10-16-2008

Newsroom

Georgia Southern University

Graduate Student Project Makes Vending Machines More Energy-Efficient

OCTOBER 16, 2008

When you stop for a few seconds to buy a cold drink from a vending machine, you probably don't put any thought into how much energy the machine uses.

But a group of Georgia Southern University biology graduate students did and found a way for the campus to save energy and money.

Eleven students in last fall's Graduate Seminar in Sustainability researched possible service projects to make the Georgia Southern campus more energy-efficient. After discussing several ideas, they proposed putting energy-saving devices on vending machines.

'It was the best project because it is not just an awareness campaign it is going to make a concrete difference," said Dr. Lissa Leege, who taught the sustainability seminar along with Dr. Michelle Zjhra. 'The work the students did is now really going to pay off on campus."

The students' research found that vending machines are one of the worst culprits of energy inefficiency, using 20 percent more energy on average than a refrigerator. As a solution, the students turned to the EMS-55, a device from the Coca-Cola Company that powers vending machines down to standby mode when they are not being used.

With $1,000 in funding from Thrivent Financial for Lutherans and the support of Coca-Cola Bottling Company United in Statesboro, the students were able to purchase 12 of the devices. Three more were donated by Coca-Cola.

'It's a simple solution, and you can do it for little money," said graduate student Steve Williams, who led the research. 'You see big benefits at a low cost."

Three test models were put on Coca-Cola machines over the summer, and the rest have been installed this fall. The EMS (Energy Management System)-55 is now in use in 11 buildings: Biology,

Forest Drive, Herty, Hollis, Marvin Pittman, Math-Physics, Rosenwald, Deal Hall, Hanner Fieldhouse, the Russell Union and the Williams Center.

The off-campus community will be connected to the initiative as well. The Coke machine at the Boys and Girls Clubs center in Statesboro is also slated to get one of the energy-saving units.

'We felt it was very important to involve our community outside of Georgia Southern in our efforts because community involvement is imperative to make a real difference for a sustainable future," Williams said.

The energy-saving device uses an infrared motion sensor to power down the machine when no one is using it. So, for example, when the Biology building is vacant at 3 a.m., the vending machine is not constantly running coolant and its brightly-lit facade is turned off.

The EMS-55 also 'learns" consumer traffic patterns. If no one uses the machine at a certain time on a certain day, the machine powers down at that same time on the same day the following week.

That all adds up to energy savings of about 33 percent, according to the students' research. A vending machine without the power controller uses 3,021 kilowatt-hours per year on average, compared to 2,023 per year with one. Multiply that by the 15 machines on campus, and the University reduces its power use by nearly 15,000 kilowatt-hours per year.

'Our first step in sustainability is to increase the efficiency of what we already have," said Dr. Leege, the director of the Office of Sustainability in the Allen E. Paulson College of Science and Technology. 'We're not having to change our behavior at all, and this is making a difference in our energy consumption.

The cost savings are just part of the equation, though. The devices also help conserve water and significantly reduce carbon dioxide and other air pollutant emissions.

'The energy efficiency is beneficial economically and environmentally," Williams said. 'While saving the university and therefore students money on the electric bill, this one small step also has a number of ripple effects on the environment."

For example, these devices increase the lifespan of the light bulbs that illuminate the front of the vending machine. That means fewer materials (glass, metals, fluorescent gas, mercury, etc.) are used to manufacture bulbs for Georgia Southern's machines; Coca-Cola United has to truck fewer bulbs to Savannah to recycle them, which saves gas and reduces harmful emissions; less energy has to be used to recycle those bulbs, which means less coal is mined and burned, which means lower greenhouse gas emissions; and, finally, less waste is generated from the parts of the bulb that cannot be recycled.

'These ripples will be multiplied 30 times since each of the 15 machines is equipped with two fluorescent light bulbs," Williams said. 'Our efforts are like throwing pebbles into the ocean; they make some ripples and waves. If everyone were to take a small step towards sustainability, then it would be like throwing a mountain of pebbles into the ocean."

That's not the only ripple effect Dr. Leege is counting on. As with all of Georgia Southern's sustainability initiatives, she wants to see this project expand. The EMS-55 is reasonably-priced (about $80 per unit), so she hopes the Georgia Southern community will get on board and provide additional units for vending machines on-campus.

The project could not have been possible without the participation of Coca-Cola. Chad Henry, the cold drink manager for Coca-Cola United in Statesboro, said this fit perfectly with Coke's commitment to be environmentally friendly through steps such as recycling out-of-date products, providing recycling bins and marketing their products with energy-efficient promotional items.

'The Coca-Cola Company is investing in 'going green,' and we are glad to have people like Lissa and Steve help us on the Georgia Southern campus," Henry said. 'They came up with the idea and got the wheels turning."

Georgia Southern University, a Carnegie Doctoral/Research University, offers more than 120 degree programs serving nearly 18,000 students. Through eight colleges, the University offers bachelor's, master's and doctoral degree programs built on more than a century of academic achievement. The University, one of Georgia's largest, is a top choice of Georgia's HOPE scholars and is recognized for its student-centered approach to education. Visit:www.georgiasouthern.edu.- See more at: http://news.georgiasouthern.edu/pressrelease.php?id=1719#sthash.hi66eUrw.dpuf