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COMBINED HEAT & POWER SYSTEMS
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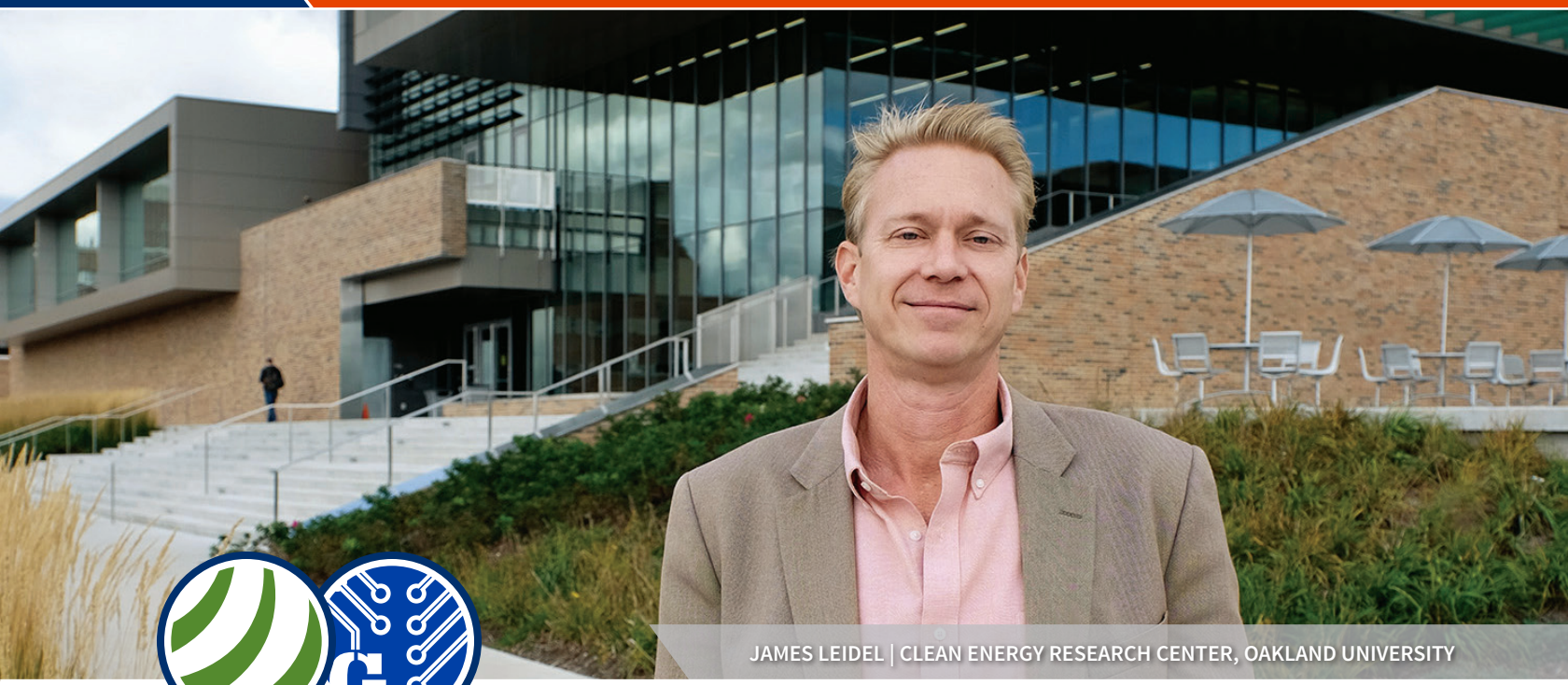
JAMES LEIDEL | CLEAN ENERGY RESEARCH CENTER, OAKLAND UNIVERSITY

OAKLAND UNIVERSITY

COMBINED HEAT AND POWER ANCHORS OAKLAND UNIVERSITY'S MICRO-GRID

Oakland University is among a growing number of U.S. colleges and universities that is updating its infrastructure and policies to meet today's standards of environmental responsibility, while also increasing its energy independence and reducing costs. One of the two combined heat and power (CHP) systems anchoring the Detroit-area university's power micro-grid was implemented by GEM Energy.

FULFILLING TWO MISSIONS: EDUCATING WITH POWER

To help the next generation of energy decision-makers understand CHP technology, the university is teaching the concept in an upper-level engineering course this fall that supplements classroom learning with hands-on experience at an on-site, in-progress CHP installation. The instructor of the CHP course, which is part of a larger clean energy and power engineering curricula, is James Leidel, Director of Clean Energy Systems. Leidel runs the school's Clean Energy Research Center, and is a major proponent of on-site power technology. The coursework immerses students in their learning at multiple energy-efficient buildings on campus within a 'living laboratories environment.'

> "Now marks an opportune time for colleges and universities to evaluate the development of on-site renewable energy facilities. If properly structured, such projects can reduce operating costs, increase the reliability of electricity supply, and substantially shrink a school's carbon footprint."
>
> MICHAEL J. MANN AND TODD B. REINSTEIN, PEPPER HAMILTON LLC

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GEM SYSTEM ENHANCES NEW ENGINEERING FACILITY

The newest such "lab" is the 127,000-square-foot Engineering Center, completed in 2014. The sixth floor of this building houses the CHP system which was supplied, installed, and commissioned by GEM Energy. The system consists of two Capstone C200 MicroTurbines—each of which generates 200kW of electricity—as well as heat exchangers and a FlexSetDG control unit. FlexSetDG monitors the equipment and, in conjunction with the building's overall energy management system, helps balance daily energy production and consumption for optimal energy distribution and lowest cost.

FlexSetDG monitors the equipment while helping to balance daily energy production and consumption.

Results? Optimal energy distribution and lowest cost.

The electricity generated by the micro turbines reduces the building's demand on the local utility, DTE Energy. In addition the units are wired to automatically isolate a portion of the building's electrical system from the grid in the event of an outage, and provide emergency power for the building's lighting, ventilation, and elevators.

The micro turbines are ducted to two heat recovery exchange units that generate hot water at two different temperature levels. The hotter water supplements the campus-wide water system year-round, while the lower-temperature water helps to melt snow on the building's perimeter.

The Capstone MicroTurbines and the expertise of GEM Energy's engineers helped create a positive experience for OU's engineering building. "GEM Energy has been a great partner in our micro turbine-powered Engineering Center," Leidel said. "GEM's experience with many Capstone turbine projects helped make our project successful."

Capstone® Turbine Corporation
AUTHORIZED DISTRIBUTOR

For on-site power generation, Capstone gas-powered CHP systems offer the highest efficiency in energy supply possible along with lower carbon emissions and backup power for resiliency in the face of weather or natural disasters.

The heat exchangers transfer the exhaust heat from the micro turbines to generate hot water.

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