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Hold true: how precision holding technology is changing the game

Precision holding technology continues to advance, with cutting-edge equipment now able to safely hold hot food to exact temperatures and moisture content for days. The benefits for operators are abundant

INTRODUCTION

It has long been considered a key ambition for many commercial foodservice operators: equipment that can hold food at precisely the temperature and humidity required. But precision holding cabinets, built to maintain the quality of food within a tightly controlled environment, are very much a technology of today, rather than the future.

Indeed, this technological leap forward is now being embraced by foodservice operators ranging from fine-dining restaurants to institutional caterers. “Precision holding is maintaining the temperature of cooked food in a manner that ensures the product is safe to serve while maintaining its moisture and crispiness,” explains Stuart Powell, CEO of Cookshack, Inc. in Ponca City, Oklahoma.

As consumers have demanded quicker service and more consistently high-quality food, chefs have worked to find ways to meet their needs. “One way to do this is to pre-cook food and hold it until the customer is ready to eat,” says Powell. “This has led equipment manufacturers to find better ways to hold food.”

Denis Livchak, MS, PE, LEED AP, senior engineer for Frontier Energy Inc., a professional consulting firm specializing in energy efficiency and advanced energy solutions in San Ramon, California, believes precision holding is important to operators, “because nowadays there is a strong emphasis on fresh food. But oftentimes the customer volume is high with a narrow window of serving, so prep cooking is required. You need to use precision holding to keep that prepped food fresh until it is ready to be served.”

“[Precision technology] is still evolving, especially during a crisis in our industry such as Covid-19” Stephen Young FCSI

TO BE PRECISE

Precision is, of course, a key word for an industry that needs to deliver to more exacting customers with each passing year. “In my world, ‘precision’ [is relevant to] information, analytics and control technology,” explains foodservice consultant Stephen Young FCSI, managing member and executive principal of YoungCaruso in Denver, Colorado. “Precision farming, precision menu planning, precision equipment controls and precision trouble shooting.”

Young says he has seen precision technology evolve “exponentially” over the past few years. “And it is still evolving, especially during a crisis in our industry such as Covid-19,” he adds.

Precision holding can keep prepped food fresh until it is ready to be served

Indeed, Young has watched precision control grow into an integral facet of many commercial kitchens. "I see it from menu planning to guest behavior, to equipment programing, to equipment trouble-shooting." Precision cooking has found a home in a variety of foodservice sectors, he says, "from handheld technology to heavy-duty equipment," providing "up-to-the-moment parametric information."

Delivery and takeout will rely more heavily on precision holding technology more than anything else, according to Garrett Lennon FCSI, principal of JLR Design Group in Seattle, Washington. "With a large majority of the independently owned and operated restaurant sector having been decimated by no in-person dining Covid mandates, delivery and takeout are now more important than ever. This will become a larger portion of operators' revenue stream," he says.

HARNESSING HEAT AND HUMIDITY

In recent years, several manufacturers have worked on ways to increase holding time while maintaining the integrity of product. This, Powell explains, has been done "by controlling humidity and temperature, along with methods to reduce the amount of time units have to be open to remove food products."

Most foodservice sectors today use some type of holding equipment in their kitchens, notes Powell. "From rice and vegetables to meat products, holding allows kitchens to stay on top of the products they need for the consumer." Depending on the product, the benefits can vary from, he says, "just having the product ready when needed to actually tenderizing many of the proteins. No matter the product though, it is important that the holding method allows the consumer to have a product that tastes like it just came off the stove."

"With these advancements, you are able to control the temperatures of the product held with exact detail, and in some cases for longer periods of time than previously able"
Garrett Lennon FCSI

In Lennon's view, off-premise catering companies "in most cases can't do their job without this technology. Mass feeding programs such as military, institutional, business and industry [B&I] and education rely on the equipment to feed customers on a daily basis within the allotted time they have for meal service," he says.

Hospitality and healthcare heavily rely on this technology to serve guests in multi-story buildings and large expansive campuses, utilizing mobile cabinets able to transport product and hold at the peak of quality, when it is desired, says Lennon. "The fast-food industry has to have this technology in order to meet the average ticket time of under five minutes," while food delivery "heavily relies on precision holding so you don't open a container of soggy tacos or a cold burger."

According to Livchak, larger quick-service restaurants (QSR) chains have proven that holding is almost as important as cooking "because that is often the last piece of equipment the food touches before it is served to the customer." That is why we see chicken chains such as KFC using precision heating cabinets, or pizza chains such as CiCi's recognizing holding cabinets are as important as their pizza ovens.

The fast-food industry needs precision holding tech so it can meet an average ticket time of under five minutes

The controls for precision holding equipment have, according to Lennon, become "much more robust and sophisticated. With these advancements, you are able to control the temperatures of the product held with exact detail, and in some cases for longer periods of time than previously able."

The technology continues to advance "beyond what was previously thought possible, with some equipment and certain preserving processes having the ability to hold hot food to exact temps and moisture content safely for days," says Lennon, while Livchak believes the biggest benefits of precision holding are food quality and reduction of food waste.

Holding equipment without moisture injection or water pan temperature control can dry out food or inject too much moisture, leaving it soggy, Livchak adds. "There are energy benefits to precision holding, where sensing technology exists to detect if there is food in the unit or if certain heating zones need to be activated." That brings additional benefits. Smart sensing of the food load can reduce energy consumption while preventing overheating of a partial load.

Lennon, in turn, also recognizes the environmental benefits. "Sustainability will also be more of a factor in the evolution of this technology. Lower wattage and less resource taxing equipment will become the standard and required universally as opposed to an optional feature."

INTO THE FUTURE

Going forward, Livchak sees induction warming for larger applications on the horizon, since it has been successfully integrated into smaller countertop warmers. "More sensing technology is also on the rise, especially for overhead lamps and heat strips, which waste a lot of energy without being used to their full potential."

To that end, the creation and expansion of heated holding shelves built to help improve the efficiency of holding freshly prepared to-go meals and pick up orders has grown considerably in recent years. Where heat lamps once dominated, heated holding shelves are now adding immense value to traditional restaurant operations.

Integration of cooking and holding will become more seamless, with holding equipment storing the information on the product, temperature and humidity settings needed for holding, and the length of time it can remain in the holding unit before being discarded. "Many more people are getting delivery during Covid, and there is less dining in," says Livchak.

"I think that mobile precision holding technology is on the rise, and manufacturers will start integrating features seen in larger restaurant equipment into mobile units for delivery."

"As consumers stay home," Powell is convinced, "having great food delivered will continue to be important – and holding technology will play a major role in this."

Stephen Young, meanwhile, believes future development will include even better equipment and provide "more analytics and personal control. Knowledge is power, at all levels," he says. ■

Smart sensing of the food load can reduce energy consumption

"There are also energy benefits to precision holding, where sensing technology exists to detect whether there is food in the unit or if certain heating zones need to be activated"
Denis Livchak

Still evolving

Food Warming Equipment (FWE) Company, Inc.'s precision holding technology has evolved over the past several years, and continues to do so: the company is already working on the second generation

INTRODUCTION

FWE is using cutting-edge technology to measure and control relative humidity to maintain product quality over longer periods of time with our PHTT Series. "Many manufacturers who build precision holding cabinets use a formula based on both air and water temperature to estimate the relative humidity inside the cavity. We don't do that," says Travis Hartley, CFSP, vice president of sales and product development for FWE, whose unit uses a humidistat and measures a cabinet's active relative humidity.

"The main reason behind that is that your water isn't going to be affected by a door opening, but that door opening is going to affect the relative humidity in that cabinet." With active monitoring, the system is able to quickly recover from any drop-offs that may be seen through the user interaction.

Coming down the road is a feature FWE has, until now, offered as an accessory, but will be included in the next generation: the ability of the unit to adjust for spikes in relative humidity. "We call that controlled venting, which maintains the set threshold," Hartley explains. For example, he says, fried chicken's "happy place" is 180° to 185° with about 26% to 28% relative humidity.

"Let's say you had the unit set at 185°/26%. The unit is preheated, you've got product in there, and now you need to load a fresh batch of chicken right out of the fryer. This new product is going to be letting off excess steam that could adversely effect your currently held product, especially the crisp coating."

Thanks to this cutting-edge technology, the unit will sense that spike, open an exhaust plenum and evacuate the excess humidity. Thus, the steam and heat emitting from the fresh product doesn't negatively affect the food already loaded in the cabinet. "Again," says Hartley, "you are just maintaining that nice, consistent environment that the product wants. When you have a sensitive product, usually a protein, if you can keep it away from those drastic swings, either up or down, it tends to maintain its own moisture and texture better, longer and far more consistently."

According to Hartley, sensitive product is any product that needs what he calls a "very tight, or consistent" environment in order to stay in top servable condition for a long period of time. "That's the other reason someone might go in this direction. Maybe they don't have that sensitive a product but they do have a really long holding window that they are targeting."

BUILT FOR A TIGHT ENVIRONMENT

FWE HAS DEVELOPED THE RIGHT TECHNOLOGY AT THE RIGHT TIME FOR FOODSERVICE OPERATORS

"There are a lot of heat systems out there that will bring food to a certain temperature, but then the moisture is kind of a more-or-less setting, a passive system or no moisture control at all," explains FWE's Travis Hartley. "Precision holding is where you have the capability to say 'I want 156°F and a relative humidity of 38%.' Then those cabinets will build to and maintain that very tight environment."

In most cases that is going to be used for a product that is more sensitive, such as barbecue, fried chicken or a delicate sauce. "Certain foods just require a very tight environment," says Hartley.

KEEPING IT CONSISTENT

"The main thing is that with any food, regardless of the environment it prefers, you like it to be consistent. It's about what the unit can do to maintain that environment you have set when you are having things happening in the kitchen – like door openings, or when you are putting food in that is above or below the temperature you are setting – and how the unit accounts for that," Hartley says.

"We are seeing everything from a barbecue chain to fried chicken restaurants to hospitals, where they need to hold a bunch of products," Hartley recounts. "Maybe they have a bunch of pre-grilled chicken breasts and need to be able to pull out what they need for that order without having to wait for the fire time of the breast in order to get it up and ready for the client. They will put that right up on the line to turn around orders faster."

When holding product for a short period, say 20 minutes, the environment is less important. "But if you need to be able to hold it for six or eight hours because it's a product that takes a long time to cook and you have a long service window, precision holding comes back to being a paramount thing."

LOOKING AHEAD

It is not surprising that operators are looking forward to that next generation of FWE cabinets with controlled-venting as a standard feature of the heat system.

"Since our units can be adapted and meet a vast span of operations, the same precision temperature humidity unit will be selected whether it is a barbeque joint, Italian establishment or a fried chicken place," says Hartley, who has spent over two decades in the industry. Also available will be touch-screen-style controls with data-logging capabilities so restaurants can track all of their HACCP data on a rolling basis for the previous 30 days. For users with multiple locations, it will have Wi-Fi capability as well as live broadcasting of temperatures and settings, should an operator want to monitor those from a corporate office.

Precision holding is "absolutely green technology," Hartley emphasizes. "Being more energy efficient, precision holding balances energy needs as power is only engaged to heat or adjust moisture as required, rather than just cycling on or off with traditional technology," he adds. Additionally, since goods can be held for longer periods of time with precision holing, it adds up to a smaller carbon footprint in waste, resources and energy. In our case at FWE, when advancing technology for the newer version of the unit we researched and implemented new insulation material advancements and will be targeting EnergyStar status.

FWE executives are convinced that their technology will prove to be more important than ever in the post-Covid era. "We are seeing a big transition in how people are eating," Hartley notes. "One thing we are seeing is a pretty massive return to comfort foods, and comfort foods tend to be things like BBQ and chicken, pizza and burgers," products that benefit from the light environment of FWE's precision holding cabinets. ■

FURTHER INFORMATION:

For more information about FCSI, please visit: **fcsi.org**

For more information about Food Warming Equipment Company (FWE), Inc., please visit: **fwe.com**

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DOING WHAT'S RIGHT

FWE'S TRAVIS HARTLEY ADDRESSES HOW HIS COMPANY – HEADQUARTERED IN PORTLAND, TENNESSEE – OPERATES EXACTLY LIKE A LARGE FAMILY

At FWE, we are a smaller, family-owned, private business. What that really means in the end is that all of our profits essentially get reinvested in the company. We are not beholden to stockholders, so we tend to follow what our users are telling us as far as where we need to transition to make sure that we stay ahead of their needs. We heavily invest in both research and development as well as keeping our engineering staff fully employed.

When the Covid-19 pandemic hit, some factories were forced to furlough employees, cut back working hours or take other measures. At FWE, that never happened. It's just a matter of shifting some of our production and stock to suit what the new needs of our customers.

Operators have basically been forced to have the ability to stage mobile takeout orders, where maybe their business model wasn't originally set up for that. We very quickly adapted and shifted more resources toward those types of products to make sure that we could stay in front of the customer's needs.

EMPOWERING THE TEAM

Being a family business means really just doing what's right. In a lot of factories you have your rule set and the folks have to work around it. With us it's a case of, 'What does it take to make this right?' and that's what we do. It's not an 'asking permission' kind of culture around here.

At FWE, we use decentralized command principles, where basically anybody is empowered to make the decision they need to in order to make a situation right without having to go up the chain of command. That really shines in a number of different aspects of the business.

We have a lot of family members working in various departments here at FWE. One of our engineers may have a son who is out working the brake press, or vice versa. Essentially, after all is said and done, the company operates like a large family. That's what makes us special.