New Technologies for the Foodservice Operator

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As a young boy I enjoyed watching Star Trek and other sci-fi shows. I was techno-culinarily-inspired when Captain James T. Kirk would press a button and a steaming hot, beautifully prepared meal would appear behind the door. I didn't know then that I would be inspired to a career in foodservice from watching a television show. I don't seriously think we will ever get to that degree of technical mastery of object manipulation; however, we have come a long way in making it easier to prepare wholesome, delicious, and nutritious meals. Imagine cooking pizzas from fresh dough in less than 4 minutes, 3 lb. chickens roasted to perfection in 12 minutes, a full pan of steaming hot, fresh vegetables in 2 minutes, a 6 oz. chicken breast broiled in 130 seconds. These are the kind of things that are possible today that were not imaginable just eight years ago. Scotty, ready to beam up two for dinner.

While I have been amazed over the doubling of technology over the last 10 years, I have been equally amazed how slowly our industry changes to new methods and technologies. We have a tendency of clinging to old habits and have a fear of being early adopters. Technology is forcing our industry to change as labor becomes a larger part of the food operator's bottom line. Today it is more important than ever to discover ways of improving productivity without compromising food quality. All foodservice facilities, whether they are fast food, full service, cafeteria, or white table operations, all have one thing in common - they are all manufacturers of food products. Like any manufacturer, raw goods come in the back door, they are fashioned, shaped, processed, and then served on a plate or in a bag to the public. Manufacturers also concern themselves with productivity, cost control, product quality, worker comfort, environmental issues, safety, just-in-time inventory control, and customer satisfaction.

Too often, the initial price for equipment is the primary purchasing consideration. Cooking food is a task for the cook, just like building fine cabinets is to the cabinet maker. A skilled craftsman can build fine cabinets with inexpensive hand tools. Most craftsmen, however, use the more expensive power tools which allows them to make more cabinets with better results. Purchase price cannot be the prime purchasing consideration. The equipment you purchase to perform taskwork is income-producing and therefore is a revenue investment.

Many foodservice operators are conditioned by habit, or misperception, to do things the same old way. Rangetop cooking, for example, is the old, established method. It is perceived to be inexpensive, fast, and effective. In reality, it is labor-intensive, slow, and messy. Rangetop cooking requires a large investment in inventory of pots, pans, lids, tongs, spoons, etc. Besides the risk of getting spattered, burned, and toasted, almost everything that is cooked on a range is transferred to serving pans, therefore making two dirty pans to clean for every product cooked. After analysis of the process, rangetop cooking is very much like making cabinets with hand tools.

So, what is the operator to do? The answer is to seek out new, proven technologies that will improve food quality, increase productivity, reduce unnecessary labor, and increase profitability. Many of these items you may have heard about or seen at trade shows, but the price tag scared you away. I would encourage you to examine the payback potential of these items and look at them as revenue-producing investments.

Microwaves: You say, "wait a minute…microwaves are not new technology." Actually, the high wattage units are. These high wattage units are extremely fast and labor-efficient. Several manufacturers offer 2,600-plus watt units. These units hold either two half-size or two full-size, 4 inch deep, plastic steamtable pans. Many of the foods that are presently cooked on a rangetop can now be cooked in these units faster, cheaper, safer, and with an improvement in food quality. These units also become efficient steamers by simply putting a plastic lid on the pan. Other benefits include the ability to cook food in the same pan in which it is served, and the ability to place them anywhere, because they do not require an exhaust hood, water, or drain lines.

Convection Microwaves: These units are primarily convection ovens with microwave assist. They provide the benefit of speed with microwaves plus the browning and caramelization of dry heat. They are primarily designed as roasting or baking ovens. These ovens are very fast. Imagine being able to cook a 5 pound. frozen deep-dish apple pie in 30 minutes.

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These ovens can also "finish cook" many frozen appetizers such as poppers, cheese sticks, hot wings, etc., replacing the need for fryers in smaller operations. Also, this equipment doesn't need to be placed under an exhaust hood in most jurisdictions.

Lightwave Ovens: As a child many of you had those little play ovens with a 40 watt light bulb to bake little cakes. Today those little ovens are all grown up. Several manufacturers now make units that are capable of cooking blanched dough pizzas in less than a minute, and fresh dough pizzas in little more than two minutes. These ovens have 12,000 watts of intensely penetrating quartz light and do a marvelous job in heating and browning frozen or fresh products rapidly.

Today there is a wide variety of ready-cooked, individually quick frozen items that cost less to purchase than cooking them from scratch. All that is needed is to properly re-thermalize or "finish cook" them. These ovens are the perfect answer to this need. Fast, efficient, labor-reducing, cost-effective, and consistent quality are all benefits of this equipment.

These ovens only require simple vent duct in most jurisdictions. They are an ideal piece of equipment for pubs, grills, sandwich shops, c-stores, and other small operators who want to sell additional items. This is a true money-making machine.

Vacuum No-boiler Steamers: These steamers have burst onto the scene as an answer to several major problems. They really fall into a new category of equipment that is not only efficient and cost-effective, but is also good for the environment. They save an operator tens of thousands of gallons of water and sewage per year. Also, these steamers avoid the many problems caused by hard water conditions that cause so many problems with boilers in traditional steamers. Since they don't have boilers or water fill lines, they are highly reliable.

The principal of a vacuum steamer is quite simple. Since water at sea level boils at 212 F, and at the top of Mt. Everest water boils at 170 F, then the lower the atmosphere, the lower the boiling point. Food in a steamer cooks when steam vapor condenses on the colder food and turns back into a liquid. The heat energy that was in the steam is now transferred to the food. Steam has six times more heat energy than boiling water.

The energy savings of this type steamer are obvious. It costs substantially less to heat water to 170 F than to heat it to 212 F. Also, these steamers do not require ventilation. Benefits of this equipment include improved food quality, versatility, environmental friendliness, and ease of use. As with all steamers, the food cooks in the same pans in which it is served.

Induction Range: There will always be a need for some range cooking, especially where direct heat is needed for sauté, or for making gravies or sauces. Induction ranges are the perfect piece of equipment for these applications. They are extremely fast, precisely accurate, and comfortably cool for the cook. Induction heating works by a simple process of creating a magnetic energy field across the cooking surface. Any pan capable of holding a magnet will work on these units. Commonly 18-10 stainless, tin, steel, or iron are suitable for induction. The pan is placed in the magnetic field and gets hot as the magnetic energy passes through the metal. Only the pan gets hot in this process. The pan then transfers heat directly to the food product.

Induction is not a new technology; it has been around for over 25 years in Europe. It has caught on in the U.S. only in the last five years. The technology is mystifying and magical. At shows and demonstrations, we like to boil water in a pan while we have a $100 dollar bill between the pan and the burner. These units are sold in 1.7, 2.6, and 3.6 kW models. The high voltage models are incredibly powerful with more cooking speed than any gas ranges available. Because induction cooking is so fast, it is not necessary to have six to ten cooking eyes unless your restaurant is a heavy cook-to-order operation. Two or three of these dynamos will get the job done. This technology is available and affordable today and is well past the pioneer stage. Ten years from now these ranges will be an accepted standard.

The biggest benefit of reducing the number of range eyes is a reduction in the length of the exhaust hood. Exhaust hoods cost between $500 - $1,100 per foot installed. If any of these, or a combination of these technologies can reduce the length of a cooking line and/or hood requirements by even 3 feet, I think it is clear the capital savings that would exist. It has also been calculated that exhaust hoods remove approximately $100 worth of conditioned air per foot of hood per year.

Oil-less Fryers: Also known as air fryers, these countertop units use superheated air to fry almost any pre-coated, blanched item that would normally be finished in a deep fat fryer. This piece of equipment rapidly heats the surface of the food to 350 F, causing the pre-applied oil on the product to fry the food. The food quality of air fried product is often better than deep fried product, because there is less residual oil in the finished product.

These air fryers, at first blush, may seem expensive at up to $8,500, but they don't require the normal $3,500/year in oil cost plus all of the labor required to change it. Payback on these fryers can be obtained within two years.

These are just a few of the new proven technologies that can dramatically improve your business if you can make slight changes in the way you presently cook. We don't have to voyage to the edge of the universe to discover advanced technologies; they are here today in successful operation. There are even more dramatic product wonders coming in the near future. If I wrote about some of the things I've seen in development, they would have to kill me, so I'll save those for a future article. Beam me up.

Cooking Products

for the New Millennium

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It has often been a mystery to me that our industry is somewhat reluctant to embrace new cost-efficient cooking technologies. Prior to writing this article, I was searching for just the right way of helping foodservice operators recognize the power of new cooking technologies in their businesses. Recently I toured a major equipment manufacturer's plant. I was talking with the owner about the dilemma I was having writing this article. I asked him to visualize the manufacturing of food equipment, as parallel to a chef or cook manufacturing food.

To generate some discussion, I said, " In your plant, for example, you probably have a piece of equipment that automatically punches and die-stamps all of your stainless instead of doing it the old way with presses, shears, and punches." He said they "used to have an old machine like that, but it was too slow, and labor-intensive." They "now have a Plasma arc cutting machine, because they only need one person instead of two to operate it, they get more cuts out of a piece of stainless steel (less waste), it is safer, every cut is burr free, it stays calibrated for the duration of a batch, it is quieter, and it lasts longer."

That was precisely the point I wanted to make. New technologies, robotics and automation have improved performance, productivity and profitability for the manufacturer, and they can do exactly the same thing for any foodservice operation. Manufacturers use the term "Keisen" for this, which means continual process improvement.

The last several decades have produced many radical new technologies that will forever change the way food is cooked. Those operators who are willing to explore these new technologies will discover economic advantages, improved efficiencies and superior productivity. They will no longer be compelled to slave over hot ranges preparing food for their customers. Most of these new technologies are available and affordable, ready to improve the operator's processes and bottom line profitability.

It has been my observation that there are three types of foodservice customers.

Pioneers – Businesses that quickly analyze the value benefit of a new technology and seize the advantage over their competition. These operators are known as "early adopters" or "risk takers."
Settlers – Tend to be businesses that are "risk averse" and wait until others have embraced a new technology before they risk their process to change.

Traditionalists – Businesses that are comfortable with the status quo. They are reluctant to adopt, or never adopt change. Most of them go out of business, because they can no longer compete.

An example of this would be the pizza revolution of the early 80s. Domino's discovered a new technology called a conveyorized pizza oven. This oven optimizes labor, provides unparalleled consistency, and dramatically increases productivity. Domino's was a pioneer! They rolled out their pizza units with conveyor ovens all over the world, leaving their competition in the dust. Several other chain operations soon emerged as settlers with similar automation, and were able to claim a share of the market. The traditionalists stuck with their old hearth-type deck ovens and lost market share. In order for these types of operations to survive, they must charge higher prices for the product and provide value-added service.

In the 90s we saw the emergence of the "top-side" or "clam-shell" griddle that gave chain burger operations production advantage over their competition. They cooked burgers from the top and bottom at the same time. This helped them increase same-store profits, improve taste, quality, and consistency and reduce unnecessary labor costs.

These are examples of process improvements, which translate to increased productivity and food quality. There are many cooking appliances in existence today that may have been around for several years, but they are yet undiscovered by foodservice operators. It's hard for a customer who sees a piece of cooking equipment at a trade show to fully appreciate and understand how it could improve their bottom line. If you are not looking for a solution, or do not recognize a problem, you will not be aware of the extraordinary benefits of some of these revolutionary cooking items.

The following is a thumbnail on some of these technologies that may help your processes:

Combination Ovens – These ovens are capable of cooking in dry-heat only, steam only, or a combination of both. This piece of equipment is 25-year-old technology, but the average operator is just beginning to understand the speed, quality and consistency it will afford them. Combis will cook most foods in less than half the

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time of a normal convection oven. Rational has just introduced a totally self-cleaning unit. With the push of a button, a spray arm automatically sprays degreasing agent on the inside of the oven, then following an appropriate soaking time, rinses it clean.

2600 Watt Microwave Oven – Several manufacturers offer 2600-plus watt models. Panasonic calls their version the Sonic Steamer®. This is a 2600-watt microwave oven that will steam anything in its own juices in a fraction of the time of a convection steamer. It holds two 4 inch deep full-size plastic steam table pans. Either of these units will put stock pot cooking on the range out of business. As an example of its speed: 30 servings of mixed vegetable medley raw to done in 2 minutes; 6 pounds of shrimp in 3 minutes; 2 gallons of whole kernel corn in less than 6 minutes. The added benefit is that all food is cooked in the same pan from which it is served.

Combination Braising Pan/Steamer – Legion recently introduced a combination braising pan/steamer unit called a Skittle®. This all-in-one unit can perform seven cooking functions in the same floor space. It adds great flexibility to the cooking line because it can be used to braise, boil, poach, stew, steam, fry and grill. This versatility can smooth out a cooking line by providing the additional functionality when needed.

Convection Microwaves – Combination microwave/convection ovens are the perfect answer for food in a hurry. They combine the power of microwave with the speed of a convection oven. As an example of their speed: frozen pizzas, 1-1/2 minutes; beef pot pie, 3 minutes; 6 ounce chicken breast, 4 minutes. This oven is just right for any operation that would like to prepare food in small batches over a long period of time. This oven can put a pub, speed line or a c-store in the food preparation business quickly. Hors d'oeuvres, wings and potato skins can add significant profits to an existing business.

Light Wave Ovens – These ovens use quartz lamps to produce intense heat quickly and cook with blinding speed. Like the convection microwaves, these ovens are designed to cook the same type food products as described previously. They caramelize the product beautifully.

Vacuum Steamer – This unit is a water bath type steamer that is designed to operate at lower than atmospheric pressure. Water normally changes to steam at 212 degrees at sea level; this unit steams with water temperatures as low as 175 degrees. Obviously, steaming with lower temperatures is a huge energy saver; also, these units use less than 6 gallons vs. 600-plus gallons of water per day with conventional convection steamers. An added benefit of this unit is that a pan of finished food can remain in the steamer while another pan of uncooked food is being cooked. These steamers can be placed anywhere and don't require a water or drain connection.

Steam Griddles – There are several varieties of steam griddles. Accutemp manufactures a griddle that has a plate surface temperature of less than 2 degrees variance at any point on the plate. This is a radical new technology and is especially beneficial in the quality and consistency of food doneness and color. The other steam griddle is manufactured by Thermodyne and employs a standard griddle plate with several domed lids and a steam injection system. This griddle actually bathes the product in live steam at the same time grilling the side that is in contact with the griddle plate. These griddles have extremely high rates of recovery and will turn out large volumes of food.

New Technology Fryers – Many electric fryers today use firebar elements, which are flat, or large-diameter round elements. These provide a much greater surface area in contact with the oil. Recovery is almost twice as fast as tube-fired gas units. One manufacturer, Frymaster, has gone one step further; they insulate the fry pot and use a unique controller called a Triac. The Triac modulates power to the oil rather than being full on or full off.

Oil-less Fryers – Oil-less fryers are also known as air fryers. They use high-velocity superheated air to actually cause the oil coating on the product to get hot enough to fry. These units do not require exhaust hoods and can be placed almost anywhere. These units are ideal for bars and c-stores. Like the light wave ovens, these units can prepare hors d'oeuvres and almost any item that has been blanched in oil.

Ventless Hoods – Ventless hoods are self-contained units that do not require an exhaust duct to the outside. They utilize a series of filters followed by an activated charcoal filter to remove grease particles and odor from the air. They can be used over electrically heated appliances only. These hoods have built-in fire protection systems.

Self-Contained Ventless Fryer – One manufacturer makes a self-contained fryer that is a standard 15# electric fryer inside and enclosed ventless hood with fire suppression system. This unit offers the benefit of traditional deep fat frying with the ability to place this unit anywhere.

Induction range – Induction ranges cook with disturbed magnetic fields heating only the pan in which the food is being cooked. The pan must be made of a material that a magnet will stick to. These are ideal for any buffet or pasta operation.

Thermal Finisher – These are rapid food warmers that pre-heat in less than 3 seconds and will toast, melt and finish foods like nachos in 60 seconds, potato skins in 45 seconds and par baked pizza in 60 seconds.

Perhaps this information will encourage you to examine and modernize your operation. Possibly one of these technologies can smooth out or fix one of your operational bottlenecks. Maybe you too will be able to say, "We used to cook our food that old, slow, inefficient way, but now we have a new technology that is truly state-of-the-art".

It's Not About Energy;

It's Performance That Counts!

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With so many decisions to make when purchasing cooking equipment today, it's no wonder that most entrepreneurs simply make their cooking equipment selection and energy choice based on perception, preference, or previous buying decision. Purchase price alone sometimes is the total and only consideration. There are many implications and considerations surrounding the cooking equipment selection process. Obviously, there are questions about food quality, texture, taste, and appearance. What do I expect this piece of equipment to do? How will it improve my process and operation? What is the correct energy choice? The purpose of this article is to examine some of the issues that should be a high priority in the equipment selection and decision-making process.

Foodservice facilities, whether they are fast food, full service, cafeteria, or white table cloth operations, all have one thing in common: they are all manufacturers of food products. Like any manufacturer, raw goods come in the back door; they are fashioned, shaped, processed, and then served on a plate or in a bag to the public. Since foodservice operations are similar to manufacturers, the operator needs to be highly aware and concerned with productivity, cost control, product quality, worker comfort, environmental issues, safety, just-in-time inventory control, and customer satisfaction.

It will help to put this discussion into perspective by first recognizing how the foodservice revenue dollar is spent. According to the National Restaurant Association[1], the national average percentage breakout of cost in a limited service restaurant is shown in the following table:

Food and Beverage (paper, consumables, and chemicals)	36.3%
Labor (wages, workman's compensation, and training)	32.2%
Administrative (rent, debt service, advertising, insurance, etc.)	25.3%
Utilities (electric, gas, water, sewage, phone, trash)	2.8%
Pre-tax Profit	3.4%

Remember that these are national averages. Your operation may have slightly different ratios, but will be proportionately the same. Focusing on those items of the budget that consume the largest part of the revenue dollar will help you "get the biggest bang for your buck." The larger cost items are food, labor, and administrative costs. Food and labor alone account for more than 65 percent. Utilities represent 2.8 percent; however, isolating just the cooking line constitutes less than 0.5 percent, or about ½ of 1 cent of each dollar of revenue. The cooking equipment decision needs to have a positive impact on the "high priority, often overlooked, cost areas" of the business.

Operators constantly seek ways of reducing their operating costs in the hope of improving their bottom line. This is a noble cause, but sometimes in the owner's haste to reduce costs, unseen forces can wreak havoc on productivity and performance. What seems a simple choice issue can affect every other aspect of the business. Through my years in foodservice, the energy choice seems to have always been placed as a high priority. It is important to recognize that the energy choice can and will affect almost every aspect of the business as a whole. There are many areas of the business that have high cost associated with them, such as labor, training, food, worker's-compensation, installation, maintenance, capital investment, and other facility issues. As mentioned previously, energy (gas or electric) alone powering the cooking line constitutes an extremely small percentage of the overall foodservice operation's costs. When considering cost, it is important to recognize the total cost, including the high cost areas that the equipment and energy decision affects.

Examining each of these high priority areas will help in the decision-making process. Various questions need to be taken into consideration when making a purchasing decision on new or replacement cooking equipment.

Labor – Is the piece of equipment employee friendly? It is getting harder to find and keep experienced help. Hot and humid kitchens take a toll on worker productivity; therefore, the piece of equipment should not add to the heat condition of the kitchen. The piece of equipment should be the cook's best friend. Will the piece of equipment have the effect of lowering my labor turnover? A recent consultative study by McKinzey and Company[2]

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indicated that a reduction in labor churn from 240 percent to less than 150 percent would put a full 2 percent to the bottom line.

Training – Is the equipment item easy to use and easy to clean? Equipment should be user friendly, requiring minimal training. This is not to say that a piece of equipment can't be sophisticated; however, the controls need to be simple to use. It should take no more than 10 minutes to teach the average employee how to use the item effectively and safely.

Food Cost – Will this item reduce food cost? The item of equipment should reduce the number and frequency of "burn-ups" and "throwaways." It should demonstrate improved yields, and in the case of fryers, it should increase oil life.

Workman's Compensation – Will this item improve my risk management practices? Does this piece of equipment eliminate a potentially dangerous situation? Safety in the workplace is of paramount importance. There are no shortcuts here. The piece of equipment must be reliable and safe. An injured employee means higher insurance premiums, and another person to train.

Installation Costs – What does it cost to initially install this piece of equipment? And later, what does it cost to move it? Installation cost can be reduced if the piece of equipment does not need to be installed under an exhaust hood or if it is flexible and can be moved around to meet the chef's needs.

Maintenance Costs – Does the piece of equipment have a good track record for reliable up time? Examples of things that cause extended down time and expensive repairs are cracked frypots, burned targets, lost parts, and burned up controls. Are parts readily available and easy to replace? One manufacturer's conveyor broiler has 23 removable parts. Several of these parts are small and if lost or misplaced, the broiler will not function.

Capital Investment – Does the item have multiple functionality? If a piece of cooking equipment can be used several different ways, it can reduce the number of pieces the owner has to buy. This is a direct and immediate savings. Will it produce revenue? It is important to remember that cooking equipment represents the income-producing tool of the business. It is a revenue investment.

Life Cycle Cost – How many years of highly reliable performance is the item scheduled to last? Simply, the longer a piece of equipment lasts, the less is its life cycle cost.

Facility issues, process improvements and miniaturization – can the item reduce the size of vent hood? With exhaust hoods costing over $1,000 per foot, the reduction of just 2 feet will reduce capital outlay, noise, air-conditioning losses, and fan size. Can it improve the process of production and improve through-put? Fewer steps in the process translate to improved efficiency. Can it shorten my cook times or increase my productivity? More product at less cost per item means more profits.

Today it is more important than ever to discover ways of improving productivity without compromising food quality. Efficiency improvements in equipment and process will increase profitability and reduce overhead simultaneously. By focusing attention on the large, high priority issues, you will be better equipped to make equipment decisions that will maximize productivity, profitability, and performance in your business.

[1] National Restaurant Association, Restaurant Industry Operations Report – 1999, http://www.restaurant.org/research/ratios.htm
[2] Nations Restaurant News, July 19, 1999, "New McKinsey Study: Foodservice leaves $$$ Billions on the Table"

A Recipe for Successful

Kitchen Planning

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Sometime in your foodservice career, you may be involved in the planning process of designing or remodeling a commercial kitchen. This may happen as a result of serving on a committee, or maybe you will want to open a restaurant of your own and you need to get started with facility design. How will you start? Who should you call? Where do you go for help? Over the past several decades I have worked with hundreds of people who have had this daunting task and had no idea about where or how to get started. The learning curve from a dead start can seem overwhelming. No one wants to make the wrong decisions, or just blindly accept other's ideas about something as complex as a foodservice operation. Time and money are always important factors, and there is never enough of either. So, finding yourself tasked with this opportunity, what steps should you take, what issues are important to understand, and how do you ensure you are getting maximum value?

This task is hardly a do-it-yourself project. It is strongly recommended that you seek the help of a foodservice professional to assist you with the collection of the thousands of details and decision points needed to begin the design process. In addition to an Architect that will be working with you on the project, there are several excellent sources you can engage to help you with the kitchen decision-making process. They are Food Facilities Consultants, and Foodservice Dealer Sales Engineers.

Food Facilities Consultants: These professionals work on a fee basis and can shape an idea, nurturing it into a fully developed plan with specifications ready to be sent out to dealers or contractors to be priced. They will assist with menu development, and some develop the color board, materials, and finishes schedules. They also can review bids for accuracy, award a winning bidder, and ensure the buyer that the equipment specified is supplied in the final installation. Obviously, the more work the consultants do to develop the scope of the project, the more they need to charge. The benefit to you (the customer) is that these professionals make decisions rapidly and have years of experience to draw upon. As a general rule, the larger the facility, the greater the value of consultants.

Foodservice Dealer Sales Engineers: These professionals work for a restaurant equipment dealer and get paid when you purchase the equipment from their firm. They will charge a retainer to compensate for their time, should you actually purchase your equipment from another dealer. These individuals can perform most of the same functions as Food Facilities Consultants with the exception of the bid process. There are several advantages to this type of relationship. Sales Engineers take a personal interest in all of their designs. They are keenly aware of new technologies and because there is generally a more conversational relationship, they are likely to recommend trying new ideas.

Other individuals that can help get the ball rolling with you or your committee are manufacturer's representatives, foodservice dealer sales personnel, and others who have been through the process before. These individuals will help guide you to a consultant or sales engineer, or they can get you in touch with someone from a church, school, or restaurant that has been through the process. Those with previous experience are almost always happy to share their experiences and knowledge, especially those things that they might do differently.

As mentioned previously there are literally thousands of decision points to be made on even the smallest project. Each of the project steps are outlined below:

- **Scope of Project:** Before you start with any drawings, the first step is to develop the scope of your project. This is the process where both you and the professional can define the type of facility, size, budget, and general ideas about the look and feel of the serving system or dining room. This involves making general decisions concerning the purpose, space constraints, capital budget, menu, operational hours, scratch cook or heat and serve, full or self service, and many more questions. It is important to fully scope your project without getting too involved with the fine details. This will properly set the parameters of the project and will allow for modifications and improvements as the learning improves.

- **Menu Development:** The customer needs to convey to the designer a detailed list of all the food they plan to serve. This is a critical step so that the kitchen designer can best determine the quantity and correct application of preparation and

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cooking equipment. Before creating a layout, the design professional needs to make a simple schedule of the various pieces of equipment they will need to include in the plan. This is an important step, because it helps the designer be certain they will not accidentally overlook a critical item in the plan. It is easy, for example, to overlook something as conspicuous as an ice machine. So, better to be safe than sorry.

- **Preliminary Layout:** Now it is time for the designer to begin blocking out a layout, giving special attention to process and flow. A deliberative plan provides that all of the necessary elements (areas) will work seamlessly together without causing interruptions in flow. The food product should move smoothly from refrigerated or dry storage to pre-prep area, cooking line, serving line, dining room, and then cleanup. This takes the skill of a trained professional who understands the impacts of health, fire, life-safety, National Sanitation Foundation, HVAC and other codes. It also takes the art of spatial design abilities, and the knowledge of what does and does not work from previous job experiences.

- **Preliminary Budget:** At this stage of the project, the designer will give the customer an approximate cost of all of the scheduled equipment on the job. Excluding plumbing, electrical and mechanical work, this is a rough number for equipment only that most closely matches the customer's quality requirements. Specifically, the designer's best guess assuming standard purchase items, limited custom fabrication, non-exotic equipment specifications, and past histories.

- **Equipment Detail and Specification:** After customer approval of the flow, process, and general acceptance of a working budget, it is now time to detail the actual cooking line. Productivity is the key to the success of any foodservice operation, making it one of the most critical elements of the project. Just like the Goldilocks story:" Not too many, not too few, but just the right amount"and type of equipment. The designer then creates equipment specifications that detail the exact equipment items required that will perform for the customer as intended. There may be specific brands of equipment you would like to be included in your specifications; however, the designer's job is to balance the capital budget constraints with the functionality of the customer needs. This is the point of the project where trade-offs or negotiations may need to be made. In the business this is called "value engineering." This involves possibly using economy equipment items, future purchase items, or standard manufacturer items in lieu of custom fabrication.

It is important to interject here that the equipment selection process needs to be scrutinized from many different angles. There are many considerations about each piece of equipment, and how the entire cooking line works as a whole. You are now into an area of decision-making that may be really difficult. It is important for the customer to understand the capabilities and performance of the equipment that will be employed in the kitchen. The evaluative process of the equipment items recommended will require you to have a great deal of faith in the design professional, but it is recommend that for each piece of equipment selected, the following questions would be asked:

- How much product per hour will it cook?
- What is the life cycle cost?
- What is the purchase price?
- How much does it cost to operate?
- What is the impact in the quality of the food?
- What is the impact on labor?
- Does the equipment item cause work environment problems?
- Is it easy to operate?
- Can the equipment item serve more than one purpose?

- **Final Layout and Engineering:** This is the last step prior to sending the project out to bid. All of the negotiated changes from the preliminary layout are incorporated into a final drawing set. Then all plumbing, gas, and electrical rough-ins are developed. Ventilation issues are incorporated into the drawings, along with special details that will help convey the finished plan. The long and arduous process is almost over.

- **Awarding the Project:** At this point, the project should be ready to send out for bid. If you have hired a consultant, they will help you determine which dealer should be awarded the project based on their bid price and historical project performance. If you worked and you feel comfortable with a sales engineer, and the prices come back within a small percentage difference, you might then order the equipment directly from them. The benefit of having the designer handle the sale is that they know all of the special details about your kitchen. It is important to understand that sometimes pricing is subject to interpretation, and someone that has not been working with you may not understand all of your requirements.

You can now see why this is not an easy task; however, if you engage professionals in your planning process you will be guided painlessly through the obstacle course of decision-making. Each missed opportunity or incorrect decision can stall or set a project back by many months. Consultants and Sales Engineers are money in the bank! They will steer you clear of profit pitfalls and build in efficiency. I hope that this article has been helpful in giving you a recipe to successful kitchen planning.

A Little Change Could Do You Some Good

By: Jim Wixson, CFSP,
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It has been said that a kitchen is functionally similar to a manufacturing plant, in that raw product comes in the back door, is fashioned, shaped, heated, and sent out the front door in a bag or belly. In any manufacturing process there are several ways to produce the same product. Simply making product, however, isn't the primary goal of a manufacturer. The primary goal of any manufacturer is to make money through the incorporation of automation, mechanization, total quality management (TQM), product cost mitigation, just-in-time inventory control (JIT), process optimization, labor efficiency, and brand reliability. Manufacturers, just like foodservice operations, measure their profitability with a simple formula of gross finished goods sold or shipped, minus the manufacturing costs to include raw goods, labor, capital costs, fixed overheads, and other plant-related costs. Holding product cost down without reducing product quality is the manufacturer's ultimate goal. They also work diligently to identify and eliminate waste in the areas of storage, transportation, over production, processing, motion, defects, and waiting. This is the principal of "Lean Manufacturing," which requires all involved in the manufacturing of a product to examine their workplace from an entirely different perspective.

Manufacturing operations employ a system they call "Kaizen," which means continuous process improvement. They are always looking for ways of reducing cost without sacrificing quality. Process change in foodservice operations can be greatly beneficial, especially where change has not been addressed for many years. However, there may be some things in a foodservice operation that probably shouldn't be changed because the flavor of the operation depends on the ambiance, theme, or flair of the tradition. But, when it comes to process, many foodservice operators are often stuck in the routine of doing things the same old way and don't explore new methods, technologies, or process enhancements. The old adage of "if it ain't broke, don't fix it" should not apply here. By embracing old habits and clinging to decades-old methods, the foodservice operation is subject to many unseen profit robbers: labor-stealing inefficiency, energy-wasting appliances, productivity quagmire, hot/humid labor-sapping work environment, and throughput-clogging preparation methods. What worked great in kitchens several decades ago will eat a hole out of your bottom line today. The good news is that there are many solutions in today's technology-rich environment.

If the manufacturing world has learned to become more profitable through Kaizen, Lean Manufacturing, and other process enhancements, how can this information help the foodservice operator? Have you ever wondered why some fast food restaurants seem to have lines of patrons backed up all the way to the front door during rush period, while others seem to run smoothly without backing up? It is extremely important for them to discover solutions, because it has been said that up to 80 percent of their net income is made in less than one operating hour per day. The foodservice operator is typically not cognizant of how to overhaul or revamp their manufacturing processes. A kitchen operation is usually mired in tradition with things being habitually done in a certain prescribed way, because that is the way they were taught to do them. If the stated goal of a foodservice operator is the same as that of the manufacturer, then it should stand to reason that the employment of manufacturing best practices, the elimination of slow, inefficient processes, added flexibility, and improved functionality will help a kitchen become a money-making machine. After all, making money or reducing the cost of product is the primary goal of almost any foodservice operation.

There are several things you can do to maximize your process and supercharge your bottom line: **Invest in New Technologies**. Just as the computer has replaced the typewriter and adding machine, there are appliances that increase efficiency and productivity in the kitchen. For example, are you aware that there is a piece of equipment that will cook two full-size 4 inch deep hotel pans of fresh or canned vegetables in little more than six minutes? Or, four packages of dry spaghetti noodles in an elapsed time of 14 minutes, not the 40-plus minutes it takes in the traditional stock pot method? Or, how about 21 pounds of baked potatoes in 23 minutes?

The old days of stock pot cooking should become a memory. There are better ways of cooking the same foods today without the labor intensity of lugging, stirring, and banging pots in the kitchen. Range-top cooking is traditional and is perceived as inexpensive. Stock pot cooking is a method that has been employed for over 100 years and has always been a labor-intensive way of producing food items. Anything cooked in a pan or a pot on the range needs to be stirred, shaken, or tended in some

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way throughout the cooking process. It usually involves lids, tongs, spoons, colanders, etc. Plus, the food item is then panned for serving. So, now the operator not only has the pot to clean, but also the serving pan.

Until the 70s, labor wasn't controllable like it is today. The range and bake oven were taking care of the majority of cooking in the old kitchens; similarly, a handsaw and a hammer used to be the only tools builders had to build homes. Now builders must use circular saws and air nail guns if they hope to be able to make a profit.

Create New Production Methods. It is human nature to do things the same old way. We are shown a particular method for cooking food items and then pass those methods along for generations. In the classic kitchen it was necessary to make stocks and reductions. Today, with bases, production sauces, and soup stock, it is easier than ever to make these items with little reduction in quality. The other thing that is human nature is ingenuity. Change begins to occur as soon as we recognize there is a problem. Enlightened employees through experimentation or knowledge-seeking are capable of providing solutions.

There are times when inexperienced people in an organization, such as a church committee, are asked to develop the design of a kitchen. Without the knowledge of experience, or the understanding of new technologies, they tend to design with the familiarity of the past. Typically, these committees all want to begin the cooking line with a big 10 burner range. Their thought process is that they can fill the top of the range with pots of vegetables, soups, and cook things like spaghetti, rice, and grits in stock pots or sauce pans. The urge to stay with the tried and true is powerful. This same reasoning would cause one to buy a push type lawn mower rather than a self-propelled model. The value benefit has to be substantial enough to encourage change. In the evolution of design for the church kitchen after looking at many options, it would be better to begin the cooking line with a convection oven. It is such a flexible appliance and is perfect for cooking and reheating many different kinds of foods, from vegetables to starches. Church committees will always say, "How are we going to cook our grits, corn, green beans, etc. without the range?" They are always amazed at the simplicity of cooking all of these items and more in stainless hotel serving pans, because it is fast, easy, and the food can be served out of the same pan in which it is cooked. This greatly minimizes the need for pot and pan washing.

Some very simple tricks of the trade can save hours of labor in preparing everyday food items such as making chopped hard-boiled eggs for salads. The usual process is to boil them in a pot, cool them in cold water, then crack and peel them, finally chopping them for the salad. A simple trick is to line a hotel pan with saran wrap, crack eggs into pan, then steam in a steamer or combination-oven, turn out on a cutting board, and chop. Another simple process is removing the outer layer of an onion. Simply steam the onions for a couple of minutes, grab them with a towel, squeeze and they simply pop out of their skins. Removing the skin from tomatoes is almost as easy. Cut a cross in bottom of the tomato, steam for about two minutes and the skin will easily peel away from the tomato meat.

Improve Functionality. Because kitchens are getting smaller and dining rooms are not shrinking, it is now more important than ever to have equipment that can perform multiple functionality. With the advent of the combination oven, a chef now has an oven and a steamer in the same footprint. More importantly, the combination oven trims cooking times by more than 50 percent, which improves productivity.

Other ways to increase productivity within the same cooking space is to include use of technologically advanced appliances that improve both quality and speed. An example of this is an appliance that combines microwaves with convection ovens—speeding cooking to times previously thought to be unobtainable: par-baked pizzas in around 90 seconds and a 5-pound frozen apple pie in 20 minutes. Another new idea is a combination braising pan and steamer. In the same 9 square feet you have a kettle, braising pan, griddle, multi-pan steamer, and a fryer.

Although not a recent technology, the clamshell or two-sided griddle has improved productivity, quality, and reduced cooking times for burger operations. The clamshell has given the burger operation a decided advantage, making them more competitive. More burgers per hour translates to greater profitability. These types of operations at some point figured out how to become more productive using technology and departing from tradition. They embraced a more optimal method for producing a high volume of uniformly cooked hamburgers.

The foodservice business is very demanding on all involved in the preparation, serving, and cleaning up after the dining public. The kitchen does not have to be a hostile, hot, humid, or chaotic place to work. It can be made more friendly, environmentally comfortable, organized, and more profitable through the utilization of new technology, process improvements, improved functionality, and the employment of tricks of the trade. A little change could do you some good.

Turn the Table on

Low Productivity!

By: Jim Wixson, CFSP,
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Productivity is one of the most important aspects and functions in the foodservice industry today. Productivity leads directly to profitability; therefore, foodservice operators demand the most efficient, highest recovery, and most reliable cooking equipment they can employ. Historically, the restaurateur has used table turn, or the number of meals served, as one of the key indicators of efficiency. The problem with this measurement is that it reflects what happened in the dining room during a meal period, and not what happened in the kitchen. Table turn could be a false indicator, because not every available seat is necessarily filled to capacity during meal periods. If the kitchen were able to operate at maximum productivity, then customers would be served more quickly, and the net effect is the production of more meals per minute, yielding greater revenue. Foodservice operators need to turn the tables on low productivity.

Many foodservice operators are not aware that there are actual production differences between similar equipment items. This in part is not the fault of the operator, because manufacturers don't publish a certified productivity rating of their product lines on their cut sheets. It is very difficult for the buyer to compare and contrast the differences between equipment items without this data. It would be extremely beneficial if the cooking equipment being considered for purchase had a productivity rating, so you would know how many pounds of product per minute or hour it is capable of producing. If this information were available, your need for production could be matched with the appropriate appliance. Until now, foodservice operators have not demanded this type of vital information, and manufacturers have not felt compelled to provide it.

For over a century cooking equipment has been specified and ordered based on its nomenclature. For example, when you specify a 45-pound deep fat fryer, all that means is that it holds around 45 pounds of cooking oil. That doesn't tell you how many pounds of anything it will cook in an hour! Water heaters, heat and air-conditioning units, point of sale systems, lighting, electricity, gas and all other products used in restaurants are rated for efficiency, or operational capacity. When you specify a water heater, for example, you want to know the gallon capacity of the tank is, and you also want to know the gallons per hour recovery rate, based on a temperature rise of 70 degrees Fahrenheit. If it is a gas water heater, you would also want to know what the cubic feet per minute ventilation requirements are, what the minimum and maximum gas pressures are, and what the btu requirements are and what the gas pipe size needs to be. Yet, when we specify a fryer we only seem to want to know how much oil it holds.

Approximately 16 years ago an energy consulting firm, Fisher-Nickel, Inc., which operates the Foodservice Technology Center in San Ramon, California, created a set of efficiency testing standards and protocol for commercial cooking appliances to measure productivity. These standards have been ratified by ASTM (American Society for Testing and Materials). The standards for fryers are based on real-world usage, and are uniform so that the testing process is the same for any piece of commercial cooking equipment tested. These results are only available by visiting http://www.foodservicetechnologycenter.com. Manufacturers are aware of the productivity ratings for those items tested, but generally they do not include those results in their literature. Operators would be surprised to discover, for example, that 45-pound deep fat fryers are ASTM rated at a low of 38 pounds, and a high of 90 pounds of product capacity per hour. This can be highly significant since foodservice margins are measured in pennies. The operator must make every second count when customers are pouring in the door.

Using the water heater analogy again, you determine that you need to maintain a 300 gallon per hour recovery rate, at a minimum temperature of 140 F to maintain sanitation quality. Not all water heaters are created equal, even though they may look alike. Water heaters have a certified recovery rating in gallons per hour, at various temperatures, so that you can determine the correct model based on your needs. This information is either published on cut sheets or easily obtainable from the manufacturers of water heaters. I'm sure that at some time in your life you wound up taking a cold shower because the water heater couldn't recover fast enough. In a home, the water heater that works just fine for a family of three is completely inadequate for a family of four. This is especially true if the kids are teenagers taking long showers. This example is exactly what happens with the fryers in a busy kitchen. The fryer's ability to recover is exclusive to its efficiency. Not all fryers are created equal. Their performance and productivity range from the (38 pounds per hour)

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economy gas models, (50 pounds per hour) standard atmospheric gas models, (60-70 pounds per hour) high efficiency gas models, (70 pounds per hour) 14 kW electric models, and (75-90 pounds per hour) 21kW electric models.

A simple visual example of the differences between electric and gas fryers can be seen in (Fig. 1) a pre-heat chart. Since pre-heat is directly proportional to recovery, the more quickly a fryer can get back to set temperature, the greater the fryer productivity. Other benefits of fast recovery are crispier product, less oil absorption, and higher revenues. The efficiency of electric can be seen in (Fig. 2) a thermal graphic image of an electric 14 kW and a high efficiency gas fryer, side by side, showing the waste heat going up the flue of the gas fryer.

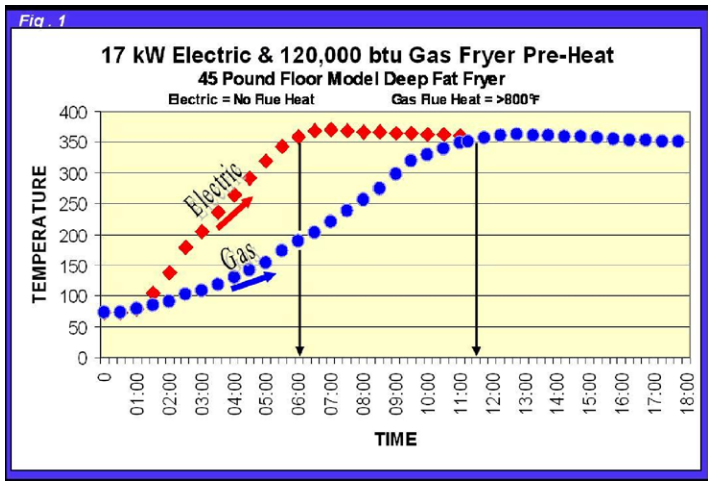

Figure 1 – Study conducted by Inframetrics Inc. on behalf of Alabama Power

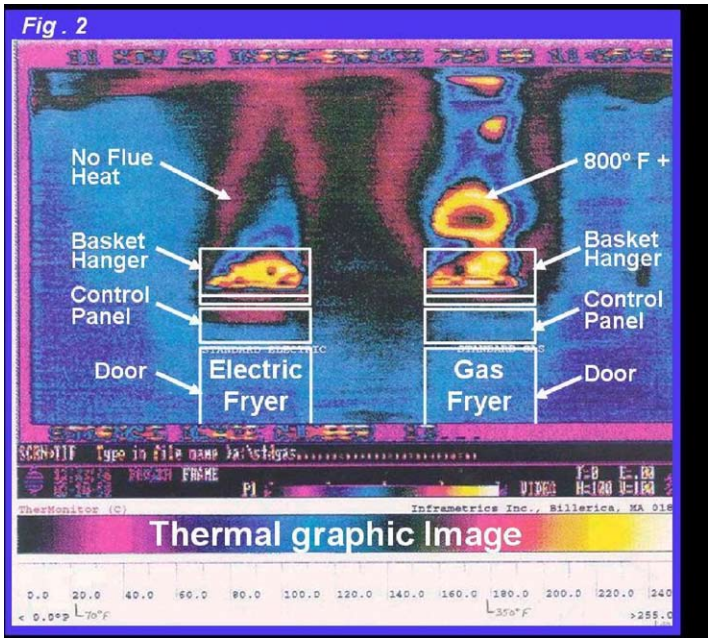

Figure 2 – Study conducted by Inframetrics Inc. on behalf of Alabama Power

The effect of lost productivity is apparent and obvious. Most of us have stopped at a fast food restaurant at the height of rush hour, and customers are stacked up six or seven deep at the cash register. What was going on in the kitchen? Could it have been that the fryers or griddles could not recover fast enough to keep up with patron demand? Operators call this condition "in the weeds" or "slammed." Since most of us are busy with little time to spare, we cannot play "the waiting game," so we leave. The restaurant's daily revenues are greatly impacted in "lost opportunity cost" and "lost business goodwill cost." This is compounded day after busy day.

The first step in improving productivity is to determine what your need for product is at the busiest hour in your foodservice day. Then, you will need to ask dealers or consultants to rate the productivity of the equipment items they specify for you based on ASTM standards. They will more than likely need to call the manufacturers' engineering departments, or the Food Service Technology Center, San Ramon, California, that performed the evaluations. Also, ask your foodservice professionals to give you a cost benefit analysis of both electric and gas cooking equipment. You will then need to make a choice between lowest first cost and highest productivity. Sometimes the customer who has a desire for the lowest front-end cost winds up spending more. When you add the cost of lost productivity to the lower-priced equipment item, it can end up being more costly than if they had purchased the higher-priced yet more productive item. You absolutely cannot presume that one piece of equipment is just the same as another!

The cost of doing nothing is the highest cost of all. By focusing on your cooking process, you will be able to discover the bottlenecks in your operation. Doing your homework and seeking guidance from foodservice professionals will help remedy the bottlenecks. The correct cooking equipment will improve productivity, smooth out the product flow, improve service delivery, increase table turn, and raise bottom line profits. Once you have discovered the power of the optimal cooking appliance, you will wonder how you ever lived without it.

It's All About Efficiency

By: Jim Wixson, CFSP,
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If you have ever driven on an icy road, you will understand what happens when you stomp on the accelerator pedal and the tires spin madly, but the car doesn't go very fast or react to your coaxing. This is a good example of inefficiency. The spinning wheels are not doing any work until they get traction, and even then you don't have positive control over the vehicle.

In the foodservice industry, our patrons determine at what time and how fast we need to react to their demand for our product. Too many in our industry buy the least expensive cooking equipment that they think they can get by with. The thinking is that one piece of equipment is just the same as another piece, and if it is out of sight of the customer, it really doesn't matter. Instead the money is spent on tables, chairs, and dining room ambiance. Why should we spend extra money and purchase efficiency? Efficiency directly equates to profitability. How can an owner/operator know which pieces of equipment they should purchase? They need to do their homework. Assistance with selection of energy-efficient equipment can be obtained from foodservice experts such as Fisher-Nickel, Inc., which is the research firm that operates Pacific Gas and Electric's Foodservice Technology Center, by following this link: http://www.foodservicetechnologycenter.com, or you can contact any of the equipment experts at the Foodservice Council by following this link: http://foodservice-council.com.

The Department of Energy has instituted a program called ENERGY STAR® to help operators select the most efficient cooking equipment. Information on manufacturers and model numbers can be found at the following Web site: http://www.foodservicetechnologycenter.com/saveenergy/energystar/. Any of the cooking equipment that is ENERGY STAR-certified will give you the performance you need to compete in a fast-paced business like the restaurant business.

Nothing in this world is 100 percent energy efficient, but it should be our goal to utilize the most efficient equipment that meets our needs. After all, the machinery we use in our business is the life-blood of that business. There are two components that determine the efficiency of a foodservice operation: mechanical and non-mechanical. I will try to explain efficiency and performance by using an analogy of building a winning race car, to that of building a winning restaurant. The same principals of building a winning race car apply to building a winning foodservice operation. You must first ask yourself if you really want to be competitive. To be competitive there are important considerations in the selection of equipment that affect efficiency. The definition of efficiency is "the ratio of the useful energy delivered by a dynamic system to the energy supplied to it." So, what this means as it relates to cooking equipment is this: Efficiency percentage equals the amount of heat energy absorbed by the food, divided by the heat energy supplied to the piece of equipment, times 100. The chart below is a measure of efficiencies of various pieces of cooking equipment, both gas and electric. These efficiencies were determined by the University of Minnesota in 1984.

Measured Equipment Efficiencies
COOKING EFFICIENCY

	Electric	Gas
• Broiler, over fired	52%	22%
• Char-broiler, flat	65%	16%
• Fryer, conventional	78%	28%
• Fryer, pressure	83%	30%
• Griddle, grooved	71%	51%
• Kettle, jacketed	73%	42%
• Open range burner	73%	38%
• Oven convection	62%	28%
• Oven, deck	55%	24%
• Oven, range	45%	13%
• Tilting, skillet	79%	52%
• Steamer, convection	23%	13%
• Steamer, pressure	39%	19%

(University of Minnesota 1984 study)

The mechanical components are:
The engine. The engine is the most important consideration of all of the mechanical components. The engine provides all the power needed to run fast. Obviously, you will want to select an engine that will deliver the highest horsepower and have a proven ability to stay together while operating at high rpm. The cooking equipment used in a foodservice facility is the engine. The operator needs to select cooking equipment that will produce the most horsepower, with a proven ability to produce the most and highest quality food per hour.

Not all engines are the same, even though they may look the same. Some economy fryers, for example, produce only 38 pounds of fries per hour, while others produce between 70 and 90 pounds per hour. These fryers look the same, but you will win no races with the economy fryers. In a small business that has infrequent orders of fried foods, a slow fryer may be all that is needed. But, if you can't keep up with the incoming orders, you need a bigger engine.

There are many griddles offered for sale in the market today, and typically operators have a general idea how big their griddle needs to be based on some historical value. Let's say that they feel they need a 2-foot wide x 3-foot long griddle. There are 3-foot griddles that can cook 175 quarter-pound frozen hamburgers

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per hour at 68 percent efficiency, while the inexpensive models only cook 132 at 39 percent efficiency per hour. If both griddle plates are the same size, how can there be such a difference in production rates? The answer is efficiency. If your business is focused on hamburger sales, you will want the griddle that will produce 43 more hamburgers per hour. More burgers per hour equals more sales per day.

Taylor makes a double-sided 2-foot long griddle that cooks 248 quarter-pound frozen hamburgers per hour at 75 percent cooking efficiency. If I'm building a winning race car, I'm putting this engine under
my hood.

Transmission. The transmission transfers the energy from the engine to the rear wheels, but not all at once. The faster you are going, the more energy can be applied. In a typical busy restaurant, the cooking equipment will be able to gradually keep up with the demand all the way to the end of a busy rush period. Too many restaurants in business today can't keep up with their business potential. Patrons are still coming in their front doors, but the kitchen is "in the weeds." Service staff are clamoring for their table's orders, and the equipment is maxed out. Cooks can't get the orders out fast enough. Does this sound familiar? If so, you need a bigger engine.

Rear axle and tires. The rear axle takes the energy from the transmission and transfers that energy to the tires. As they say, "this is where the rubber meets the road." Maximum traction occurs when the service staff is able to plate, bag, and deliver food to patrons as quickly as it is cooked.

An example of maximum traction is the new cooking technology offered by TurboChef that combines superheated air with microwaves to cook food in a fraction of the time of conventional ovens. These ovens can cook a frozen pizza in little more than 3 minutes instead of 30 minutes, and frozen breaded chicken strips in 90 seconds instead of 15 minutes in a convection oven. These ovens cook on average 12 times more food per hour than a conventional, comparably sized oven. This is what efficiency means, being able to cook more food, faster and better than with old technologies. These ovens will help you win the race every time. The only bumpers you will see are those you've already passed.

There are other factors other than the mechanics that affect efficiency and performance. Some of these non-mechanical efficiency factors are:

Body and alignment. The body design determines how much drag will be exerted on the car. And of course alignment keeps the wheels from going in different directions. The same considerations are engineered into today's energy-efficient cooking equipment. In energy-efficient ovens for example, air-flow is enhanced by making all interior corners coved. This aids in creating even air flow, which improves cooking performance and improved coloration. These improvements, along with new technology enhancements in heat transfer, have slightly increased the manufacturing cost of these highly efficient money makers. These improvements are worth the small increase of initial purchase price, plus payback is very fast on the investment in energy-efficient equipment.

Insulation of equipment can dramatically improve efficiency. There is one manufacturer of kettles and braising pans that insulates their entire product line as standard. In a recent test, Legion filled one insulated and one non-insulated kettle, each with exactly 40 gallons of water, in a room with ambient air of 72 F. The water in both kettles was heated to 182 F, and allowed to cycle for one day before testing for wattage to maintain a water temperature of 182 F. Energy was measured for exactly one hour. It took 1,743 watts to maintain the uninsulated kettle and only 624.6 watts to maintain the insulated kettle's water. This is a whopping 1,118 watts (64 percent) savings in one hour to do exactly the same amount of work.

The driver. The driver is also key to efficiency and performance through skill in smooth acceleration and cornering. The chef can only prepare the food as fast as the equipment will let him or her cook. This is where technology has changed everything. No longer does a cook have to be a captive of a big old gas range top covered with stock pots. Stock pot cooking is slow and inefficient, since all of the heat is focused on the bottom of a pot. In today's efficient kitchens, a kettle, braising pan, steamer, convection oven, or another vehicle is much faster and more efficient.

Today's cooking equipment has autopilot features that almost do all the driving for you. With solid state control systems and integrated circuits, the equipment actually tells the cook when to put the food in, and controls all times and temperatures throughout the cooking cycle. Food is cooked faster and with greater control of quality. Both Henny Penny and Rational are now selling combination ovens that are called Smart Cooking System and Self-Cooking Center®, which do exactly what their names imply. These ovens improve operator efficiency by not having to babysit or monitor the cooking process. The freed-up time can be used to manage the business.

Skilled pit crew. A skilled pit crew is the last factor that can affect performance and efficiency. They can keep a car running at peak performance by changing tires and setup throughout a race. The wait staff in a restaurant is that pit crew. Turning tables and keeping the patrons happy is their job. If the food orders are not ready for pickup because the equipment is slow, not only will you not win the race, chances are good that your patrons won't come back to see you race again.

Efficiency is the cornerstone of a profitable business. It makes a difference in just getting by, or being able to run at the front of the pack. It makes the difference between operating at your maximum potential or being held hostage by your equipment's only potential. Your homework will pay dividends that will enhance your productivity, improve your operational performance, and position your business for success and profitability. Building the winning foodservice operation will position you for many checkered flags, with all the prize money, and the fame that goes with winning.

Operational Efficiency

Is Not Automatic

By: Jim Wixson, CFSP,
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Today's foodservice operations need to be able to run leaner and meaner than ever before. Gaining operational efficiency is demanding, and requires constant managing of the overall operation, and it involves making the correct assessments and decisions with such issues as safety and sanitation, production, firing, hiring, training, scheduling, food procurement, equipment and supplies purchasing, and maintenance, plus dealing with all of the challenges of the day-to-day business of guest satisfaction.

It is not possible to simply cut your way to operational efficiency. Operational efficiency is created through the application of a well-crafted plan, and the tools to execute that plan. The old adage, "don't put your cart before your horse," applies to this situation. It is all too easy to allow inefficiency to fester in a business and blame the problem on staff, when in fact it may be a cumulative disorder in the business. The great majority of restaurants are well run businesses and have gone to great lengths to address each of these areas, first in their business plan, and then in their practice. However, even the most well run business can always stand continuous process improvement.

With so many variables to manage, it is more important than ever to examine each small aspect of the business and find ways of making improvements. It is recommended that the business have, or construct, a standard operating procedures manual. Each of the above and other aspects of the business should be well documented. If management will keep a daily log or diary, then at a convenient time they can address the problem areas of their business. The best way to do this is to keep a log of issues that arise in the course of doing business, and then constantly review operating procedures.

The necessary steps for making mid-course corrections that will improve operational efficiency are:

Analyzing process flow. If the problem in the business is slow food delivery times, then the problems may likely be found on the cooking line. It could be a piece of cooking equipment that is slowing down the process, or it could be that the food item needs to be cooked a different way. There may be another way to speed up food delivery, such as par cooking and/or using more pre-prepared foods.

You might think about calling a manufacturer's rep to ask for a demo of your food product in their manufacturer's latest energy efficiency technologies. You will discover that these manufacturer's reps have a wealth of knowledge and can help you in many consultative ways.

Developing a work team that shares the same goal.
It takes a team effort to observe the operation from different perspectives, then develop work-around solutions. This is accomplished by developing a virtual work team from your staff. The cooks and wait staff need to share a common vision, and be able to zero in on the problems in service operation, and then work together to solve them.

Deploy energy-efficient equipment and procedures.
Foodservice operations are extremely energy-intensive. They consume more than 575,000 btu per square foot per year. The Department of Energy has sanctioned an ENERGY STAR® certification label for equipment that meets the highest standards of energy efficiency. Information on ENERGY STAR equipment can be found at the following web address: fishnick.com. As mentioned previously, you can arrange a demonstration of these energy-efficient appliances by calling one of the manufacturer's reps listed in this month's Trade Talk.

Developing a stagger-starting equipment items schedule is a wise practice, because it reduces energy waste. If you know that it only takes 12 minutes to pre-heat a fryer, then there is really no need to turn it on 3 hours before the serving period. 30 minutes ahead of time adds peace of mind and monetary savings at the same time. When the meal period is over, turn it off. You can turn it back on again for the next meal period and it will take just a few minutes to be back up to temperature. If this became the new habitual practice of the line cook, the energy savings would be enormous, plus the equipment would last longer.

Improve productivity with equipment that has the greatest throughput capacity.
Some operators feel that they can reduce their cost by skimping on the cooking line. Reducing cost on the cooking equipment is seen as a positive step to reducing operating cost. And reducing operating cost is confused with operational efficiency. By the

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same token, buying the top of the line equipment won't necessarily make you more money, or make you more efficient. I have seen over the last several decades penny-pinching in the back of the house, and almost a limitless budget on the front of the house with marble this and oak that. The assumption is that if the customer can't see it, it is not important.

It is interesting that even the smallest operators recognize value when purchasing food. They understand that the price they pay for food items like a gallon can of corn from two different vendors may be within pennies of each other, but on further examination one brand may have more actual corn and less water than the other. The smart operator buys the can with the greatest amount of actual corn per dollar every time. This is a small example of exercising operational efficiency with respect to food purchasing.

The saying "you get what you pay for" is certainly true when it comes to cooking equipment. Budget-model cooking equipment such as fryers are built cheap to sell cheap. They are not designed to be efficient or productive. They are not designed to last for more that 5 years. They are inefficient, producing slightly less than half as much product per hour as their standard product counterparts. They produce approximately one-third as much product per hour as the high efficiency models.

I am certain that most operators are not aware of the poor performance of these budget $700 - $800 fryers. There is a presumption that a fryer is a fryer. All fryers look the same, but that is where the similarities end. Just like the gallon can of corn example I gave previously, these inefficient fryers are like getting 2 quarts of corn and 2 quarts of water in every gallon. Operational efficiency demands that the operator maximize the productivity and throughput in the smallest footprint possible.

The point here is that the customer may not be able to see the inexpensive kitchen equipment, but it may affect their dining experience. Slow and unproductive equipment will cause the food orders to back up, slowing down the speed to service. This in almost every case causes the wait staff to be anxious, frustrated, and on edge. Customers pick up on this chaos as they sit impatiently waiting for their food order.

We have all been there. We go out to dinner and are seated after a long wait. We order food and sit for 15 to 20 minutes waiting for our order to arrive. Then we see the people that were just seated 10 minutes ago get their food. The waiter/waitress comes by and says, "Your food will be out in just a minute." You then see other tables that you are certain were seated after you getting their orders. Finally you get your food order, but your dining experience has been damaged.

Operational efficiency is not automatic. It requires planning and execution. Achieving operational efficiency should be in the mission statement of every foodservice operation from restaurants to church kitchens. If it became the focus of all employees, they would work to make their jobs more enjoyable, which in turn will make the business more profitable. The real value of seeking optimal operational efficiency is that the customers recognize a well managed operation by rewarding them with repeat business. Everybody wins.

Look Before You Leap

By: Jim Wixson, CFSP,
Cooking Products Manager – Georgia Power
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I'm sure we all heard as children the cautionary phrase, "Look before you leap." We usually heard this after we had just done something that got us in a mess. And usually after a moment of reflection, we would realize that our mess was totally avoidable had we done a little thinking and planning ahead of time. It is human nature to simply act and react without being pragmatic in our approach to a situation.

In the foodservice business, it is particularly easy to go through the motions of operating a foodservice facility without stopping to occasionally take stock of the process. However, there are several occasions when the situation hands you an opportunity to reflect and evaluate your equipment purchase. Some of these situations, for example, are building a new restaurant, the addition of a new menu item, complete kitchen remodel, replacement of an unreliable piece of cooking equipment, a need to improve productivity and performance, and replacement of a broken piece of equipment.

Anytime one of these situations presents itself, it is time to look at all of your evaluative considerations. When you are in the "heat of battle" it is hard to take the time to examine all of your many purchasing decision options, especially if you don't have a guide to help you develop the kind of questions that need to be answered before you make your purchase. Waiting for a piece of equipment to "go belly up" is not a good time to do all of your research. It is best to do your research, and determine if there is a better way to cook your food products, while everything is operating properly. Old equipment may be costing you sales and should be replaced long before it dies on the job. A one-, three-, and five-year plan should be developed that would initiate a planned replacement game plan. I hope that some of the following considerations will help you look into all of the issues involved in your next equipment purchase before you leap into a decision.

The following is a list of considerations and questions that will help guide you through the evaluation process so you can make the most optimal equipment decision for your business:

How will the piece of equipment cook my food?

- **Quality** - Will the quality of my product be the same or better than expected? This includes flavor profile, texture, moisture, color, and other aesthetic considerations. Food quality is king, and the only way to make this determination is to take a test drive on demo equipment with your food product. Manufacturer's representatives are happy to arrange a demo for you.
- **Yield** - Will the yield be the same or more? Look at the newer cooking technologies that allow for faster, more thorough cooking with less shrinkage, therefore increasing the yield and reducing your food cost.
- **Consistency** - Will the consistency of my food be the same at the end of a rush as it was at the beginning? In many cases the newer technologies have better recovery than the older unit(s) you are replacing. It is always a good idea to test drive several pieces of equipment to put them through their paces, thus ensuring your selected equipment item will produce the consistent quality you are looking for from the beginning to the end of a rush.
- **Productivity** - Will the new equipment item(s) produce more food per hour than the old one did? The speed of throughput is one of the most important things to consider. It is the determinate that most affects table turn and drive-thru times. It is noteworthy that there are major differences between electric and gas appliances. So, just because you are replacing a gas appliance (other than charbroilers and ranges) doesn't necessarily mean that you would replace it with same. We recently helped a drive-in hamburger operator reduce his drive-thru time from 2:37 to 2:09 by influencing him to buy equipment with greater throughput capacity.

What is the real cost of the new equipment item?

- **Purchase Price** - What is the real purchase price? The lowest price may be, in fact, the highest price. The real price includes a whole host of other variables such as the labor component, energy cost, uptime or reliability, and productivity. The correct balance between purchase price and performance should be weighed before a real decision can be made.

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- **Installation Cost** - What is the installation price? Installation price includes removal of the old equipment, the delivery, uncrating and setting in place of the new piece, and the electric, gas, ventilation, or other mechanical requirements needed to make the new piece operational within code standards.
- **Maintenance Costs** - What will be the cost of preventative and routine maintenance for this new equipment item? Operators tell us that the hidden cost of maintenance is sometimes greater than the purchase price of the item. For example, one chain spends more than $500 per thermostat per year maintaining and replacing broken griddles in their chain. These costs do not include the cost of downtime, which affects sales.
- **Other Hidden Costs** - What is the cost of lost or slow sales? Another hidden cost is the cost of lost sales from slow performance. For example, if the piece of equipment happened to be $1,000 cheaper but had lower productivity, it may in fact cost the operator more than $100,000. Recent Quick Service Restaurant studies indicate that a reduction of 10 seconds in drive-thru time can add $100,000 to the bottom line.

How will the new equipment item increase sales?

- **Throughput /Productivity** - Will the new equipment item produce more product during peak hours? It is advisable to ask your dealer or manufacturer's rep to help you determine the maximum productivity of the equipment item you are considering. They can arrange for you to test drive both electric and gas items, so that you can compare and contrast performance. A perfect example of this is an operator who was considering the purchase of a 3-foot griddle for a hamburger operation. They were convinced that it was the best one because they had seen it at a competitor's operation. They certainly should know better, right? Wrong. After some consultative investigation they discovered that the griddle they believed was the best, and they were prepared to buy, only produced 184 quarter-pound frozen hamburgers an hour. Whereas, a competing model with different fuel would produce 228 hamburgers an hour. This was a whopping difference of 43.6 more hamburgers per hour at $4.75 per hamburger, and two rush hours per day = $150,354 additional sales per year. Needless to say, they purchased the higher-production griddle.

What is the impact of the piece of equipment on labor?

- **Ease of Operation** – Is it user friendly? You will want to know that the proposed equipment item will be easy to use, easy to clean, and will be embraced by your staff.
- **Training** – Are there any special training issues? It is a good idea to include one of your cooks who actually operate your equipment in the discovery process. They will learn how to operate the item. Then they will teach the staff.
- **Safety** – Will this equipment item be less likely to burn or injure my staff? All cooking equipment needs to be treated with respect. Nothing is 100 percent safe, however, some items are safer than others. Some manufacturers add additional insulation between the heated surfaces and the operator. In most cases this added insulation bonus comes at no additional cost.
- **Health** – Will the new equipment item reduce emissions or other harmful by-products of the cooking process? One of the most distressing by-products of the cooking process is the excess heat added by the cooking equipment to the kitchen. Even air-conditioned kitchens can be as hot as 90 degrees with high humidity, which saps the energy out of your production staff. Care needs to be taken to select equipment that minimizes kitchen heat.

What is the Impact on Maintenance and Upkeep?

- **Uptime/Reliability** – As addressed earlier, is the piece of equipment I am replacing constantly needing repair or maintenance? The cost of downtime simply eats the bottom line out of profitability. When a piece of equipment breaks down at the height of a rush hour, it cripples the process. Service staff cannot adjust for excessively long service times when their orders are not coming up in the window. I have been in operations when this has happened and have observed the chaos that ensues. Wait times increase, table turns increase, wait staff tips decrease, customer satisfaction goes in the tank, and most importantly, the restaurant's sales and profitability suffer.
- **Lifeservice** – How many years can I expect the item to last before it needs to be replaced? Cooking equipment today is under greater load than ever, because restaurants are staying open 24 hours per day. It is almost impossible to predict how long a piece of equipment will last. An oven in a church may still be functionally operable at 25, whereas a 10-year-old oven in a fast food restaurant may be on its last legs. Rebuilding equipment can lengthen its life, but it is not really economical. Labor cost to change out a cracked fry pot can be around $2,500, almost as much as buying a new fryer. The solution to avoiding spending good money after bad money is to specify and buy a fryer that won't need a new fry pot.

What is the impact on other systems?

- **Air-Conditioning** – Will this proposed item add heat and humidity to the kitchen work environment? Kitchens are hot enough already, and if they can be made to be more comfortable, worker productivity will increase, and employees will be less stressed. For each additional 12,000 btu of waste heat per hour you put into your kitchen with cooking equipment, it can cost you more than 11¢ per hour in electricity to offset that heat with air-conditioning. This may not seem like a great loss, but it can add up to thousands of dollars per year. There are cooking equipment items that are more efficient and produce dramatically less waste heat.

• **Environmental** – What is the impact of my proposed purchase on the environment? A thorough examination of the impact of the new piece of equipment on air emissions, ventilation, water, and sewage issues are of high concern. Restaurant patrons are beginning to expect the businesses they frequent to be good stewards of the environment. In addition to doing something good for the environment, there are savings for the operator. For example, there are many new boilerless steamers that consume less than three gallons of water per 3-hour shift compared to 180-plus gallons consumed by water-hungry boilered units. This can amount to a water and sewer bill difference of more than $900 per year. It is also an un-necessary load on local water supply in draught years.

What are the operating costs?

• **Labor Costs** – How will my proposed equipment item reduce or hold my labor costs in check? The new piece of equipment should be as easy, or easier, to operate than the older one. In practice, we consult with our customers to achieve operational efficiency for their businesses, and it is one of our goals to help them improve their processes and help them reduce unnecessary labor requirements. One of our favorite manufacturer's reps allies always tells his demo participants that the most expensive equipment in the kitchen is a set of tongs, spatula, or long-handled spoons, because they require a human on the other end to operate. More automated functionality requires less labor.

• **Fuel Costs** – What effect will my equipment purchase have on my utility bills? This is a question around which many operators base their entire decision. As discussed throughout this article, there are many more important considerations. In a recent survey conducted by the National Restaurant Association, they determined that labor and food costs in a typical foodservice operation are 31 percent and 32 percent respectively. The energy component was only 2.7 percent of revenue, with about a third of that attributable to the cooking process, or approximately 8/10ths of a cent per dollar of revenue. As you can see, energy is important, but it is one of the smallest budget items of concern.

To some of you, this may be the beginning of a journey into specifying cooking equipment. To others, it may be a refresher. But in either case, it is not complete until it is put into practice. I hope that this checklist will help you think through many of the issues that surround your future equipment purchases. In short, the perfect piece of equipment to specify is one that:

- Produces the best flavor profile
- Has the highest productivity and throughput capacity
- Is easy to use, safer to operate, and easiest to clean
- Is the most efficient
- Is the most reliable ensuring up-time
- Has a long service-free life
- Doesn't add heat to the kitchen, and is easy on air-conditioning costs
- Has the lowest emissions, uses the least amount of water, and is good to the environment
- Has the lowest cost of operations

By asking all of the right questions, gathering all of the information, and evaluating all of your results, you will make the best decision that will improve your business. There are several excellent resources you may want to visit that will give you additional insight into your search for answers: www.foodservicecouncil.com and www.fishnick.com. I'm sure you will be able to develop a list of your own questions to ask vendors in doing your homework. So, I want to encourage you to "look before you leap."

Green for the Environment and Green for Your Bottom Line

By: Jim Wixson, CFSP,
Cooking Products Manager – Georgia Power
Revised July 2009

The word of the decade is **"GREEN."** Almost every article we read in trade pubs today has words such as sustainability, green, eco-friendly, locally grown, environmental responsibility, landfill-safe, recyclable, ENERGY STAR®, etc. We are now in the era of conservation. Restaurants are getting on the landfill management bandwagon, and are becoming aware of the positive implications of managing resources penny by penny. Plus, they are discovering that improvements in efficiency go straight to the bottom line. Society is becoming more environmentally conscious, and now it makes good marketing sense for restaurants to be seen by their patrons as good stewards of the environment. Many restaurateurs today are busy finding or creating solutions for eliminating landfill waste, improving efficiencies, and creating sustainable operational practices. Greening the globe is a good thing, but greening your bottom line at the same time is even better.

The National Restaurant Association (NRA) has launched several initiatives that will aid in making the shift to a more eco-friendly world and will promote sustainability in the restaurant and hotel industry. It is the goal of the NRA to:

- Assist restaurants in identifying environmentally responsible solutions that work for the restaurant business
- Help restaurateurs identify practices that can reduce operational costs for restaurants while conserving energy, water and other natural resources
- Increase recycling practices, and encourage the creation and use of sustainable materials and alternative energy sources

NRA President and Chief Executive Officer Steven C. Anderson says, "Sustainability and conservation are important and timely issues, and we hope our new initiative(s) will inspire the restaurant industry to explore business solutions that are both eco-smart and business-smart. Developing environmentally friendly practices is good for the industry, good for consumers, and good for the country."

These are transformative times where an entire industry is in a state of change. New rules of the game are being crafted every day. Obviously, the quality of the food product is the most important consideration; however, in addition to food quality, patrons want to know that the restaurants they frequent are community-oriented. In a recent survey completed by the National Restaurant Association, it was found that 62 percent of consumers are likely to choose a restaurant based on its environmental friendliness, and nearly one-third of restaurant operators plan to allocate a larger part of their budget to such efforts in 2008. In addition, the Association's survey of more than 1,200 chefs shows organics, local produce and sustainable seafood are among the hottest menu trends right now. Finally, the survey indicated that kitchen equipment that saves water and energy and equipment that serves multi-purposes are top priorities.

There are no simple solutions, as the problems are extremely complicated. A solution in one area creates new cascading changes in other areas. As an example of this, gasoline prices have recently been on the rise, which has enticed farmers through the Midwest to sell their corn to ethanol producers, getting a higher price for their crops. Because so much corn is being diverted to ethanol, it has created shortages, hence rising prices for feedstock which has created higher prices for dairy products, beef and chicken. Farmers wanting to get in on the ethanol craze have been converting their crops from rapeseed and soy (used in the production of cooking oils) to corn, which has caused cooking oil prices to increase by more than 40 percent. All of these pricing forces are causing inflationary pricing for the consumer. Compounding the pressures on food prices are supply chain vendors raising transportation and distribution costs due to rising diesel prices.

Going green is the only solution. One of the pioneers, early adopters, and champions for environmental stewardship in the restaurant industry is Georgia native and communications industry mogul, the renowned Ted Turner, founder and owner of Ted's Montana Grill. Ted and George McKerrow Jr., president/CEO, are leading the charge in rethinking every aspect of their business operationally, from waterless urinals to recycled paper tablecloths. They are a living example, a laboratory, if you will, for rewriting these rules for enviro-operational efficiency. Not only have they reduced their environmental footprint and reduced their distribution reach, they, at the same time, have improved their food quality and their net income. Net income from operations is the other green that is good. All of their green initiatives make excellent environmental and economic sense, in that they all provide a payback to the restaurant.

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Green for the Environment and Green for Your Bottom Line continued

Because Ted's Montana Grill is deeply committed to the environment, they have undertaken many initiatives to reduce their environmental footprint. It was their goal to be 99 percent plastic and styrofoam-free. That's why they re-introduced the paper straw, (not produced in the United States since 1970) and use it in all of their restaurants. Their tablecloths are recycled brown butcher paper. Menus are printed on 100 percent recycled paper. Their to-go cups are made of cornstarch that bio-degrades in landfills in just 50 days. Soft drinks are served in recyclable glass bottles. Take-away food is placed in Bio-Plus Earth® containers, which are high-quality, bio-degradable containers that are microwavable. These containers have been endorsed by the Green Restaurant Association. Ted's has also focused on conservation initiatives of energy and water. They installed 66 solar panels at their restaurant in Tallahassee, Fla., and low-voltage lighting in all of their restaurants. They are currently looking into wind generation. Many of their restaurants feature water-efficient toilets in order to help conserve water, and biodegradable powder Boraxo® soap in restrooms. Nearly all of the paper, plastic, aluminum and glass products used in the restaurant are recycled, and Ted's is currently measuring the impact of this effort in landfills. Mr. McKerrow says, "Will all of this change the world? Maybe, maybe not. But it's the right thing to do." Adds McKerrow, "Being ecologically and environmentally responsible has always been at the heart of Ted's Montana Grill, and we want to be a role model for other restaurant companies and operators. We also want to give our customers an experience they can feel good about – a place where they can 'eat great and do good.'"

As alluded to earlier, the other green benefits are the savings to the bottom line. As an example, Ted's is installing low-watt bulbs in all 51 restaurants. This initiative will push costs down from more than $22 per socket to less than $3 per socket per year. While the new bulbs are more expensive – almost $10 instead of $.50 each – they pay for themselves in six months and will end up saving the company more than $12,000 annually. "The new bulbs maintain the same warm look and feel of Ted's while lowering their energy costs. They also further our commitment to reduce energy consumption," said McKerrow. "We're continually working to make every aspect of our restaurants as eco-friendly as possible."

There are 945,000 restaurants operating in the United States, and all should be seeking ways to improve their eco-footprint through improved efficiencies in their cooking equipment. Energy is a precious commodity and should be used wisely. There are many equipment items offered for sale today that can cook the same amount of food as you now cook with half as much energy. More operators need to invest in ENERGY STAR® rated equipment. Even though the initial purchase price may be higher, the net cost of ownership is lower. It is a matter of education and understanding that low first cost equals high ownership cost. High equipment efficiency is the answer to high productivity and low operating and ownership cost. Economy model gas fryers, for example, have efficiencies as low as 32 percent, with low productivity. These are bad for the environment, bad for operator productivity, and bad for the bottom line. Standard model gas fryers have efficiencies of between 40 – 47 percent, and high efficiency gas fryers 50 – 65%. Electric fryers from economy to high efficiency have an efficiency of 80 – 85 percent. Gas or electric high efficiency ENERGY STAR or "CEE" rated equipment is good for the environment and good for the operator.

ENERGY STAR and the California Consortium for Energy Efficiency (CEE) have developed standards of efficiency for commercial cooking equipment through ASTM (the American Society for Testing and Materials). Fisher-Nickels, Inc. (www.fishnick.com), which tests equipment for efficiencies and productivity, publishes a list of qualifying equipment for rebates offered in California, with all of the particular information on efficiency and water consumption. Equipment on this list is the best in class and is in the top 25 percent of efficient equipment offered for sale. You can find this list at: http://www.fishnick.com/saveenergy/rebates/complete_list.pdf (note that rebates are offered in only a few states in the country and are the prerogative of each state's Public Service Commission.)

Whether you embrace the green movement for environmental reasons, for sustainability reasons, or to improve your overall bottom line, we owe it to future generations to be good stewards of the resources we have, and to minimize unnecessary waste. There are pioneers leading the way who have benefited by their environmental proactivity. By doing the right thing, you will be rewarded with improved efficiencies and **GREEN** bottom line.

What's the Real Cost of Equipment?

By: Jim Wixson, CFSP,
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Revised July 2009

Wouldn't it be great if we had a crystal ball, or a calculator that would tell us how much it was going to cost us to own a certain piece, or pieces, of equipment for a given number of years? A tool that would consider all the future years' costs that would be required to keep the purchased item running and operational? This would help us make the difficult purchasing decisions as to whether we should buy brand x, y, or z. All too often, a presumption is made that all equipment is the same, and that price is the only difference. If in fact you knew that an inexpensive $750 fryer would cost you more than $20,700* to own over the next 10 years, and an ENERGY STAR® fryer, selling for $3,900 would have an ownership cost of $14,500** over the same 10 years, which would you choose? If you further knew that the economy fryer only produces 38 pounds of frozen fries per hour, and the ENERGY STAR fryer produces 61 pounds per hour, would that help you make an ultimate purchasing decision?

Who has ever bought a car or some other multi-thousand dollar purchase item, and figured in the cost of oil, tires, gasoline, repairs, disposal costs, insurance, and all other costs of ownership? Not many I would imagine, because there are no ready-to-use calculators or spreadsheets to assist in the analysis. It is, after all, the total cost of ownership that we pay for goods and services. The old adage, "You can pay me now, or you can pay me later," is true every time. If we had a simple, easy-to-use calculator or tool, we might be inclined to take the time to analyze, evaluate, and understand the "total cost of ownership."

If you were waiting for such a tool or calculator, you are in luck. There are now some tools for us to take advantage of and develop life cycle costing.

Today, in the foodservice industry, Total Cost of Ownership (known as TCO) is the new catchphrase. Consultants, foodservice dealers, distributors, utilities, and service organizations will soon be discussing TCO with their customers. Just as HACCP (Hazard Analysis Critical Control Point), ENERGY STAR, and LEED (Leadership in Energy Efficient Design) have become commonplace discussion and lexicon in the sales process, TCO will be considered by customers as value-added service in the future. And, the future is now. Several large national chains are already factoring TCO into all of their purchasing decisions.

There are many factors to consider in the equipment purchase decision. Generally, we look at the purchase price of an item and simply compare the price-to-value of one item versus another. The key is to provide a commonly accepted method and platform for collecting all of the necessary data points that comprise TCO. This was formerly known as "Life Cycle Cost"; however, life cycle does not include many indirect costs such as differential in productivity, and labor savings. TCO analysis performs calculations on extended costs for any purchase – these are called fully burdened costs, which represent the total cost of ownership. The calculation includes both direct and indirect costs, and benefits related to the purchase of an equipment item. The intention is to arrive at a final figure that is expressed as a "net present value," and reflects the effective cost of purchase, all things considered.

Net Present Value (NPV) of capital is the present (discounted) value of cash inflows minus the present value of cash outflows. Or, another way of looking at it is that NPV is a discounted dollar figure of a future purchase price less the interest on future years' investments. For example, if the bank interest rate for capital is 4 percent, and you need $10,000 in 10 years, then the net present value cost of capital is $6,754.19. This is the amount of money you would need today invested at 4 percent compounding interest to have $10,000 in 10 years.
Thought leaders and other industry professionals envision that manufacturer's representatives, dealers, and consultants will be adding value to their customer relationships by helping them make specification and purchase choices based on TCO. This will position and distinguish them as professionals in the eyes of their customers, and will separate them from all of the other people in the industry that are simply trying to sell something. There are currently two life cycle tools being used today: NAFEM Life Cycle Tool, and Fishnick.com Life-Cycle and Energy Calculators. Both of these tools will help the user create a dynamic business case analysis for purchasing one product over another.

The North American Association of Food Equipment Manufacturers (NAFEM) has developed, through a working subcommittee, an Excel-based Life Cycle Tool that can be downloaded at the following url: http://www.nafem.org/resources/index.aspx . The subcommittee was made up of industry leaders comprised of manufacturers, dealers, and foodservice

consultants. These members of the Technical Liaison Committee worked for over five years to develop consensus for the components in the calculation of their "Equipment Life Cycle/Total Cost of Ownership Tool."

Another key contributor to the NAFEM Life Cycle Committee is Fisher Nickel Associates, who have created several easy-to-use life cycle calculators. These calculators allow you to compare the total cost of operating different appliances over their useful service lives. The results demonstrate how high-efficiency ENERGY STAR equipment will continue to save energy dollars years after the initial purchase equipment, versus standard units. These calculators can be found at the following url: http://www.fishnick.com/saveenergy/tools/calculators/.

Getting started

With either tool, you will need to know a minimum amount of information. Gather the data for those items below that are in bold font, and it will be easier for you to plug the values into either of the models. The more information you can develop, the better results you will obtain.

What you will need to know:

Purchase Detail	• **Purchase Price?** • **Total Accessories Price?** • **Taxes?** • **Rebates/Incentives?** • **Freight Charges?** • Hourly Install Labor Rate? • Estimated Install Hours? • Additional Setup Costs? • **Anticipate Life Span Years?**
Service Detail	• **Replacement Parts Estimate?** • Parts Inflation Percentage? • Hourly Service Labor Cost? • Labor Inflation Rate? • Service Travel Cost? • Service Travel Inflation Rate? • Shop Supplies Costs? • Shop Supplies Inflation Percentage? • **Other Annual Service and Repair Cost?**
Preventative Maintenance Detail	• Annual Preventative Maintenance Replacement Part Cost? • Annual PM Parts Inflation Percentage? • Hourly PM Labor Cost? • PM Labor Cost Inflation Percentage? • Other PM Costs?
Operating Cost Detail	• **Electric Utility Rate per kWh?** • **Annual Consumption Kilowatt Hours?** • **Gas Utility Rate per Therm?** • **Annual Gas Consumption in Therms?** • **Water Rate per CCF (Hundred Cubic Feet)?** • **Sewer Rate per CCF (Hundred Cubic Feet)?** • **Annual Water Consumption CCF (Hundred Cubic Feet)?** • Utility Inflation Percentage? • Consumables Supplies Cost? • Consumables Supplies Inflation Percentage? • Hourly Labor (Operating Cleaning) Cost? • Total Labor Hours (Operating/Cleaning)? • Labor Inflation Percentage? • **Other Operating Costs?**
Disposal Detail	• Disposal Hourly Labor Rate? • Estimated Teardown Hours? • Additional Teardown Costs? • Freight Charges and Transportation Costs? • Hazardous Materials Costs?

It is not necessary to fill in every data cell if a value is not known. An estimate can be used until the actual number is researched and known at a later date. Completing the NAFEM Life Cycle Tool may require you to consult with a variety of sources including manufacturers, service agents, utilities, and other end users.

Of all the cost factors mentioned, the most difficult one to identify is the service detail and maintenance cost. Keeping good

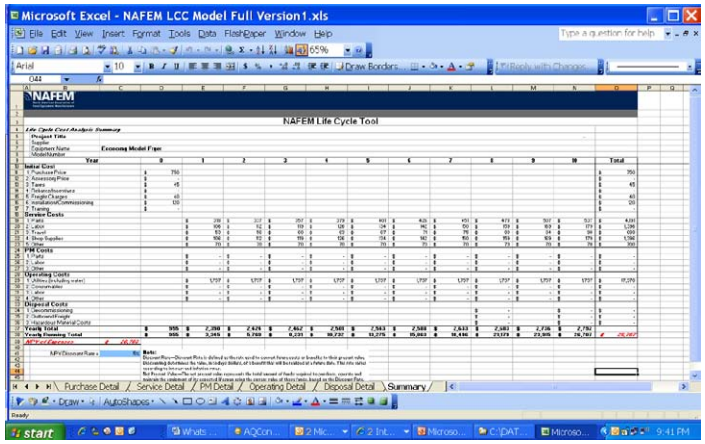
records of each appliance is difficult, but necessary, if you want to determine the total cost of ownership. At the present time there is not a national data base to reference the approximate maintenance cost for various pieces of equipment.

No matter which tool you use, the purpose is the same. We all want to make the best and most objective purchasing decision we can. By using a TCO model, you will be able to evaluate the real ownership cost of various equipment offerings. The purchase price of a piece of equipment by itself can be very deceptive. It is the Total Cost of Ownership that will help you make the correct purchasing decision.

**Assumptions used in economy model fryer 10-year net present value cost: initial purchase price $750, replaced every third year, $200 disposal and change-out cost, $750 preventative maintenance and service costs over the 10-year period, $1,860 operating energy cost per year, and a discount rate of 5%.*

***Assumptions used in ENERGY STAR model fryer 10-year net present value cost: initial purchase price $3,900, $1,350 preventative maintenance and service costs over the 10-year period, $987 operating energy cost per year, and a discount rate of 5%.*

NAFEM Life Cycle Model



Fishnick Life Cycle Calculator