

FCSI WHITEPAPERS



**Advantages
and
limitations
of ventless
(ductless)
technology**

Ductless, or ventless, technology refers to cooking equipment that is fully self-contained and does not need overhead hoods. It can also refer to free-standing hoods that can be used in pop-up and mobile applications, or where the opportunity for traditional ventilation is limited. But where are the opportunities in this segment and how will the technology evolve?

INTRODUCTION

Ductless systems use a series of internal filters that “scrub” cooking particulate and vapors to remove grease and odors before releasing it into space, according to Andrey Livchak, director of Global R&D for Halton Group, a maker of traditional and ductless ventilation systems. Livchak was speaking at FCSI’s consultant roundtable: ‘Advantages and limitations of ventless solutions’ in summer 2021.

Typically, ductless systems are limited to electric appliances. They are commonly used in non-traditional or non-kitchen spaces like convention halls, concessions and other areas or wide open spaces where there is limited access to permanent hood fixtures. Ventless pieces are also useful in high-rise and/or older buildings that pose structural challenges for safely venting cooking vapors to the outdoors.

THE EVOLUTION OF DUCTLESS

The range of both ventless cooking appliances and hood systems has grown significantly over the years, and now includes everything from ventless combi-ovens to rapid-cook ovens, steamers and more. The range of ventless hood products has also expanded to include mobile recirculating stations, countertop ventless hoods and fuller-scale, ventless exhaust hoods. However, the need for continued education about these products and their potential applications continues.

“Most of the clients I work with have seen ventless solutions, but I’m not always sure that they completely understand them,” said Laura Lentz FCSI, design principal, Culinary Advisors, LLC, as part of the same roundtable. “[Ductless hoods] are more complicated pieces that may or may not include fire suppression systems and have filters that need to be maintained. There is definitely an educational piece where consultants need to assist with the goal of making sure that they are the right solution for the client.”

Still, Lentz says, ventless cooking “is definitely on the radar” for increasing numbers of her clients because they can solve major issues in terms of kitchen design.



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Laura Lentz FCSI

The range of ventless cooking appliances has grown significantly

Ductless equipment is helpful in high-rise buildings or in certain locations where external venting using traditional ductwork can be challenging. Lentz has relied on ventless solutions for government and/or historical buildings where there are many regulations about how and where traditional venting can happen — if at all. And, as kitchens become more mobile, or as operators look to change up menus or concepts more frequently — especially in the wake of Covid — ventless can offer a wider range of solutions to meet needs.

What first took a slow road to develop in the 1990s has “seen a significant rise in popularity in the last few years and this is based on the advancement of technology, Edward Arons FCSI, partner/managing director, Colburn Guyette, said during the roundtable. “The increased effectiveness of the filter systems in the amount of ventless equipment that is now available has been a game changer. Throughout the evolution of healthier menus and in the push to more electric kitchens, the demand for ventless technology grows. Anything that offers flexible and sustainable options are desired.”



While ventless technology is not necessarily energy-reducing in and of itself, it can contribute to a more efficient kitchen over the long run. “It depends on the country or region, but when it comes to ventless, most of the equipment that you’re actually using to cook with is electric, and we’re finding these days that electrical equipment is far more efficient than gas,” said Andrew Brain FCSI, director, MTD Hospitality Consulting and co-director, Foodservice Consultants Australia, during the roundtable.

“The second efficiency is that [with ventless], you’re not extracting air that has been chilled or heated within a room. Traditional, fully ducted systems need to have make up air, and in most cases, they’re tempered. In a ventless system, you don’t necessarily extract that heated or chilled air from the room,” says Brain.

“It’s important to understand that ductless systems do not remove heat from cooking appliances. They release cleaned air back into kitchen spaces. Additional cooling may be required if an existing ventilation system doesn’t have enough cooling capacity to compensate for the heat gain from the cooking process,” says Livchak.

There are many considerations to take when selecting ventless equipment, starting with the menu. “Can you handle it using a ventless system? How robust does the exhaust system need to be?” says Arons. “These days, there is everything from a countertop ductless hood for a panini press to an 8ft, full ductless exhaust system

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Ventless technology can contribute towards a more energy-efficient kitchen across the long term

with its own fire suppression built in. There are also systems that allow you to have the filter system remotely located in another room, which is useful if you don't have the height in a space. There are a lot more options than there were years ago and now that there's a push for better total building ventilation and air quality, I think all of this will start to tie in together."

THE ADVANTAGES OF VENTLESS

In today's climate, with a shrunken foodservice workforce, ventless technology can help with the lack of skilled labor. "When it's paired with smart cooking technology, menu-driven automation and commissary-style distribution methods, ventless can certainly help with labor," Robert Doland FCSI, principal, Jacobs Doland Beer, said during the roundtable. These pre-programmable solutions also feature a range of alerts and signals to help better manage airflow and meet regulations.

Ventless solutions are also helpful in rented, less permanent spaces, says Edward Bircham FCSI, director, Humble Arnold Associates, based in the UK. "Because, where you have a compartmented space, and I'm thinking specifically where you might have a tenanted location, you have got to work within an area where you're not needing to penetrate the entire landlord spaces and have fire rated elements that work elsewhere. [Ventless] can create a very dedicated independent zone within an area. It's something for us to think about in the future."

Ventless solutions can in some circumstances cut overall kitchen costs because they reduce the need for regular ductwork cleaning, FCSI Associate Mildred Famero, design consultant at Eminent Foodservice Design Consultancy Pte Ltd, based in the Philippines, said at the roundtable. Although, she points out, that ventless systems still need have regular filter changes. Still, some advanced pieces will alert the operator through alarms or by shutting off completely when it's time to change the filter.

A newer advantage of ventless systems is the ability to install pop-up kitchens or add hospitality to retail or office environments that weren't originally built to house a permanent kitchen. "I'm seeing more operators look at spaces that were previously not going to work for them," says Bircham. "It's a really pivotal time for everyone at the moment, especially for landlords. I think they will be looking for every opportunity to try to open up the breadth of clients that would want to take those retail spaces."

On the flipside, using ventless to create kitchens in what would otherwise be deemed retail or office space or even in "dead" spaces can help operators build new avenues of food & beverage revenue. "This definitely helps with the return on investment when it comes to ventless," according to Lenz, who notes that ventless can also help operators have more flexibility. "One of the big trends we're seeing in foodservice is how quickly concepts can be able to change and develop," she says. "A mobile or ventless solution can be great for just giving [operators] that flexibility without the need to install a full ventilation system. This is also a great solution especially if you're looking at a couple years at the most for a concept."

The flexibility, modularity and sustainability of a ventless solution will continue to be important for operators, especially in a post-Covid environment where menus



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Ventless systems offer the ability to install pop-up kitchens or add hospitality to retail or office environments

and kitchens might need to adapt to quick changes or new regulations. Ventless hood solutions can also supplement more permanent kitchens by accommodating the installation of small, flexible cooking pieces for pop-up concepts and rotating or special menus.

Menus also continue to change as consumers seek out healthier, more plant-based offerings, and this is having an impact on the growth of ventless hood solutions. “I think as the types of foods that we produce become less and less based on animal fats and oils, that helps cut down on the grease present in that menu, and that’s really the thing that literally gums up the works in ventilation,” says Doland, who notes that when heavy animal fat cooking is used in combination with any type of exhaust – ventless or not – it can cause filters and ductwork to need to be replaced or maintained more regularly.

“I need to emphasise that you need to properly maintain ductless systems. Because it contains filters it wouldn’t function [sufficiently], if it’s not properly maintained,” says Livchak.

OVERCOMING MISCONCEPTIONS

The continued growth of ventless will rely on consultants educating clients, but also on educating regulating bodies. A pervasive “myth” about the technology is that it’s not powerful enough to meet standards for air quality in certain areas.

“I think it’s our responsibility to educate ourselves and understand the codes and limitations that are out there. We’re up against mechanical engineers, or local authorities who are questioning the suggestions or options that we put forward, especially in situations where there may not necessarily be adequate space for ductwork,” says Brain.

“It’s also our responsibility to educate and come armed with the right information.” Brain notes that Asia/Pacific, Australia and New Zealand have fairly strict codes for mechanical ventilation on food premises. “In all cases, though, there is the option to go down the engineered solution path. As long as manufacturers can show the appropriate code compliance, I think these solutions have a place.”

On another note about myths, “[ventless solutions] are very focused on electric. That means that some clients feel that it is excluding to their operation,” says Bircham. “But we are also seeing more and more of a move toward electric equipment. Now, we are finding that a lot of those early objections are being overcome.”

In the past, there has also been some perception “that there is a high, initial capital cost associated with ventless, you’re also excluding the high cost of duct shafts and welded black iron,” says Doland.



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THE FUTURE OF VENTLESS

When it comes to the future of ventless or ductless hood systems, Famerio believes that if the correct information is presented in terms of performance and the ability to meet regulatory guidelines, operators might be more inclined to consider that route.

Always, ventless has its place in pop-up, mobile and less permanent fixtures, notes Brain. “When you’re limited to where you can run ductwork, whether it’s in the basement of a building, or even say, on a ship, there will always be opportunities for these solutions,” he says.

Bircham agrees. “I think [ventless] is going to continue to open up opportunities for new locations—for caterers and others to be more agile and to be able to take equipment with them rather than have to make heavy investments in permanent spaces,” he says. “As we see technology continue to improve in terms of indoor air quality, I think the authorities will be more relaxed about [ventless systems] and it will become more accepted globally.”

The flexibility ventless solutions offer might be the main driver in a post-Covid world. “This whole past year has really taken our world and turned it on its head, so I think any solution that offers flexibility and the ability to handle uncertainties will be important,” says Lentz. “Some campuses and workplace settings are decentralizing, and [operators] don’t know if that’s going to go on for a while or whether it’s even forever. Ventless offers huge opportunities there.”

So, in terms of the return on investment available to operators, how much in terms of cost savings can a ductless ventilation typically offer an operator? “I’m not sure that cost savings are driving application for this solution,” says Livchak.

“It’s driven primarily by the ability to cook in a place where you couldn’t previously open a kitchen, or a temporary cooking station. “When we design a commercial ventilation system, we look at all aspects – the space requirements and cook line emissions – and we select a ventilation system that is appropriate for the particular application. So, if a restaurant can be designed with a vented system, we would typically design a better system for it. The ductless system is designed for difficult spaces or spaces where you couldn’t cook before. Indoor air quality is a concern. So, we are introducing indoor air quality sensors that can address these concerns. We can physically measure indoor air quality in the space and see whether the filtration or ventilation system is adequate.” ■



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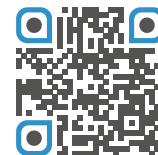


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