

CWRU raises wind-energy labs over Cleveland area

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Case Western Reserve University and its partners have erected their third and largest research wind turbine — and begun the process of tying into the grid.

The 1-megawatt turbine, which will sit 230 feet above William Sopko & Sons Co., near the I-90-Rt. 2 split in Euclid, is a utility-scale power generator. The company is one of the university's industrial partners in wind research and made the property available.

The mid-sized research turbine erected on the same parcel and the smallest, on the Case Western Reserve campus, are already providing power.

After initial studies of their operation, all three will be used as working laboratories available to researchers at non-profit organizations and for-profit companies, eliminating the large expense of having to buy or build their own turbines.

The overall goal is to develop better products, from nuts and bolts on up to new technologies to manage the turbines and improve efficiency and longevity, and thereby establish a wind-energy supply chain in Northeast Ohio.

Researchers can gain access to the turbines through the Wind Energy Research and Commercialization (WERC) Center. The WERC Center is part of the Great Lakes Energy Institute (GLEI) at CWRU.

"By having three different sized [wind turbines](#), researchers and companies can 'right-size' their efforts, depending on what information the researchers are interested in and what market the companies are developing products for," said David Matthiesen, professor of materials science and engineering at Case Western Reserve and faculty director of the WERC Center.

The three wind turbines also have a variety of technologies in them, Matthiesen explained.

The 100-kilowatt turbine has a direct drive system and no gearbox in its drive train. In addition to the swiveling nacelle, which houses the generator, the pitch of the blades can be changed on the 225-kilowatt turbine to control the angle to the wind. The 1-megawatt turbine has additional monitoring features to allow researchers to study how electricity generated by the turbine is integrated into the power grid.

The larger turbines are in Euclid, where they complement the surrounding industry.

The electricity from the 1-megawatt turbine will flow into the adjacent Stamco Industries plant. Inside the plant, mammoth presses generate up to 3,000 tons of pressure as they stamp truck wheel rings and other products out of heavy-gauge steel. Unused power will flow into the grid.

As part of its commissioning tests, the intermediate turbine is already providing power to William Sopko & Sons' light manufacturing business of making adapters, parts and accessories for precision grinders.

The smallest turbine, a community-rated power generator, provides electricity to The Veale Convocation, Athletic and Recreation Center. During its first full year of operation, the [turbine](#) generated 58,500 KWH or about 5 percent of the total used by the center.

Provided by Case Western Reserve University

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