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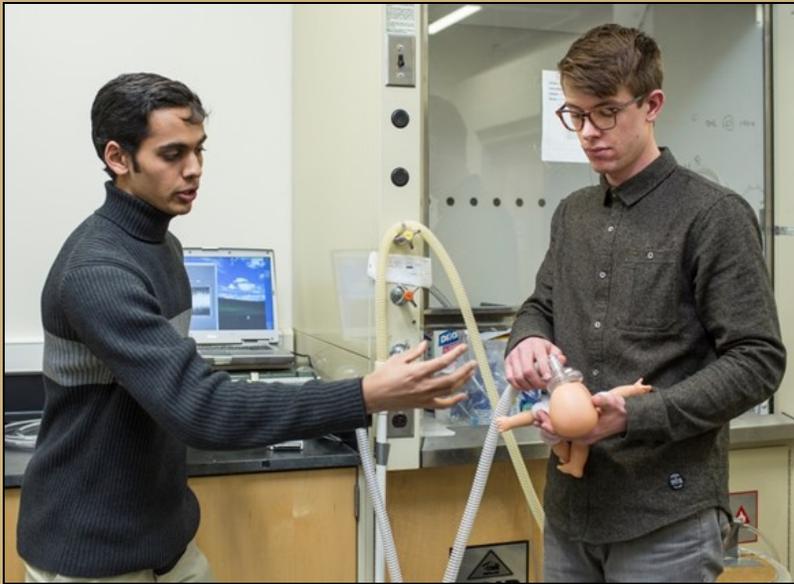
"There's nothing I believe in more strongly than getting young people interested in science and engineering, for a better tomorrow, for all humankind."
~ Bill Nye

CEAS e-News

WMU Students Win at Prestigious Lemelson-MIT "Cure it!" Competition

Two Western Michigan University students, **Stephen John** and **Joseph Barnett** won the award in the "Cure it" category of the prestigious [Lemelson-MIT National Collegiate Student Prize Competition](#) for their innovative dual pressure respiratory device. Stephen John graduated recently with a BS in Mechanical Engineering and Joseph Barnett is a Biomedical Sciences major and plans to graduate this summer.

In summarizing their main focus as inventors, they explained that innovative medical advances are often implemented in high-income countries. Yet, if engineers address the particular constraints of developing nations, these regions can also benefit from technological progress. As a design team, they seek to bolster the medical care provided in developing countries by addressing an old respiratory problem in a new way. Their aim is to bring the minimally invasive biphasic positive airway pressure and Nasal Intermittent Positive Pressure Ventilation (NIPPV) treatments to areas that currently only



L-R: Stephen John and Joseph Barnette

offer Continuous Positive Airway Pressure (CPAP). They have tailored their dual pressure solution to work with existing bubble CPAP setups, enabling hospitals to easily expand their services. Their design attempts a novel process: to deliver biphasic and NIPPV with a bubble system through an innovative oscillatory relief valve mechanism. Their device produces clinically relevant waveforms with an appropriate upper pressure level, lower pressure level, frequency and duty cycle of oscillation. Their simple mechanical design facilitates easy adjustment of several key functional parameters. Since their mechanism is solely powered by the exhaust of bubble CPAP, medical centers can readily offer biphasic or NIPPV without additional energy, cables or batteries. As the system is conjoined to bubble CPAP, the pressure levels can be easily adjusted to deliver dual pressure therapy by changing the water level. Healthcare workers can now deliver both these treatments simply by replacing the exhaust pipe in their existing bubble CPAP circuits, without a steep learning curve or an expensive investment. They confirmed directly from clinicians with *Respiratory Therapists Without Borders*, that babies in developing countries are dying due in part to lack of a dual level pressure treatment that is widely available in developed countries. John and Barnett reported that their device can potentially reduce the time, energy and resources spent to drive patients to a larger city—a journey that often costs a baby its life—and it empowers local communities to save lives.

WMU Associate Professor in Mechanical and Aerospace Engineering **Dr. Peter Gustafson**, was one of Stephen's professors and noted that Stephen was among the top 1% of hundreds of students he has taught while at WMU and that Joseph was known for his wealth of firsthand healthcare experience and academic excellence. The team used Gustafson's lab to conduct experiments of their innovative design.

As the winning undergraduate team John and Barnett will receive \$10,000 and national media exposure. Additionally they will have exposure to investment and business communities as well as a trip to [EurekaFest](#) at MIT on June 19-20.

WMU Ts'ai Lun Chapter Takes the Grand Prize at International Video Competition



WMU Paper Engineering Senior Kendra Fein and TAPPI President Larry Montague



WMU group celebrating Ts'ai Lun's grand prize win at PaperCon and TAPPI Centennial Celebration event.

Western Michigan University Paper Engineering Program students attended PaperCon and the [Technical Association of Pulp and Paper Industries](#) (TAPPI) Centennial Celebration in Atlanta Georgia this week. Ten students attended networking events, technical presentations, served as panel experts, and contributed to professional committees. According to **Kate Miller** Chemical and Paper Engineering Student Recruiter and Outreach Officer, one of the most extraordinary accomplishments was the [WMU Ts'ai Lun Student Chapter](#) receiving the grand prize for an [international video competition](#) honoring the forest products industry past, present, and future. **Kendra Fein**, a WMU Senior in the Paper Engineering Program wrote the script and produced and edited the video with the help of over twenty Ts'ai Lun members. The students were honored at the Centennial Celebration Gala on April 20th and received \$5,000 for their student chapter.

Two distinguished WMU Alumni were honored at the awards dinner on April 21st. **Chuck Klass**, President of Klass and Associates and a 1948 grad of the program received the highest honor bestowed by TAPPI, The Gunnar Nicholson Gold Medal Award. This award is presented to the individuals who have made preeminent scientific and engineering achievements of proven applied benefit to the world's pulp, paper, board, and forest product industries. **Jon Kerr**, a '82 WMU Paper Science graduate was awarded the Herman L. Joachim Distinguished Service Award. Established in 1983, this award is the highest honor the Association (TAPPI) can bestow upon an individual for exemplary leadership that has significantly contributed to its advancement. Jon currently serves as the Executive Director for the Pulp and Paper Association at Miami Ohio.

Speakers from Western Michigan University included **James Atkinson**, a PhD candidate, **Ryan Stoneburner** a recent Alum, and **Dr. Dewei Qi** a current WMU Professor all from the Department of Chemical and Paper Engineering. TAPPI kicked off their new Women's chapter which will include many WMU alumni and current Paper Engineering students Lexi Pierce, Taylor Baranski, and Kendra Fein.

Sponsorship for the conference was generously provided by the Paper Technology Foundation and the Department of Chemical and Paper Engineering. PTF Board member, **Jeff Lange** of Bercen enterprises contributed substantially in aiding the foundation by suggesting member companies increase funding for student industry involvement allowing twelve additional students to participate in sponsored field trips or conferences this year.

~ Kate Miller , contributor

Upcoming Events

[WMU Grand Rapids Open House - May 19, 20](#)

[More events and news](#)

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