

PROVIDING THE 'SIZZLE' AND THE 'STEAK'

GTI Research Plays an Important Role for the Commercial Foodservice Industry

Within a typical research laboratory, the smells of chemicals, gas, sulfur, and other by-products of real-world science often permeate the air. Not so inside GTI's Residential/ Commercial Appliances Laboratory, where the scents of baked pizza dough, French fries, and steamed broccoli provide what Tim Cole calls an "aromatic juxtaposition" to traditional research and development (R&D).



"Don't let the aromas mislead you," says Cole. "Successful R&D can smell good."

Cole leads a group of researchers that perform R&D on commercial foodservice equipment, research that is becoming more and more important to natural gas utilities and equipment manufacturers as they strive to find ways to maintain and grow this market.

Foodservice is 'hot, hot, hot'

"Commercial foodservice is a growing industry, even in today's slower economic environment," notes Cole. "There are many reasons for the growth, but the simple fact is that people are eating out much more frequently than they used to. This includes fast food, casual, and upscale dining. Every segment is growing."

'Outlets' At the Mall

Over the past 10 or so years, the fastest growing segment of this industry has been the non-traditional restaurant sector. These outlets, otherwise referred to as "kiosks," are often found in airports, shopping malls, athletic stadiums, and other similar venues. Although they can be lucrative opportunities for proprietors, they can also present hurdles to the installation of natural gas equipment, challenges that GTI continuously addresses through its R&D program.



"Kiosks are strong opportunities for gas utilities to maintain or gain new load," says Rich Van Camp, GTI's Manager, Residential/ Commercial Appliances Laboratory. "In order to do so, however, we need to continue developing cost-competitive gas-fired equipment that will provide utilities with an entrée into this market. If, for some reason, gas isn't piped into a particular restaurant location, we need to be able to present compelling reasons to that restaurant as to why it should be."

Software Tool Calculates Energy Savings

As part of its strategy to providing that entrée, GTI continues to create software tools that are designed to assist gas utility sales forces to better compete with their electric counterparts. One such tool, kitchenCost™, successfully launched in the late 1990s by GTI, has been updated to further exploit the benefits of natural-gas-fired foodservice equipment.

KitchenCost 4.0™ allows restaurant owners and gas utility marketers to key in parameters such as the types of cooking and ventilation equipment that will be used; the number of anticipated hours of cooking operation; the specific restaurant location; and weather and utility data, including electric rates for the particular city. Through a menu-driven Windows™-based graphical interface, the user is quickly able to get a comprehensive look at the operating costs of gas-fired versus electric equipment in different cities throughout the country.

Leveraging Dollars to Deliver New Products

For gas utilities, one fallout from the recent wave of industry mergers and acquisitions has been the significant reduction of utility marketing staffs. Companies that have traditionally had a history of heavily supporting the development of foodservice equipment now face both financial and personnel constraints. Because of this, both utilities and equipment manufacturers have turned to GTI to lead the charge in finding new ways of developing equipment and getting it into the marketplace.

In response, GTI has successfully raised research and development dollars through alternative funding sources such as its Residential/Commercial Collaborative R&D Program. In short, collaborative programs are a select group of research projects funded by a group of interested companies who help steer the direction of the R&D. The research is performed by GTI and the proprietary results are disseminated at the investors' direction.

"The collaboration programs present a great opportunity for utilities to leverage their investment in R&D," says Cole. "Because of today's economic environment, an individual company might not be in a position to independently fund an entire project that can provide a potential revenue-stream to them. However, through this consortium approach, they're now able to fund multiple projects in the foodservice sector, thereby receiving a bigger bang for their buck."

Cole adds that several of GTI's ongoing projects are being funded through collaborative programs.

What's Cookin' at GTI?

Currently, GTI is performing a wide array of foodservice equipment R&D at its Residential/Commercial Appliance Laboratory. Here are a few examples:

Cross-Flow Convection Oven

This novel gas convection oven incorporates a catalytic airflow process that has the ability to self-clean the grease that's generated from the cooking process. The oven's cross-flow convection provides superior uniformity of the products that are cooked, thereby eliminating the need to rotate pans halfway through the baking cycle. This allows for less food waste and better overall product quality. GTI anticipates that this system will stand by itself in the marketplace since there isn't another technology with this unique capability.

Dual-Deck Pizza Oven

A dual-deck pizza oven that incorporates a single gas burner allows multiple pizzas to be placed on two separate conveyor-type belts at the same time. This unique capability allows the restaurant to deliver more products in a shorter time while also conserving more space. Four pizza decks can fit in the same space that previously housed two, thereby doubling the store's capacity to cook pizzas. GTI has applied for a patent on this technology and expects it to reach the marketplace in 2003.

Falling-Film Commercial Steam Generator

GTI's 300,000 Btu/hr "falling film" commercial steam generator incorporates a novel technology to extend the life of the product. Traditionally, water lines to conventional boilers eventually corrode. For a typical gas unit, this type of failure can be catastrophic, warranting the replacement of the entire boiler. With the novel GTI "falling-film" process, however, the boiler isn't subjected to the same type of corrosion, because the system provides a self-cleaning feature that daily sheds the water scale down the drain, thereby eliminating the need for costly chemical cleaning in areas that have "hard water." GTI estimates that the current inventory of steam generators in the marketplace is approximately 65 percent electric. The falling-film generator provides the gas industry an opportunity to recapture some of that market share. The unit, being tested in GTI's lab, is approximately 18 months away from being commercially available.



Advanced Gas Griddle

This new gas-fired griddle can go from a cold start to a uniformly heated 350°F surface in less than five minutes, far exceeding the traditional technology, which often takes 20 minutes. "The edge-to-edge griddle cooking uniformity for this product is going to be outstanding compared to traditional units," notes Cole. "If you set the temperature of a typical gas-fired griddle to 350°, and measure its uniformity, you can conceivably find temperatures across the griddle surface ranging from 395° at one edge to 305° along another edge. This griddle will be far better than that." The GTI Residential/Commercial Collaboration Program is also looking at advancing this technology from the kiosk size to a larger, three-foot size for use in commercial kitchens.

Commercial Gas-Fired Bakery Oven

GTI is currently developing a commercial bakery oven that incorporates a unique air-flow process not previously used in this industry. The process places the food in the commercial oven and forces hot air around the food being baked. Using the traditional method, workers load the food onto a cart, which is placed in the oven, elevated, and rotated continuously to gain the cooking uniformity desired. GTI has been awarded a patent for the new technology. The GTI process will offer both footprint and cooking efficiency.

Ready for Delivery

For more than 20 years, GTI research has played a major role in the development of several successful commercial foodservice products, including the Blodgett Combi-Oven, Pitco Fryer, and the Lang Clamshell Griddle. Its most recent commercial success is the Stellar Sirius Boiler-less Steamer. The "boiler-less" steamer incorporates a gas-fired combustion system designed by GTI. Marketed as the "Sirius" steamer, the innovative system provides a dry steam-cooking environment that delivers more cooking energy in less time than its competition because of its fast heat-recovery process. The unit, which costs less to clean and maintain than existing gas and electric designs, was commercially introduced in early 2002.



What's Next?

Energy Reliability An Important Issue to Restaurants

Increasingly, GTI has heard from foodservice industry representatives that the reliability of the electricity distribution system is of concern to them.

"In the past," notes Cole, "it was common for electric utilities to tout to the restaurant industry a reliability factor of 99.99999 percent on their distribution systems. Today, in some cases, that factor has been reduced to 99.999. When you calculate that out, you'll find that for a large chain with 1,000 restaurants, it's conceivable that they might be faced with a situation where one of their restaurants is without power. That's a major concern to them."

Because of this, according to Cole, many are looking at distributed energy technologies as a possible solution to their overall energy problem. GTI's Distributed Energy Resources (for larger-scale commercial and industrial applications) and Energy Utilization (for smaller-scale commercial applications) Research Centers are pursuing several projects on Cooling, Heating, and Power (CHP) programs.