teaching Award for the 2006-07 academic year and **Professor Michael Stanisic** won a 2007 Reverend Edmund P. Joyce, C.S.C. Award for Excellence in Undergraduate Teaching.

Professor Thomas Corke was elected to the grade of Fellow in the American Physical Society (APS) and **Professor Timothy Ovaert** was elected to the grade of Fellow in the American Society of Mechanical Engineers (ASME). **Dr. Corke** also was awarded the University's 2007 Research Achievement Award.

Professor Meng Wang received the ASME Lewis F. Moody Award presented by the Fluids Engineering Division of the ASME for his outstanding original paper dealing with the practice of fluids engineering.

Dr. William K. Blake, BSCHEG '64 and D.E. honoris causa '96 joined the faculty this fall as the Visiting Melchor Chair Professor. Dr. Blake recently retired as a Navy laboratory directorate Chief Scientist and has been an active supporter of many AME research programs. During this year he will participate in a number of research programs in acoustics and fluid mechanics.

In August, **Professor Robert Bernhard** joined the AME Department and was elected by the University Board of Trustees as the Vice President for Research. Bob arrived from Purdue where he was a Professor in Mechanical Engineering and Associate Vice President for research. He is an active researcher in the areas of active noise and vibration control and we look forward to his many contributions to our programs and the University.

Hessert Laboratory 15th Anniversary Celebration

November 2006 marked the 15th anniversary of the dedication of the Hessert Laboratory for Aerospace Research. To mark the event the Hessert Laboratory in conjunction with the Center for Flow Physics and Control hosted an anniversary luncheon with approximately 100 people attending, including **Tom and Marilyn Hessert** and many of their family members. A highlight of the event was the attendance and comments by **Rev. Theodore Hesburgh, C.S.C.** President Emeritus and longtime friend of the Hessert family. The Laboratory, a gift of the Hessert family, has added considerable capabilities to the research and academic programs in the Department and will do so for many years to come.



Dr. Thomas Corke presents 15th anniversary plaque to **Tom and Marilyn Hessert**



Tom and Marilyn Hessert with **Rev. Theodore Hesburgh**

Emeritus Faculty

Professor Emeritus **K.T. Yang** received the Max Jakob Memorial Award which is given jointly by the American Society of Mechanical Engineers (ASME) and the American Institute Chemical Engineers (AIChE). The award is made in recognition of eminent achievement or distinguished service in the area of Heat Transfer. It represents the highest honor in the area of heat transfer that the participating societies can bestow.

In April 2007 it was announced that Professor Emeritus **Thomas Mueller** was awarded the JOV Award for his career-long contributions to the Journal of Visualization.

If you've ever considered what other activities professors pursue in retirement, Professor Emeritus **Edward Jerger**, who is currently living - to quote Ed "in paradise" - in Hilton Head, recently broke state swimming records in the 80-84 age division at the South Carolina Short Course Championship Meet.

On a much sadder note, Professor Emeritus **Lawrence H.N. Lee** passed away in March. Dr. Lee joined the Notre Dame faculty in 1950 and his academic career spanned 43 years. He was the consummate gentleman and scholar and great Notre Dame fan. He established a very high standard for scholarship and teaching and influenced many during his long and successful career.

Airborne Aero-optics Laboratory

A milestone research accomplishment this year was the submission and awarding of a 5-year, \$6M grant for a project entitled "Airborne Aero-Optic Laboratory" under the direction of **Dr. Eric Jumper**. This project is funded by the Joint Technology Office and jointly managed by the Air Force Office of Scientific Research and the Office of Naval Research. Central to the research project is the development of a flight-test "laboratory" consisting of two aircraft that will conduct experiments involving the propagation of lasers from one aircraft to the other. The flight tests will be coordinated with wind tunnel tests in the new Mach 0.6 wind tunnel. The research will also include computational simulations of these complex flow fields and this project represents a unique combination of numerical, ground-based and flight test activities and helps establish Notre Dame as a national center for Aero-Optics research. This research program also represents an important university-government-industry collaboration that hopefully will set a precedent for future research.

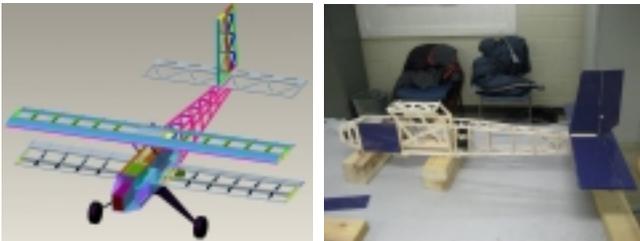


Mike Giordano, BSME '07, demonstrates a human powered water distillation system during the display of the Fall 2006 ME capstone design projects

Graduate Students

Dr. Joshua Cameron, a 2007 Ph.D. graduate and a Visiting Assistant Professor in AME, won the 2007 Eli J. and Helen Shaheen Award which recognizes the top graduating doctoral degree recipients in the humanities, social sciences, science and engineering. **Dr. Scott Morris** was Joshua's research advisor.

Justin Deuerling, AME Ph.D. Candidate, received the 2nd place award for his oral presentation in the Ph.D. student paper competition at the 2007 Summer Bioengineering Conference sponsored by the ASME. Justin's research advisor is **Professor Ryan Roeder**.



Spring 2007 AE Capstone Design Airplane
Purple Rain

College Honor Award

The 2007 College of Engineering Honor Award was presented to **Mr. Robert J. May, Jr., BSAE '68**. Bob also holds two M.S. degrees (Purdue and Stanford) and an M.A. degree. He began his career as a research engineer in the Turbine Engine Division at Wright-Patterson Air Force Base and progressed to become the Executive Director of the Aeronautical Systems Center. During his career he held positions of ever-increasing responsibility and authority. In August he retired from the Air Force where he held the highest-level civilian position in the Aeronautical Systems Command and was responsible for the acquisition and management of all Air Force aircraft systems, a \$27B/year operation. Bob's retirement was short-lived as he joined the Battelle Institute as their Air Force Sector Vice President in Dayton, Ohio in September and thus is continuing to make contributions to the profession. Bob received a number of important national awards and he has been an active contributor to numerous local and national organizations. His career has been distinguished by both his individual contributions and the role he has played in fostering the success of a wide variety of organizations of which he has been a part. He is an outstanding role model for our students and it was the Department's privilege to host his visit to campus.

Student Activities

Elizabeth Rollins, BSAE '07, received the Sigma Gamma Tau Regional Honor Award that recognizes the recipient as one of the top eight outstanding Aerospace Engineering seniors in the United States. Elizabeth also received a National Science Foundation Graduate Research Fellowship, a prestigious multi-year fellowship that is currently supporting her doctoral studies at MIT.

David Rowinski, BSME '07, received a National Defense Science and Engineering Graduate (NDSEG) Fellowship and is pursuing his Ph.D. at Cornell.

The AIAA Region III Student paper conference was held at Notre Dame this past spring. Undergraduate and graduate students from seven mid-west universities came to campus to present research papers. **Thomas Economon AE '08** (1st place), **Holly Weiss BSAE '07** (2nd place) and **Donald Tillotson BSAE '07** (3rd place) "swept" the awards for their papers and presentations. Note: it wasn't a "Notre Dame" judging panel, just excellent work on the part of these individuals.

Gordon Farmer, BSME '07, placed 3rd in the 2007 ASME Student Mechanism Design Competition and presented his design at the IDETC meeting in Las Vegas. Gordon worked with **Professor Michael Stanisic** on his project.

Todd Ptacek, BSME '07, became the 11th Irish men's track/cross country athlete to earn All American and Academic All-American honors in the same year.



Dr. Eric Jumper, Mr. Robert May, Jr. and Dean Jim Merz

Alumni Notes

This year we'll try to provide some alumni Highlights and quick recognition from many - but unfortunately not all - who contact us each year.

Carolina Elmufdi, BSME'00, won the Rohm and Haas NOVA Innovation Award for her "significant achievements in defining and executing creative approaches to problem solving" for the company and as part of the award Carolina designated the AME Department to receive a gift from Rohm and Haas to support our design programs. Congratulations and thank you!

The Notre Dame Alumni Association presented **Francis X. Bradley, BSAE '39, MS Math'49 and JD '49** with the Rev. John Cardinal O'Hara Award during the 2007 Reunion. Besides serving as a judge for 22 years - Francis was asked by Fr. Hesburgh in 1957 to establish the University's Office of Research and Sponsored Programs. Francis also responded to the question/photo in last year's Highlights as to "Does Anyone Recognize these Engineers" - Francis was the "fellow in the middle."

Late last fall, NASA announced that **Col. Michael T. Good, BSAE '84, MSAE '86** has been assigned as a Mission Specialist to an upcoming Space Shuttle mission to repair the Hubble Space Telescope.



Spring 2007 Aerospace Capstone Design
Team **Golden Dragon**
Nick Steinmetz, Lydia Szeligowski, Stephen Hutchings, John Kozy and Keita Miyamura,
all BSAE '07

A Wall Street Journal article related to the employee benefit plan developed by **Celeste Volz Ford, BSME '78**, President and CEO of Stellar Solutions appeared earlier this year. Celeste has received numerous recognitions for her creativity as an engineer and manager.

The Mexican Academy of Sciences conferred the 2006 National Research Award in the area of Engineering and Technology on **Dr. Carlos Rubio, Ph.D. '00**.

The National Security Education Program announced that 1st **Lt. Andrew N. DeBerry, BSAE '04**, was selected as the first recipient of the NSEP Howard Baker, Jr. Award. As an undergraduate student Andrew spent time in England, Egypt and Uganda and he is currently serving the country in an over-seas assignment - Andrew definitely took advantage of his "Notre Dame" opportunity.

And finally thank you for the notes and cards from: **Arnold Anderjaska, BSAE '51; 2nd Lt. Mollie Drumm; BSAE '06; Brian Flaherty BSAE '97; Dave Lynch, BSME '68; Leon Blank, BSME '54; Dr. Eric Silk, BSME, '93; Michael Gianelli, Eric Jerome and Terry Trent all BSAE '69.**



Daniel VanNess, Ph.D. candidate with the 2007
AME Graduate Symposium guest speaker
Mr. Dan Jensen, MSAE '90

If your interest in the space shuttle is more "fictional" you may want to track down the book [Damned to Heaven](#) (F&F Publishing) by **Robert J. Mahoney, BSAE '85**, who after spending the early part of his career at NASA, is now combining his writing and space interests. **AME Highlights** doesn't provide commercial endorsements but you can find the book on Amazon!

The San Jose Business Journal selected the Adventa System Micro-Infusion Catheter System as one of the "top three emerging medical technologies for 2006." **Thomas M. Loarie, BSME '68** is the Chairman and CEO of Mercator MedSystems, Inc. the developer of the Adventa System.

John Rogers, BSME '99, who is currently the Semiconductor Program Manager for Yaskawa Electric America was awarded a patent for a system of path planning for robotic manipulators.

Eric Baumgartner, MSAE '88 and Ph.D. '93, currently the Dean of the College of Engineering at Ohio Northern University, was announced as a co-recipient of the 2008 IEEE Technical Field Award in Robotics and Automation.

And to illustrate the wide range of accomplishment for AME grads, **Rev. James T. Gallagher, C.S.C., BSAE '98**, was ordained at the Basilica of the Sacred Heart in April.



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Industry Supporters

Each year AME receives financial support from both individual and corporate donors. These funds are used to assist in the mission of the Department in many important ways. The University is well-known for the generous support of its alumni, but it is particularly helpful when organizations, with the encouragement of our alums, contribute either by participation in events such as Industry Day, by supporting intern programs or through grants or gifts. This year we wish to recognize those organizations that have provided direct support to AME; they include: Procter and Gamble, Rockwell Automation, Bell Helicopter, Orbital Research, Innovative Scientific Solutions, Phillip Morris, AgilOptics, Daimler-Chrysler, Honeywell, Zimmer, Honda Corporation, Smurfit-Stone, Boeing, MZA Associates, General Electric, Eli Lilly Company, Sites, Inc. and General Motors.

Do You Recognize These Engineers?

