



KEEP COOL AND CARRY ON

HOW PIONEERING EQUIPMENT IS RESHAPING REFRIGERATION
AND COLD-SIDE INNOVATION IN FOODSERVICE'S NEW NORMAL



HOSHIZAKI

The right ice
makes the perfect

Mixed Drink

Feel the Flavour

1 oz fresh lemon juice
1 oz fresh mango juice
1/2 oz French Amaro
2 oz Manzanilla sherry

Add ice to container and roll to chill and combine. Pour over sphere ice in a tall glass. Top with soda water for effervescence and stir to incorporate. Garnish with a sprig of mint and straw. Enjoy!

-Jenner Cormier, Bar Kismet

Contact your local
distributor for Hoshizaki
sphere ice machines.

hoshizakiamerica.com



WELCOME

Covid-19 and a focus on food safety means more refrigeration innovation

The global Covid-19 pandemic has triggered many considerably far-reaching reactions across the foodservice industry, not least the necessity for a laser-like focus on ramping up hygiene and food safety standards. These standards were, frankly, already pretty high across the board, but now must be more stringent than ever before in order to meet consumer confidence.

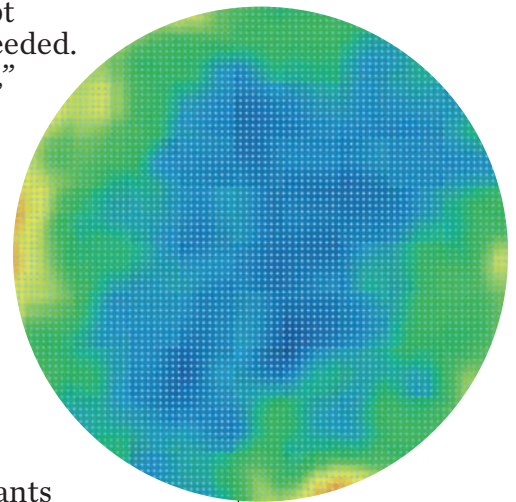
Effective and efficient cold storage therefore has become an increasingly hot-button issue. With operators already reeling from a debilitating lockdown of the hospitality sector and having to reduce the amount of covers within restaurants in order to meet social distancing guidelines, capacity and demand issues for cold-side equipment will continue to have an impact upon an already pressured bottom line.

“Food safety and effective storage have always been a need, but now there is a greater driver in terms of being able to adapt to covers and fluctuate refrigeration – being ‘on’ only when needed. A compact footprint whilst maximizing capacity is invaluable,” says foodservice consultant Roz Burgess FCSI, director at UK consultancy Intelligent Catering.

Denis Livchak, senior engineer at Frontier Energy in the US concurs. “As restaurants get less business, they are buying less food product and have the opportunity to consolidate their refrigeration space and turn off certain units.”

There is no greater opportunity therefore for the industry to look closely at energy consumption and cost-efficiency in refrigeration equipment during this exceptionally testing period. While revenues continue to be suppressed, operators will need all the help they can get from forward-thinking manufacturers and the foodservice consultants who design commercial kitchens and specify the equipment used within them.

New opportunities for more energy efficient equipment, increased industry-wide regulation and improving the levels of communication between major stakeholders are all explored within the pages of this special *Cold-side Technology* supplement. We talk to experienced foodservice consultants and equipment technology experts about what is on the horizon for cold-side and why this is the right time for the industry to ensure it is future-fit for the point when the industry transitions fully out of recovery mode. Enjoy the read.



Words: Jim Banks, Michael Jones

Further information: fcsi.org

Produced by
Progressive Content
progressivecontent.com

COLD-SIDE TECHNOLOGY

Covid, compliance and the cold-side: the complex nature of innovation

There is a constant and endless cycle of innovation in cold-side technology driven by the need for efficiency and performance. Now, the Covid-19 pandemic is another catalyst for development, not least because of the changing regulatory environment and the focus on public health. Jim Banks examines the newest developments and how the direction of innovation may change

Few would argue that, of all industries, foodservice is among those feeling the biggest impact from Covid-19.

With social distancing measures in many regions, constant changes in the response to risks and, crucially, a heightened sense of caution among customers. At such a time, investment in technology may not be a top priority, but it soon will be.

Innovation is a constant process, but global events such as the Covid-19 pandemic inevitably accelerate it. New challenges bring new opportunities, and with cold-side equipment being so vital for the safety of customers and the quality of service, it will undoubtedly adapt as a new normal emerges.

The consequences of Covid-19 have been dramatic for the foodservice sector. The short-term priority has been to support hotels, restaurants, cafés and bars to ensure that business can return when normal business resumes. The long-term effects, however, will include a lasting change in focus in the development of new technologies, processes and procedures.

“This one is a little trickier than just keeping the food cold,” says consultant Brett Daniel FCSI of US consultancy Camacho. “They’ve made that hurdle already for the most part. The question now is, how do you get food into the customer’s hand with minimal interaction and without them touching anything but their intended purchase.”

“Air screen refrigeration helps with some of that but doesn’t stop someone touching everything else in the refrigerator,” he adds. “Integration of an app with the refrigerated device that allows the customer to purchase and then activate a refrigerated compartment with a single item in it could also be a solution. Automatic doors, or antimicrobial handles can also help limit the spread on frequently touched surfaces.”

The industry will have to be

constantly vigilant when it comes to public health, whether it is global incidents such as Covid-19 or more localised health issues. Alongside food safety, there is also a need to focus on energy consumption and cost-efficiency at a time when revenues are suppressed.

“Food safety and effective storage have always been a need, but now there is a greater driver in terms of being able to adapt to covers and fluctuate refrigeration – being ‘on’ only when needed,” says Roz Burgess FCSI, director at UK consultancy Intelligent Catering. “This is a new aspect, as many operators will only have ever had all refrigeration on. Now there is the need to balance refrigeration on to demand.”

“As restaurants get less business, they are buying less food product and have the opportunity to consolidate their refrigeration space and turn off certain units,” says Denis Livchak, senior engineer at Frontier Energy in the US. “However, I do not think that is being done. As more restaurants close because of the pandemic, the market is becoming flooded with used equipment.”

Technology adapts

The focus on safety is not new, but it does serve to increase the impetus behind innovation that pursues the traditional goals of equipment on the cold side, among them efficiency, durability, flexibility and high-performance.

Blast chillers, walk-in coolers, refrigerators and freezers are vital in maintaining the quality of food, but they potentially incur high costs in terms of energy consumption. Energy efficiency remains a prime factor in their incremental development, but now, more than ever, it must go hand-in-hand with

The manufacturer’s view: John Benner, director of sales & national accounts Thermodyne Foodservice Products, Inc

The need for social distancing in kitchens has required operators to limit the amount of staff in a defined area. Using equipment that can multifunction via smart technologies to keep food cool, cold, frozen, or even hot and move between these various temperature ranges without direct interaction from staff, helps to increase the available space for proper social distancing as well as reduce overall labor costs.

The biggest shift I’ve noticed in terms of the way cold-side technology evolves in a post-Covid environment is the renewed effort to properly monitor the safe temperature of food, whether that is keeping food hot or cold. Moving into the post-pandemic environment, I see continued effort being made to monitor temperatures automatically or remotely without the need of direct contact with the food product, such as through our Thermodyne Smart Controller.



Left: Thermodyne products help operators keep food at a safe temperature

improvements in performance.

“A compact footprint while maximizing capacity is invaluable,” says Burgess. “This enables inclusion within the available space whilst minimizing required area. They need to be able to adapt to site design and, indeed, the ability of the menu and chef to adapt throughout the week and seasonally.

“Therefore, units that can change from chiller to freezer to blast chiller certainly tick all the boxes,” she adds. “This type of innovation also ticks the energy efficiency box. At present, there is not a single project in which I am involved that is not being evaluated, with energy rather than capital cost being a driver.”

That search for flexibility is also behind the growing popularity of cook and chill units. Indeed, there is a growing number of blast chiller models that will also do low temperature cooking.

Cost has always been a defining factor in the drive for energy efficiency and, at a time when some foodservice businesses are struggling to survive, its importance has grown. However, it is no longer sufficient to say that a chiller or freezer is efficient or that it meets an independent standard. Operators want to know in detail how a particular model operates in terms of energy use and, ultimately, cost.

At the same time, operators want not only convenience and flexibility, but also the ability to integrate any piece of cold-side equipment with the other equipment in their kitchens to have a holistic view of their costs, maintenance requirements and levels of performance.

“Equipment must be driven forward and energy information must be shown along with maintenance requirements,” Burgess says. “Ease of access to the units to enable regular checks and preventative maintenance will also aid the operators. However, combining a complete package with connectivity and remote temperature checks and identification of what might need to be maintained next at an affordable cost and for ease of installation and integration would



Above: LTI has developed options to retrofit self-service equipment

develop the refrigeration game further.”

However, despite the powerful push to adapt technology for a future that will be not only more energy-efficient, but also dominated by enhanced scrutiny on public health issues, the process of cold-side innovation continues to happen at a relatively slow pace.

“The industry is still slowly adapting to the latest natural refrigeration advancements,” notes Livchak. “Over the past three years, small refrigeration equipment has become more popular and efficient with R290 refrigerant. Ice machines have been stuck between low-refrigerant and high-refrigerant volume systems and are now starting to transition to a more environmentally friendly refrigerant – from R404 to R410, which was adopted by the AC industry a while ago.”

“As the energy consumption of standard refrigeration equipment has gotten lower, some manufacturers are looking at preventative maintenance savings,” he adds. “There is one manufacturer that offers automatic coil cleaning, which shows promise.”

Alongside operational costs, operators are hungry for any feature that can reduce maintenance costs. On board diagnostics have become a more common feature across many refrigeration categories, with even relatively low-cost >

The manufacturer's view: Chance Hunt, product manager, LTI

The most significant Covid-19-related concern we're seeing among LTI customers is related to self-service options like salad bars. There's currently a lack of guidelines or regulations on using this equipment, though many industry associations recommend doing away with self-service options for the time being. To help foodservice providers address the safety concerns of shared utensils or close spacing, LTI has developed some options for retrofitting this kind of equipment. Self-service counters can be easily converted to full-service or to grab-and-go or convenience store-like setups. These add-on options allow the equipment to still be useful for serving in today's environment with minimal cost for parts. We are receiving requests for barriers to be added to separate customers from clerks and other workers and for protector or shield options to convert a countertop from self-service to full-service.

With regards to how technology will evolve in a post-Covid environment, I expect to see more options for touchless operation, robotics, improved sanitation, increased third party delivery/pick up, new packaging for foods to support the increase in delivery, and higher awareness of food temperature recording requirements in the future. We have already seen a salad-making robot in the market, and we are looking forward to see what is next. All of this could add up to a vastly different looking foodservice environment in the next five years.

Scotsman

PRODIGY PLUS MODULAR ICE MACHINES

Scotsman's Prodigy Plus Modular Ice Machines include a wide array of sanitation and maintenance features to keep your operation running smoothly.



AUTOALERT™ INDICATOR LIGHTS

Easily visible LED lights provide key information without the need to touch / remove panels.



ANTIMICROBIAL PROTECTION

Built-in AgION® components help inhibit the growth of microbes, bacteria, mold and algae.



ONE-TOUCH CLEANING

Our Prodigy Plus Cuber one-touch cleaning system makes preventative maintenance simple and efficient.



FRONT-LOCATED AIR FILTER

Ensures visibility and ease of cleaning. Allows breathability for maximum energy efficiency.



For unit specifications and other brand information, scan the QR code to visit the Scotsman Sales App

models incorporating some kinds of error reporting and diagnostic logging.

“Smart defrost still has a lot of savings potential with walk-in freezers, although it is still not widely adopted except for some high-end systems,” Livchak says.

Hi-tech versus low-tech

While it is true that operators want more specific information on performance, efficiency and cost, this does not imply a disregard for independent standards. In fact, those standards serve as a fundamental benchmark for operators and equipment manufacturers alike, defining key parameters and setting benchmarks for regulatory compliance.

“I think most customers are trying to specify ENERGY STAR equipment and some US states are even trying to make it mandatory,” notes Livchak. “However, not all customers know that ENERGY STAR goes through different update versions and the goal is only to label the top performing 30%. I think, however, that there are still lots of refrigeration categories that have not really been characterized for energy efficiency.”

Ecodesign is still a buzzword for cold-side equipment and it is particularly important in smaller refrigeration units. The energy contradiction with refrigeration is that it is more efficient to cool down a larger space per cubic foot than a smaller space so a walk-in cooler is far more efficient than having several reach-in coolers. Yet this would make refrigeration less accessible and less flexible in terms of positioning.

“A lot of non-US manufacturers are flooding the market with inexpensive reach-in refrigerators that are listed as energy efficient, but their long-term reliability is yet unknown,” says Livchak.

One advance that may change the game is the emergence of solid-state thermoelectric coolers. Their advantage over traditional compressors is that they have no moving parts and, consequently, require little or no maintenance. The technology is out there in the market but

has, so far, not been widely adopted, and simpler tweaks or procedural changes are more within reach.

“There is a holding cabinet manufacturer that makes a solid-state cooling element,” says Livchak. “Variable speed compressors are getting smaller, but they are still not small enough to get beyond walk-in coolers and freezers. Refrigeration in foodservice is still old school. Low-tech improvements such as adding doors or improving insulation can have much more significant energy impacts than some newer technologies.”

“Another trend in refrigeration is for more customized solutions or having refrigeration closer to your other processes to minimize walking to the other end of the kitchen,” he adds. “Chef bases are a great example.”

Changing rules

Whatever factors operators and manufacturers may prioritize, the agenda for technology development will likely be determined by one group above all others – regulators. Their priorities certainly overlap – with regulations focusing on energy efficiency, environmental impact and safety – though compliance requirements can be a burden.

“I think most advances in commercial foodservice refrigerant technology lately have been in response to regulation,” says Livchak. “The US Department of Energy’s 2018 mandatory energy regulations and the Environmental Protection Agency’s (EPA) refrigeration global warming potential (GWP) regulations have pushed the industry to unwillingly make changes to refrigeration designs.”

The EPA had moved to de-list R-134a and R-404a – the most common refrigerants – in 2020, only to have its authority under the Clean Air Act successfully challenged



The manufacturer’s view: Hailey Elting, business development manager, Traulsen

The pandemic has affected operators in a couple of different ways depending on the market they serve. For example, in the education arena, as students moved to remote learning, higher education facilities as well as some K-12, districts began to limit or completely close down their food distribution sites. In these instances, the issue at hand was proper shut down practices for refrigeration units. In other circumstances, as many people experienced employment lay offs and furloughs, operators were tasked to bring in more food for distribution at community food pantries. These sites required more refrigerated food storage equipment.

As the country begins to open back up, operators are looking for ways to safely store food while also keeping increased sanitation efforts at the forefront of their operation. Easy-to-clean components and materials, foot pedals for hands free door opening, and glass doors with LED lighting allowing increased visibility into refrigeration cabinets will help promote these sanitation efforts by reducing the number of touches on frequent contact surfaces. Longer term, we will see an increased focus on remote communication capabilities, self-diagnostic features, and features that reduce the need for regular preventative maintenance.

Left: Traulsen is developing ways to reduce the touches on frequent contact surfaces



THE KING OF COOL

GLYCOL PREP TABLE



24-HOUR PERFORMANCE



NO FROST BUILD UP, NO DEFROST



FAR EXCEEDS NSF7 REQUIREMENTS

Keeping food product safely cool and kitchens under control is no small task. Using a steady flow of glycol coursing through anodized chiller plates, Traulsen Glycol Prep Tables maintain consistent temperatures for 24 hours with the lid open, even in extreme kitchen environments



2 & 3 Row Pan Rail Models Available



traulsen.com

| Traulsen © All Rights Reserved



The manufacturer's view: Sally Ray, director of marketing, Hoshizaki America

The majority of refrigeration needs remain the same for QSRs that are operating similarly to pre-Covid-19 times (and in some cases have seen increased sales); however, for many other foodservice operations there have been a few noticeable changes. The food supply chain has had some challenges requiring some operators to stock up on meats and other items, which requires additional freezer storage. Pre-packaged beverages and grab 'n' go items require more refrigeration space than dispensed beverages, which in many cases are not operating right now. According to a recent poll, glass door refrigerated merchandisers were the number one additional item needed during the pandemic in the convenience store market. There is also a renewed focus on refrigeration in the healthcare market for storage of vaccines and other medicines.

There is a growing market of Internet of Things (IoT) solutions for refrigeration products that may help monitor temperatures, running times, compressor/evaporator cleaning, and inventory levels. Any solutions that allow more touchless/hands-free operation will continue to evolve. Currently, foot pedals, infrared sensors, anti-microbial labels and/or parts, help provide less contact with equipment which helps eliminate cross-contamination. We will see more of these types of solutions in the near future. There are also new technologies for refrigeration systems, such as thermoelectric coolers using semi-conductors, but although they run more smoothly with no moving parts, they are 30-45% less efficient than traditional compression/cycle system. With the US Department of Energy regularly requiring more efficient refrigeration products, our focus is on making continuous improvements for overall savings and increased food safety.



Above: Hoshizaki is working to improve its machines' efficiency

in federal court. The intended move was due to the high GWP of the refrigerants and, though initially unsuccessful, it was a clear signal of intent about the direction of travel for regulation. Indeed, some US states have independently adopted the EPA standards.

Taking the hint, the industry has made efforts to recertify equipment with alternatives – R-448 and R-449 – which could result in higher equipment costs. Similarly, the requirement in some states for outdoor walk-in coolers and freezers to be classified as industrialized building systems incurs a cost. Furthermore, trends in the US tend to inform or be aligned with global standards over time.

“The most significant change is probably in refrigerant regulations, which has required all manufacturers to reengineer their systems to work under those guidelines while maintaining the required energy efficiencies. That is not a simple task,” says Daniel.

“The EPA was driving that change,” he adds. “Some manufacturers had to abandon items in their regular catalog because they couldn’t engineer the systems to meet the efficiency with the new refrigerant. Nevertheless, I think that regardless of what new rules and regulations that are coming down the pike, we adapt and overcome naturally.”

Globally, the trend is towards ‘green’ refrigerants, particularly in regard to GWP, which will put the onus on manufacturers and consultants to keep

pace with standards as they evolve.

“These regulations have left voluntary standards like ENERGY STAR very little room for improvement,” adds Livchak. “Now, regulation will focus on less common refrigeration categories and will try to tackle medium-sized refrigeration systems, which are too big for flammable R290 refrigerants and are too small for controlled ammonia or CO2 systems.”

It remains to be seen whether environmental health regulations influenced by Covid-19 will also have an impact on refrigeration, but there will certainly be a need for manufacturers to provide – and consultants and their customers to absorb – much more information about compliance issues, performance criteria and cost profiles.

“There’s a need for more information regarding energy consumption, heat emissions, noise levels, chill down/cool down times,” says Burgess. “It’s incredible how little information many manufacturers have about their products and there is, with some, a greenwash.

“Versatility of equipment will become more the expectation, along with ease of refrigeration unit close down – with the ease of cleaning seals, evaporators, runners and rails very important,” she continues. “So, too, is knowing the cost for ‘cool’ down when bringing equipment back online, which will allow operators to adapt to fluctuating trade levels.”

Daniel agrees that the future will be defined by choice, as operators want to be able to adapt to changing circumstances.

“I think flexibility is going to be the trending thing in the next five years,” he says. “If this pandemic has taught us anything, it should be an incessant need to be flexible on a daily basis because you just don’t know what the following day is going to require you to do.”

Knowledge is key and, like the procedural changes made in hospitality and foodservice due to Covid-19, technological innovation must go hand-in-hand with better communication between all stakeholders. ■

INTRODUCING EXPRESSLINE BY LTI

A FAST AND SAFE WAY TO SERVE DURING THE BUSIEST MEAL RUSH.

LTI's ExpressLine serving counters are built for safety and speed. Instead of hot wells and cold pans, the new dual-temp ExpressLine Compact series has heated and refrigerated bays side by side – great for serving individually wrapped or pre-packaged meals and sides. These counter modules are ideal for serving patrons during the busiest meal rush. Units are easily transportable so delivering meals to where customers are is a breeze.

Contact LTI today to find a serving solution for you at (888) 584-2722 or learn more at lowtempind.com/expresslines



LOWTEMPIND.COM
(888) 584-2722

ExpressLine