

# Halton

– 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™ hoods 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

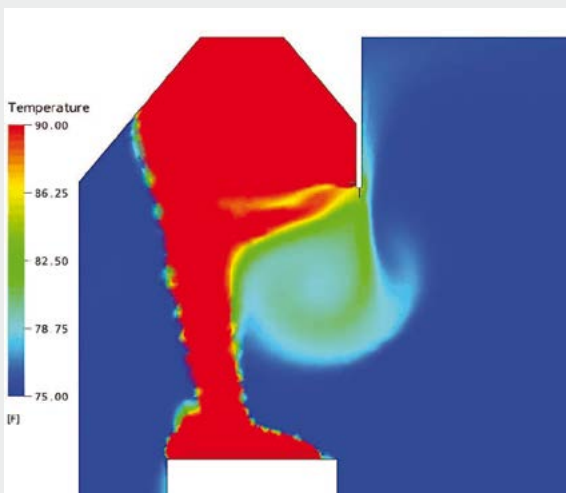
**Capture efficiency** is the ability of the kitchen ventilation system to provide sufficient capture and containment at a minimal exhaust flow rate. Halton Capture Jet™ technology creates negative pressure along the front edge and side of the hood and assists in capture and containment of heat and effluents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

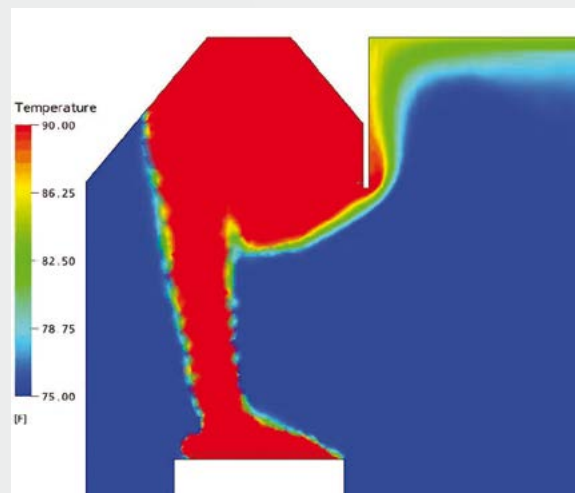
Compared to conventional exhaust-only hoods, Capture Jet™ technology has a 30 to 40% lower



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

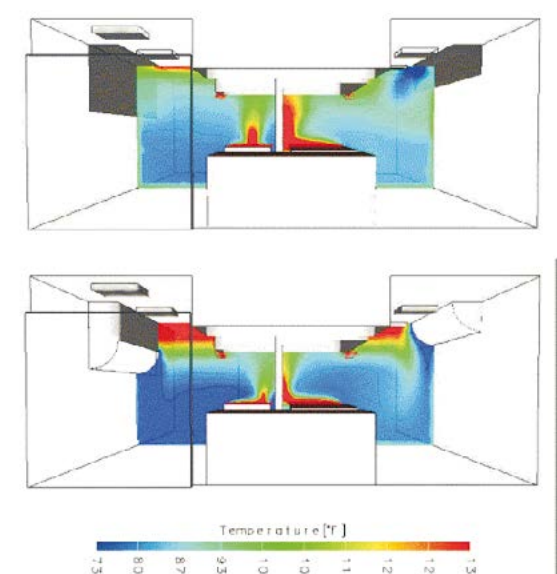
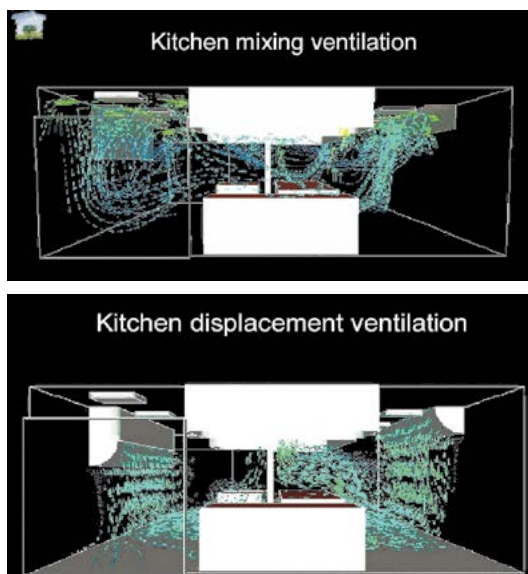
# Integrated Design Approach for Better Energy Savings

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™ hoods 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™ Hoods

**The Halton Capture Jet™ range of hoods** 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™ hoods 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™ Hood with Supply Air**

The KVF Capture Jet™ hood 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™ Hood**

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



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

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





# Capture Ray UV-C Hoods

Many kitchens require emission control in their exhaust systems, to comply with the increasing demand for environment-friendly operations. Halton Capture Ray hoods 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™ Hood with Supply Air and UV-C Technology**

The UVF Capture Ray hood 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 Hood with UV-C Technology**

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



## **Pollustop - Air purification system**

Halton's Pollustop advanced air purification technologies is a range of standard filter assemblies designed to remove airborne contaminants such as smoke and surplus ozone prior to discharge into the atmosphere.





# Service System Enhancements

## Water Wash systems

Halton offers automatic wash-down systems for hoods, which combine the Capture Jet™ system's efficiency with filter and exhaust plenum cleaning. These maintain grease extractor performance and keep the entire system running at peak performance. Better still, with our advanced design the filters do not have to be removed from the hood, reducing labour costs.

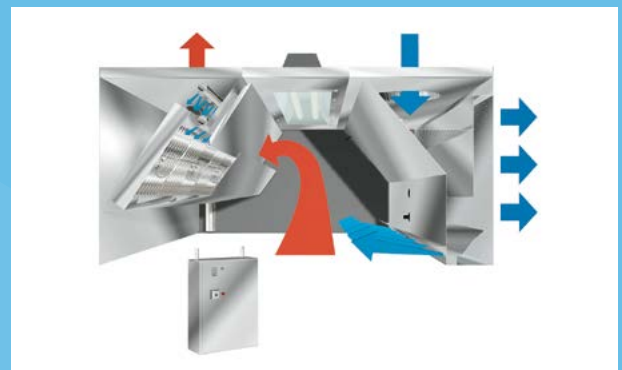
- Halton water-wash hoods work by spraying cleaning detergent mixed with water through the KSA filters from within the extract plenum and onto the outside face of the KSA unit.
- The washing cycle is programmable with a separate control cabinet that can be connected to several hood groups.
- The system incorporates Capture Jet™ technology and KSA multi-cyclone filters (UL- and NSF-classified) as standard.
- It provides a draught-free low-velocity air supply.
- The system is supplied with integral lighting, adjustment dampers, and TAB™ testing and balancing taps (which allow accurate and simple adjustment of air flow rates and balancing of ductwork, with effective commissioning).

## KWF – Capture Jet™ Hood with Supply Air and Automatic Water Wash Technology

The KWF Capture Jet™ hood is equipped with low-velocity supply air unit, high-efficiency KSA filters, and automatic cleaning of the exhaust plenum and grease filters.

## KWI – Capture Jet™ Hood with Automatic Water Wash Technology

The KWI Capture Jet™ hood is equipped with high-efficiency KSA filters and automatic cleaning of the exhaust plenum and grease filters. Individually adjustable personal supply air nozzles reduce the effect of radiant heat.







### Fire Safety

As an option, a fire suppression system can be designed to economically fit particular sizes of kitchen equipment and hood arrangements.

The main purpose of fire safety system is to protect the occupants and the fire-fighting personnel in the event of a fire. In commercial kitchens, the biggest fire hazard exists in places where a lot of grease is released: fryers, fat cookers, char-broilers, woks... The existence of grease in the presence of high surface temperatures can cause flames and thus cause the grease to ignite.

Pre-piped from the factory, a liquid-agent system provided by Halton offers a fully automatic, standalone, non-electrical solution for 24-hour protection for the cooking equipment, extraction plenums, and extract duct spigots. A typical system comprises a stainless steel control panel, fuse-link detection, a fuel shut-off facility, a remote manual-pull station, and stainless steel pipework where visible.





# Unipoint Service Distribution Units

Halton provides bespoke service distribution units incorporating all piped and electrical services for commercial kitchens. The in-built flexibility of this system allows fast and straightforward additions or alterations to be made to accommodate changes in kitchen design. Unipoint is fully accessible, for easy cleaning and maintenance.

- All internal pipework and technical services pre-assembled and tested off site
- Total segregation of M&E services
- Co-ordinated interface with ventilation products
- Availability as either a wall-type or island-type unit
- Dedicated and/or multi-service risers to suit each application
- A wide range of optional extras







### **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.





[www.halton.com/foodservice](http://www.halton.com/foodservice)

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