

Equipment Innovation

Washington University in St. Louis's 800-seat Bear's Den, located in its South Forty House residential center, was designed to meet LEED criteria. At right, convenience retailing and energy-efficient kitchen. Go to: <http://food-management.com/segments/colleges/washington-u-opens-bear-den-0910/index.html>



This past November, long-running efforts to encourage more sustainable and energy-efficient commercial foodservice operations took a major step forward. That's when new LEED for Retail standards were finalized, a milestone that capped a multi-year effort to realistically apply the nation's most widely recognized building sustainability certification program to commercial spaces like restaurants, which have "process" needs that vary significantly from those of ordinary building areas.

The advance is a significant one for foodservice operators, from large restaurant chains to institutions with major foodservice preparation and serving facilities. It will define what having a "sustainable" foodservice facility means for years to come and will give a big boost to the already rapidly growing interest in more efficient kitchen and foodservice display equipment.

The Different Flavors of LEED

The LEED certification program itself has been evolving since 1993. That's when two pioneering entrepreneurs, David Gottfried and Rick Fedrizzi, co-founded a private 501(c) 3 membership-based non-profit trade organization called the U.S. Green Building Council (USGBC). The Council focused on promoting sustainability in the design and construction of buildings and, in 1994, established the

LEED rating and certification program that has since become a standard adopted and adapted across the industry.

Today, LEED is an internationally recognized green building certification system that uses third party verification to recognize building performance in areas like energy and water efficiency, CO2 emission reduction, improved indoor environmental quality and other areas. While LEED-certified construction is still the exception rather than the rule, the very existence of the program has tended to increase the awareness of many institutions and corporations in terms of the sustainability issues LEED certification raises.

Originally LEED was a "one size fits all buildings" standard, with all of the limitations that would suggest. In particular, it had major shortcomings in relation to areas like kitchens, which in LEED language are "process intensive," using energy, water and environmental control systems differently than ordinary building space does.

However, the LEED program evolved over the years to recognize such differences. The new LEED for Retail standard is just one more adaptation: there are now major LEED certification categories for New Construction, Commercial Interiors, Schools, Healthcare and Retail facilities, with sub-categories that recognize renovation and retrofitting projects.

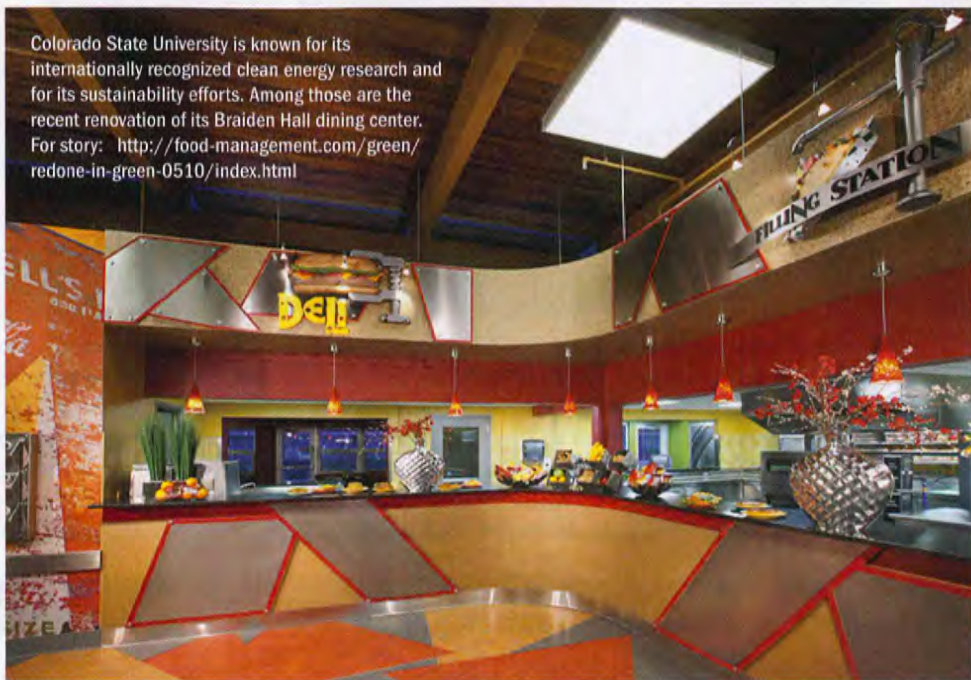
If your organization has chosen to pursue a LEED-certified project, and foodservice facilities are part of it, you are probably working closely with an experienced consultant who is often a LEED Accredited Profes-

Growing interest in LEED certification and energy savings that justify efficient equipment investments are changing the way kitchens and serveries are outfitted. By Karen Weisberg

in the Age of LEED



Colorado State University is known for its internationally recognized clean energy research and for its sustainability efforts. Among those are the recent renovation of its Braiden Hall dining center. For story: <http://food-management.com/green/redone-in-green-0510/index.html>



What's New in Energy Saving Equipment

It is common in the foodservice community to hear people argue that equipment manufacturers have been slow to change and that more innovation—especially in terms of energy and water efficiency—is needed. But Don Fisher, president of Fisher-Nickel, Inc., points to numerous examples of equipment on the market today that belie that claim.

Advances in Steamers

One of Fisher's top examples is the development, over the past decade, of boilerless steamers in which water usage has plummeted from 40 gallons an hour to less than four gallons. You can view one good example of how such advances have been accomplished in the What's Hot/What's Cool exhibit at NAFEM, where Accutemp will be displaying its Gas Fired Evolution Steamer, which has earned the Gas Foodservice Equipment Network's (GFEN) 2010 Blue Flame Product of the Year Award.

According to John Pennington, CSC, vice president territory sales and corporate chef for the Fort Wayne, IN-based manufacturer, the company's first Energy Star listed steamer dates back almost a decade. The Evolution model represents its most advanced product so far and can be either "connected or not connected," he adds.

Generally, those purchasing "not connected" steamers are aiming to save water, since 25 to 40 gallons of water are typically used every hour for a boiler-based steamer, while boilerless steamers typically use 14 to 24 gallons. However, the Evolution Steamer uses less than one gallon per hour either way.

Pennington adds that the connectionless installation

now also requires less intervention on the part of the operator than did past models.

"We took our connectionless design and figured out how to add water to it without having to manually fill and drain the unit periodically," Pennington says. Instead, a control valve unit can be installed on the back of the steamer that recycles condensed water back into the chamber. Also, "since we don't require water filtration, there are no water quality statement exclusions [that can] void the warranty."

Pennington estimates annual savings of energy and water combined for the Evolution Steamer vs. an older, boiler-based unit could be \$1,500 to \$3,500; when compared to an older boilerless unit, he says the Evolution could save \$500 to \$1,600 annually.

"But how fast can it cook?" As a chef himself, Pennington is quick to point

out that a chef in a kitchen typically "doesn't care about energy efficiency; he's worried about how fast he can get the food out." The models in question are designed to facilitate batch cooking in volume situations, he says.

AccuTemp Gas Fired Evolution Steamer



"The boilerless unit will be two minutes slower than one with a boiler—it depends on the density of the food and how fast the given product can absorb the steam.

"Usually in an a la carte situation, you need the speed of a boiler-based steamer to get product out in four minutes versus eight minutes." (Visit www.accutemp.net for more info and an energy savings comparison chart of the Evolution Gas Steamer vs. conventional boiler-based gas steamers.)



PNC Bank in Pittsburgh constructed its Eco Bistro cafe according to LEED standards. For story: http://food-management.com/news-briefs/ecobistro_parkhurst_pnc1208/index.html

sional (LEED AP). But whether your location is actually aiming for a Gold (or Silver or Platinum) LEED rating—or your organization is simply trying to be more sustainable by making a few energy-saving kitchen equipment purchases—the advent of LEED has raised the bar.

The labeling game

The largest impact LEED standards have had on foodservice operations is in the area

of equipment. In particular, specifying highly energy and water efficient appliances, lighting and ventilation systems is a major factor in helping a project meet LEED certification criteria.

Very often, those equipment choices require that equipment specs include the now seemingly ubiquitous Energy Star label, which has caused some to confuse the connection between the two programs.

In fact, the Energy Star label was introduced in 1992 by the Environmental Protection Agency. Its standards have been updated over the years to recognize advances in technology and performance, but its basic idea has remained the same: the Energy Star label certifies that a given piece of equipment meets or exceeds a specific level of efficiency the program has established as being signifi-

cantly above that of an average unit in the same category.

As of this writing, seven categories of commercial kitchen equipment can feature Energy Star unit ratings. These include steamers, fryers, convection ovens, griddles, reach-in refrigerators/freezer machines, hot holding cabinets and dish machines. (To learn more about these categories and how they apply to commercial foodservice operations, go to www.energystar.gov/index.cfm?c=products.pr_find_es_products).

While Energy Star remains a completely separate program from LEED, the LEED program recognizes that Energy Star has become the de facto standard for equipment energy and water efficiency. For the most part, LEED has wisely not tried to “reinvent the wheel” in this area.

So just how is foodservice equipment evaluated to ensure that it can be certified as Energy Star compliant? For answers to this and related questions, we turned to industry guru Don Fisher, president/CEO

What's New in Energy Saving Equipment

Vulcan Boilerless Batch Steamer



In the steam cooking world, Mike Burke, CFSP, SNS, product manager for the steam cooking division of Troy, OH-based Vulcan, agrees with Pennington in recognizing that cooks are first and foremost concerned with productivity vs. energy savings. With that in mind, Vulcan's Energy Star rated Boilerless Batch Steamer (vs. an a la carte cooker) has been reintroduced this year. Now made in-house, the unit's energy saving cooking efficiency has been increased by more than 5%; on a one-compartment steamer (3-5 pans) there's typically a \$450 annual savings on utility bills (i.e., electric, water and sewer combined) with a 90% water savings vs. a traditional steamer.

Addressing the productivity issue, Burke details the kitchen operation reality: “You put product in (for batch cooking), shut the door, let it cook through the cycle—and not open the door during the cycle. With a la carte cooking, you may have to open the door to put more product in, shut the door, and remove product at various times. Such actions change the temperature inside the oven and affect the cooking time of all items within.

The way the (energy efficiency) standards are written, tests measure a unit in a specified usage situation that may not be realistic given the usage and performance demands in an actual operating environment, Burke argues.

Where a la carte is the norm, Burke suggests that some locations, such as a 90-bed nursing home, for example, should actually be able to use a boilerless batch steamer more effectively if they change production processes so as not to keep opening the unit during production. In situations where that isn't possible, he says model selection needs to look beyond efficiency ratings only and consider the likely usage patterns that will actually occur.

Coming to a Boil

Sustainability is considered in the development of every new product designed by Duke Manufacturing, according to marketing manager Richard Arthur. The St. Louis, MO-based company's Gas Flexible Batch Broiler, co-developed with Burger King, recently completed its rollout and is currently in test with a large international contract management company.

“The broiler is one of our bigger successes with a green focus,” Arthur says. “The typical broiler is a major natural gas hog. We designed a batch broiler that's a slightly smaller unit than the one it was to replace, but it meets the needs of about 95% of the chain's stores worldwide—and helped reduce gas consumption by 25% to 30%.”

In addition, since the unit boasts an enclosed cooking chamber, that is said to reduce its impact on the ambient temperature of a restaurant, leading to reduced air conditioning costs. Kitchen workers are said to be cooler and more comfortable as well.

Waterbaths Without Water

Duke's latest innovation is its Waterless Rethermalizer, also slated to debut at NAFEM's What's Hot/What's Cool pavilion. It features a waterbath that eliminates the need for water!

“Bagged frozen product typically retherms (or slakes out) in a 50 gallon

of San Ramon, CA-based Fisher-Nickel Inc. Fisher-Nickel has been a pioneer in this area for a quarter century and its equipment testing and research activities have become the bedrock upon which many utility companies, state energy authorities and manufacturers have come to base their own standards and criteria.

The company's website (www.fishnick.com) is also a veritable treasure trove of information for operators, including (just for starters) a nine-page "Energy Star Guide for Restaurants/Putting Energy into Profit."

The guide was created in partnership with Pacific Gas & Electric Food Service Technology Center, itself long credited with being a center of expertise for commercial kitchen energy efficiency and ventilation, appliance performance testing and sustainable building design.

That brings us back once again to the Energy Star program and the part the Fisher-Nickel organization has played in its development.

One of Fisher-Nickel's long time roles has



A state-of-the-art cafeteria was a prominent part of the new, LEED-certified employee center Campbell Soup Co. opened last summer. For story: <http://food-management.com/news/campbell-opens-corporate-cafe-0710/index.html>

been to represent PG&E and the Food Service Technology Center (FSTC) program (funded by California utility customers and administered by PG&E under the auspices of the California Public Utility Commission).

Fisher, through FSTC, has over many years assisted the EPA "in identifying contacts within

the foodservice industry to help make the commercial food service equipment segment of the program possible," he explains.

FSTC is also a member of the specification development group for Energy Star. Acting as a third party, "we, as the FSTC, apply standardized industry tests to equipment

waterbath that's filled up each day and held at boiling most of the time," Arthur explains. "By saving 50 gallons per unit per location per day, there's a significant savings in water usage. Plus, the unit cycles off when not in use and only supplies heat when it's demanded."

Fryers Recovery

As greater energy efficiency has become increasingly important within the industry and as more manufacturers aim to attain Energy Star standards, Fisher also points to fryers from Ultrafryer Systems as "the benchmark fryers—those with the highest efficiency performance."

Of course, Rick Jones, director of sales and marketing for the San Antonio, TX-based manufacturer, agrees, but voices some Energy Star-related frustration. "We were green before green was cool," he contends. "But Energy Star created a standard based on cooking energy efficiency for only one of three classes of fryers—the 14-inch size (that's the cooking area of the fryers) or 45 to 50 lbs. (that's how much shortening it holds)."

That size may make up the largest portion of the industry's installed fryer base, but Jones notes that 18-inch (60 to 100 lbs. of shortening) and 20-inch super fryers (with a shortening capacity in excess of 120 lbs.) are still waiting for recognition by the Energy Star program.

He also says he'd like to see "a Silver Star, Gold Star, Bronze Star for differentiation of those at the top from those at the bottom. Different levels within the Energy Star rating would drive energy savings [innovation] because as it stands now, there's usually no incentive to go further."

Noting that all Ultrafryer Systems' fryers would pass the Energy Star standard, Jones singles out the Par 4 Gas Fryer as the most efficient fryer the company has developed to date. Created in the past two years, it's a fairly expensive unit (and therefore not heavily marketed) that's currently offered in the 18-inch size.

"With a more efficient fryer you can cook at a lower temperature (about 350°F) and therefore with a lower energy cost because it has faster recovery (that is, after cold product is immersed, how long it takes for the oil to get back to 350°F). He says that also means less oil is absorbed by the



product and increases the amount of product that can be cooked per hour, increasing productivity.

Advances in Conveyor Ovens

Looking for a faster-cooking Pizza Conveyor Oven? Operators in that situation can turn to Middleby Marshall (Elgin, IL) and then say, "WOW!" (Actually, the WOW! Oven was first released in 2005 and has since gone through various iterations, according to company spokesperson Darcy Bretz).

"Depending on product, it takes three to five minutes to cook a pie, letting locations that would usually need two ovens to purchase only one. The current model saves about 30% in energy use vs. our traditional conveyor ovens."

Middleby also claims to have developed the most energy efficient Speed Cooking Oven available—the SOTA model introduced in early 2010. "Energy consumption is half that of a traditional fast cook oven," Bretz says.

Heat Recovery in the Dishroom

You've done it all and now there are pots, pans, dishes, etc., to be washed. For the latest in Energy Star-rated Exhaust Air Energy Recovery, Hobart Corporation (Troy, OH) launched its Advansys Ventless Door Machine in January 2010.

"The recovery cycle captures heat in the steam from the machine and

Equipment Innovation in the Age of LEED

GOLD LEED COOK-CHILL. Metropolitan State Hospital in Sacramento, CA, may be the first cook-chill operation in the country to achieve that distinction. Story at: http://food-management.com/news_briefs/metropolitan_vanir_leed1223/



LEED OR GET OUT OF THE WAY. Michigan State University Residential & Hospitality Services opened Phase One of its Brody Square project, a multi-station dining hall, this past fall. It is the first of its construction projects to be LEED certified. A second phase is scheduled to open this summer. Story at: http://food-management.com/news_briefs/michigan_state_brody0105.

to determine if manufacturers can qualify an appliance model for Energy Star," says Fisher. Such uniform procedures ensure that "apples to apples" comparisons can be made among units made by different manufacturers.

The specific tests used are developed

by the American Society of Testing and Materials (ASTM), but helping to develop and improve such tests has been a major objective of the FSTC since its inception. Fisher also notes that while FSTC acts as an unbiased party doing the testing, manufacturers looking to become certified still must

submit those test results and their applications directly to the Energy Star program.

Incentives to purchase

It's no secret that utility rebates are often available to operators who purchase energy-efficient equipment, but Energy Star certification may or may not be enough to qualify you for these. Organizations like FSTC can help you determine if the model you are looking at meet rebate criteria, which sometimes exceed those of the basic Energy Star label.

If you're based in California, and FSTC is a certified third-party lab for California Energy Commission (CEC) compliance testing, you can visit fishnick.com/rebates. On the other side of the country, Ed Smyth serves as director and consultant of KEMA Services, which provides similar information for New York, another state that has been a leader in promoting energy efficiency.

KEMA designs and provides program services for utilities and state entities like NYSEERDA (New York State Energy Research Development Authority). Among other services, it provides information and support to New York State end use customers who are eligible for NYSEERDA programs through the authority's Focus on Hospitality (visit: www.energystar.gov/index.cfm?c=pt_univ_eeps_sites_nyserda).

Smyth notes that in addition to the Energy Star rating program there is yet another set of industry standards recognized by a group known as the Consortium for Energy Efficiency (CEE, found at www.CEE1.org). CEE is a voluntary organization of energy efficiency program providers from various states whose members include utilities, state energy offices, and "partners" such as manufacturers and

What's New in Energy Saving Equipment

uses it to heat incoming 55° to 65°F cold-water headed for the final rinse cycle," explains product line manager Carrie Hoff. "By heating cold inlet water up to 140°F, less additional heating energy is needed to reach the required 180°F rinse-water temperature."

In a typical application, Hobart calculates the resulting savings, based on 200 racks/cycles per day in a restaurant setting, should be on the order of \$792 annually by running the machine on a cold water line. Also, because there's no vent hood, there is no need to replenish air lost with conditioned makeup air, reducing the HVAC load for a \$776 annual savings.

Together, that's a total savings of \$1,568 by running on a cold line vs. a hot line. (And it doesn't count an additional estimated \$3,500 savings from not having to purchase and install a basic vent hood in new construction). Altogether, this amounts to a \$5,068 savings (including the hood cost) for the first year with \$1,568 in savings per year thereafter. "This high temp machine is perfect in a leased space where the operation doesn't own the building and you want to avoid the expense of

installing a hood," Hoff adds.

Stero, also under the ITW company umbrella, offers at least five warewashers with Energy Star ratings and notes that an Energy Star commercial dishwasher can save up to 90MBTU of energy and 52,000 gallons of water per year. But a word of caution is

offered by longtime industry/Stero warewasher expert Rod Collins, principal, Rod Collins Associates, Cotati, CA.

On large conveyor or flight-type machines, it is very important to size tanks correctly, he says. Improper sizing can lead to situations in which soiled dishware must be re-run through the machine, negating any savings that might have been calculated.

As with everything in the marketplace, buyers need to be diligent in investigating efficiency claims and equipment applicability carefully in light of their own requirements. Also, efficiency ratings and testing standards are continually evolving, so make sure you check for the latest data before assuming that any particular model will qualify for a rebate or achieve the level of efficiency you are looking for.



James Madison University's East Campus Dining Hall (below and at right) was the first LEED-certified building on the school's campus. For story: food-management.com/news/jmu-opens-greenhall-0909/index.html



government agencies. The U.S. Department of Energy and EPA both provide funding.

Smyth explains that NYSERDA provides incentives (for NY state-based operators) for commercial equipment standards set by

CEE. "In some cases, Energy Star and CEE standards are identical; other times CEE standards are higher." That's because utilities make rebates available based on their own load management needs.

"In New York, it's up to NYSERDA to determine the incentive based on calculated savings," Smyth says. "NYSERDA offers a 'pre-qualified incentive' that is a fixed amount per technology. There are also 'custom incentives.' If someone is looking at a technology that's not pre-qualified, NYSERDA has a custom incentive based on calculated electricity savings per year."

In other parts of the country, operators should check with local utilities about the availability of similar rebate programs.

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Plugging Holes in the Certification Process

In mid-March 2010, the U.S. Government Accountability Office (GAO) provided EPA with a copy of an audit report on the Energy Star product certification process, researched with covert testing, that found "the process is vulnerable to fraud and abuse."

"In particular, the GAO demonstrated that the Energy Star product qualification process was not sufficient to prevent manufacturers choosing to falsify information from doing so."

While the report did not cite any examples of actual fraud, it did point to some of the weaknesses that plague a self-certification system like the one Energy Star had relied upon. More importantly, it also underscored the importance of third party testing for standards of this sort.

Those points were not lost on EPA, which quickly moved to address the points GAO identified. "Self reported" certification results are no longer permitted and testing by third party labs is now required for Energy Star certification.

However, should you encounter a problem (or have your doubts), the EPA encourages you to send a note to ENERGYStarVerificationProgram@energystar.gov.

Those with an interest in this issue can download a pdf of the original GAO report from the GAO website at: gao.gov/new.items/d10470.pdf

What's the connection?

It is easy to see why confusion so often exists about the relationship and differences between these various kinds of programs, which all share some common goals.

"LEED standards are meant to advance the entire Green Building industry, to give people—including manufacturers and operators—guidelines for moving forward," says Fisher-Nickels' Richard Young, its senior engineer/director of education. That is, there are no LEED-certified appliances, and in most cases you don't get credit towards a LEED certification by directly specifying any particular piece of equipment. In new construction, LEED certification relies upon the use of a computerized model to simulate a building's energy performance as well as upon other factors. More efficient equipment simply contributes to the building's performance.

Young sees LEED certification as a "reach" standard for many, but still a very viable tool to encourage efficiency.

"It's a way a forward-thinking company or institution can move ahead. It also provides a

way to help justify the cost of equipment to management [by pointing to dollar savings as well as the public recognition garnered by attaining LEED certification]."

And it is in that sense that the advent of LEED certification has significantly changed the paradigm for equipment manufacturers and their national association, NAFEM, Fisher believes.

"You'll see references to Energy Star and the LEED program as attributes manufacturers want to be associated with" whether an entire product line meets Energy Star criteria or not, he says. "The existence of these programs has unarguably driven innovation and changed the market. "Energy Efficiency" wasn't on the banners at NAFEM even four years ago." **FM**



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