

SUMMER 2018 MECHANICAL ENGINEERING NEWSLETTER

## MoMEntum

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### From the Department Head

Welcome to the summer 2018 edition of the Mechanical Engineering Newsletter,

MoMEntum!

Do you have fond memories of working on a competition team? This newsletter gives you an update on some of the teams most closely associated with ME: FSAE, RHEV, DBF, and HPVT. We've also showcased the "Bella Bike" capstone project, a student team developing an Emergency Response UAV, and the students who received departmental awards.

Dr. Sanders, who taught many of you over his 38-year career at Rose, retired at the end of fall. There is a brief summary of his accomplishments below and I know he would appreciate hearing from any of you, as he moves on to other activities.

It is getting to be "crunch time" on the "What ME's Do" project—we hope to include those submissions in publicity and on the walls of the main hallway this fall. If you have been meaning to get us a contribution, please spend a few moments to do that now. More information on that below!

# What Do MEs Do? Share your story!

As you've no doubt learned – beginning with the transition from student to working professional – the options for mechanical engineers come in many flavors and sizes. Our ongoing exploration of "What Do MEs Do?" is meant to give students and prospective students an idea of the range of career possibilities open to ME graduates. We convey the diverse, rewarding world of our profession through online features, brochures and other print pieces, and even the walls and hallways here at RHIT.

## **So, what's your story?**

Please share notes and photos that convey what you do professionally and how you got where you are. We're happy to highlight what other Rose ME grads in your organization or elsewhere are doing, as well.

To join the conversation, [please send us your comments and photos.](#)



## Helping Those Who Provide Emergency Aid

Helping emergency responders manage a crisis is rewarding in itself, but two Mechanical Engineering students recently had their work honored at a regional student conference of the American Institute of Aeronautics and Astronautics. Cameron Sickbert and Mitchell Lozier took first place with their paper, “Development of an Emergency Response UAV.”

Lozier and Sickbert are developing **NORM** (Network Of Rescue Machines), the first unmanned aerial vehicle intended for emergency response professionals. NORM. can take off vertically, unfold wings for horizontal flight, then land vertically to deliver a payload to a preprogrammed destination. The UAV can deliver tools, supplies or other aid to fire, hazmat, and medical emergency situations that are not accessible or safe for humans. On-site, NORM will be able to hover and provide aerial surveillance.

The team has produced a **video** explaining their concept, which is helping raise funds for a full-size prototype. Their success at the regional conference led to an invitation to present at the annual AIAA SciTech Conference in January 2019.

Dr. Calvin Lui, associate professor of mechanical engineering, has supervised Sickbert and Lozier on the project since 2015. Their work has attracted funding from several sources, including:

- ArcelorMittal, through the Independent Project/Research Opportunities Program
- The Branam Innovation Center Fund (Dr. Bill Kline, supervisor)
- The Student Academic Travel Fund (Dr. Julia Williams)



## Smarts, Chops and Attitude: ME Awards Single Out Seven Top Students

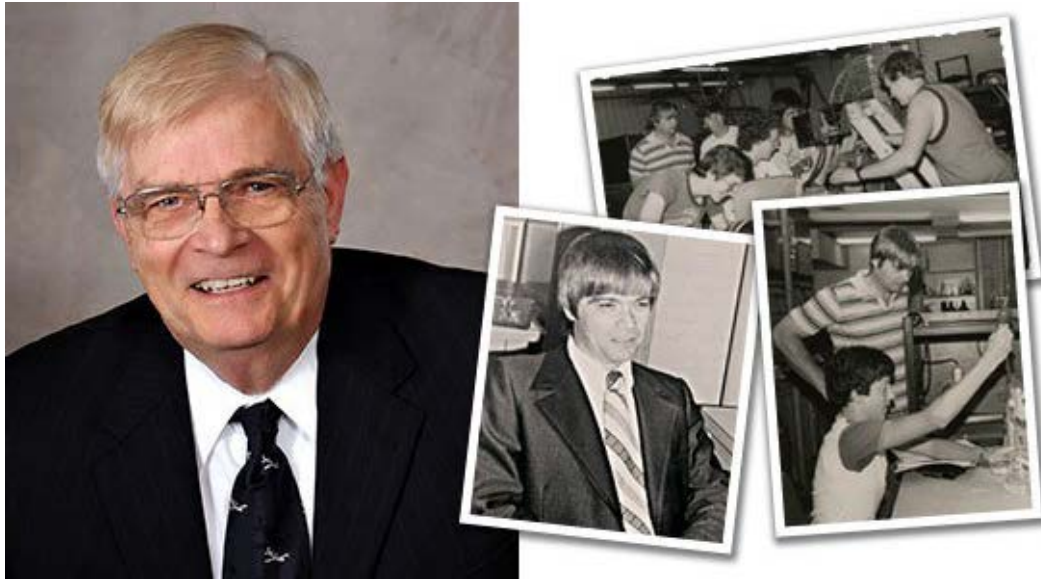
You don't get into Rose-Hulman without the wherewithal to succeed in a demanding academic environment. Those who go on to earn degrees have demonstrated that they can apply what they've learned and are prepared for careers in their field of study.

Along the way, a handful are singled out for recognition in the form of Mechanical Engineering departmental awards. These honorees excel not only at academics and extracurricular activities, but also certain qualities valued by those who established or inspired the awards:

- Caroline G. Johnson: Cummins Engine Company Inc. Award  
Faculty select a mechanical engineering student of senior class standing based on scholastic achievement, extracurricular activities, character, responsibility, attitude and potential for professional growth.
- Michel F. Farhat: Edward A. MacLean Award  
Memorializes Dr. MacLean's 25 years as professor and head of the Civil Engineering department with a cash award for a student completing junior year who has achieved academic success, demonstrated academic improvement and been active in extracurriculars.
- Benjamin Strate: Steinhauser Award  
Honoring Department Chairman Emeritus Robert Steinhauser, this award recognizes a student completing sophomore year for scholastic achievement, extracurricular activities, character, responsibility, attitude and potential for professional growth.
- Jenna Lewis, Zachary Swanson, Thomas VanFossen and Garrett Wight: John D. Winters Scholarship

Scholarships for juniors and seniors demonstrating financial need as well as academic record, technical ability, future leadership potential in the business world, and high moral values.

Hats off to all honorees of the 2018 Mechanical Engineering Departmental Awards. Their success underscores Rose-Hulman's unique strength as a teaching institution and the opportunity to foster future generations of students through gifts and bequests.



## **Sanders Flies to Enjoy Retirement after 38-Year Teaching Career**

Wayne Sanders has more time to tinker with small aircraft and other mechanical equipment after his recent retirement – concluding a 38-year career of teaching mechanical engineering students about the elements of heat transfer, thermodynamics and propulsion. He also supervised countless laboratory sessions. Many of Sanders' former students returned to become his department colleagues and now will take over many of his courses.

Sanders, who joined the faculty in the fall of 1980, is a licensed professional engineer, and had previous industry experience working for the U.S. Patent Office, B.F. Goodrich, Boeing and the U.S. Army & Air Force Exchange Service. He conducted research on gas turbine engines for propulsion and power generation.

During sabbaticals, Sanders helped develop engineering design courses for Japan's Kanazawa Institute of Technology and taught at Malaysia's Shah Alam University.

Sanders also is a licensed small aircraft pilot and once owned his own plane, which he built from scratch.



Sanders earned all of his academic degrees in Texas – a bachelor's degree from Texas A&M University, a master's degree from Lamar University and a doctorate from Southern Methodist University.



## Mechanical Engineering Seniors Create a Special Bike for a Special Girl

Nine-year-old Bella Cates will be able to enjoy summer alongside her friends, thanks to a custom-made bicycle designed and fabricated by five mechanical engineering students as part of a senior-year capstone project. The heartwarming story caught the attention of [Indianapolis media outlets](#).

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## Efficient Vehicle Team Focuses on Time Management

The challenges for students designing a super-high-mileage vehicle include keeping things on track before the vehicle hits the track.

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## Human-Powered Vehicle Team Turns a Corner

An all-new “tadpole tricycle” concept takes students back to the drawing board after retiring a winning two-wheel design.

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## These Courses Take Minutes, but Yield Big Results

“Using up a set of brake pads in 10 minutes is never a good sign,” but this student Grand Prix team is on track for success with their car—and their careers.

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## Design-Build-Fly: “You have to do the math”

The weather was lousy. Their plane crashed. They built a new one from parts and carried on. Read how these Mechanical Engineering students rose to the challenge and how they fared.

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## CONTACT US

We welcome your feedback, so please don't hesitate to **contact our faculty and staff** with questions and comments.

## HELP MOLD TOMORROW'S MECHANICAL ENGINEERS

Generous alumni enable us to support faculty and provide enriching opportunities for students. Help us by **making a gift to the Mechanical Engineering Department**. Please designate your gift to fund 12228 - Mechanical Engineering. To designate your gift to a specific competition team, please indicate the name of the team.

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"When you want to know how things really work, study them when they're coming apart."  
~William Gibson