Werewolf Cookline Project: An Update

By Amelia Levin, Contributing Editor

In our August issue, *FE&S* published "Comprehensive Commercial Kitchen Equipment Retrofit," the first article in a series about the cookline project taking place at Werewolf Bar & Grill in San Diego and at other foodservice operations on the West Coast. Earlier this year, the PG&E Food Service Technology Center (FSTC) in San Ramon, Calif., teamed up with SoCalGas and San Diego Gas & Electric (SDG&E) for a grant project awarded by the California Energy Commission to study kitchen system optimization in commercial foodservice and the use of high-efficiency commercial cooking equipment in various foodservice operations.

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Submeters have been installed on various pieces of Werewolf's foodservice equipment, including the griddle, broiler, range, oven, exhaust hood and two fryers. And FSTC representatives have begun analyzing energy use and the potential for savings. "We are learning, when it comes to the introduction of new technologies, training is key and that teaching and emphasizing cleaning and maintenance plays an important role as well," says Denis Livchak, PG&E FSTC energy research engineer.

Ventilation

In examining Werewolf's ventilation, the FSTC found that the restaurant uses a whopping 50 kWh per day, primarily because of running the main (2 hp) hood fan all day at full speed. "The main hood was always set to high because of the charbroiler underneath — but they don't always cook on the broiler, so we found an opportunity to turn down the fan speed when not in heavy usage," says Livchak.

To do so, the team installed a variable-frequency drive on the main hood as a first step in potentially installing a demand-controlled ventilation system for the fan speed. "You need to install these frequency drives first — they sit in between the fan motor and the electrical connection, and you can manually change the speed of the fan motor or turn it on and off during nonpeak use," Livchak says.

These drives typically cost $300 each (with extra for installation), but they're more affordable than demand-controlled ventilation systems and are a great first step toward turning down fan speeds and saving on ventilation energy, says Livchak.

Werewolf requires two drives: one on the exhaust and the other on the supply end to control the makeup air and balance the pressure in the kitchen. "These have to be in sync because, if they're not, you're going to pull more air out of the kitchen than is being supplied, which causes a negative pressure, and you will suck dirt from outside," Livchak says.

The next step toward demand-controlled ventilation is to have a specialist install infrared sensors that sense when the equipment is in use or sitting idle and will run fan speeds accordingly. This costs significantly more up front but, according to Livchak, saves much more in the long run.

In addition to reducing fan speed, installing more energy-efficient equipment that naturally gives off less heat under the hood will also help to reduce energy use. Couple that with an on/off equipment schedule and Werewolf could see even more savings than those being generated with its current schedule — equipment on at 6 a.m. and off at 10 p.m.

The Broiler

Adding to the hood energy use issue is the fact that the 2-foot-wide broiler uses about five therms per day, which is "quite a bit for a small broiler," says Livchak. The broiler is now at the top of the list of items this project will look to replace when building the new cookline.

The team is researching two types of more efficient broilers for the replacement: a lidded broiler, which saves energy by trapping the heat and smoke in an enclosed unit (much like a home barbecue grill), and an infrared broiler, which only powers up when it senses food on the grill. Lidded or infrared broilers can bring cost savings of anywhere from

10 percent to 50 percent depending on usage, according to Livchak.

Even a smaller hood was using extra energy, so they turned down the fan speed on that unit as well. "They only had a 1-horsepower fan, but being on almost all the time, it was using about 20 kWh per day just for the exhaust," says Livchak.

The Griddle and Fryers

Currently, the griddle at Werewolf uses four therms per day. The FSTC is working on getting a more efficient replacement griddle with the potential to reduce consumption by 20 percent to 30 percent.

Still, these griddle savings won't rise to the level of savings to be gained by adjusting the fryer setup. The restaurant replaced its two big fryers last year with energy-efficient models, but because they were slightly underperforming compared to the usage volume, the FSTC has looked into replacing these models with energy-efficient models that are also high performing. Werewolf's kitchen staff cook fries in one fryer and proteins in the other.

"Since they are a bar and fry a lot, the current fryers are not keeping up with the demand, so there is a bottleneck in the system, and they are using more energy than needed," says Livchak.

The Range

Meters installed on the stovetop show the range doesn't use too many therms per day (roughly 2), but Werewolf could see more savings through the use of special pots provided by the FSTC.

"They mainly use the range for breakfast, and then staff are actually turning the burners off, so that helps save on energy," says Livchak. "But the pots and pans reduce the cook time by about 30 percent and use the same (or less) flame size, so they save energy over time."

These pots work by transferring heat more quickly from the flame to the cookware and the food through "fins" on the bottom of the pots and pans.

Equipment Testing

The project's next phase calls for testing the infrared and lidded broilers with the unique preparation method the Werewolf uses for its chicken wings. Instead of simply battering and frying the wings, the restaurant first broils the wings to mark them and give them a smoky taste.

The FSTC plans to send one of each broiler model to the SDG&E Energy Innovation Center, a LEED Platinum demo facility where Werewolf staff can try cooking the wings with this method on each model to measure energy savings and performance and determine the best application. Most broilers are 3 feet wide, but with Werewolf's space limitations at 2 feet, there might be a need to order custom-made equipment.

Innovations centers like these keep popping up across the country as utility companies, operators and manufacturers prioritize energy savings more and more. The PG&E FSTC was one of the first innovation centers of its kind, and for the last 25 years it has served as a pioneer in testing equipment and advancing energy savings.

The SoCalGas Food Service Equipment Center also offers demo and testing facilities where customers can "test-drive" new commercial foodservice equipment with no obligation, and it offers regular seminars about energy-efficient equipment, kitchen ventilation, food safety, equipment maintenance, industry trends, rebates and more.

Southern Company, the umbrella utility company for Georgia Power, also opened a new Energy Innovation Center located in Atlanta's Technology Square for demonstrations, not just for cooking equipment, but also for industrial and agricultural equipment, according to Livchak.

"Electricity use in the U.S. has grown five times faster than other energy sources over the past four decades, so it's easy to see why more utility companies are opening up innovation centers like these," he says.

Southern Company has said it will seek partnerships with leading Southeastern universities and other strategic partners to conduct more energy research projects at the Center.

Other Cookline Sites

The other sites that have been selected for the "cookline project" include Moffitt Café at the University of California–San Francisco (UCSF) Medical Center in the PG&E service territory, Gate Gourmet in Southern California Gas Company service territory, and the Doubletree Hotel in Pleasanton, Calif. Candidates for other sites in the PG&E service territory are currently being considered.

"We're continuing baseline monitoring at the Doubletree and just started some monitoring at the UCSF Children's Hospital," says Livchak.

Stay tuned for more details on the cookline project to come in future issues of the magazine. **FE&S**