NEWS FROM THE DEPARTMENT CHAIR - DOUG REINEMANN

I would like to extend my greetings to all of our alumni and friends as the new Chair of BSE. It was 37 years ago (and unfortunately also about 37 pounds ago) when I first walked into the Agricultural Engineering Department. I enrolled as a freshman Electrical Engineer but, inspired by lecture given by Dick Koegel, switched to Agricultural Engineering, as it sounded much more interesting than any other engineering discipline. I have not been disappointed. I finished my BS in 1980, spent a year doing volunteer work, and then came back to do my MS with Dick Straub on a wind power project. This was followed by Ph.D work at Cornell and then 2 years working for USAID in Pakistan. I joined the UW faculty as an extension specialist in 1990 and developed programs in machine milking and rural energy issues. My milking machine work has taken me around the world several times and I never dreamed that milking cows could be so interesting. My energy work has included electrical safety, stray voltage energy efficiency, and more recently, life-cycle-assessment of integrated Dairy and Ethanol production systems. My work with the ‘Green Cheese Team’ and Great Lakes Bioenergy Research Center is a small part of the prominent role our faculty have developed in the Bio-Energy

AUF WIEDERSEHEN (UNTIL WE MEET AGAIN) BUT NOT GOODBYE

As many of you know by now, on June 1, I assumed the role of Senior Associate Dean in the College of Agricultural and Life Sciences(CALS) and stepped down as Chair of BSE. In this position, I hope to be able to continue to serve BSE, as well as the entire CALS community, which is reflected in my choice of title for this article. I have been affiliated with BSE since the summer of 1968, when I decided to enroll in the Agricultural Engineering program and will continue that affiliation with a small appointment in BSE that will allow me to continue to help with teaching and providing leadership for AgrAbility and related projects.

I believe the Department is in excellent hands under the new leadership of Doug Reinemann and already see new and exciting changes. Give him your full sup-

Continued on page 6.
Spring semester 2013 was a very busy and exciting one for the UW ASABE Student Chapter!

At the beginning of the semester, a group of students with Dick Straub and Kevin Shinners traveled to Louisville, Kentucky to visit the National Farm Machinery Show. There, students got a chance to see the latest in Agricultural Engineering technology and were able to speak with engineers from these leading companies.

A couple weeks later, another group of students traveled to the University of Kentucky in Lexington for the annual Midwest Regional Rally. Seven student chapters gathered for a weekend full of technical tours, meetings, and social events. While there, one of our members, Brenna Stow, was elected to the board for organizing next year’s rally at Ohio State.

The chapter also participated in the Engineering Expo, where we showcased a hazelnut husking and sorting machine and Justin Vannieuwenhoven’s fishing rod holder (see page 4).

Students at the Midwest Regional Rally.

Over 10,000 students visited during the three days of expo, and we are very excited to have taken second place overall in the event.

The Badger Pulling Team showed very well in Peoria, Illinois for the ASABE Quarter Scale Tractor Competition May 30th - June 2nd. The team took first place in the team presentation while bringing home a sixth place finish overall (see page 3).

Our final trip of the semester was a trip to the Madison Wastewater Treatment Facility where students could see the process of treating wastewater to clean water. The semester wrapped up with our cookout and farewell to graduating seniors. This fall we are planning a camping trip, industry tours, as well as the annual Lawn Mower Clinic.

ASABE is looking forward to a fun and productive fall semester!

ASABE OFFICERS OF 2013

President — Nolan Lacy
Vice President — Shayne Havlovitz
Secretary — Meredith Remter
Treasurer — Jim Breckenridge
Polygon — Reid Christ
CALS — Andrew Meinerz

AEM — Brenna Stow
Public Relations — Ricky Bero
Engineering Expo — Nolan Lacy, Jim Breckenridge, Aaron Bohnhoff
Lawn Mower Clinic — Evan Price, Clay Selsmeyer, Trevor Meyer
Webmaster — Aaron Bohnhoff
A ROUND OF APPLAUSE FOR OUR AWARD WINNERS!

INNOVATION DAYS WINNERS

Luke Stedman (Biological Systems Engineering) and Steve Burbach (Mechanical Engineering) won the $2,500 Tong Prototype Prize for their product, TreeREX, a safe, portable tree stand for hunters. Both hunters, they identified the weaknesses of existing designs and came up with the TreeREX which has a pair of steel “jaws” that clamp around a tree trunk, using hunter’s weight to secure the clamp. The two senior undergraduates won fourth place and $1,000 in the Schoofs Prize for Creativity.

GRADUATE STUDENT YI-CHENG WANG

Yi-Cheng Wang received the Richard M. Heins Wisconsin Distinguished Graduate Fellowship and was honored in ASABE’s New Faces of Engineering 2013. As a graduate student in BSE, Yi-Cheng is passionate about engineering and its ability to improve lives. His research focuses on environmental disinfection methods and designing disinfection devices to solve the real world problems in biological field. Yi-Cheng’s environmentally-friendly technologies were used to help clean up the Morakot Typhoon that hit Taiwan in 2009. Inspired by the power of engineering, he is currently working on ways to harness green energy and enhance food safety and quality.

2013 WI ASABE STUDENT AWARD RECIPIENTS

QUARTER SCALE TRACTOR TEAM

Last academic year, the Quarter Scale Tractor Team made some much needed updates to their pulling sled, and designed, built and tested an entire tractor. Starting with only a 31hp engine, the team set out to build a machine with a goal of a top five finish at the competition. The design team, led by Justin Orrick and Bryan Rowntree, created a complete 3-D model for their BSE 509 Senior Design project. A major goal of the team was to create an innovative machine that had new and unique features that would draw interest from anyone visiting the competition. The final design for the 2013 tractor featured a fully mechanical three speed powershift that allows the driver to change gears on the fly. It also showed off an original steering design where the front wheels and the main front axle would rotate, drastically reducing the turning radius of the tractor. Once the design was completed, the UW-Madison Badger Pulling Team began work building this tractor. The work of Scott Dietsche, John Gillis, Nolan Lacy, Brandon Nigon, Cyrus Nigon, Evan Price, Alex Roltgen, Kyle Rowntree, Jake Standal, Brian Straub, Joe Treinen and many others resulted in a machine that was sure to do well at competition. Continued on page 5.
Inspired to pursue the product further, Justin developed a business plan to enter in the Burrill Business Plan Competition where he won an additional $10,000. In addition to his winnings, Justin has had numerous articles published about the CFS Holder in news sources such as Outdoor News, Field and Stream, and USA Today.

The new fishing rod holder he designed is the first to incorporate “self-adjusting bait technology”. The technology proposes that keeping the bait at a relatively constant height in rough conditions will yield more fish. The mechanics of the CFS Holder are relatively simple. When using the self-adjusting feature, the user simply adds weight (sinkers) to the line until the rod balances on the holder. This ensures the center of gravity is at the pivot point of the rod holder. As a result, the rod stays parallel with the water while the boat is rocking back and forth since the rod is constantly pivoting to stay balanced. This pivoting allows the bait to stay at a relatively constant height and appears more natural-looking to fish. The competitors’ products are not able to do this because their rod holders lock into place and are unable to pivot. This causes the rod to constantly change position relative to the height of the waves, which causes an unnatural look for the bait. Visit 3in1holders.com for a video which shows the CFS Holder side by side with the competitors’ products for more clarification.

In addition to the novel self-adjusting feature, the CFS Holder has multiple other features which benefit fishermen. In particular, the CFS Holder is multi-functional and can be used on land/ice, in a “fixed” position (similar to the competitors’ products), and in the self-adjusting feature. This enables the product to virtually reach the entire fishing market and allows the user to use the product for all types of fishing such as trolling, jigging, casting and anything in between. Moreover, when using the self-adjusting feature, the user does NOT need to take the fishing rod out of the holder to set the hook. Because the pole is pivoting, once a fish strikes, the user simply hits the back of the holder and the front will pivot up, setting the hook.

Please visit 3in1holders.com for more information.
CALS DEPARTMENTAL SCHOLARSHIPS 2013-2014

Don S. Montgomery Scholarship
April Zhao, Food and Bioprocess Engineering, Eagan, MN

Ervin W. Schroeder Biological Systems Engineering Scholarship
Arielle Kroner, Natural Resource & Environmental, Franklin Lakes, NJ

Gail Edwin and Janice Faye Janssen Biological Systems Engineering Fund
Travis Schumacher, Food & Bioprocess Engineering, Marathon, WI
Xingtai Li, Food & Bioprocess Engineering, Qingdao Shandong China
Kathleen Roush, Food & Bioprocess Engineering, Sheboygan, WI

Ham Bruhn Biological Systems Engineering Scholarship
Ian Atkins, Food & Bioprocess Engineering, Bayfield, WI
Michael Hatchell, Structural Systems Engineering, Kaukauna, WI
Shengzhi He, Food & Bioprocess Engineering, Chengdu, Sichuan China

Lynndon and Norma Brooks Scholarship
Jonathan Kett, Food & Bioprocess, Burr Ridge, IL
Katherine Scharenbroch, Food & Bioprocessing, Sheboygan, WI
Lauren Saleh, Food & Bioprocess, Amery, WI

Orrin I. Berge Scholarship
Nolan Lacy, Machinery Systems Engineering, Fitchburg, WI

Robert H. & Willa Meier Scholarship Fund
Thomas Larson, Machinery Systems Engineering, Viroqua, WI
Michael Shinners, Natural Resource & Environmental, Antigo, WI

Roger W. Ambrose Scholarship
Joanna O’Brien, Natural Resource & Environmental, Wauwatosa, WI

Wisconsin Agricultural Engineer Scholarship
Emily Hokanson, Food & Bioprocess Engineering, Cedarburg, WI

Wisconsin Biological Systems Engineering Scholarship
Brenna Stow, Natural Resource & Environmental, Saline, MN
Jennifer Sanford, Food & Bioprocess Engineering, Oregon, WI

QUARTER SCALE TRACTOR TEAM
Continued from page 3.

The team traveled to Peoria, Illinois to test their tractor against 28 other schools. Battling wet conditions, the team sent the tractor through technical inspections, brake tests, a sound test and even a maneuverability test. The tractor was also put before a panel of engineers where the safety, serviceability, manufacturability, ergonomics, and test and development of the tractor were evaluated. After the evaluation, Justin and Bryan pitched their tractor to a group of industry engineers in a formal presentation. Unfortunately, the results of the pulls were slightly disappointing as the tractor struggled to deal with the wet and tacky track conditions.

Although the pulls didn’t go as well as planned, Badger Pulling was still able to finish 12th in the tractor pull event. Overall, the UW-Madison team finished 6th in the competition, propelled by placing 4th in the written design report, and winning the team presentation. Finishing 17 spots better than their 23rd overall finish last year also earned the team the “Most Improved” award.

While they fell just shy of their goal of a top five finish, the team is proud of what they accomplished this year and look forward to building on their strong finish at next year’s competition. The team would like to thank their generous sponsors and the BSE Department, as well as the UW-Madison ASABE chapter for their support.
AUF WIEDERSEHEN FROM DICK STRAUB CONTINUED FROM PAGE 1

port. I am also proud of what BSE has accomplished and believe the Department is in a strong position with near record student enrollment at both undergraduate and graduate levels, a strong teaching program which just received re-accreditation, active and well-funded research and Extension programs, excellent productive faculty, and an involved and supportive alumni and friends base. I am glad to have been a part of making this happen, and hope to continue to be involved with the BSE community.

I want to close by reiterating how important you (our alums and friends) are to me personally and to the future of BSE. Nothing makes me more proud than seeing our student, alumni and friends excel and make a difference in their job, community or society. Your willingness to help or provide guidance has been, and will continue to be, extremely important to BSE and to our profession. Thank you all for your friendship and support.

- Dick Straub

NEWS FROM THE CHAIR CONTINUED FROM PAGE 1

arena with several large grants and many smaller ones supporting some aspect of bio-energy research by almost every member of our faculty or their many Graduate Students and Post-Docs.

While settling into the Chair’s office, I was reflecting that I have known 7 of the 12 Chairs in the 119 year history of the department, reaching back to Ham Bruhn who was Chair in 1962, through Fred Beulow, Gary Bubenzer, Jim Converse, Ron Schuler, Pat Walsh and Dick Straub. I learned valuable lessons from all of them and am honored to have been selected to carry on their work. Our department has a long, proud history of meeting the engineering challenges of the past century. As you will see in the newsletter, we have new faculty coming on board, awards received by our very creative students and faculty, and some retirements. We are now at the largest enrollment in the department’s history and well positioned to meet the “Grand Challenges of Engineering” food, feed, fiber

As I make the transition from faculty member to Department Chair, my priorities are to tell as many people as I can about the great teaching, research and extension work going on in our department and develop partnerships to provide the resources to support our mission in new ways. I would like to offer a special note of thanks to Dick Straub, whose leadership has kept the department on an upward trajectory, and to all of you who have supported internships, scholarships and facilities updates in the past.

- Doug Reinemann

FACULTY UPDATE

Read about BSE Retirements and our new faculty member on Page 8.

2013 WI ASABE AWARDS

Prof. Richard J. Straub - The 2013 Career Achievement Award

Ronald Schuler
Leonard Massie (not pictured)
50 Year Milestone Anniversaries

2013 WI ASABE AWARDS
There is a need to supplement seawater and, therefore, finding ways to utilize the brackish groundwater sources is important for sustainable agricultural production systems in Qatar. Capacitive deionization (CDI) is a novel water treatment technology for dissolved salts removal.

CMU-Qatar (CMUQ) was established in 2004 as a member of Qatar Foundation, to offer B.S. degree programs in Computer Science, Information Systems, and Business Administration. Since CMUQ does not have an engineering program, my specific role as the 1st first engineering faculty appointment at CMUQ was to develop a teaching and research program in environmental sciences and engineering.

My research activities focused on: (i) advanced water treatment methods, and (ii) wastewater reuse. Qatar has very limited conventional water resources, with groundwater being recharged annually by light rainfall (~80 mm), which is insufficient to sustain growing freshwater needs. An exponential increases in groundwater withdrawal is threatening the quantity and water quality of existing reserves. Therefore, finding ways to utilize brackish groundwater is important for sustainable agricultural production. Working with Prof. Marc Anderson (CEE, UW-Madison), Prof. Kelvin Gregory (CEE, CMU-Pittsburgh), Mr. Linchen Han (CEE, CMU-Pittsburgh), we developed and tested an efficient, low-cost desalination technology. Capacitive deionization (CDI) is a novel water treatment technology for ion removal, which has lower energy requirement than reverse osmosis (RO) with the potential to produce lower amounts of waste brines. CDI technology, unlike RO and nanofiltration, does not require high pressure equipment and can be operated using solar energy. We tested our novel CDI system to treat brackish groundwater and achieve various levels of salinity reduction to produce water stream for different end-use applications (e.g., irrigation of forage, food crops; livestock consumption).

At CMUQ, I started exploring the feasibility of using reclaimed water for crop irrigation. This project is currently being performed at UW-Madison along with Prof. Joel Pedersen (Soils, UW-Madison). We are quantifying the uptake of several wastewater-derived organic micro-pollutants by diverse plant types.

As part of my instructional activities, I taught two new Environmental Science/Engineering courses specifically tailored to non-Engineering majors. Both my courses were very well received and teaching to non-majors in a diverse cultural environment has helped hone my instructional skills. With climate change expected to cause dramatic shifts in precipitation patterns, I emphasized food and water security in the lectures to increase their awareness of water management issues and appreciate the economic linkages between water and food production.
Congratulations to Anita Thompson for being elected to the Committee on Undergraduate Recruitment for a 4 year term.

Dave Bohnhoff is a recipient of the Standards Developers Award, which recognizes those who make major contributions in the development of Standards in 2012. Dr. Bohnhoff’s revision involved incorporating strength equations for bearing, lateral, and uplift soil capacities.

BSE Retirements

Happy Retirement to Brian Holmes! Brian retired from the UW in July 2013, but he will continue to work with BSE as an Emeritus Professor in Farmstead Engineering and Energy. Brian gave over 34 years of service to the residents of Wisconsin and his colleagues in Cooperative Extension. Brian received the Special Recognition Award for Career Service for 2013 for his exceptional work during his career. As one colleague summed up: “Brian’s leadership and participation in Extension efforts will be greatly missed as he moves his life into retirement mode. Brian’s leadership on the Dairy and Forage teams will be difficult if not impossible to replace. His ability to form relationships with non-extension researchers and private industry and bring them into team educational efforts were exceptional.”

Happy Retirement to Larry Chapman. Larry retired from the UW in July 2013 after 22 and a half years of working for BSE. He will continue to work with the UW and BSE as an Emeritus Senior Scientist focusing on Healthy Farmers Healthy Profits.

In Memoriam

Grace Borgman Stith died peacefully at her home on October 5, 2013. She was 86. Her husband, Dick J. Stith, Emeritus Professor of our department preceded her in death. There will be a memorial service for Grace in the summer 2014. The Stiths provided an endowment for an undergraduate scholarship in the department. We remember Grace and Dick and their gifts of their time and student support to the department with gratitude.

BSE Faculty Honors

BSE Faculty Honors

BSE New Faculty Preview

BSE Alumnus Damion Babler was awarded the 2013 Young Engineer Award for his outstanding contributions to the advancement of the Agricultural and Biological Systems Engineering profession.
BURKHARDT FUND UPDATE

The BSE department was the recipient of a gift from an Alum, Martin Burkhardt (MS Agricultural Engineering, 1964) and his wife Kathleen (BS Home Economics, 1960) to establish a fund to employ students to work in our shop and labs to round out their educational experience as well as help with the cost of an education. We have had a number of students that have benefitted from this generous gift over the past 15 years. In the past year, Evan Price and Clayton Selsmeyer were the Burkhardt scholars. Both worked full time in the summer and part time during the school year. Clayton reported that working in the BSE shop was a great experience. He particularly enjoyed learning some new fabrication skills and gaining a better understanding about how things go together. Evan is a senior in the Food Engineering option of the BSE and has been working in the lab for 3 years. Evan enjoyed the opportunity to apply the skills he learned in his classes and gained some valuable insights into the design process. He learned how to solve design problems creatively through hands-on work. Evan will go on to manage the new Dane County Anaerobic Digester during his last year of study at the UW.

BSE GET’S CONNECTED!

LIKE BSE ON FACEBOOK

Find us on Facebook at UW-Madison Department of Biological Systems Engineering and stay updated on BSE activities, awards, presentations, and news stories!

www.facebook.comUWMadisonBSE

ABEs have a long history of solving our most fundamental challenges.

Check out the video Ag & Bio Engineering: Meeting the needs of humankind, sustainably to learn about how ABE provides the necessities of life, and more, for a growing population, without degrading our natural world. Agricultural and Biological Engineers are leading the way in innovative solutions.

Find it at: https://www.youtube.com/watch?v=WM16bY0W8o8

BSE Graduate Students enjoy lunch at Picnic Point. (right)
SHANE WILLIAMS

BSE BACKGROUND
I received my B.S. in the spring of 2009 and my M.S. in the summer of 2011 from BSE, with a Machinery Systems emphasis under the advising of Dr. Kevin Shinners.

WORK AT KUHN
Since July of 2011, I have been working at Kuhn in Brodhead, WI as a Design Engineer in the Hay Tool Technologies product line on our windrow merger product line. A lot of the skills and knowledge I gained through my graduate research in BSE, from a design, testing, and manufacturing standpoint, have all been put to good use in my current position.

I have had the opportunity to travel to France, Germany, and Italy to visit machines in those countries and understand how their conditions and requirements compare to those used in the U.S. Windrow mergers are a shared project and product line between North America and France, so not only do I communicate with engineers in our own factory but I also consistently talk and meet with engineers in France. My time spent in BSE prepared me well for this aspect of the job. The students and faculty within the BSE department all have very unique backgrounds and core competencies, and many are actually from countries outside of the United States. It was necessary to communicate in ways that everyone can understand in order to work together on projects and assignments or even to get to know different colleagues and their research.

OTHER INTERESTS
Outside of work, I still go back to the family dairy farm in Barneveld, WI and help out as much as I can. I am fortunate to work with and live nearby many of the friends I made in and outside of BSE while in college, and it is great to be able to keep those relationships as we get older. I really enjoyed the BSE Alumni Social event this past April and hope that those events can continue in upcoming years.

ASABE INVOLVEMENT
I became involved in ASABE during my undergraduate years in BSE, and I am still very involved with the society on both a local and national level. I am in my second year as the Vice Chair-Membership for the Wisconsin State Section, and I am also involved with the Young Professionals Community (YPC) of ASABE. During my first two years of involvement with the YPC, I was a Member-At-Large to the YPC Executive Committee, and these past two years I have been on the Executive Committee acting as the YPC representative to the Publications Council. While representing the YPC on the Publications Council and Resource Editorial Board of ASABE, I have also joined numerous Power and Machinery committees within the society.

In January of 2013, I was named one of the New Faces of ASABE for 2013, based on my involvement in the society. Of the twelve New Faces of ASABE, I was also one of the five whose profile was chosen to represent ASABE as New Faces of Engineering at National Engineers Week. I would really like to thank Dr. Kevin Shinners for his help and support during the nomination process. I was not the only current or former student from BSE to be named a New Face of ASABE in 2013, as another current graduate student, Yi-Cheng Wang, was also given this honor. This was the third year in a row that BSE was represented in the New Faces of ASABE. I think this speaks volumes of our department and its’ commitment to preparing its students for their careers, as well as the department’s desire to promote ASABE and keep former, current, and future students involved with shaping the industry.
FUNDING UPDATE

PLEASE GIVE SOME CONSIDERATION IN CONTRIBUTING TO ONE OF THE BIOLOGICAL SYSTEMS ENGINEERING DEPARTMENT FUNDS LISTED BELOW:

Biological Systems Engineering Fund

Biological Systems Engineering Student Activities Fund

Biological Systems Engineering Student Scholarship Fund

We sincerely wish to thank our alumni and friends who have generously supported the College of Agricultural and Life Sciences Department of Biological Systems Engineering. Your gifts today are more important than ever as the University faces challenging budget constraints. Gifts made to the Department of Biological Systems Engineering help us with scholarship, facilities improvement, endowed professorship and graduate fellowships, and carry on our tradition as leaders and innovators in the Biological Systems Engineering field.

An invitation to join the prestigious Bascom Hill Society is extended to those who provide support of $50,000 or more to the department or to a specific project or program of their choice. You can pledge your commitment over a 10-year period, provide for a gift in your will, or give a gift of annuities or appreciated stock. If you have specific questions about giving, please contact Barbara McCarthy at the UW Foundation (Phone: 608-265-5891; e-mail: barb.mccarthy@supportuw.org).

Department of Biological Systems Engineering Funds

Two options to make a gift:
1. Visit the BSE website at bse.wisc.edu and select “Support BSE” in the left column.
2. Make checks payable to University of Wisconsin Foundation and return this form to:

   University of Wisconsin Foundation
   US Bank Lockbox
   PO Box 78807
   Milwaukee, WI 53278-0807

I/we would like to join other alumni and friends in support of the Department of Biological Systems Engineering.

I/we wish to pledge $__________ over ________ years. Please remind me of my pledge in ____________ (month).

I/we contribute $___________. (Contribution is enclosed.) My company will match this gift; company form enclosed.

I/we wish to have my contribution support _____________________________________________________ fund.

Name:______________________________________________ E-Mail:___________________________________
Address:___________________________________________________________________________________
City: ________________________ State: ______________________ Zip:_____________________________

Please charge my gift of $ _______________ to my: MasterCard Visa American Express

Card number ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___Expiration date ______________
Cardholder's name as it appears on credit card (please print):________________________________________
Cardholder’s Signature:__________________________________________________________________ Date ____________________
Thank you for your support.

The Share the Wonderful campaign is an annual effort to raise funds to support the University’s core budget in order to bring students an exceptional educational experience. To learn more and make a donation, please visit www.sharethewonderful.org. If you would like to make a gift to the department, please mention BSE to ensure the funds are properly directed. If you are donating online, please write “Biological Systems Engineering” under “other designation.”