

# Halton Foodservice - By Stoddart Manufacturing

- Capture Jet™ technology and service systems



# High-Efficiency Kitchen Ventilation Solutions

Utilising state-of-the-art technologies and extensive expertise, Halton has focused on developing unique systems that provide energy-saving solutions for capture of airborne impurities and heat loads in professional kitchens. The results of these systems allow for a more comfortable and productive thermal environment at reduced operation costs.

Halton Capture Jet™ technology is the only system that can reduce a commercial kitchen's energy bill by up to 50% and at the same time improve the air quality of the food service environment. In every business venture, the initial investment and subsequent running costs are the critical factors determining viability. By improving the total efficiency of the ventilation system, it is possible to gain savings in both initial costs and running costs, while also increasing worker productivity by improving indoor climate conditions. With a shortage of skilled kitchen staff, and an increasing demand for energy-saving and environmentally sound operations, efficient food service environment solutions have never been so important.



## Halton Capture Jet™ canopies are equipped with:

- Patented Capture Jet™ technology for improved capture and containment of pollutants
- High-efficiency KSA multi-cyclone filters
- TAB™ testing and balancing taps, which allow accurate adjustment of air flow rates and effective commissioning of the ventilation system
- A low-velocity supply air unit
- Balancing dampers for both supply and exhaust
- Individually adjustable personal supply nozzles to compensate for the effects of the radiant heat emitted by the cooking equipment
- A fluorescent light fixture providing approximately 500 lux at the work surface
- Stainless steel welded construction (AISI 304)
- Option for equipment with automatic Water Wash system and Capture Ray UV-C technology for grease destruction

# Halton Capture Jet™ technology increases hood efficiency

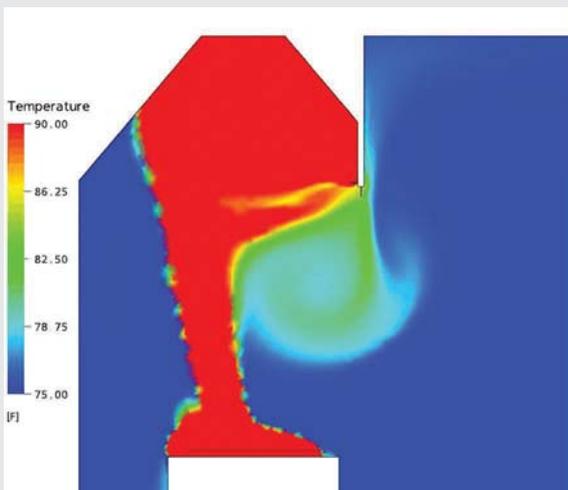
**Capture efficiency** is the ability of the kitchen ventilation system to provide sufficient capture and containment at a minimal exhaust flow rate. Halton Capture Jet™ technology creates negative pressure along the front edge and side of the canopy and assists in capture and containment of heat and effluents in the critical work area.

The high efficiency of Halton kitchen ventilation systems is based on the unique Capture Jet™ technology, which reduces the effective net exhaust volumes while improving extraction efficiency, with fan and ductwork size minimised. Capture Jet™ hoods prevent the heat and impurities produced by cooking appliances from spreading to the work area. The hoods deliver a small air jet – the Capture Jet™ – to push the upward-flowing thermal current toward the filters.

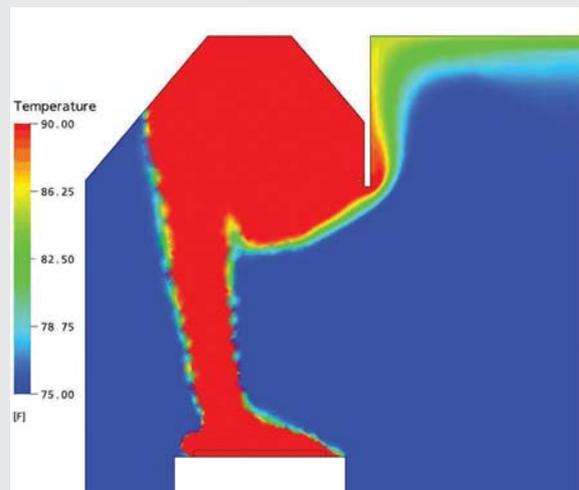
Compared to conventional exhaust-only canopies, Capture Jet™ technology has a 30 to 40% lower



required exhaust volume for extracting an equivalent heat load. This yields direct savings in both running and initial costs. Capture Jet™ hoods include unique mechanical KSA filters, which remove 95% of grease particles sized eight microns and above. These save on energy and maintenance, as the pressure loss is low and the stainless steel filters are easy to clean. The hoods also include our TAB™ system for easy on-site testing and balancing.



Result of the CFD models for the Capture Jet hood With Capture Jet™ On



Result of the CFD models for the Capture Jet hood With Capture Jet™ Off

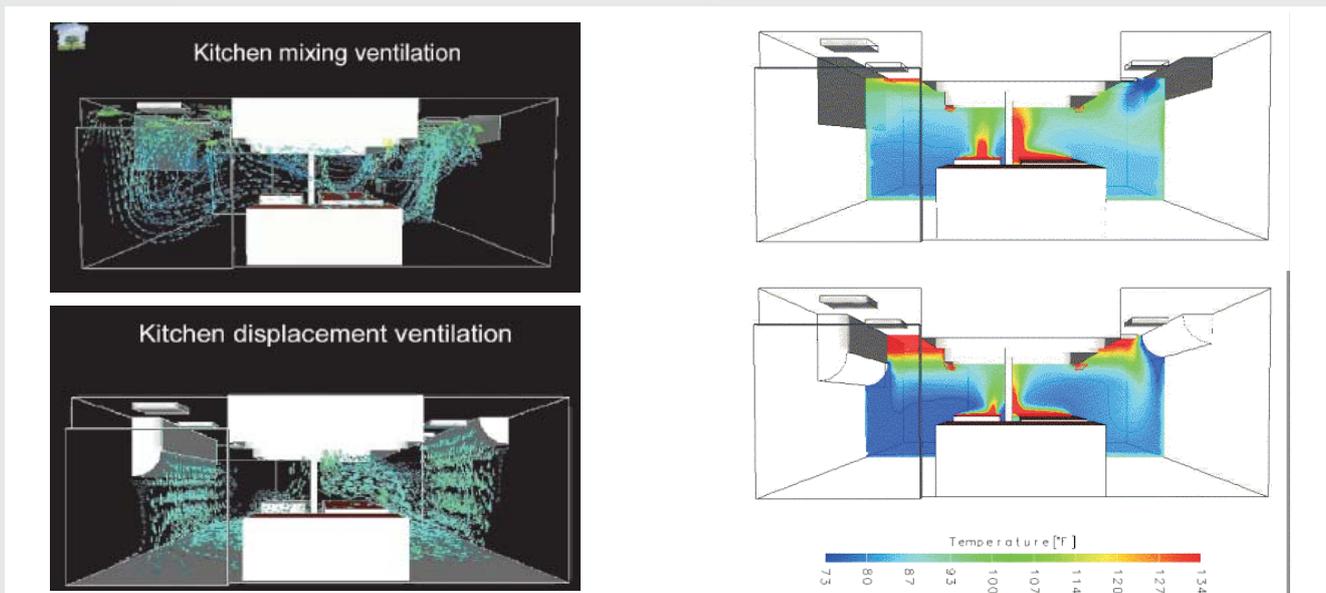
# Integrated Design Approach for Better Energy Savings

A universal concern regarding commercial kitchen spaces is having an effective ventilation system. A large proportion of kitchen ventilation planning is dedicated to proper exhaust of cooking effluent. Much less time is usually dedicated to planning how that volume of air is to be replaced. Cross-draughts and high air velocities caused by improper introduction of the replacement air can result in failure of the hood to capture and contain effluent from the appliances.

Important energy savings can be realised with various exhaust hood applications and their associated methods for distributing replacement air. However, with analysis the potential for increased energy savings can be realised with an integrated system incorporating both extraction and supply for the kitchen.

Halton applies a holistic approach to kitchen ventilation. Supply and exhaust air systems are taken into account to create excellent working conditions. A combination of high-efficiency Capture Jet™ hoods and displacement ventilation reduces the cooling capacity required, while maintaining appropriate temperatures in the occupied space. The natural buoyancy characteristics of the displacement air aid in the capture and containment of the contaminated convective plume by lifting it into the hood.

The overall commercial kitchen ventilation issues include indoor air quality, fire prevention, safety, employee comfort, equipment investment costs, operating costs, and maintenance costs.



CFD simulation of a kitchen with mixing (top) and displacement (bottom) air distribution system. Air temperatures are shown.

# High-Efficiency Grease Extraction and Emission Control Technologies

The purpose of a mechanical grease filter is to remove large particles from the exhaust stream and to provide fire protection by preventing flames from entering the exhaust unit and ductwork.

To ensure high-efficiency grease extraction, Capture Jet™ technology includes Halton's patented UL- and NSF-classified KSA multi-cyclone filter. This unique grease separator is constructed of multiple cyclones that remove 95% of grease particles sized eight microns and above. High-efficiency grease filtering is achieved by a unique form of filter honeycomb and by spiralling air flow inside the honeycomb. Air flows continuously in the same direction, and thus grease particles are centrifugally separated from the air flow.

With its individual chambers, the KSA filter has a very large free area ratio when compared to traditional grease filters. This, in turn, allows for a smaller pressure loss across the filter, which reduces the energy requirements of the exhaust fan and decreases the noise generated by the exhaust, while still reducing the operation costs of the Halton solution even further.

The extraction efficiency and pressure loss of the KSA filter remain practically constant throughout use. Independent laboratory tests prove that this is the most efficient mechanical grease filter on the market.



Halton Capture Ray UV-C grease destruction technology takes emission control and filtration efficiency to entirely new levels. Capture Jet™ canopies can incorporate UV-C features, resulting in clean ducts and improved hygiene and fire safety.

First, grease particles of eight microns and above are filtered out via mechanical filtration, and the remaining smaller particles and grease vapours are then eliminated with the UV-C oxidation technology, leaving grease-free ducts and reducing emissions in the fan discharge area.

Halton's Pollustop advanced air purification system can be incorporated into the total kitchen ventilation solution when the control of airborne pollutants at the discharge point is a requirement. It removes smoke, absorbs surplus ozone, and minimises airborne cooking odours, thus facilitating the location of commercial kitchens in areas where there is no provision for kitchen exhaust.



# Capture Jet™ Canopies

**The Halton Capture Jet™ range of canopies** provides solutions for a variety of professional food service ventilation applications, for virtually any cooking process. The Capture Jet™ technology and low-pressure-loss KSA filter combine to create the most efficient system available for the removal of convective heat and effluent.

The Capture Jet™ canopies use the advanced Halton Capture Jet™ system, combining horizontal and vertical jets at the front and on the sides of the hood to improve the capture and containment of the air flows generated by the cooking equipment, and so even at the end of the line. The Capture Jet™ with Side-Jet technology is based on the high entrainment of compact, high-velocity capture air jets. They efficiently induce ambient air at the critical front and side area of the hood, minimising spillage of the contaminated air and maintaining excellent air quality in the work area.

## **KVF – Capture Jet™ Canopy with Supply Air**

The KVF Capture Jet™ canopy consists of a low-velocity supply air unit, a light fitting, adjustment dampers, high-efficiency KSA grease filters, and air flow measurement taps.



## **KVI – Capture Jet™ Canopy**

The KVI canopy consists of a Capture Jet™ unit, a light fitting, adjustment dampers, air flow measurement taps, and high-efficiency KSA filters.



## **KVL – Capture Jet™ Backself Canopy**

The KVL backself canopy uses Capture Jet™ technology and high-efficiency KSA grease filters. It comprises a light fitting and air flow measurement taps.



# Capture Ray UV-C Canopies

Many kitchens require emission control in their exhaust systems, to comply with the increasing demand for environment-friendly operations. Halton Capture Ray canopies are based on Halton's patented Capture Jet™ solution, advanced mechanical KSA filter technology, and a UV-C system for the destruction of grease generated in the cooking process. Our UV-C technology is scientifically tested and includes all the necessary safety features. Together, these features result in clean ducts and improved fire safety.

Odour control, smoke, and the appearance of exterior exhaust ducts are factors that need particularly careful consideration in food service environment design. Halton's advanced air purification system is designed to be incorporated into commercial kitchen ventilation systems where control of airborne pollutants at the discharge point is a requirement.

## **UVF/UVI – Capture Jet™ Canopy with Supply Air and UV-C Technology**

The UVF Capture Ray canopy equipped with low-velocity supply air unit, high-efficiency KSA grease filters, and ultraviolet cassette offers a complete set of controls and safety features.



## **UVL – Capture Jet™ Backself Canopy with UV-C Technology**

The UVL backself-type Capture Ray canopy is equipped with high-efficiency KSA grease filters and ultraviolet cassette. It offers a complete set of controls and safety features.



# PST

POLLUSTOP, Advanced Air Purification Technology



PST/POLLUSTOP/1004/UK

Pollustop is a standard range of modules designed to be incorporated into commercial kitchen ventilation systems where the control of airborne pollutants at the discharge point is a requirement. There are 7 standard units ranging in duty from 0.9 m<sup>3</sup>/s to 6.3 m<sup>3</sup>/s.

The Pollustop range was conceived to compliment the Capture Ray / Reactocell UV-C Kitchen canopies or ventilated ceilings. It is now widely understood that certain ultraviolet lamps, when incorporated within the exhaust plenum of a kitchen extract canopy, will remove airborne grease that is not removed by the primary canopy grease filters. It is also the case that, by increasing the UV lampage to a carefully-selected level, airborne cooking odours will be so minimal that it can negate the need to discharge the vitiated air at high level in the building.

The Activated Carbon module is there simply to adsorb surplus ozone produced by the UV-C lamps, in the kitchen canopies or in the Pollustop itself, at times when the cooking operation is not running at maximum load.

After UV treatment, a heat recovery coil can then be used in a totally safe and efficient manner, as airborne grease is removed. It can be used to heat the incoming fresh air into the kitchen or to pre-heat water.

- Especially developed for kitchens operating in concentrated urban locations
- Respects the neighbourhood due to minimal cooking odours (Improved external air quality in surrounding areas due to reduced cooking odours and pollution)
- Lower energy consumption thanks to an efficient heat recovery system, sustainable over time
- Control and monitoring system with Halton Foodservice Control Platform (compatible with all Halton High Performance Kitchen solutions)
- Visual and audible alarm system available when filters are approaching failure status
- Fan speed regulation system allowing the operation of the Pollustop at a constant exhaust airflow level
- In-built acoustic insulation with double skin panels

# M.A.R.V.E.L. :

## Intelligent demand controlled ventilation system for professional kitchens



The M.A.R.V.E.L. system\* is packed full of technological innovations representing the best expression of the Halton High Performance Kitchen (HPK) concept. This is the first truly intelligent, responsive, and completely flexible demand controlled ventilation (DCV) system specifically designed for canopies and ventilated ceilings.

M.A.R.V.E.L., in combination with Capture Jet® technology, offers the lowest levels of energy consumption currently possible and provides complete comfort for users.

The first innovation:

M.A.R.V.E.L. is able to identify the current status of the cooking equipment (switched off, heating to cooking temperature, or cooking in progress).

The second innovation:

M.A.R.V.E.L. has the unique ability to adjust the exhaust flow rate to match these three statuses and, above all, canopy by canopy and in a totally independent manner. If only one of the cooking ranges in the kitchen is operating, the flow rate for that canopy or the ventilation ceiling zone concerned will

be automatically adjusted to that required. The other canopies or zones will continue operation at a low flow rate.

The third innovation:

M.A.R.V.E.L. is capable of continuously regulating the flow rate achieved with the extraction fans but also, and most importantly, their pressure. By operating at a variable pressure and flow rate, this system enables you to fine tune the equipment to the exact area and overall requirements, with power consumption kept to the absolute minimum. The associated supply fans are also controlled so as to guarantee the air flow balance of the kitchen.

The fourth innovation:

M.A.R.V.E.L. is a totally flexible system. It can be reprogrammed at any time in response to changes in kitchen layout.

\* Model-based Automated Regulation of Ventilation Exhaust Level



# KCJ / UCJ Ventilated Kitchen Ceilings



## When open sightlines and aesthetic design matter

**Ventilated Ceilings** are a flexible solution for open-kitchens where the heat loads are relatively low and aesthetics and openness are appreciated. They can cover the entire ceiling surface offering flexibility for the kitchen equipment lay-out or be combined with customized extraction systems for heavy load application areas.

**The KCJ ventilated ceilings utilise Capture Jet** technology to guide the heat and impurities to the exhaust sections. Supply air is introduced to the kitchen space through low velocity units. The ventilated ceiling system can integrate an automatic water wash system and UV-C feature for grease destruction and maintenance free operation.



An attractive and totally adaptable design combined with a flexible integrated lighting and quiet operation of the new ceiling concept contribute to create a comfortable food service environment in prestige architectural projects, display cooking applications and culinary school facilities.





### **At Your Service**

Halton has been developing, designing, and manufacturing high-efficiency kitchen ventilation solutions for over 30 years. We believe that high-quality indoor air is the key to a healthier and more productive life. The company is committed to following standards and guidelines that help us to provide the most energy-efficient, hygienic, and safe food service environments possible.

Our international experience allows us to create unique solutions adapted for regional requirements. With customer satisfaction, schedule, and project requirements always in mind, we offer a total package and a highly flexible approach to tailor solutions to meet the customer's needs exactly.

**For Halton's national sales & support network,  
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