Lean is Green: Designing Operations to Maximize Output with Minimal Resources

By Amelia Levin, Sr. Associate Editor -- Foodservice Equipment & Supplies, 9/24/2009 7:28:00 PM

Investing in energy-efficient equipment, switching uniforms from cotton to recycled plastic, installing low-flow, pre-rinse spray valves and LED lighting – we've all heard endless talk about how these "green" steps can save precious resources, and they can. But there's another way to look at the sustainability: making a kitchen as lean as possible to be as "green" as possible. In addition to switching to resource-saving equipment and supplies foodservice operators can reduce their carbon footprints by doing more with less equipment, choosing the right foodservice equipment, and shrinking kitchen spaceMark Godward, of **SRE** in Miami, and Tom Ligocki, of **Lean Kitchen Solutions LLC**, in Sheboygan, Wisc., are two consultants that have spent considerable time exploring the concept of lean foodservice operations.The "lean" assembly cell structures that made automobile manufacturers so successful, also apply when trying to make kitchen designs efficient. Everyone, and everything has a place, and "baby steps," the number and extent of movement by kitchen cooks and workers, make a huge difference in food production and efficient operations. Not to mention equipment selection and, of course, placement.Here are 10 tips shared by Ligocki and Godward for making kitchens leaner and greener.
Lean Tip #1: Assess what you really need. Can you do more with less? That is the million-dollar question for foodservice operators looking to streamline their businesses – and their budgets. "Operators should really only have what they truly need in terms of equipment," Godward says. "Do you really need a bigger **walk-in** cooler, or could you survive with a smaller cooler and more **reach-in** refrigeration on the line? Can you get away with two **fryers** instead of four, or a four-foot-grill instead of a six-foot-grill?"The trick is assessing exactly how many pounds of food the operator wants to produce to make a profit. Then, work backwards to determine the necessary amount of production capacity required from the foodservice

equipment. “There’s a tendency among operators to say, ‘I want to have enough resources to make sure the job gets done and the customer gets served,’” Godward says. But an extreme emphasis on customer service that can lead to excess, when in reality, less is more.“When you have a 6-foot-grill versus a 4-foot-grill, that’s more makeup air you’re going to use, and a larger hood you’re going to need,” Godward says. “And maybe the employee will turn on all of a range’s burners, even if they’re not all needed, and that uses up more energy.”Determining the minimum-required size and cooking capacity for each piece of equipment, therefore, helps create more efficiencies not just in energy-usage, but also in labor and capital investment. Also on the positive side, that selecting equipment this way reduces the foodservice operation’s carbon footprint. “Of course, there’s a marketing opportunity there – to tell customers what you’re doing to help the environment,” Godward says.**Lean Tip #2: Make better equipment choices.**Naturally, durability is important for many operators when it comes to purchasing equipment. However, in terms of lean kitchen design, so is versatility. In particular, equipment with parts that staff can turn off during non-peak periods helps prevent excess energy-use, according to Godward.“Can you turn off smaller sections of a grill and still be effective?” he says. “Or, can you partition a **fryer** into small sections that allow you to have some vats open and some closed? Or maybe instead of two large **fryers**, the operator can have four smaller **fryers**, each designated for a particular food item, and which can be turned off when not in use.” The **fryer** solution also helps in case one **fryer** breaks at an inopportune time. These seemingly small features can add up to increased energy savings.Another idea is to have two prep-table lines, but fit just one with undercounter refrigeration instead of both. Equipment that can help execute multiple menu items can also play a role in helping an operator conserve resources. Flat-top **griddles** can cook a variety of proteins from eggs to meats and fish; combi-**ovens** that can slow-cook, braise, steam, and operate as a traditional **oven** are two examples of equipment that not only perform multiple tasks but also reduce the number of items needed in a kitchen. Braising pans are also good for braising vegetables and meats and for producing soups, in place of soup kettles that are only good for soups, Ligocki suggests.Ligocki has also sought out customized equipment, which doesn’t always cost more, to create space

and resource savings. For example, he worked with one school foodservice operator to create lids for the kitchen's deep **sinks**, to create extra space for stacking dishes ready to go into the **warewasher**. Foldable stainless steel tables also help save space, as do equipment on castors that can easily be moved around for multiple uses.**Lean Tip #3: Start designs with the dining room.**Most kitchen designers are taught to design from the "inside out," meaning, figure out the kitchen first if all possible. But Ligocki has another idea that works in tighter spaces: Design the dining space first, and then work backward.In industrial operations, that's called a "pull system," or flow chart showing what's causing what. Ligocki starts backward, at the point where the guest is served the food. From there he examines each step of the process all the way back to food preparation to determine the proper layout and flow needed to execute the menu and serve the customers. Often, Ligocki says, operators will focus on the kitchen first so much to the point that when it comes to figuring out seating, there's little space left for the dining room and adequate tables needed to turn to make a profit.He's simultaneously works from the menu outward as well. "I also start with the menu and figure out how many people the place is going to serve, how much food product needs to be shipped to the customer, and how many meals the operation will send out, and then I can figure out how many people are going to be in the kitchen and doing what, and then how much space the place will need for the kitchen," Ligocki says. Only then are equipment selections made.**Lean Tip #4: Reduce overall footprint.**Designing to be lean, as described above, helps foodservice operators reduce their overall footprint, a point of emphasis for a growing number of restaurants the past few years. In a time when real estate has suffered, meeting volume demands with less space has been the popular business method of choice, it seems.**From Denny's to Einstein Bagels, IHOP, Chili's, Ruby Tuesday and so many more, chains have rolled out new-store prototypes with significant reductions in both dining and kitchen square footage**. The result has been an overall reduction in energy and gas use, labor costs, and costs for rent and build-outs. To make up for sales volumes, operators have switched to smaller-batch cooking, using off-site, central commissaries for soups, sauces and other high-volume foods that take up space, and retherming some products.Ligocki says reducing overall inventory also

helps save space, both in terms of cool and dry storage. That might mean more deliveries, or a closer focus on exact numbers of meals needed to be served. By taking these steps, an elder care facility Ligocki was working on was able to reduce the footprint of the on-site kitchen, thereby allowing the facility to build another patient room using the additional 1,000 square-feet. This allowed them to generate an extra $3,000 a month in additional revenue thanks to having a lean kitchen.**Lean Tip #5: Take steps to reduce food waste.**Determining the exact amount of food needed to be produced to make a profit while not running out, doesn't just improve efficiency in kitchen operations, but it also helps reduce **food waste, perhaps the number one cost-draining culprit in restaurants**. "Food waste has a domino affect on so many other aspects of running a restaurant," Godward says. It affects the amount of food product purchased, the amount of space need to hold that product, the amount of cooking equipment needed to prepare it, and countless other factors. "I'm not saying the foodservice industry is trying to waste food, but that is an area that needs to be controlled more and more," he says.Ligocki, in helping a pizza restaurant client get leaner, noticed that at the end of a service period staff would fill a garbage can with discarded pizzas and dough. "I encouraged both the management and the staff to get together and help map out that food waste," he says. "I asked the staff to figure out how many pizzas they were throwing away every day." The staff also figured out how much dough was used to create that pizza, the cooking time to create the pizza, the space needed to hold the dough to make the pizza, and how many pizzas were sold. By tracking the food waste, Ligocki and the operator determined that the facility was using the wrong heat lamps, which were responsible for generating a significant portion of the food waste. Large pizzas sat under the lights and literally dried out, making them inedible. Simply switching the lights and making smaller pies reduced food waste and allowed the operator to realize significant savings in terms of food costs and waste hauling costs."It's really important to get the staff involved in these processes," Ligocki says. "Some restaurants have employee bonus programs, pay raises, or other incentives to keep food waste down."**Lean Tip #6: Reduce portion sizes.**Portion sizes have grown dramatically since the 1950s, a time when super-sized meals didn't exist. For some restaurants, larger portions represent a way to add value

for the diner and charge more per menu item, thus leading to higher check averages. Some restaurants, though, have found success by offering diners an increased number of smaller menu items. For example, the restaurant may have an expanded appetizer or “small plates” list on their menu so diners can pick and choose how much they want to eat without as much waste.During a more economically challenged time, however, these small plates also come in handy because they allow the diner to make the decision to spend less. Smaller portions at lower prices can also make a restaurant more desirable to customers trying to protect their wallets. Restaurants with larger bar areas have sought to expand their bar food menus to boost sales among diners not looking for a large dinner and larger check. Reducing portion sizes helps reduce overall operator costs by lowering the costs of purchasing food, reducing waste and hauling costs, reducing **dishwasher** energy and water use (with less food needing to be scrapped), and by reducing the energy used to cook high volumes of food. But aside from these basic savings, the environmental impact of reducing portion sizes is huge, Godward says. The more food we consume, the more demand we put on agriculture, and the more fertilizer, packaging and ultimately waste we create to meet those demands, he says.**Lean Tip #7: Consider ergonomics.**Ligocki places a high priority on the details when it comes to lean kitchen design. That even means finding out if the chef is right- or left-handed. “If you’re right-handed, you tend to hold things with left hand and reach with your right or dominant hand,” he says. It makes sense, then, to have a reach in refrigerator that opens outward to the right. But if you’re left-handed there might be a better solution.Another interesting idea Ligocki has is to put **walk-in** coolers side-by-side with doors that swing outwards to the opposite sides of each other to allow for simpler work flow in the area.Also, slightly raise microwave **ovens** or convection toasters so their inside compartments are closer to the user’s eye level. “It’s a lot harder to open the doors on these units if they’re at waist height,” he says. “But you also don’t want it to high so you’re reaching up over something. This sounds kind of anal, but this is the focus in the world of lean,” Ligocki says.**Lean Tip #8: Assume you’re down one person.**Another trick Ligocki uses for lean kitchen design is assuming the kitchen will always be down one staff member. “The space difference is only slight, and then, if someone calls in sick you won’t have

any surprises," he says.Setting up space for more small-batch cooking on the line helps support this structure as well. Ligocki will design a kitchen "line" into more of a U-shape, which allows the cook to swing to different points and have adequate undercounter refrigeration so he or she can prepare food the in one spot quickly, swing around and cook it on the equipment, and swing around and plate the food in another open area of the counter. This small-batch food prep at the line works with most foods, except of course poultry butchering or other prep work that would incite food safety concerns.**Lean Tip #9: Train staff to understand the importance of lean.**Everyone needs to be on-board when it comes to understanding the importance of kitchen efficiencies, Ligocki and Godward would agree. Tracking food waste, mapping out activities in the kitchen, saving natural resources and operating costs by closing **walk-in** cooler doors and turning off **faucets** – these small things add up over time.**Lean Tip #10: Go ventless.**In some small operations, electric appliances can work just as efficiently as gas units. Ligocki retrofitted one small operator with all induction burners so there was not need for a heavy-duty venting system.Of course, thoroughly checking the structural and mechanical requirements of the building first is a must, as is working with health departments and local building statute to make sure ventless can work safely and legally.