A Growing Passion

Recent MSE graduate Dylan Lew is committed to energy innovation

This July, **Dylan Lew** *(B.S. and M.S., 2021)* is headed to Greenville, South Carolina, to work for GE Renewables as part of the company's prestigious Edison Engineering Development Program (EEDP). The program offers recent graduates hands-on technical training, mentoring, and a chance to make a real difference by tackling GE's most critical business challenges. Lew will begin by working on wind turbine failure analysis and material selection, then rotate to different assignments every six months to gain a broad perspective on the company's energy solutions.

"I'm ecstatic about this opportunity because I love hands-on work and I love solving a practical challenge," says Lew. "I think the materials aspect of energy systems is often overlooked, yet it's a critical component of wind turbines, solar panels, recycling systems, power grids, and other products. Not only do materials need to have the necessary characteristics to optimize energy outputs, but they should also be sustainably sourced and have a minimal environmental impact. As a materials engineer, I believe I can make a significant contribution."

Reimagining the Food Chain

While his new job at GE is exciting, it's far from Lew's first exposure to energy-focused engineering. As a freshman, he co-founded a startup called Ecotone Renewables that transforms food waste into nutrient-rich liquid fertilizer. As the company's Chief Executive Officer, Lew built an apparatus called the Seahorse System, which sustainably processes food waste. Not only does the contained anaerobic digestion process generate energy, but the end result is a carbon-negative agricultural fertilizer.

In March 2021, Lew helped launch a successful pilot of the system in the Swissvale neighborhood of Pittsburgh. The focus of his CIT honors research project, Lew's work on the Seahorse prototype was supported by a Small Undergraduate Research Grant (SURG) from CMU's Undergraduate Research Office. Lew presented the results to date at CMU's recent Meeting of the Minds event.

"Converting food waste into an agricultural fertilizer solves two critical climate-change problems simultaneously,"

The Seahorse System built by Lew transforms 10 tons of food waste into 10,000 kilowatt hours of energy, as well as carbon-negative liquid fertilizer.

Lew explains. “First, the open-air decomposition of food waste is responsible for 8% of greenhouse gas emissions. Second, 50% of the energy used by the global agricultural industry is used for fertilizer production.”

“By allowing food waste to break down in a controlled, anaerobic environment, we can actually capture the emissions as an energy source — while producing liquid fertilizer in a low-cost, low-impact manner,” he continues.

Energetic by Design

In addition to running a business and designing an innovative energy solution, Lew finished two degrees in four years via CMU’s integrated master’s/bachelor’s (IMB) program. Along the way, he also completed three internships — working on fuel cell research in Israel, 3D-printed parts for jet engines at GE Aviation, and lunar dust abrasion mitigation techniques at NASA.

Outside the classroom, Lew was a founding member and first president of the CMU chapter of oSTEM, or Out in Science, Technology, Engineering, and Mathematics. This group provides a sense of community and support for LGBTQ+ people across the University, but it’s especially focused on enabling STEM students to succeed personally, academically, and professionally in a safe and nurturing environment. He was also a pole vaulter on CMU’s track and field team for two years until he was sidelined by a back injury, and scored critical points to help CMU win the closely matched 2019 Indoor Track UAA Championships.

How did Lew accomplish so much in just four years at CMU? “I’m a person who can’t sit still,” he says with a laugh.” I love to keep busy. And, if you’re engaged in something you’re passionate about, it doesn’t feel like work.”

Dylan Lew - CIT Honors Research Presentation May 2021

Our Technology: Anerobic Digestion - https://youtu.be/izuvex9vOQ8