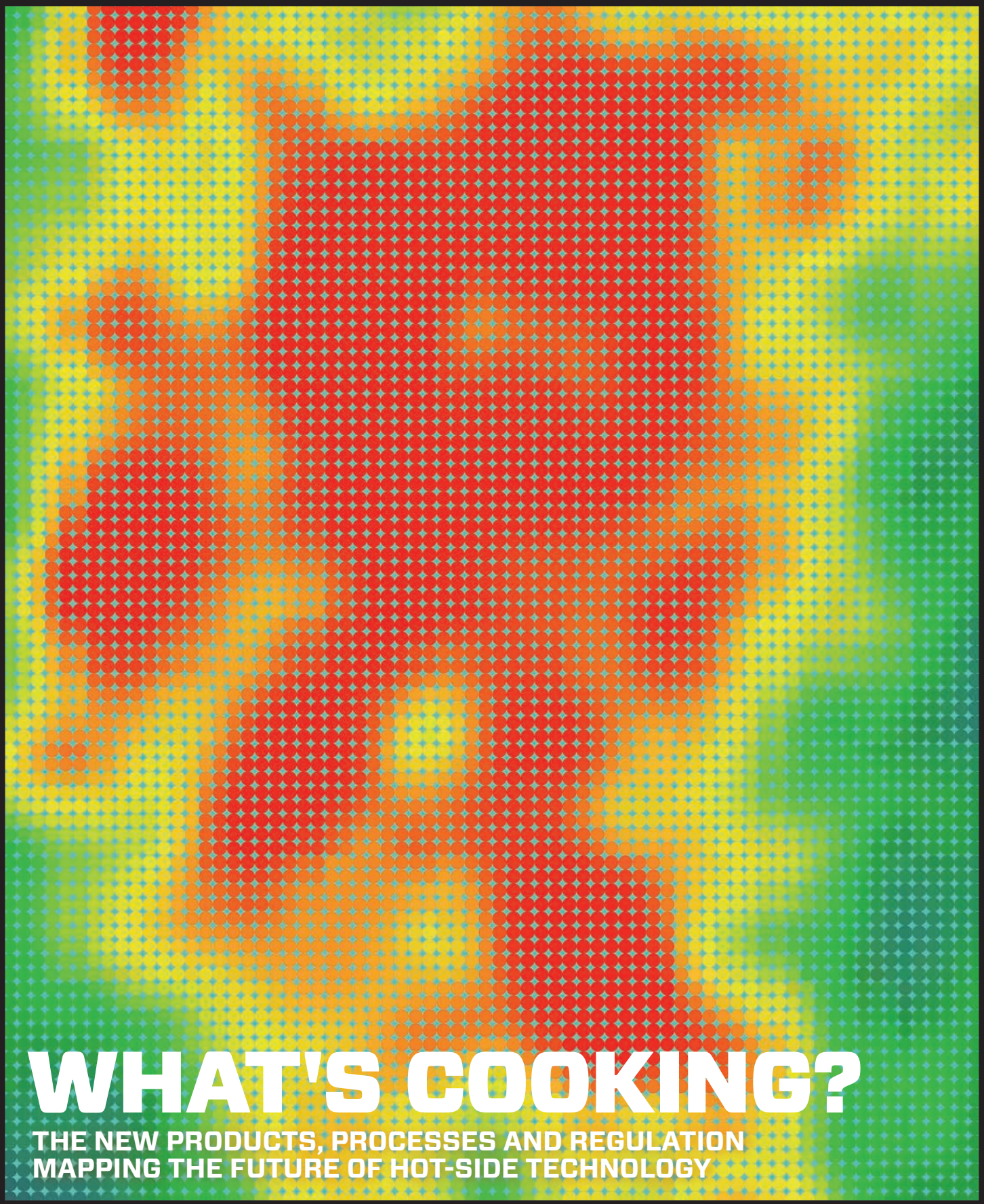

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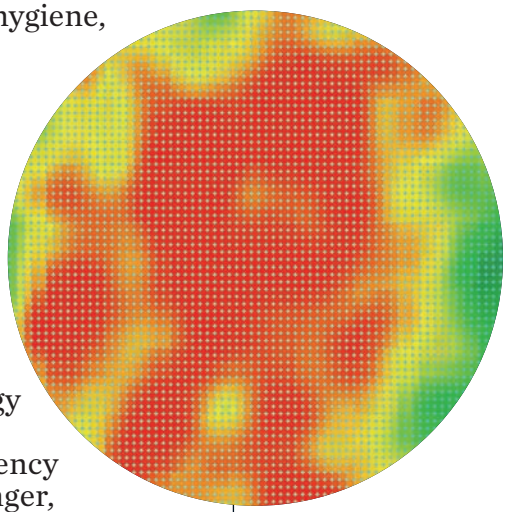
Ever-changing ways to cook food demands constant innovation

Change is the only constant in life," said Heraclitus. Yet, whether the oft-quoted maxim of the Greek philosopher can be applied to the rate of innovation in the foodservice industry remains open to conjecture. Certainly, some consultants would like to see *more* constant change – particularly with regards to developments in cooking technology. "We're using the same stoves we were using 100 years ago, nothing's changed. That's just crazy to me," says US consultant Joseph Schumaker FCSI, president and CEO, Foodspace.

And he's only half-joking. For Schumaker, there was some genuinely exciting innovation being progressed in cooking technology and back-of-house operations generally before the Covid-19 pandemic struck earlier this year. The fear is that some of this development may now be stymied and mothballed – with back of house put onto the back burner – as the attention of the industry switches to assuaging (albeit, legitimate) consumer concerns about pressing issues such as hygiene, sanitation and social distancing in the front of house.

"We were starting to focus on back-of-house and working outwards. What Covid is going to do is continue to force us to work from front-of-house [to] back. The challenge with that is we're not creating opportunities to be more efficient, thereby making us more profitable. We're going to continue to focus on customer experience. I'm not discounting that, but we were finally on the verge of making some major breakthroughs."



Yet, many would argue that there is, not only plenty of innovation still in play in terms of back-of-house operations, but that there is also some seriously game-changing technology specifically focused on hot-side and cooking technology now available. An ever-increasing demand for greater energy efficiency will certainly be a constant. As will "more connectivity, a stronger, more intuitive interface between equipment and operators," predicts FEA's John Whitehouse in the UK. "More automation of cooking technology, including more touch-free controls. More ergonomic design in the kitchen."

And with a great demand for ghost kitchens and with take-out and delivery becoming a prime revenue stream globally, the constant need for change is set to continue. Not everyone will be happy with the rate of change, perhaps, but there are hopefully enough reasons within these pages to give food for thought.

Words: **Michael Jones, Howard Riell**

Further information: **fcsi.org**

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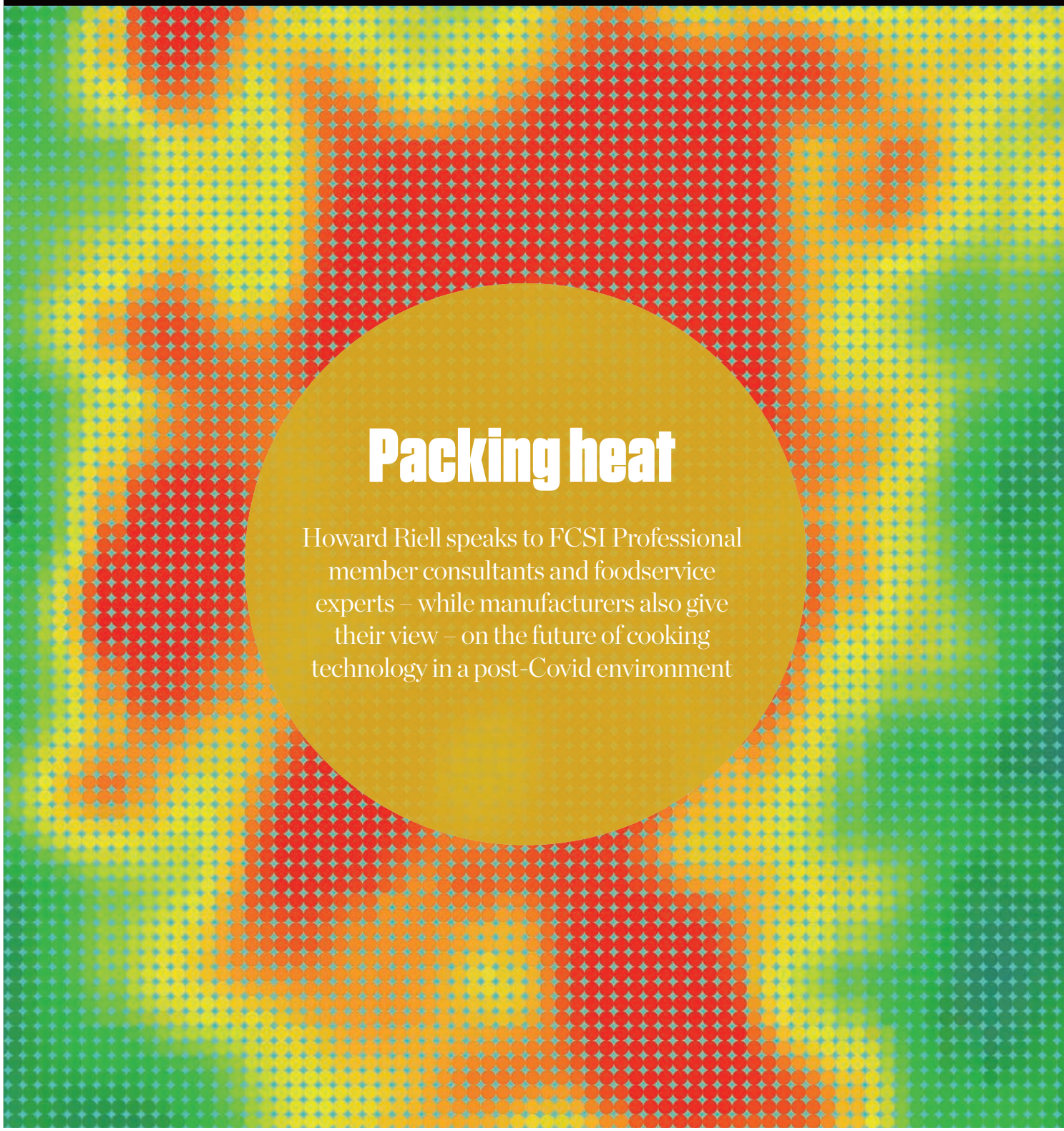


Packing heat

Howard Riell speaks to FCSI Professional member consultants and foodservice experts – while manufacturers also give their view – on the future of cooking technology in a post-Covid environment

Some of the most fundamental elements of the foodservice industry – from evolving dining trends to technological advances and regulatory factors worldwide – are being re-examined in the wake of Covid-19.

Operators and equipment manufacturers alike are taking action. Heading the list of concerns for equipment operators related to the pandemic are of course cleanliness, minimizing the risk of infection or contamination, and maintaining social distancing. As John Whitehouse, CFSP, chair of the Foodservice Equipment Association (FEA) and managing director and owner of First Choice Group puts it: "How can we operate a commercial kitchen under such conditions – especially busy kitchens that weren't designed with social distancing in mind? There's a lot of C-19 guidance out there from several sources – many of which FEA contributed to. Now the association has pulled together guidelines covering best practice in the kitchen for foodservice operators."

FEA represents over 200 companies that supply, service and maintain all types of commercial foodservice equipment. Its Guide to COVID-19 Kitchen Best Practice (available to download for free from fea.org.uk) covers a vast range of areas, providing specific advice and instruction for each. For example, it suggests creating workstations at social distances where possible. "Ideally," Whitehouse says, "everything the chefs need will be at their own work-stations – prep, cooking equipment, refrigeration, and so on."

As for the ways in which regulation is impacting advances in cooking technology, Whitehouse underscores that "again, it's the circular economy and our sustainability goals." The United Kingdom government's drive to net-zero carbon by 2050 will have "a huge impact. Assuming a typical kitchen lasts 10 years, we're only three kitchens away from a net-zero carbon world. We are currently talking to the government about how to establish energy standards and incentivized support for manufacturers, dealers, specifiers and end-users to develop and install more energy efficient equipment."

Covid-19, says consultant Frank Wagner FCSI, manager of K-DREI based in Berlin, Germany, has underlined the importance of cooking safely and efficiently "more than ever. Food safety in cooking has been key to professional kitchens since I can remember. To prove that the operator is cooking safely is now requested by the customer/guests. Nobody wants to get infected from badly cleaned china or dishes prepared by chefs without masks."

Cooking "takes heat and time," notes Paul Bartlett FCSI, the principal of Kitchen Solutions Consulting in Baltimore, Maryland, US. "For high-volume post-Covid feeding of children and shelters we use combi-ovens and blast-chillers. For artisan restaurants we use a lot of sous-vide for meats so we can purchase, break down, portion, package and cook efficiently with reference to cost of goods and cost of labor."

In the 24-hour diners, Bartlett adds, "We still rely on multiple cooks manning the ovens, griddle, sauté burners and slide-drawer broiler." Once the food is cooked and heading for service, his team relies on steam tables – he lauds Alto-Shaam's Halo Heat – and thermal carrying cases from Cambro. "The last casino quick-serve restaurant I worked on five years ago featured programmable clamshell griddles with timers and ovens with presets for each menu item. Ugh!"

Foodservice operators realized that >

The manufacturer's view: Alvin Ganaishlal, technical service manager, Wood Stone

I see the demand for "connected" appliances growing, not just for ease-of-use and performance, but for serviceability. Automated error reporting and remote diagnostics will become more desirable in the future, not only to maximize efficiency and reduce downtime, but to limit exposure and avoid cross-contamination.

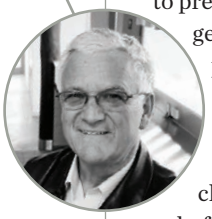
The ability of a piece of equipment to communicate data to a service center or manufacturer will help to prevent failures as well as help schedule non-emergency structured maintenance. We can see this happening now with many of the new vehicles on the road, where driving info is constantly monitored and shared. I expect to see a monthly "health report" from equipment in the future, showing maximum temperatures, faults, uptime and downtime.

they needed to rethink and re-engineer their menu to comply with post-Covid regulations, explains Arlene Spiegel FCSI, president and principal of Arlene Spiegel & Associates in New York City, US. "Most of them have reduced or repositioned the various back-of-house staff."

With take-out and delivery becoming a prime revenue stream in many states, she continues, additional prep and staging tables "help serve as a 'new line' to serve these guests and third-party delivery pick-ups." Staffing schedules have also been adjusted to keep within social distance rules by scheduling a limited number of staff coming in early to receive, bulk prep, bake, roast and set up stations, and then leave the premises before the regular crew arrive.

But not everyone sees major changes ahead. Tim Smallwood FFCSI, principal of Foodservice Design Management in Victoria, Australia, suggests the possibility that Covid will result in no change to the way foodservice operators have to cook. "The process of cooking correctly in the past is the same as in the future, and the heat of cooking destroys all pathogens." Any changes will not come in the actual cooking process per-se, he suggests, but in the monitoring for traceability of compliance with HACCP standards. "This will hurt Asian kitchens more than European and North American ones because they are still playing catch-up in the application of HACCP standards."

Cooking equipment manufacturers are going to have to be open to linking the critical processes of their equipment – time and temperature – to a neutral traceability framework that "will probably be operated through an open Blockchain ledger so that the compliance can really be traced from farm to fork by all those involved in the process," says Smallwood.



HACCP, he feels, has yet to be properly understood and implemented by equipment manufacturers who can get accreditation for their equipment – "whatever that actually means" – without their critical control points in the process being visible to an external system. That "will have the equipment of other, competing manufacturers also visible. That's the blockage to full, effective HACCP traceability."

Above: A Vulcan fryer interface. Touchpoints are to be looked at in the current climate

Ventilation

Wagner calls ventilation the most important part of the equation designed to prevent employees and guests from getting infected from aerosols. "A proper ventilation system is the second-best way, after wearing a mask, to shield kitchens or buffets from aerosols. Fresh, cleaned air is not only good for chefs, it is also taking out particles, bacteria, viruses, germs. Fire suppression is important, as always."

Regulation, Wagner emphasizes, has had and will continue to have "a deep impact," citing as the best examples the wood-fired pizza oven or charcoal grill. "I cannot remember a wood-fired pizza oven in a restaurant in Italy within the >

The manufacturer's view: Dan Montgomery, senior manager, consultant services, Vulcan

The pandemic has caused a reduction in the menu offering, meaning scaling back the number of employees per shift, plus the amount of ingredients needed.

Operators are seeking equipment that is easy to clean/sanitize, easy to use and with an awareness of touchpoints with handles, controls, etc. It's also resulted in a wider exploration of ghost kitchens and commissary kitchens, while, many operators in various segments have been evaluating or deploying cook/chill/retherm processes to simplify operations, contain food cost, and address handling concerns.

It has meant more menu items that consist of pre-cooked, individually-wrapped single servings; an avoidance of menu items or ingredients with short shelf-life and an emphasis on reduction of food waste. Carry-out has become a profit focus and, along with outdoor dining, the salvation for some operators. Many operators will adjust cooking processes and handling to accommodate carry-out containers, safety considerations, and evolved customer expectations. Quality retention in carry-out is often an issue, especially for full-menu operators. Equipment that supports menu versatility and cooking method variation is a plus.

Some new operations are investigating the feasibility and revenue producing potential of carry-out only concepts. Many B&I operations continue to address carry-out options along with shut-down, start-up contingencies for in-house dining.

With winter approaching, outdoor dining options diminish. Cooking and serving safely, efficiently, and effectively (and profitably) will require a new level of creativity. Profitable winter menu items that can also be packaged for carry out and retain quality will be important (as will the cooking methods and equipment).

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Above: Wood Stone expects the demand for connected equipment to grow

last few years. In some countries the regulation about heat recovery from ventilations in kitchens had a deep impact on ventilation design."

In Whitehouse's view, ventilation is potentially a contributing factor to the spread of Covid-19. "On the other hand, most foodservice kitchens don't have internal air conditioning; rather, they use make-up air from outside to replace the air that the ventilation system pumps out." The impact of social distancing on ventilation and fire suppression has been limited, he feels. "Obviously, the key with both is the safety of people in the building – compliance with current legislation is the essential here."

According to Bartlett: "The common knowledge among the epidemiologists and the medical/scientific community is that more outside air is better. In the kitchen we already knew that. My favorite is Captive Air's PSP plenum with demand-control ventilation." With regard to fire suppression, he adds: "Nothing new under the sun. Everyone just trying to keep their nose above water."

Smallwood foresees that it is the ventilation of the kitchen rather than the cooking exhaust that will be the only change ahead, with UV-C sterilization being used in the air-handling equipment to sterilize the exhaust air from the kitchen before it goes into the HVAC system. "Halton is doing good work on this. Ventless cooking systems will certainly be required to use UV-C to 'treat' the air before it is returned to the space as a consequence of Covid and, in reality, all such viruses."

Smallwood confesses that he had "always thought that gas for cooking would be phased out and electricity be the sole primary energy source. I've battled chefs over this for over a decade at conferences. It becomes a useful debating point. Gas is a non-renewable resource; electricity can be renewable, as well as cleaner and cheaper."

"In our world of projects, we see ventless technology being the biggest game changer," says Stephen Young FCSI, managing member and executive principal of Young Caruso in Denver, Colorado, US. "Followed by smart equipment that can be monitored from remote locations, followed by mobile app ordering and touchless point-of-sale systems in the retail environments."

According to Young, social distancing for ventilation is high on the priority list, as good ventilation in both the front and back of house will mitigate the virus transfer via airborne conditions. Ventless technology will continue to advance, with >

The manufacturer's view: Kirk Goss, VP consultant relations, Welbilt

The post-pandemic foodservice environment for operators has considerably altered the way that both the FSR and QSR channels need to operate in order to provide increased and seamless access to their products in an ever-changing world of consumer expectations.

The list of challenges continues to stack up with mandated closures to the dining room, or at best, limited seating to ensure social distancing. Additional back of house workflow modifications in equipment and layout that aid in curbside pick-up, drive thru and increased third party delivery engagements are challenges all segments are now forced to manage while trying to maintain a targeted end-user experience currently executed by a reduced labor force.

Therefore, operators should utilize their equipment choices and leverage as much as they can from connected, smart appliances. These smart appliances not only help monitor equipment for food safety and potential service needs, but also provide realized savings in reduced food loss through automated communication throughout the kitchen. The automated communication functionality also aids in managing the number of tasks the reduced labor force will have to oversee.

A fully connected kitchen has been a hot topic in this industry for several decades; however, its reality has slowly been becoming a commercially viable option within the past five years due to rapidly increasing labor costs and the more recent evolution in 3G/5G network technology. It's Welbilt's view that Covid-19 has only quickened the pace.

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new cooling technologies to mitigate radiant-heat conditions that make these systems less desirable in many cases.

"Additionally, ventless technology allows for display cooking and finishing that we believe most guests will appreciate in the post-Covid world."

Still to this day, Young says, ventless technology "requires manufacturers to get involved with many local approval agencies. Ventless technology should be universally accepted."

2021 and beyond

So, what of the future?

"It's more connectivity, a stronger, more intuitive interface between equipment and operators," Whitehouse predicts. "More automation of cooking technology, including more touch-free controls. More ergonomic design in the kitchen." The "circular economy" is going to be more important, too. "We're already seeing a new approach to equipment specifying, where its efficiency in terms of consumables, operation and end-of-life recycling are all taken into account."

Looking ahead again, Whitehouse suggests that energy efficiency is "right up there in terms of what's exciting." The adaption of technologies from other industries he sees as "particularly fascinating – such as the latest designs in airflow around refrigerated cabinets, some of which are based on air-movement technology developed in motor racing. Another area in refrigeration that's creating buzz is the increasing effectiveness of temperature control and air management, leading to longer shelf lives for some foods."

On the cooking front, Whitehouse continues, there is the variety of combinations of different heat sources, "creating advanced appliances that deliver both quality and speed." In warewashing, he notes, there are "lots of advances in saving resources and improving hygiene. Smart technology and connectivity are having big impacts."

Wagner says he does not believe that cooking technology will change dramatically over the next five years or so, though he would like to see dishwashing evolve. "Water and energy are very important recourses. Reducing chemicals and energy for heating will get better, I hope." The biggest changes in kitchen operation that the industry will see, he predicts, will be in hotels or canteens. "The restaurants that will survive the crisis will need to be sustainable, efficient and very good in the quality of the things they are offering."

Spiegel sees architects and designers rethinking ventilation using different metrics. "It's no longer about make-up air and calibration with exhaust systems. Open windows, outdoor seating, curbside seating, multi-level cooking spaces, ingress, egress and even restrooms will create complicated variables for engineers to figure out." The use of ventless equipment, which has been growing in food halls, ghost kitchens and transportation hubs will, she predicts, be "the 'go-to' solution for many of these new post-Covid challenges."

Cooking and packaging technology should enable an operator to produce more food safely and with less staff in the future. Kitchens, Spiegel foresees, will be thought of as manufacturing plants "as well as simply a chef's playground." Sous vide, which she labels "an old technique," will be brought back in a new, high-volume process "so fewer chefs need to be in the kitchen at one time."

Operators will also come to rely more on outsourcing much of the prep to cut back on in-house labor, Spiegel adds. Sensitive temperature-controlled environments – both hot and cold, on the lines and in coolers – will insure quality "and alert the chefs, through RFID, of any product being compromised."

Says Young, "We believe that open/visible kitchens will be the near-future trend, as guests not only want to feel safe in the dining room but want to know that their food is being prepared safely with structured and responsible chefs and cooks." What he terms the "more pleasing" areas of the back-of-house will emerge to the front-of-house view. "A push for great-looking and great-performing equipment technology will be a must in the near future."

Young and his colleagues feel that, pre-Covid, "great protocols were in place already for safe food handling, safe employee conditions and safe guest meal handling." Movement to provide front-of-house solutions to help the guest feel safe and entertained "will have the biggest immediate impact on the industry." ■

Below: Braising pan from Vulcan. Its clients want easy-to-clean equipment to facilitate take-out options

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Thermodyne Dual-purpose

Thermodyne dual-purpose units allows users to automate the cooking and refrigeration processes.

With **Thermodyne's** 700DP and 1500DP, it is possible to refrigerate, automatically reheat and hold prepared foods, with no food service attendant required. Units can easily switch from one function to the other with a simple to operate control interface.

Scheduling flexibility allows these units to be custom programmed for different mealtimes for every day of the week. Automated meal programming is available, which makes it the perfect solution for nearly any restaurant or food service operation.

- **Units can keep food cold until time to reheat or cook. All of which can be done without staff being present.**
- **Smart Controller allows for "recipes" to be programmed for operation and then simply selected to initiate.**
- **Allows for multiple "recipes" / dayparts which are easy to program and update as menu items change.**

EPA 202 Approved

Additionally, every Thermodyne model is EPA 202 approved meaning it does not need to be placed under a hood system when used for cooking. EPA 202 testing determined that Thermodyne units are in compliance with Section 59 of UL710B, the standard for re-circulating systems. With no visible smoke or grease-laden effluents collected, Thermodyne units can safely be used without the need for a kitchen exhaust hood. Without the need for an overhead commercial kitchen exhaust system, Thermodyne users can save valuable kitchen space by moving units out of the exhaust area.

Scenario for keeping food chilled and then reheating with

Thermodyne Dual-purpose units:

The following scenario illustrates how Thermodyne dual-purpose units allow restaurants to automate the cooking and refrigeration process, saving valuable time and money.

Close of Business: Pre-cooked foods, which come out of the cooler, can be placed in a Thermodyne dual-purpose (DP) unit which would operate like a refrigerator.

Based on the “recipe,” the food in the DP would stay at refrigerated temperature until a preset time when the unit would change from a refrigerator to a reheating/rethermalizing oven.

Based on the “recipe," by amount of time or by temperature probe, the DP would turn down the internal temperature to the preset holding temperature to keep food warm until serving.

10PM: Restaurant closes, food is prepped for breakfast and placed in the DP at an operating temperature of 34°F.

The restaurant knows it takes about 1.5 hours to reheat the food, which is currently being held at 34°F, and their breakfast starts at 6 AM.

4:15 AM: The Smart Controller in the DP unit automatically changes the operation temperature from 34°F and increases it to 230°F to reheat the food. The DP will keep the operating temperature at 230°F for 1 hour.

5:15 AM: The Smart Controller in the DP automatically lowers the temperature from 230°F to 200°F and it will stay at this temperature for the next 30 minutes.

5:45 AM: The Smart Controller in the DP automatically lowers the temperature from 200°F down to the holding temperature 165°F.

700DP

What does this mean for the restaurant?

With DP unit automatically performing all these functions without direct/present interaction from the staff, it frees up the staff to:

A. Come in later because they do not need to place food from the cooler into a reheating cabinet manually (labor savings).

B. Allows for the staff to perform other functions, such as cleaning and disinfecting surfaces for the day.

Once the product is at the hold temperature at 5:45 AM, the staff will start the hold timer which is built into the DP’s Smart Controller, so that they know when to switch over to lunch. As an alternative, once the product is at the hold stage for breakfast, the staff can move it from the DP unit to another holding system (such as one of Thermodyne’s hot food wells). Press the lunch day part and the program for reheating food served for lunch. At this time the DP resets its temperature automatically to 34°F and the process of keeping food chilled, reheating, and holding begins again.