



MEN NEWS

University of Idaho
College of Engineering

Mechanical Engineering Spring 2007

100 YEARS OF MECHANICAL ENGINEERING AT THE U OF I

The 1889 act of the Idaho Territorial Legislature which created the University of Idaho provided for "compulsory offering...of instruction in agriculture, mechanics, commerce, language, literature, and philosophy." The first University of Idaho graduating class of four students in 1896 included granting of two engineering degrees, both in civil engineering. In 1907 the School of Applied Science reorganized into the College of Engineering.

The Department of Mechanical Engineering was created on paper in the 1901 UI catalog, occupying five empty rooms designed for its use in the north end of the Engineering Hall. Included were a machine shop, office, engine and boiler room, woodworking shop and drafting room. Equipment was gradually added, some obtained from a defunct harvester factory in Moscow which was also utilized as work space, as well as surplus after World War II. The 1934 construction of a new campus heating plant left the vacated plant as laboratory space for mechanical engineering, taking the place of the harvester plant. The Kirtley laboratory building, heated, lighted, but bare due to wartime shortages, became available in 1942.

Henry Silha and Henry Gauss, with the help of students, turned the space into a functioning teaching laboratory, using what material they could scrape up. From 1942 until 1969 the laboratory was shared by four engineering disciplines, but is largely used by mechanical engineering today. In the late 1990s the Gauss building underwent extensive remodeling to make it the fine facility that it is today, housing ME's Center for Applied Thermodynamic Studies, the Mind Works Design Center, Idaho Engineering Works, the Hybrid Electric Vehicle work area, Computer-Aided Design Lab, and the Senior Design Suite, Shop and Lounge.

Although the enrollment started small--one ME student was registered in 1909, four the following year, and only seven by 1916--there were 33 students right after World War I. A total of 153 credits was required for graduation, compared to 128 credits today. Student enrollment jumped appreciably after World War II, and has continued to grow ever since, presently numbering over 300 undergraduate and 65 graduate students.

It is difficult to imagine today, but the faculty in 1902

consisted of one person, Sidney R. Sheldon, who was actually an electrical engineer. Mechanical courses at the time included mechanisms, machine design, steam engines and boilers, wood carving and turning, and bench and machine work in iron. By 1920 the faculty had doubled to two members, one of whom was the second student to complete an engineering master's degree at UI, the program first offered in 1924. Today the ME department is made up of 20 professors, some on the Boise and Idaho Falls campuses, plus teaching and research assistants, adjunct and affiliate faculty, a full-time shop manager and an associate engineer.



Clean Snowmobile represents the excellence of Mechanical Engineering at UI.

Henry F. Gauss, great-grandson of the eminent German mathematician, joined the department in 1926, bringing continuity and modern direction to the department. "The first thing I had to do was jack up the corner of the building so that I could open the door to my office," observed Gauss, who served as department chair until 1949 and retired in 1955. In 1971 the Kirtley lab was renamed to honor Professor Gauss. A long line of the Gauss family has been associated with Mechanical Engineering at the University, including brothers Adam and Tyson, currently enrolled.

Further information on the Gauss family was sent in a letter from John Garrett, (Finance, '85), of Triad Distributing Northwest, Inc., Boise:

"One of the early Deans of Idaho's School of Engineering was Professor [Henry F.] Gauss --the Gauss name being one of the most important names in the history of modern scientific thought. Professor Gauss was the great-great-grandson of Karl Friedrich Gauss (1777-1855). ...he was so important that until just a few years ago, his picture was still featured on German currency. His mathematical theorems and formulas are still taught in our schools today. Remember the Gaussian Matrix and the normal distribution curve? Have you ever de-Gaussed your computer monitor? A quick Google search came up with more than 300,000 web pages on this

man.

The former Dean Gauss's son, Bill Gauss, now well into his 90's, is an expert on the Gauss legacy at Idaho. He has studied the great Gauss, and has been honored in Germany as one of the few surviving direct descendants of Karl Friedrich. Bill is a graduate of Idaho's school of engineering, a distinguished military figure, and a former college instructor. He still plays an important role with the annual Gauss Scholarship given at the U of I. Of interest, I'm told that he contributed to the design of the gun turrets used on B-17's during WW2."

As facilities continue to improve, IDEAWorks, Mechanical Engineering's newest computer laboratory is scheduled to go on line fall 2007. Ten to twelve dual-core PC's and an array of sophisticated software, e.g., CATIA solid modeling, ALGOR FEA, CFDdesign computational fluid dynamics will be used by undergraduate seniors, graduate students, and faculty to solve our most difficult numerical engineering problems. Funding for this laboratory includes alumni donations, NIATT, ME Department, Boeing, and SBOE. The goal of the laboratory is to be not just another computer laboratory, but a problem-solving environment that, through its design and finis elicits excellent work from our most talented students.

ROUND 'N ABOUT: FACULTY, STAFF AND STUDENT ACTIVITIES



Dr. E. Clark Lemmon has retired after 22 years of service to UI Engineering. As well as teaching, conducting research and advising students, Lemmon served as department chair from 1986-1995. He and Nancy have moved to Idaho Falls where they... "have been very busy and on a vacation from work, computers and email. We are pleased to be in our new home and neighborhood, and getting involved in the community and various service activities, but best of all with our four sons and their families," according to Clark.

Dr. Don Elger's 07-08 sabbatical project is to develop a culture and practice of measurement—assigning a number to quantify the quality of something that people care about—in higher education. Elger will research and develop strategies and tools for making measurement an effective practice in higher education. From this project he hopes to develop a marketing/sales strategy to support nationwide professional centers where motivated, engaged professionals in higher education can improve their skills.

Here are links for further information on Karl Friedrich Gauss.

- http://www.edinformatics.com/great_thinkers/gauss.htm
- <http://www.mathsong.com/cfgauss/Dunnington/1927/>
- http://www.geocities.com/RainForest/Vines/2977/gauss/g_bio.html

Dr. Karen Den Braven, advisor for the ongoing Clean Snowmobile project, will spend her sabbatical year researching clean engine technology and laboratory facilities, including work with Bombardier Recreational Products on excess-heat issues in direct-injected two-stroke engines.

Dr. John Sturgul has a busy summer of lecturing at the University of Cusco, Peru, McGill University, Montreal, and at the Western Australian School of Mines in Kalgoorlie; giving keynote addresses to the Peruvian Institute of Engineers' annual meeting in Cusco and at the international mathematics meeting in Alba Iulia, Romania; and presenting short courses and seminars for CODELCO (the Chilean national copper company) in Santiago, Chile.

Change is in store for **Dr. Ralph Budwig**, who will be married in June to Deborah Brizee, middle school counselor in the Vallivue School District. Debbie and Ralph share a love of outdoor activities such as running, mountain biking, and snowshoeing.

Budwig is transferring from Moscow to the Idaho Water Center at UI Boise where he will teach and assist in engineering courses and work with Dr. Judith Steciak on experimental combustion research. Budwig has supervised major research involving the Center for Ecohydraulics Research Stream Lab (CERSL, aka the flume) and will coordinate the purchase, installation and implementation of instrumentation systems and platform in the CERSL. The equipment proposal for a sediment system for the CERSL, funded by the Murdock Charitable Trust, will support

Keep in touch! We want to hear from you!

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Name _____
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Position _____
UI degree and year _____
Comments _____

two graduate students and a senior design team to assist in development and testing the system.

For the past few years, **Dr. Steve Penoncello** has worked to expand the activities of the Center for Applied Thermodynamic Studies (CATS) to include the experimental measurement of thermophysical properties. Veronica Miller (M.S. 2006, currently a Ph.D. student at the University of Pittsburgh) was the first graduate student in CATS to design and build an experimental apparatus; an ebulliometer used for measurement of vapor pressure. During the Spring 2007 semester, three students from Ralph Budwig's ME 451/551 (Experimental Methods in Fluid Mechanics and Heat Transfer), designed an experiment and procured equipment for the calibration of resistance temperature detectors used in the ebulliometer apparatus. The students involved in this work include Jacob (Jake) Leachman (M.S. 2007), Dave Rowe (M.S. 2007), and Jennifer Hasenoehrl

(B.S.M.E, spring 2007). Jake Leachman and Dave Rowe will begin their doctoral studies this coming fall, Jake at the University of Wisconsin and Dave at the University of Minnesota. Jennifer Hasenoehrl will begin her master's work in the CATS this summer, measuring and correlating vapor pressure data for several fluids used in the thermal management of electronics. Veronica, Jake, and Jennifer are past and present recipients of the Richard B. Stewart Thermal Science Scholarship.

Dr. Dean Edwards and his students take advantage of Idaho's unique Lake Pend Oreille to conduct research on Autonomous Underwater Vehicles (AUVs). At the Navy's Acoustic Research Detachment facility in Bayview one could see the largest fleet of AUVs in the world. This unlikely inland spot is "...a world-class acoustics lab," according to Edwards. "Pend Oreille is deep, quiet, cold and uniform," explains Edwards, a recent recipient of the UI's Excellence in Research Award.

To read the entire story of the research going on in Bayview, go to page 13 of the UI's news magazine at: <http://www.uidaho.edu/herewehaveidaho/PDF/UIMagWinter07.pdf>



Jake and Chris are pleased with their awards.

Jake Leachman and Chris Fischer, both MSME 2007, were chosen for outstanding work at the U of I Graduate EXPO. This event, held in April before the College of Engineering EXPO, is a showcase of excellence in graduate student research from all disciplines. Participants create displays and give presentations on their research. Both received monetary awards, Fischer an award of merit, and Leachman for an outstanding presentation.

Sleep Sound, given the Innovation Award by the Idaho Research Foundation, attracted much attention at the Engineering EXPO in April. This project addresses Sudden Infant Death Syndrome (SIDS) with the creation of a simple, inexpensive, easy-to-use sensor system to monitor the rise and fall of the baby's chest during normal breathing. The final version would be incorporated into infant sleepwear that would be found in any major retail store. The project is funded by Idaho National Laboratories, and created by a team from the University of Idaho's Mechanical, Electrical, Computer, and Biosystems Engineering Departments.

Molly Murphy Steiner, ME Department Manager, was chosen College of Engineering's Outstanding Staff member, 2006-07. Many of you owe some of your success as graduates of ME to Molly, who undoubtedly helped you in senior design by guiding you through the ins and outs of correct purchasing procedures. Her well-deserved honor included a nice monetary award.

Dan Cordon, Ph.D candidate, was also awarded, chosen College of Engineering Outstanding Graduate Student. Having earned both his BSME and MSME at UI, Cordon has been an asset to the department for some time, fulfilling a range of responsibilities besides excelling in his studies. Steve Beyerlein explains: "These roles include mentoring senior design teams on numerous vehicle projects, teaching our project-based senior laboratory course and our combustion engine course on video, and supervising the Small Engine Research Facility. It is easy to forget that Dan is a graduate student, since many of our interactions with him are identical to those we have with faculty and staff members. Recognition with a College award is well-deserved and timely."

Two recent UI ME graduates received promotions at Colmac Industries in Colville, WA: **Brant Osiensky**, BSME 2005, to lead research and development engineer, and **Mike Harper**, MSME 2006, to sales engineer.

John S. Canning, BSME 1970, Chief Engineer, Platform Integration Division for the Naval Surface Warfare Center, Dahlgren, VA, comments: I am leading efforts to develop advanced engagement systems, such as directed-energy weapons, and to weaponize robots. We have figured out how to let robots decide for themselves when to pull the trigger when engaging targets. Probably the most remarkable thing about this is that we've done this and figured out how to keep the lawyers happy at the same time. A paper outlining this approach and presented at the Association for Unmanned Vehicle Systems International (AUVSI) 2004 North American Symposium was co-authored with a person from the Navy JAG office in the Pentagon.



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University of Idaho

UI ASME HOSTS ANNUAL SPRING CONFERENCE

After years of traveling to cities around the Northwest, the University of Idaho Mechanical Engineering Society was pleased to host the 2007 Student Professional Development Conference (SPDC) on March 30-31, 2007.

The variety of activities included tours of the engineering buildings, the Student Design Competition (to build a human-powered water still), undergraduate and graduate presentations, technical poster/website displays, and the RC Baja Competition consisting of an acceleration run, slalom and racetrack. Veteran attendees called the event one of the best conferences in many years. With over 100 people from universities across the Northwest, ASME conferences provide an opportunity to gain confidence in professional presentations and to compete and show off a design which required teamwork in incorporating principles from design to manufacturing. ME Chair Don Blacketter and College of Engineering Dean Aicha Elshabini were among the attendees.

The 2007 ASME board consists of Kurt Hall, Tyler Merritt, Scott Firkins, Kirk Zielke, Garrett Gunn, Abraham Shryock, Mandy McGrath, Heidi Ness and SPDC host co-chairs Jessica Sampson, Michela Moreland and Tyler Merritt.



Clean Snowmobile Team Members – Back Row L-R Alex Fuhrman, Ben Armstrong, Dylan Dixon, Chris Tockey, CJ Stock, Andy Findlay, Justin Johnson, Rachel Geerlings, Dr. Karen Den Braven, David Polehn, Front Row - Ben Hanks, Brian Hanson, Nick Harker, and Jay Meldrum Lead Organizer of the Event.

CLEAN SNOWMOBILE CLEANS UP

The 12 members of the University of Idaho **Clean Snowmobile** Competition Team earned first place honors at the Society of Automotive Engineers (SAE) Clean Snowmobile Challenge (CSC), where participating students from across the country re-engineer stock snowmobiles to reduce emissions and noise while maintaining or enhancing performance. The competition was hosted by Michigan Technological University March 19-24.

Idaho brought home not only the International Snowmobile Manufacturers Association Award for first place, but also the Gage Products Award for Best Fuel Economy; the Polaris Industries Award for Best Handling; the Society of Automotive Engineers Award for Best Design; the Land and Sea Inc. Award for Best Performance; EMITEC Award for

Best Value; and the DENSO Corporation Award for Best Ride. The team shared the Michigan Snowmobile Endurance Award with four other outstanding institutions completing the 100-mile Endurance Run.

Team captain **Nick Harker** earned the Founders Award for Most Sportsmanlike Conduct for the team when he stopped mid-race to extinguish a fire in a competitor's vehicle.

For more news about the sled, the race, and next year's requirements, go to <http://www.engr.uidaho.edu/csc2007/>.

Clean Snowmobile also earned honors at UI's College of Engineering EXPO in April, winning both a booth (display) and technical session (presentation) award.

WORDS FROM THE CHAIR

Our championship in the Clean Snowmobile Challenge is just one example of our students' continued excellence in their coursework and projects. The high demand for our graduates, who consistently score well above national norms on the Fundamentals of Engineering Exam, is a testament to the students' hard work and the efforts of dedicated faculty members. The new year is filled with many changes. Dave Thompson and Clark Lemmon retired effective July 1 of 2007. We are appreciative of their years of service and dedication to the college and department. We have hired four faculty mem-

bers who will join us in the fall: Gabriel Potirniche from Mississippi State University in computation mechanics; Jay McCormack from Carnegie Mellon University, mechanical design; Eric Wolbrecht, UC Davis, in System Dynamics; and Akira Tokuhiko from Kansas University to support our Nuclear Engineering program in Idaho Falls. Both Karen Den Braven and Don Elger will be on sabbatical during the 2007 academic year. Preparation for our upcoming ABET accreditation visit is ongoing and we are confident in the program we have to present.

I want to thank alumni and friends for your generous support of our program. I especially thank our Advisory Board for

their dedication and willingness to come to campus several times a year. Lastly, I express my appreciation to our faculty members who have worked especially hard this year. Please drop me a note or stop by for a visit.

Best Regards,
Don Blacketter



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