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Harnessing the Sun and the Wind

The Sky's the Limit for Curt Freedman G'87

Like a sculptor, Curt Freedman G'87 lavishes lots of tender loving care on his creations. The alumnus and adjunct professor of alternative energy and energy management at the School of Engineering beams with pride as he looks at his "baby" outside of Sleith Hall. In fact, he even did a bit of landscaping around it. "See the pachysandra down here?" he asks. "I planted each and every one of those myself."

No, that's not an outdoor sculpture next to the southern end of the building—although certain engineers would argue that the installation does have certain artistic appeal. The eye-catching (and sun-catching) panels are part of a solar energy project that heats the building's mechanical engineering laboratory by producing thermal energy. In addition, the electricity generated by the photovoltaic panels is used to supplement lighting in the lab.

Look straight up and you'll see that the solar panels have company: mounted on a 55-foot-long stainless steel pole is a three-bladed wind turbine more than eight feet in diameter that also provides electricity to the laboratory. Freedman, the designer and project coordinator for the entire endeavor, firmly believes that the project has benefits beyond providing effective—and renewable—energy sources on campus. "I think that the high visibility of the Outdoor Alternative Energy

Laboratory will attract greater interest in alternative energy, and provide increased opportunities for research and laboratory experimentation and study," he says.

He was honored to head the project "because alternative energy is going to be of greater significance in terms of energy solutions—as well as jobs," he says. "Western New England College is becoming an important center for this type of research. Students here enjoy the advantage of having immediate access to the right equipment, permitting live demonstrations of engineering concepts that they can't get at many other schools."

Aside from teaching at the College, designing the Outdoor Alternative Energy Laboratory was another way to give back to the institution that has given him so much. Freedman says his education at the College, where he graduated with a Master of Science in Engineering Management, had a direct application to the lab and numerous other renewable energy projects. "The solar research that I completed during my graduate school studies established a methodology for many of my complex energy and solar heating applications," he says. Among his most important influences as a student here were Mechanical Engineering Professors Wellen Davison and Said Dini.

Practicing What He Preaches

Freedman has constructed solar energy systems at his present and previous homes, and in 1990 he designed and installed what he calls a "guilt-free air conditioning system" in his home—one that pumps cold water from a 327-foot-deep well through a coil in the cellar. After a blower pushes air across the cool coil and throughout the house, the system pipes the discharge water to outside spigots, where hoses irrigate the lawn. The well water then drains back into the ground and is used again, rather than entering the public sewer system.

A year later, he and his company, C.M.F. Engineering, put in a large groundwater air conditioning system at the Chez Josef banquet hall in Agawam, MA. "It pumps up to 350 gallons of water per minute through cooled coils on many of the rooftop units, and the groundwater is then returned to the aquifer," he says. "Chez Josef was the first non-consumptive air conditioning system in western Massachusetts ever to be granted a water discharge permit by the Massachusetts DEP [Department of Environmental Protection]."

The project was a turning point for Freedman's company. "At the time it was the largest application of this technology that I had ever done," he says. Word of the air conditioning system's efficiency got around, enabling him to design energy-saving systems for many more businesses.

The energy engineering consultant and forensic engineer has long been a vocal advocate for alternative energy solutions. In 2008 he worked to petition the Massachusetts Department of Public Utilities to improve its policy for renewable energy technology funding in Massachusetts.

This policy, which was approved in 2008, requires that utilities evaluate rebates based on the after-tax credit cost of a project. "The end result of this policy will be to enable a much greater number of renewable energy projects to receive funding through utility rebate programs," he says.

Freedman even practices what he preaches in his leisure time, taking comfort in the fact that when he is steering his sailboat on Long Island Sound with his wife Sheryl; and two sons, Ben, age 21,

and Alex, 18, their impact on the environment is nonexistent. "It's a renewable energy form of recreation," he says with a smile, "and it's very relaxing."

A resident and native of Longmeadow, MA, Freedman graduated with a Bachelor of Science in Mechanical Engineering from Lehigh University in 1981. After working as an engineer for Combustion Engineering in Windsor, CT; Xidex Corporation in Holyoke, MA; and Friendly Ice Cream in Wilbraham, MA, he founded C.M.F. Engineering in 1985.

Freedman's teaching at Western New England College began in 2004 when Dini invited him to deliver presentations in his solar engineering course. He now teaches courses in energy management and renewable/alternative energy system design, and offers a heat pump lab. "I love working with students," he says. "Being an adjunct has been a very nice opportunity for professional development, and it's always exciting to bring in a whole new crop of energy conservation specialists into the workforce."

Tapping an Inexhaustible Energy Resource on Campus

Freedman was chosen to design the Outdoor Alternative Energy Laboratory because of his working knowledge of renewable energy, according to Bart Lipkens, chair and associate professor of Mechanical Engineering. He adds that the project was a natural for the School of Engineering, because stewardship and caring for the sustainability of the environment both within and beyond the campus, are goals outlined in the College's *Strategic Plan 2009-2018*. "In keeping with this philosophy," he says, "the School of Engineering is using applied engineering research, including Curt's technology, to find green solutions for not only industrial partners, but also for the College."

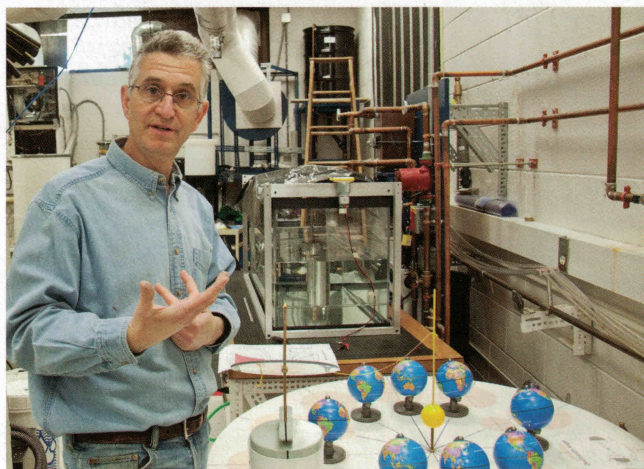
Standing next to the solar panels on a sunny day, Freedman points out that solar power has come a long way in the past few decades. His solar panels certainly aren't the unsightly monstrosities that one associated the solar arrays of yesteryear. In fact, his colleagues, including Lipkens, think they look downright futuristic.

Likewise, in communities across the country, more and more people these days find wind turbines appealing—like functional, moving sculptures. But is Freedman's a work of art? You be the judge.

He says the College has worked hard to beautify the site. Some arbovitae shrubs will be planted on the backside of the complex—an earth-friendly decoration, of course. Freedman would have it no other way. He also plans to build a sundial and put it between two of the solar panels. Freedman may be partial, but he finds the solar panel complex attractive, and no one has complained about the look of the wind turbine.

As for the gentle whir of the turbine's propellers, the noise is music to his ears. It's as melodic as the wind hitting the sails of his sailboat. It's the sound of renewable energy.

We have more photos of the Outdoor Alternative Energy Laboratory, as well as video of the wind turbine being mounted. Look for *The Communicator's* "Web Extras" in the left column of the Alumni Website: www.wnec.edu/alumni. ■



Curt Freedman in the Indoor Green Energy and Power Lab