Nuts, Bolts and Neutrons

KANSAS STATE
College of Engineering
Department of Mechanical and Nuclear Engineering

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DEPARTMENT BITS

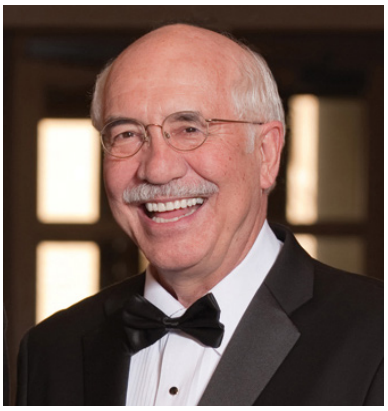
K-State alumni invest in opportunities for next generation

The U.S.S.R.'s Sputnik satellite launch in 1957 sparked an interest in space travel for Jim Jaax, a farm boy from Maize, Kansas.

He went on to study mechanical engineering at Kansas State University, where he earned a bachelor's degree in 1965, a master's degree in 1967 and married Suzanne Behrens, who earned a B.S in 1965 and M.S. in 1967 in foods and nutrition science at K-State. His education would ultimately lead to a highly-lauded career of more than 33 years with NASA, where he retired as deputy director for engineering for the Johnson Space Center.

"Growing up on a dairy farm provided many great life experiences," Jaax recalled. "But I knew I wanted a different career. I knew I wanted to attend a university, something neither of my parents had done."

Scholarships, graduate research assistantships and traineeships made their K-State journey possible, and now Jim and Suzanne are investing in opportunities for the next generation. The James and Suzanne Jaax Mechanical Engineering Scholarship, created in 2013 with IRA distributions, supports undergraduate and graduate students at K-State.



"Engineering is a very demanding discipline and the cost of tuition has soared since my time at K-State," Jaax said. "We want to empower students to focus on their education and alleviate some of their financial burden, just as others helped us. K-State was very instrumental in helping me find a successful career in a field I love, so our hope is that our scholarship recipients will also discover their passion and enjoy long, successful careers."

Gifts to the Department of Mechanical and Nuclear Engineering also support the $1 billion Innovation and Inspiration Campaign to advance K-State. To support the department, please contact the engineering development office at engineering@found.ksu.edu or make a secure, online gift to support mechanical engineering excellence or nuclear engineering excellence.

LEADERSHIP

Dr. Garth Thompson retires after 44 years at K-State

Dr. Garth Thompson, retired this year after 44 years at Kansas State University. Dr. Thompson served as the MNE Department Head from 1971-1974 and again from 1997-2001.

Dr. Thompson came to K-State from Purdue University where he was an assistant professor and shining star in teaching and research. At that time, he had already received recognition as an NSF Fellow, Ford Foundation Fellow, and Shell Oil Company Fellow. He had also received the Engineering Foundation Research Award, Standard Oil Award for Teaching Excellence, and SAE Ralph R. Teetor Award.

In 1974, following his service as department head, he pursued research in Automatic Controls. He obtained funding from various agencies including the Kansas Department of Economic Development. This relationship resulted in the development of the Center for Research in Computer Controlled Automation, now Advanced Manufacturing Institute (AMI). He served as the Founder and Director of the center from 1984 to 1988. From 1997-2001 he once again took on the role of department head for Mechanical and Nuclear Engineering. In 2006 he was honored with the Bob and Lila Snell Distinguished Career Award for Excellence in Undergraduate Teaching.

From 2007 to 2010 he lived in Afghanistan, where he served as director of the engineering partnership between K-State and Kabul University, rebuilding the Kabul University Engineering Program.

During his career he was PI or Co-PI on over 40 research grants, he wrote 40 peer-reviewed publications, and supervised 36 MS and 9 PhD students.

EXCELLENCE

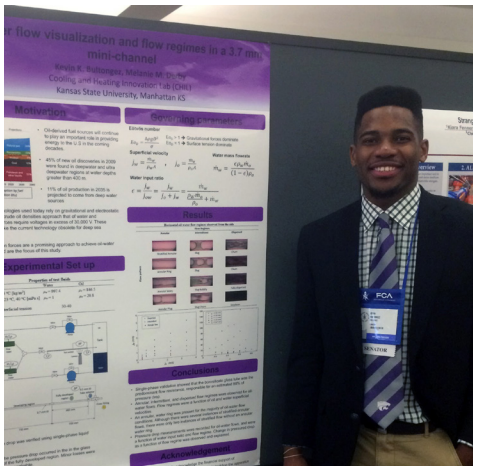
Graduate Student takes first in national poster competition

Growing up in Kinshasa, the capital of the Democratic Republic of the Congo, Kevin Bultongez recalls the many power black-outs that affected his daily life. Rolling blackouts to converse power are still a common occurrence in the DRC, sometimes they are scheduled allowing people to work around the inconvenience, but they can happen at any time without advance notice. When blackouts occur, the city anxiously awaits the moment when the power is restored. As a child, Kevin knew when power was being reestablished because he could hear the cheers go up around the city as different area's power was restored. This experience helped him appreciate the importance of power and was a contributor, in part, to his desire to pursue a career in renewable energy.

Kevin and his family came to the United States when he was 13 years old. Having grown up speaking French, Kevin found that taking French in high school was beneficial to helping him quickly learn English. Fortunately, languages came easily to him and never posed a barrier the pursuit of any of his many varied interests which ranged from artistic to analytical.

Kevin started out his K-State journey as an art student. However, learning about the science of Thermodynamics with Dr. Melanie Derby sparked a new fascination, and prompted him to change his major to engineering. After successfully completing his undergraduate degree at K-State, he chose to stay at K-State for graduate school. Like many K-State undergrads, he had held numerous part-time jobs to help pay for his undergraduate education, so being able to access the Graduate Teaching Assistant stipend enabled Kevin to pay for his education and fully dedicate his time to his studies.

Recently, his technical research poster recently took 1st Place out of 400 entrants at the National Society for Black Engineer's national conference in Boston, Massachusetts. He felt that his experiences in previous presentations with the Cooling and Heating Innovation Lab (CHIL) helped his confidence and his ability to communicate with people not necessarily knowledgeable in the field.



Kevin's project looked at current oil-water separation techniques used in the oil and gas industry. He described the current technology as "only accessible at the surface or on land and use electrostatic and gravitational forces. While being effective at separating the fluids, these techniques are inefficient in regards to energy use, time, and overall cost. Gravity alone is not sufficient, especially in cases of heavy crude where oil densities reach comparable values to that of water."

The solution proposed in Kevin's study initialized the oil-water separation inside the tube, as fluids are being pumped, by using surface tension forces and achieving annular flow. In annular flow regime, oils with higher viscosities and lower surface tension occupy the core region of the tube, and higher-surface-tension water forms an annular ring around the oil core. In application this technology could be used to implement subsea oil-water desalting systems to minimize the distance at which salt water is pumped, decreasing pipe corrosion and prolong major equipment life cycles.

The National Society of Black Engineers is a 31,000 member organization that helps prepare black college students for careers in engineering. It also supports pre-collegiate students' budding interest in working in STEM fields.

DEPARTMENT BITS

Welcome to K-State

Welcome to our new additions in the MNE department.

Amir Bahadori, Assistant Professor in nuclear engineering comes to us from NASA where he served as a principal scientist in Advanced Exploration Systems and RadWorks Radiation Environment Monitor projects. James Chen, Assistant Professor in mechanical engineering comes to us from Pennsylvania State University. He is the Lab Director for the K-State Multi-scale Computational Physics Lab. Walter McNeil, Assistant Professor in nuclear engineering earned his PhD at K-State, and is involved with threat detection systems in the Space and Naval Warfare Systems Command. Stefan Yates, Academic Advisor, is a professional advisor who leads the support and recognition of our MNE students.