AET INFORMER

DEPARTMENT OF APPLIED ENGINEERING AND TECHNOLOGY

MOREHEAD STATE UNIVERSITY

Volume 15 Issue 2 March 2014

Chair's Message - Striving for Success

The Morehead State University service region has the potential to become a vibrant manufacturing region because of our trained workforce that meets the ever changing skill requirements for current and future industries. The Department of Applied Engineering and Technology (AET) has an exceptional opportunity to play a significant role in the economic development of the Eastern Kentucky region.

Steve Defazio accepting the ATMAE Innovation Award.

The continued contributions of AET graduates to regional corporations have resulted in the formation of partnerships with companies in the area. For instance, at the Boneal Corp., AK-Steel, Seal Master, Mazak Corp. and at SRG Global, the proportion of AET graduates in key technical management positions has increased signigicantly. The companies that the AET Department has worked with over the last few years have, through their participation in the Advisory Board, aided the Department's efforts to improve and modernize. The board members are actively involved in advising on curriculum and, more recently, they have come together to endow a scholarship fund for the AET Department. Clearly, Morehead State University has the potential to induce even more industries to locate in Eastern Kentucky region.

We have designed diverse academic programs and have employed qualified faculty members who are committed to the study of engineering and technology so that AET can cultivate and expand the potential of students, businesses, and industries in the region and the state. Through collaborative efforts with the AET advisory board and industries, we strive to prepare professionals and leaders who are technically competent, innovative in problem solving, and skillful in management of personnel and facilities.

Due to an increasing need of the industrial sector for a highly skilled workforce, the department has increased enrollment by 40% (from 200 to 300 majors). The Department will continue to improve and develop in order to accomplish its primary mission of serving the citizens of Eastern Kentucky through the development of competent engineering managers and technologists, who play a key role in the economic development and effective use of resources in MSU's service region.

The department's acquisition of Siemens $209 million in-kind GO PLM software grant has contributed to the planning for development and implementation of a 21st century Advanced Manufacturing Center. Through the establishment of the Center for Advanced Manufacturing, we plan to support local and regional companies in the areas of computer integrated manufacturing (CIM), flexible manufacturing systems (FMS), mechatronics, and rapid prototyping of parts (RP), among others.

To increase enrollment and aid retention, the board has established the AET Advisory Board Scholarship endowment which will be used to recruit, retain, and prepare the next generation of applied engineering personnel. Additional donations from the advisory board companies, employers, alumni, faculty/staff, and AET friends will make our dream of a $250,000 endowment a reality.

To enhance the quality of AET programs and prepare graduates who are nationally competitive, the department is prepared for the ATMAE team visit on April 13-15 for reaccreditation of the Engineering Technology program and initial accreditation of the Master of Science in Engineering and Technology Management (MSETM).

Inside this issue...

Faculty Spotlight	P. 2
Alumni Spotlight	P. 4
Advisory Board Spotlight	P. 5
Student Organizations	P. 6
Graduate Student Spotlight	P. 7
AET News Spotlight	P. 8

ATMAE The Association of Technology, Management, and Applied Engineering

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FACULTY spotlight

Hans Chapman

Dr. Hans Chapman has been selected as faculty for the third year in the 2014 Governor's Scholars Program (GSP). He will be at the Bellarmine University Campus this summer.

Dr. Hans Chapman mentored undergraduate students, Zach Schneider and Andrew Greene for their presentation at the 2014 Posters at the Capitol Conference in Frankfort, KY. The title of the presentation was "Assessment of the Solar Energy Variability and Effects in Eastern Kentucky". He also mentored AET graduate student Stephen Glossner for his poster presentation titled "Assessment of LEED Certified Residential Projects in Kentucky".

The Alternative Energy Systems equipment acquired from the $43,000 grant from $42,000 grant awarded by the Siemens Building Technologies Education Team and the MSU Administration, was received and installed in February 2014. The equipment will supplement the IET 352 Energy Systems and Sustainability course offered in the summer and taught by Dr. Chapman. In another development, Dr. Chapman worked with other AET personnel, Mr. Jason Stepp and Mr. Sam Mason to submit a grant application for $20,000 from the Pentair Foundation. The funds, if awarded, will supplement the AET Department's efforts to acquire a High Performance Rapid Prototyping Machine.

Dr. Chapman co-authored a paper titled "Robust Affordable Outdoor Technique for Testing and Characterizing Photovoltaic Modules". The paper was published in the Journal of Arts, Science, and Technology in November, 2013.

Nilesh Joshi

Dr. Nilesh Joshi attended the 2013 ATMAE annual conference in New Orleans along with his students, Ms. Nadeera Ekanayake and Mr. Matt Watson. Ms. Nadeera Ekanayake presented her research on the Genetic Algorithm based Stochastic Modeling methods to study Multi-Echelon Inventory Systems. Mr. Matt Watson coauthored a paper with Dr. Joshi. The paper titled, "CAD/CFD-Based Experimental Designs for Analysis of HVAC componentry in Industrial Equipment" was published in the proceedings of the ATMAE conference. Dr. Joshi also attended the 2014 Kentucky CTTE conference and gave a presentation titled, "Sustainable Product Designs: A Case Study of Team-based Learning in Engineering and Technology Education".

Yuqiu You

Dr. Yuqiu You submitted five presentation proposals to be presented in the annual conference of the Association of Technology, Management, and Applied Engineering (ATMAE) in St. Louis, MO in November 2014. They include two research projects "The Design and Comparison of Single Inverted Pendulum System Controllers" and "A LabVIEW-based Automatic Solar Tracking System: Architecture & Analysis". The research paper, titled "The Design and Comparison of Single Inverted Pendulum System Controllers", has been submitted to the Journal of Technology, Management, and Applied Engineering (JTMAE) and is being the peer-reviewed. Dr. You has successfully developed an MOA between Pellissippi State Community College in Tennessee and MSU to ensure the smooth transfer of students from these 2-year colleges to the BSTM program. Dr. You serves as the leader of the Eastern Kentucky Team of the KY Girls STEM Collaborative, and is planning collaborative projects for recruiting girls in science and technology. She also serves as reviewers for the International Journal of Modern Engineering (IJME) and the International Journal of Online Engineering (IJOE). Dr. You has created a new course, IET104 Human factors at work. The course has been approved to be listed under the Natural Science I category for General Education requirements, and will be offered for 2014 summer and fall semesters.

Ni Wang

Dr. Ni Wang is a new faculty member in the Department of Applied Engineering and Technology (AET) focusing on engineering design and CAD modeling, simulation and analysis. Dr. Wang was awarded a $5000 internal research grant for "CFD modeling of micro-cantilever beam as gas sensor". Upon completion of this research project she will have papers published by the end of hte year. She will present the results at the annual ATMAE conference in St. Louis, MO, in November 2014. Dr. Wang currently serves as co-advisor of Society of Manufacturing Engineers (SME), The Association of Technology, Management, and Applied Engineering (ATMAE) and AET robotic team. She participated in and coordinated several events such as MPATE and SME day. Dr. Wang attended meetings of the Lexington SME Chapter and she also attended MSU Open house and recruiting events. She participated in a Quality Enhancement workshop and took on responsibility as a scorer of the Critical Thinking Assessment Test (CAT). She is currently restructuring IET120 (Technology Systems) with colleagues to make it a technology principle based course.

FACULTY spotlight

Sanjeev Adhikari

Dr. Adhikari, Dr. Hans Chapman and April Haight are working on calculating the carbon footprint of Morehead State University, a project created by the President's Sustainability Committee of MSU to initiate recycling and carbon footprint calculation. Dr. Adhikari received a $1730 grant to mentor undergrad Student, Robert Spencer on Low Cost and Energy Efficiency Building. The funding is available from the Center for Regional Engagement (CRE) at Morehead State University (MSU). Dr. Adhikari and the AGC Student Chapter attended a town hall meeting in West Liberty initiated by Texas A&M University Professor Greg Luhan and his students. This is a great community effort to rebuild West Liberty, KY after it was devastated by a tornado in 2012.

Dr. Adhikari is serving in the position of secretary of the construction division of the Association of Technology, Management, and Applied Engineering (ATMAE). Dr. Adhikari is also serving as the secretary of the Kentucky Academy of Science (KAS) Engineering Session for 2013/2014. Two posters related to green building were presented at the KAS conference by Dr. Adhikari's students Robert Spencer and Stephen Glossner. Dr. Adhikari presented a paper at the Kentucky Association for Environmental Education (KAEE) 3rd Annual Sustainability Symposium on March 14, 2014 in Bowling Green, KY. The title was "Calculating a University's Carbon Footprint: Experiences from Morehead State University". The paper was presented with Dr. Chapman and Ms. Haight.

Dr. Adhikari's threee papers were presented at the annual ATMAE conference in New Orleans, LA in November 2013. These paper titles were: 1) Analysis of asphalt shingles as a reclaim waste materials on highway pavement, 2) Energy Systems and Sustainability: Making the US More Competitive, and 3) Analysis of Job Market in the Perspective of Green Building. These papers were presented with Dr. Chapman, Dr. Grise, and Dr. Wang of the AET department.

Sam Mason

Sam has participated in a Professional Development seminar at the University of Kentucky presented by Dr. Bill Burke, Associate Director for the Enhancement of Learning and Teaching. The seminar covered the Assertion-Evidence Structure of presentation material and "Rethinking the Design of Presentation Slides". Sam also volunteered time and effort to present a 10-hour OSHA training for the Youthbuild Program on campus during Spring Break.

Joyce Stubbs

Dr. Joyce (Wogoman) Stubbs has been asked to serve on Martin County's (KY) "Work Ready Community Committee". Joyce was also the conference chairperson for the CTTE-UCC Conference held at MSU on February 6 & 7. The conference focused on "College and Career Ready – Are We Ready In Kentucky". The conference was attended by Kentucky Department of Education staff, Carter County (KY) educators, University of Louisville, Murray State University, Eastern Kentucky University, Western Kentucky University, Kentucky State University and Morehead State University professors.

AGC Chapter Visits MSU YouthBuild Site

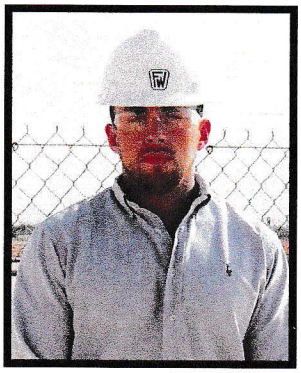
The AET student chapter Associated General Contractors were invited by MSU YouthBuild Vocational Training Assistant Dale Stamper to visit the home the group has been building in Frenchburg, KY. The students were introduced to some of the energy efficient building techniques being employed in the house by the Habitat for Humanity.

During the visit the AGC students were able to see how a double-wall home is constructed and the materials Habitat for Humanity incorporates in the building of the home, such as energy efficient windows and doors, caulking for sealing all penetrations to the shell of the home, and specially constructed trusses for the roofing system that allow for a maximum level of insulation in the attic area.

The AGC group was so impressed with the construction of the home that they have began planning for assisting the Habitat for Humanity on local projects.

AGC students at the YouthBuild project site in Frenchburg, KY with Greg Dilce of Habitat for Humanity and YouthBuild Vocational Training Assistant Dale Stamper.

ALUMNI spotlight



Jerry Carpenter

As a student of Morehead State University and a May 2012 graduate of Construction Management and Civil Engineering Technology, I faced many challenges during my tenure. I didn't always hold a great appreciation for education. It is to this appreciation and the AET Faculty that I attribute my success.

I grew up in a small town approximately 45 miles south of Morehead, Salyersville, Kentucky. Throughout primary and secondary education, I was an above average student, but never excelling in any particular subject. Like most high school graduates, I wanted to go to college with my friends, but with no career goal in sight. My first semester, I experienced everything I could, except an actual education. Near the end of the semester, I realized that college just wasn't for me.

After a few months of working odd jobs, I realized I wanted more, but still had no idea what it was that I wanted for the rest of my life. In an effort to buy a little time, and possibly find out where my passions lie, I joined the military. It took some time to get used to the structure, but ultimately, it was exactly what I needed. I ended up serving 6 years as a Combat Engineer where I served one tour of duty in Afghanistan. After returning home from deployment, I decided I was going to go back to school because I wanted to make something of myself. I was finally ready for the challenges and growth that one only experiences while furthering their education.

Curt Adkins

Once an undergraduate and graduate student at Morehead State, Mr. Curt Adkins is now a proud father of two with his beautiful wife Krista. He is an engineer/ group leader at Mazak Corporation in Florence, Kentucky. Curt frequently recalls fond memories of time in the classroom and machine shop at MSU, as well as spending a lot of time kayaking on Cave Run Lake. Along with his career at Mazak, he has continued to use what he has learned from the AET Department, designing and building a CNC plasma cutter and CNC router. "I have a great deal of respect and gratitude for the people at Morehead State. Especially the AET faculty and staff. I owe them all a great deal for investing their time in me. I have been blessed."

I always held an appreciation for the challenges associated with construction, as my father, a construction worker, introduced me to this at an early age. After some research, I found Morehead State University offered a program that would prepare me for the career I was seeking.

I enrolled in the program in Spring of 2010 and was a bit overwhelmed entering back into college as a non-traditional student out of the military. My first semester back, I enrolled in 18 credit hours and finished the semester with a 4.0 GPA. This trend continued for the next 2 ½ years while managing to maintain high marks in all classes. I completed the program with a 4.0 GPA in the AET department.

After graduating, with no idea what to do with this new knowledge, I was ready to face the world. After searching, I was offered a job as a Construction Engineer in the Industrial sector at a refinery in East Chicago. I spent 1 ½ years in this position where I began rising through the ranks. With my responsibilities increasing, I welcomed everything that was thrown at me. After completing the project, I reported to my employer's corporate office in Houston, TX. After a short time there, my employer offered me a Chief Engineer position at a new project. I was a little hesitant with my limited amount of experience, but accepted anyway. With only 2 years experience, I now hold the position of Chief Engineer on a $1.6 billion project for an ENR top rated Engineering and Construction firm.

Defazio receives ATMAE Innovation Award

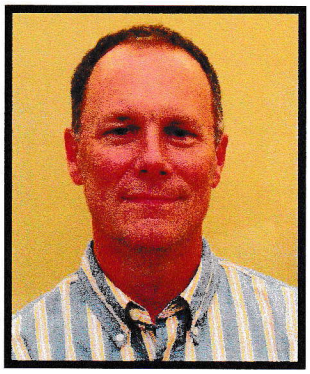
Morehead State University alumnus Steven Defazio was recognized as the Industry Innovation Award recipient at the 2013 ATMAE National Conference in New Orleans, La. Defazio has made significant contributions to MSU's Department of AET since graduation by providing industry insight and curriculum enhancements to stay consistent with industry trends. He has served on the AET advisory board for more than 10 years and one year as chair.

ATMAE's committee selected Defazio as this year's award recipient based on his innovation, demonstrated leadership and superior performance, through the creation and management of technology and the effective management of resources, to benefit a business enterprise and society. The president of Kyosan Denso pointed out that due to Defazio's exemplified leadership, the company was able to minimize losses while contributing to productivity enhancement through process improvements based on TPS principles. This was especially notable during the economic downturn in 2008-09 and aftermath of the Japan disaster in 2011 when production volume was down.

Defazio has been promoted three times in a five year period while at KDMK. He started with the company in 2008 as the manufacturing manager, promoted in 2010 as senior manager and then to vice president of operations and engineering in 2012.

ADVISORY BOARD spotlight

R.T. Sutton

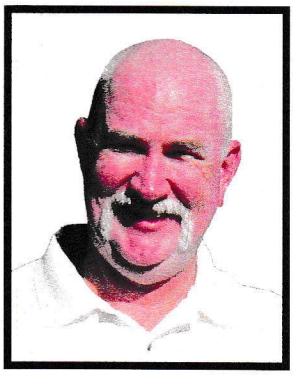


R.T. Sutton is a native of Mt. Sterling, KY. He graduated from the University of Kentucky in 1987 with a Bachelors of Science Degree in Industrial Training and Development with an emphasis in Machine Tool Technology. He also holds Associates in Applied Science Degree from the University of Kentucky in Mechanical Engineering Technology.

He is currently employed at Pentair in Mt. Sterling, KY as the Manager of Product Engineering. During his 17 years at Pentair he has also held rolls in Quality and Customer Service. His original roll was as Quality Manager, overseeing the ISO 9000 certification. He has also had roles in Elizabethtown, Kentucky as a Tooling Engineer and Georgetown, Kentucky as a Machine and Tooling Designer.

R.T. lives in Mt. Sterling with his wife (Shelly Sutton). They have one son (Alex) who is a Senior Civil Engineering Student at Western Kentucky University and two daughters. Abby is a freshman at the University of Kentucky and Lily is a freshman in High School (Home School). R.T. enjoys his ministry at his local church, Boy Scouts and Horseback Riding.

Dr. Herb Wedig



Herb is an independent educational sales rep for Technical Training Aids representing companies such as Amatrol, Fanuc, SolidWorks, Stratasys and others offering educational training products in the areas of industrial education and advanced manufacturing. TTA helps schools provide flexible, targeted solutions for local industry giving instructors and students the skills they need to be successful.

Herb has worked with educational institutions throughout Kentucky & Tennessee for the last 29 years. He was also a co-founder/owner of the Atech Corporation in Walton, KY from 1984 to 1992. Before coming to Kentucky Herb worked for the Megatech Corp. in Massachusetts from 1978 to 1984.

Herb grew up in Cincinnati Ohio and received his B.S. in Industrial Education from EKU in 1974. Herb received his Masters and Ph.D. in Industrial Education from Iowa State University in 1978. Herb has made major contributions to AET, travelling to MSU several times to help find a solution for the department's Rapid Prototype Machine needs.

Paul Daniel

Paul Daniel is an Assistant Manager of Production Engineering at KDMK. He was a 2001 graduate of Harrison County High School in Cynthiana, KY. He then attended MSU where he graduated in 2006 with a BS in Industrial and Engineering Technology in Manufacturing and Robotics. Upon graduation, he worked for the Mazak Corporation as a National Service Engineer/Spindle Repair Technician from May 2006 until August 2007.

He was hired at KDMK as a Production Engineer in August 2007. He was then promoted to Sr. Engineer in 2011 and later promoted to Assistant Manager of Engineering in 2013. KDMK is a OEM automotive supplier of SIFS (Simplified Integrated Fuel Systems) with customers such as TOYOTA, FORD, HONDA, and others. They are the #1 manufacturer in the world within the Denso Global Group for SIFS production. He is one of KDMK's technical trainers for Engineering and Maintenance. His teams responsibilities vary from Equipment Design, New Product introduction/Setup, Kaizen, Process Layout and Design, Estimations and support for other departments.

Dr. Veekit O'Charoen

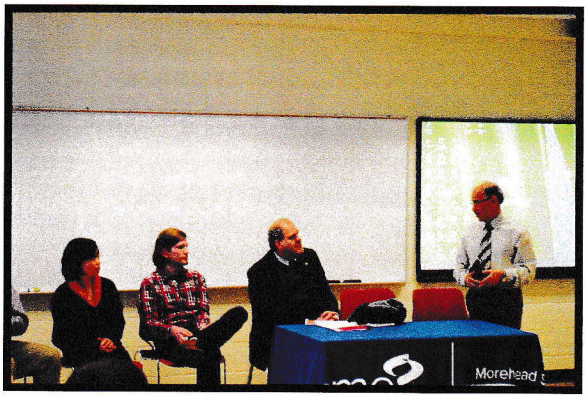
Dr. Veekit O'Charoen is a Senior Technical Lead in the Manufacturing Engineering Systems and Development (MESD) domain, Production Engineering Core of Boeing Commercial Airplanes in Everett/Seattle, Washington. Veekit joined the Boeing Company in 2005 and assumed his first responsibility for ME Processes Deployment where he authored interactive documents designed to support manufacturing engineers of the 787 Dreamliner program and global partners based on the Define Geometry Based Process Planning business scenario. In 2007, Veekit was assigned by Boeing Leadership to join MESD team where he utilized a unique combination of skills and experience in Define-Develop-Deliver a solution to improve ME Tools and Processes specifically related to Manufacturing Visualization, Installation Plan and 2D/3D Work Instruction Authoring. Veekit holds two Boeing Invention Disclosures: US patent pending and trade secret.

STUDENT organizations

Society of Manufacturing Engineers (SME) Student Chapter Hold SME Day Activities

The MSU Student Chapter S303 of the Society of Manufacturing Engineers (SME) organized SME Day on Thursday March 13 2014. Students from AET and other departments participated in various competitions and other events, such as Technology Bowl, Robotics, MasterCam, Solidworks/Solid Edge, Structural Design and Wood Pen Making. Dr. Ahmad Zargari, Chair of the AET Department and Dr. Roger McNeil, Dean of the College of Science and Technology addressed the audience during the opening ceremony. The closing and award ceremony was led by Mr. John Haughery, Academic Advisor for STEM and AET graduate student. Matt Warren, SME Treasurer and Quentin Gaille, SME Secretary presented various prizes to award winners.

First place went to Chris Mullins, a junior in the Electronics and Computer Engineering Technology (ETEC) major. Tied for second place were Brent Gozzard, a junior in the Engineering Management (EM) program and Matthew Neal, a sophomore in the Electronics and Computer Engineering Technology (ETEC) major. In fouth place was Troy Stafford, a sophomore in the Design and Manufacturing Engineering Technology (ETDM) major.



AET Chair, Dr. Ahmad Zargari (standing), welcoming Dr. Roger McNeil, Dean of the College of Science and Technology. Also in the picture are Matt Warren, SME Treasurer, Dr. Ni Wang, SME Advisor, and Dr. Hans Chapman, SME Advisor, (partly shown).

AGC Student Chapter Assisting in Local Projects

This has been a very busy semester for the MSU AGC chapter. We kicked off the semester with an invitation, from J. Marshall at the Center for Regional Engagement, to attend a meeting in West Liberty on the reconstruction efforts to rebuild after the devastating tornado that destroyed most of the town two years ago. This meeting was set up by Texas A & M University architecture students under the direction of Professor Greg Luhan. Professor Luhan is a professor at the University of Kentucky who is teaching at Texas A&M while on sabbatical from U.K. This meeting resulted in collaboration with M.S.U. and Texas A&M on rebuilding one of the local businesses. M.S.U. students will be providing site survey information, site preparation costs, construction costs and a construction time line based upon Texas A&M students design for the building. This project is under the direction of Construction Management major Robert Spenser.

The next project the students are working on will be a walking track for the residents of District 4 in Morgan County. The students have already presented Magistrate Frankie Spenser and local residents with a conceptual 3-D rendering of a possible design as well as a PowerPoint presentation with AutoCAD drawings of two additional designs. This information was presented during a community meeting in the town of Ezel at the local elementary school library during the first week of March. This project will have the students using all the skills they have learned during the course of study here at M.S.U.; design, site survey, site prep, materials and cost estimates, and a timeline for the construction completion. This project will be completed in approximately 3 phases with the first phase to be completed by the end of the current semester. Construction Management majors Maci Motley and Cyra Jones are co-leading this project.

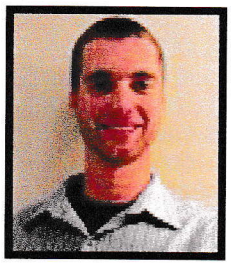
M.S.U. students are also taking part in an extension of the Midland Church of God in Bath County as a third project for the current semester. This project will be a proposed design, materials and cost estimates, and survey of the site and Church building. This project is being led by Construction Management major Brendan Bell.

These projects allow the students to understand the skills taught by the instructors in the classroom in a real world situation. This type of experience will be extremely valuable to graduates of the program when they enter the workforce. The projects also help to strengthen ties between the University and the surrounding communities. The student AGC chapter is committed to the idea of "Building the Future" here in our surrounding area as well as the state and beyond. We are planning on doing projects each semester to fulfill this commitment and train the Construction Managers of the future.

GRADUATE STUDENT spotlight

Yading Yang

Yading Yang, from China, is a Graduate Assistant in the Department of Applied Engineering and Technology. He got his BS Degree in Electrical Engineering in 2011, which focused on power generation. He was an exchange student at Morehead State University in 2012. Now he is pursuing an MS in Engineering and Technology Management.



Stephen Glossner

Stephen Glossner is a Graduate Assistant in the Department of Applied Engineering and Technology. In December 2012, he earned his B.S. Degree in Engineering Technology with an option in Construction Management from Morehead State University. He is currently in his last semester of his M.S. Degree in Engineering and Technology Management. He is currently working on his Master's Thesis; analyzing the cost effectiveness of building LEED certified single-family homes in Kentucky. Stephen is planning on presenting this research at the ATMAE Conference in November. Stephen is a member of the AGC and ABC student organizations at MSU as well as ATMAE and the Kentucky Academy of Science. He is also an active alumnus of the Morehead State University Men's collegiate bowling team.

Caiwen Ding

Caiwen Ding, is a graduate Assistant in the Department of Applied Engineering and Technology. He earned his bachelor's degree in Electrical Engineering and Automation from Guangxi University, China. He is currently pursuing his MS degree in Engineering and Technology Management. He is excited about the graduate student life on MSU campus

Jimmy Powell

Jimmy graduated with his BSTM from Morehead State University in May of 2013 and is now seeking his MSETM. Working as a Graduate Jimmy has assisted Sam Mason with IET 186 and 286. supervisinng the wood fabrication lab and the metal fabrication lab. He has also assisted Dr. Joshi with ITCD 103. and Dr. Adhikari in ITCM 202 with construction labs.

John Haughery

John Haughery is a graduate student finishing an MSETM degree. Recently he has been nominated for Outstanding Engineering & Technology Management Graduate Student for the spring 2014 semester. It is with great appreciation that John receives this award and is counted among past exemplary graduates from the AET Department.

As of March 1st, MSU's College of Science & Technology has hired John into the position of Academic Advisor (STEM). The duties of this new job will be to serve as a freshman advisor for the departments of Applied Engineering & Technology, Earth & Space Sciences, and Mathematics, Computer Science & Physics. Mr. Haughery is very excited to serve the college and students in this capacity!

John continues to pursue scholarly contributions. At the 2013 ATMAE Conference he was awarded 2nd Place in the Graduate Research Competition for his research titled, Developing an Approach for Customizing a Renewable Energy Systems Laboratory Protocol. John has taken this success and extended it into his thesis research related to determining curriculum content for a renewable energy master's program. Also, Mr. Haughery is a primary-author and secondary-author on two presentations for the upcoming 2014 ATMAE Conference.

- Design of a Programmable Surface Acoustic Wave Correlator Using Binary Phase Shift Keying Encryption for Wireless Network Security (primary-author)
- Circuit Design For Improved Capture Of Ambient Energy Over A Wide Frequency Range By Piezoelectric Energy Harvesting Devices (secondary-author)

Jayson Minix

Mr. Jayson Minix is in his third semester here at MSU where he is completing a Master of Science in Engineering and Technology Management. His graduate studies are in the field of Quality Engineering with a research emphasis on measurement variation encountered when using coordinate measurement machines. Jayson has as BS in Aeronautics with many years of experience in the Aerospace industry which began while he served in the United States Air Force. He is currently pursuing a career in Industrial Management and hopes to obtain employment as a Quality Engineer upon graduation.

AET NEWS spotlight

A Different Approach to Solving Eastern Kentucky's Jobless Rate Woes by Shane Wallingford

The talk of everyone in Kentucky from politicians to clergymen or from the wealthy to the poor at this moment in time has to do with the unprecedented jobless rate in Eastern Kentucky. Coal mining jobs have declined drastically for many reasons ranging from the ease in which coal can be mined in the region, to EPA standards that have made using coal as a natural resource undesirable to clientele such as power plants and refineries. The aftermath is undeniably startling as approximately 6,000 people have been left jobless and homes and small towns are left wandering how they will survive. This has prompted an Economic Summit held by State and Federal representatives to be called to attempt to surmise a plan to create economic opportunity to a place that is devastated and desperate for immediate results. People of the region need opportunities that could garner a living wage once again and allow a proud, steadfast region of the Bluegrass State to once again sustain itself independently.

There are other regions of Appalachia, such as Lewis County along the Ohio River in Northeastern Kentucky that has been in this position for over 100 years. There is no coal seam in this region or any other mineral for the exception of a river rock deposit that can be mined. Of the 4,949 people that live and work in this county, 3,229 have to leave the county to find work. The county's largest employer is the school system that has 26.1% of the workforce employed and another 20% work for government aided medical facilities, meaning that nearly half of the jobs in the county is provided by State or Federal government agencies. The manufactured goods portion of the county is not high enough to even be considered in a census report and now the large manufacturing jobs providers in neighboring counties such as Emerson Power Transmission (Browning's) have gone to other regions and countries. The citizens of this county has a major challenge as well to promote and garner the economic development needed to sustain itself.

Shane Wallingford, owner of JSB Industrial Solutions, INC, decided to try and approach the problem of joblessness in this county in a unique manner. Shane, a 38 year old graduate of Morehead State University with a Master's of Science in Engineering Management, developed a plan to attempt to create jobs based on 5 criteria in an attempt to purchase his own company and move it to the region.

1. The company to be purchased must be re-locatable.
2. The company must be in a certain price range; below $300,000.
3. The company must manufacture a product that is an industrial need.
4. The company must have existing sales of the industrial need.
5. The product line must fit the skill set of the displaced workforce that is in the region.

This method expedited the potential for quick cash flow into the company and mitigated the risk of a start-up company. After 2 years of searching, Shane found a product line called Ball Mills that are used for pulverizing aggregates into powders that met the 5 criteria, therefore was the solution to the problem. The workforce of the region has extensive metal removing, metal forming, metal fabricating experience which is exactly what is needed to manufacture the products. The limestone and coal fired power plants are all dependent on Ball Mills in their process and people to work the needed jobs are readily available with the experience necessary.

To get through the lending process, Shane had to rely on Buffalo Trace Area Development District and MACED for the funds that were required as lending institutions were still feeling the sting of the housing market collapse and did not feel comfortable participating. In order to expedite the needed revenue and cash flow components of the company, Shane turned his sights to the AKA (Advantage Kentucky Alliance) and Scott Broughton to have an asset utilization survey completed and discover new ways to utilize the machinery in his company. Together, they worked toward 6 month goals and one year goals focusing on immediate items that would be the quickest means of increasing cash flow and generating revenue.

Knowing that Ball Mills were large capital projects that would take 12 to 16 weeks to complete, Shane then found a company, Universal Machine in Terre Haute, IN, that was searching for a reliable OEM to manufacture pallet manufacturing equipment. This was lower margin, higher volume machinery that has the capabilities of keeping a steady work flow for the work force in the company because of the size of the equipment and the lack of sophistication in these machines. Shane also has a Mazak CNC Laser and a 225 ton press brake that he is looking to utilize in the contract manufacturing arena cutting and forming piece parts for larger companies.

As this is a January 2014 start-up with 5 employees at an 8,000 square foot facility in a county that historically has high unemployment rates which consistently ranks in the top 10 counties in Kentucky, Shane is trying to establish himself in the manufacturing world utilizing the workforce that is already in existence. His company has 1 design Engineer utilizing Solid Works, CNC Laser capabilities, Press Brake (225 ton) and welding capabilities and is currently looking to contract manufacture with the laser and press brake to generate cash flow,plus the operators are all local. By utilizing the skill set that is already in place in the county, he is attempting to capitalize on the need for minimal training of his employees on machinery and therefore gaining instant capabilities expediting the chance of success. Is it the only solution to the problem of joblessness in Eastern Kentucky, no? Is it a possible solution to the jobless rate in Eastern Kentucky, yes? It is just a possibility for now.

AET NEWS spotlight

IET 422 - Closing in on 27 more 30-hour OSHA completion candidates

The AET Departments IET 422 – Industrial Safety Standards and Enforcement course is coming closer to a close with another group of 30-hour OSHA completion candidates. Twenty-seven more juniors and seniors will earn the completion to add to their list of achievements while at MSU. The course focuses heavily on the required 30-hour course material mandated by the United States Department of Labor Occupational Safety and Health Administration sector. There are about three types of safety training that most employees will encounter; topic by topic, 10-hour OSHA and 30-hour OSHA curriculum. The topic by topic are usually follow-up trainings, updates or very specific areas of concern. The 10-hour OSHA is usually a complete primer course for those employees entering the workforce in General Industry and the 30-hour course material goes further in depth of many topic areas in the OSHA 10 curriculum but focuses heavily on managements role, maintaining records, emergency action plans and employee rights and employer responsibilities.

"Essentially, the 30-hour OSHA course prepares our students to hit industry running with a sound foundation of safety awareness. Many of our students will begin their careers in mid-level management roles, therefore, not only are they an employee....but a Management Representative of the employer. Their role is two-fold," said Sam Mason, Design and Manufacturing Instructor and Authorized OSHA Trainer. Mason added, "Everyone in this country has a right to a safe and healthful workplace and is protected by the General Duty Clause. It began on December 29, 1970 when signed into law by President Richard Nixon and became effective August 27, 1971. It still amazes me that the OSH Act is only 43 years old, just a little older than I am."

With the IET 422 30-hour OSHA course in its third year running, Mr. Mason has trained 76 AET students through completion, 13 students through YouthBuild USA and approximately 45 employees in a specialized topic two-hour lock-out/tag-out (LOTO) training at SRG Global. Mason continued by saying, "The 30-hour OSHA completion card our (AET) students receive is not only a boost during competitive interviewing, it is a signal to any employer that they (the students) will be safety conscience in industry. It also allows the employer a break from yet another training fee they will have to pay for the new hire. I feel we can provide this service so the funds for that particular training can be used for additional training in another area the company choses for the student to gain more knowledge or skill ie. Specialized controls or robotic programming training, PLC's, monitoring systems, etc.)

AET Helps Thirteen MSU YouthBuild Participants Earn 10-hour OSHA Certification

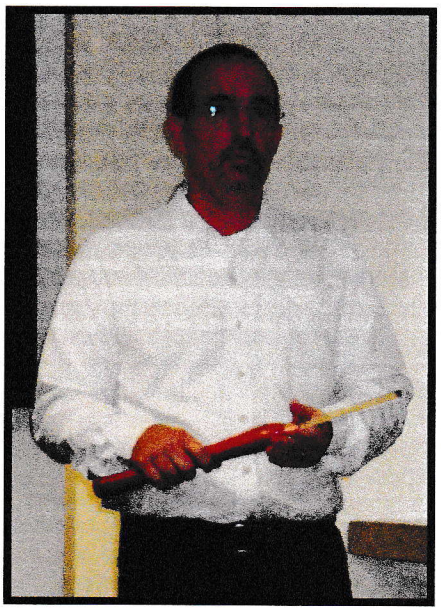
During Morehead State University's Spring Break week, AET's Design and Manufacturing Instructor and Authorized OSHA Trainer, Sam Mason, voluntarily conducted a 10-hour OSHA training course for the YouthBuild USA organization housed on campus. The participants covered General Industry 1910 topics of Means of Egress, Walking and Working Surfaces, Fire prevention, Hazard Communication, Hazardous Materials, Machine Guarding, Bloodborne Pathogens, Electrical Safety, Personal Protective Equipment and Materials Handling. As fulfillment of the contact hours, earned an official 10-hour OSHA completion card that actually benefits two stakeholders; the participants because they are well informed for the workplace and the employer because they know this new employee has already had training in safety related topics.

"I think this is a great way to give back to the youth in our community and help guide young people toward their goals. The participants learned not only safety topics, but what rights they have to a Safe and Healthful Workplace," said Sam Mason. He continued by saying, "It's not just a card....it is motivation for them to become aware of unsafe conditions not only at work but throughout their daily activities. Knowledge and information are powerful and that's what needs to be reiterated to these young students. Having knowledge and determination along with knowing someone cares and supports them, is enough to be successful in a career and their life."

MSU YouthBuild is a Department of Labor funded grant program operated by the School of Public Affairs. YouthBuild works with 18-24 year-old high school dropouts, helping them to complete the GED and to develop vocational skills. Participants spend half of their time working with staff at MSU's Adult Learning Center and the other half of their time learning construction skills in partnership with Habitat for Humanity. Throughout the program, participants are encouraged to explore different vocations, as well as opportunities for post-secondary education.

AET NEWS spotlight

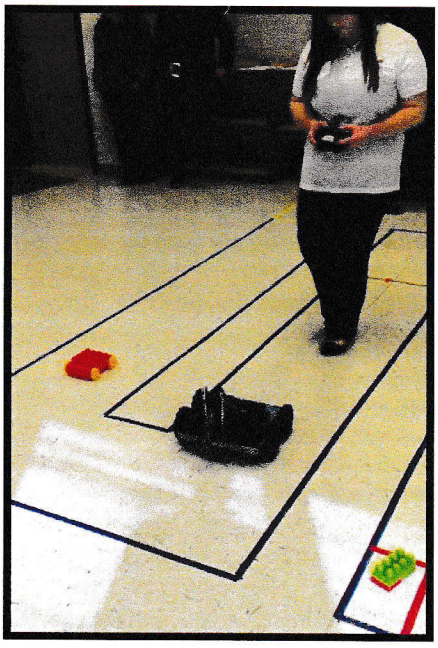
Craig Jackson Speaks to Manufacturing Students



The Fall 2013 ITMT 186 Manufacturing and Fabrication course invited a Kentucky Inventor/Innovator/Business Owner to speak on his pathway to career success. Mr. Craig Jackson, President and CEO of Easy Wood Tools, Inc., Lexington, KY spent time walking the students through his journey from his corporate management job, to his start-up business from his garage in Owensboro (2008) and the journey to Cahill Drive, Lexington. Craig shared his love of wood turning and his displeasure of the primitive tools he had to re-sharpen and use. This is where he began to tinker with the idea of a replaceable carbide insert turning tool. Now Craig and his company produce 9 models of turning tools, a revolutionary designed wood turning chuck and they have other new products that will also launch soon. He brought his Design Engineer, Garth Grause, with him to speak, demonstrate and discuss the process of various rapid prototyped designs for his new product that will launch in 2014.

"Craig did a fabulous job discussing the importance of Toyota Principles, Business Plans, New product launch and marketing plans as well as his extensive and exhaustive journey", said Sam Mason. Craig demonstrated his ability to research and learn from reading his stack of books (5'10" tall) to extract the six key factors/ focus areas that worked for his company start-up which included quality, price, delivery, customer service, innovation and scalability. These are his driving force that he exemplifies to his employees which are demonstrated in the quality of his products.

AET Graduate Students Judge Mobile Robotics Event for Skills USA Regional Competition



A student controls a robot at Skills USA Competition

The AET department was asked to help in the Mobile Robotics regional event as part of the Skills USA Regional Competition held in Paintsville, KY. on February 28th, 2014, as the Mobile Robotics event had never been held at a regional event. Four AET Graduate Students (Stephen Glossner, Jimmy Powell, Caiwen Ding, and Yading Yang) volunteered to travel to Paintsville and assist in the event staff with the Mobile Robotics event. The graduate students were pleasantly surprised to find that they would be doing more than just assisting. They collaborated with the event coordinator and other event staff to develop a course for the robots to navigate and a scoring system to evaluate their performance. The coursed utilized a series of formidable turns, obstacles and tasks the robots had to perform all while being timed. Two teams competed in the event and both did remarkably well. The Graduate students truly enjoyed this experience. They were glad they could help ensure that the first Mobile Robotics event held a regional event went as smoothly as possible. Annette Harris, Principal of Belfry Area Technology Center and Morehead alumnus, who was greatly involved in the Skills USA Competition said the following about the four Graduate students who aided in the Mobile Robotics event;

"They were very knowledgeable about the specifics of a robotics event. They basically took the contest over and constructed an obstacle course from scratch. They were actively engaged with the event coordinator in designing a score sheet and specific details of the contest lay out. The knowledge they provided was invaluable in this contest. Mobile Robotics had never been held at a regional event.

The MSU students were professional, courteous and respectful throughout the entire day. I was extremely proud to be an alumnus of the program and I feel that these young men are an asset to your department. I would highly recommend that the students receive class credit or recognition for chairing and designing a secondary level robotics competition. I look forward to the MSU AET Department's continued involvement of the 2014-2015 Skills USA Regional Competition."

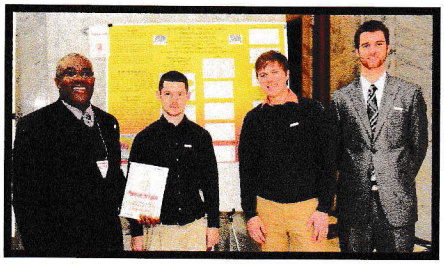
AET NEWS spotlight

AET Department Receives Alternative Energy Systems Training Equipment

The Department of Applied Engineering and Technology (AET) received an Alternative Energy Systems Training Equipment in February 2013. The equipment was purchased from a $42,000 grant awarded by the Siemens Building Technologies Education Team and the MSU Administration. The equipment will support the department's efforts in establishing a laboratory for the IET 352 Energy Systems and Sustainability course developed and taught as a summer course by Dr. Hans Chapman.

Herb Wedig, Educational Consultant with Technical Training Aids, who is also an AET Advisory Board member, performed an orientation of the equipment at the AET Department on February 28, 2013.

Herb Wedig performs orientation on AET's new Alternative energy systems training equipment with Dr. Hans Chapman and John Haughery.



Dr. Hans Chapman, Zach Schneider Andrew Greene, and Stephen Glossner

Haughery and Watson Take Honors at ATMAE Conference

The Applied Engineering and Technology Department at Morehead State University is proud to highlight a few of its current students who received national recognition for accomplishments in academics. These honors were given this past November by ATMAE, which is a nationally and internationally recognized organization predicated on promoting leadership, innovation and collaboration in academics, industry and society. Each year ATMAE presents awards to the most exemplary candidates in a number of categories. John Haughery and Charles "Matt" Watson were recipients of awards at this year's annual ATMAE Conference in New Orleans, LA.

John Haughery was awarded the Kate and Cliff Strandberg Masters Student Scholarship, which is given to only one masters student each year by the ATMAE Foundation. This esteemed scholarship recognizes exemplary service and dedication to the ATMAE organization in both professional and academic capacities. Mr. Haughery currently servers as a member of the ATMAE Board of Accreditation and author of the organization's annual student robotics challenge article. Also, Mr. Haughery received 2nd place in the Graduate Student Research Presentation Competition with his research titled Developing an Approach for Customizing a Renewable Energy Systems Laboratory Protocol and received best 2013 ATMAE Conference proceedings paper in the Electrical, Electronics and Computer Technology Division.

Matt Watson, past BS (2012) graduate, current MS student in the AET Department and Designer at Link-Belt Cranes was presented with the Epsilon Pi Tau Alvin Rudisill Award and was induction into Epsilon Pi Tau. This award is given to Mr. Watson based on his exemplary professional leadership potential and academic accomplishments. He has recently received US Design Patent D687,868 for the design of a highway crane driver's cab. Mr. Watson is the co-inventor of this design along with LeRoy Williams.

AET Students Present Posters at the 2014 Posters at the Capitol Conference in Frankfort KY

AET students, Zach Schneider and Stephen Glossner were among 26 MSU students who collaborated with faculty to present posters at this year's Posters-at-the-Capitol Conference at the State Capitol, Frankfort, on Thursday, Feb. 27. Morehead State University President Wayne D. Andrews, Lt. Governor Jerry Abramson and other officials unveiled this year's event.

"These student projects, completed in collaboration with faculty members outside the traditional classroom setting, represent the personal, value added educational opportunities available at Morehead State University," said President Andrews.

Undergraduate students Andrew Greene and Zach Schneider, worked with Dr. Hans Chapman, assistant professor of Applied Engineering and Technology on their research titled "Assessment of the Solar Energy Variability and Effects in Eastern Kentucky". AET Graduate Student, Stephen Glossner presented a poster on the topic "Assessment of LEED Certified Residential Projects in Kentucky".

John Haughery accepts the Kate and Cliff Strandberg Masters Student Scholarship.

Learn much more at **www.moreheadstate.edu/aet**

For Your Information

The AET Department will host the 2014 TSA Regional Competition on March 27, 2014.

The ATMAE Accrediting team will visit AET April 13-15, 2014 for BS in Engineering Technology program reaccreditation and MS in Engineering and Technology Management initial accreditation. .

The KY State TSA Conference will be held April 21-23, 2014 at the Crowne Plaza Hotel in Louisville, KY.

The 2014 ATMAE Annual Conference will be held November 19-22, 2014 at the Hilton at the Ballpark in St. Louis, Missouri.

The Advisory Board Chair-Elect is Jeff Lewis of Alstom Power.

The Advisory Board Past-Chair is Jason Fights of the Mazak Corporation.

The Fall 2014 AET Advisory Board meeting will be held on October 17, 2014.

AET faculty, staff, and students will visit Toyota in Georgetown, KY on April 10, 2014.

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