ALL IN A DAY’S WORK

Undergraduate Sam Malin knows that to make a difference, you need to get your hands dirty
Edzo’s Burger Shop has no problem attracting Northwestern students in search of an after-class nosh. But it’s not hunger that has brought Sam Malin to the downtown Evanston hot spot on this cold, wet afternoon. In fact, he’s not even inside the restaurant but on the roof. More precisely, he’s perched atop a metal exhaust vent that puffs greasy burger fumes out of the kitchen and into the cold air.

Malin has come to Edzo’s to conduct an energy audit, an assessment that determines how much energy a building uses and suggests ways to lower consumption, such as using low-energy light-bulbs—or in Edzo’s case, a new ventilation system. The vent that is good at sucking the fryer fumes out of the kitchen, Malin explains, is also unfortunately successful in taking the building’s heat along with it.

Malin is trying to find out why this happens, but the elements are against him. Raindrops pelt him as he squints, scanning the vent for its model number. Shielding his notebook from the pummeling rain, he holds his breath and leans into the hot stream of air. “Next time I should probably ask Eddie [Lakin, Edzo’s owner] to turn off the exhaust,” he says. “We engineers aren’t always doing the most glamorous things,” he adds, “but they’re all important.”

Few things are more important than sustainability to a motivated group of McCormick students involved in the campus organization Engineers for a Sustainable World. Malin is copresident of the group, which has garnered attention with projects like the Tiny House, a 128-square-foot, zero-net-energy house that can operate completely off the grid (see photo on page 41).

Sustainability wasn’t always Malin’s passion. As a high school student in Rye, New York, he was more of a math kid. He was fascinated by Fibonacci and the golden ratio, a number (about 1.6) that can be used to explain everything from the spiral on conch shells to the patterns by which people seat themselves in an empty auditorium. Malin planned to pursue these interests with a double major in mathematics and psychology.

Then, early in his freshman year at Northwestern, Malin was introduced to Engineers for a Sustainable World. At that time ESW was trying to convert Northwestern’s intercampus buses to run on fryer oil from University dining facilities, and they were looking for helpers. Both Malin and ESW were in luck: Malin was already a pro at vegetable oil–powered automobiles. In high school he had converted his diesel Volkswagen Jetta to run on vegetable oil. From filtering out sesame seeds from a Chinese restaurant’s waste soybean oil to diluting it with kerosene to get the oil to just the right consistency, the project was a crash course in the mechanics of green technology. (It also affected his social life: Malin admits that at least one date was ruined by soybean-induced engine trouble.)

Through ESW Malin’s interest in sustainability skyrocketed. Shortly after the bus conversion project, he became involved with energy audits. Working with professional energy consultants, Malin and other ESW members have inspected not just burger joints but also sorority and fraternity houses and even an Evanston municipal building, noting dated lightbulbs, inefficient freezers, cracked windowsills, and other inefficiencies that cost both the owner and the environment. The group can put a dollar figure on these energy losses, showing owners how environmentally friendly renovations can pay for themselves. (The owner of Edzo’s, it turned out, can save more than $700 a year and reduce his carbon footprint by 9,400 pounds per year by implementing the team’s recommendations.)

Malin will graduate in June with a bachelor’s degree in civil engineering with an architecture focus and a master’s degree in mechanical engineering through the department’s energy and sustainability program. During school breaks Malin has found ways to complement his studies and gain practical experience. Last summer he completed an internship at a solar energy company in Greenwich, Connecticut, where he researched incentives various states offer for solar energy projects.

In addition to all this hard work, Malin has also found time for pursuits outside the sciences at Northwestern, such as performing in a dramatic production. “I had never acted before,” Malin says. “It was a great opportunity to do something totally different.”

This spring Malin is again exploring new opportunities as he goes to work in the lab of Eric Masanet, a sustainability expert who recently arrived at Northwestern from the University of California, Berkeley, and Lawrence Berkeley National Laboratory. (Masanet is also an alumnus, having received his MS in mechanical engineering at McCormick.) Malin will research ways to measure and compare the environmental impacts of different building materials through life-cycle assessments.

“A life-cycle analysis looks at all the energy components that go into a product or process, from manufacturing the parts to assembling them and transporting them,” Malin says. “It’s about tracing a product all the way back so you get a complete look at its carbon footprint. It’s a very powerful tool.” For example, Malin says, while concrete making is extremely energy intensive, the material could actually save energy over the course of its lifespan, because buildings made with concrete have a higher thermal mass and can better regulate building temperatures.

While Malin continues to build his expertise in efficiency and energy consulting, he has started exploring how he might apply his interests to the business world. “I’ve become more interested in sustainability as a corporate mentality,” Malin says. “How to change corporate strategy to incorporate sustainability and be socially responsible.”

Ultimately, Malin is keeping an open mind, ready to take on new challenges as they present themselves—much as he has approached his work in sustainability at McCormick. “My McCormick experience has really been about getting interested in new things and changing directions,” he says. “I’m always open to trying something new.”

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