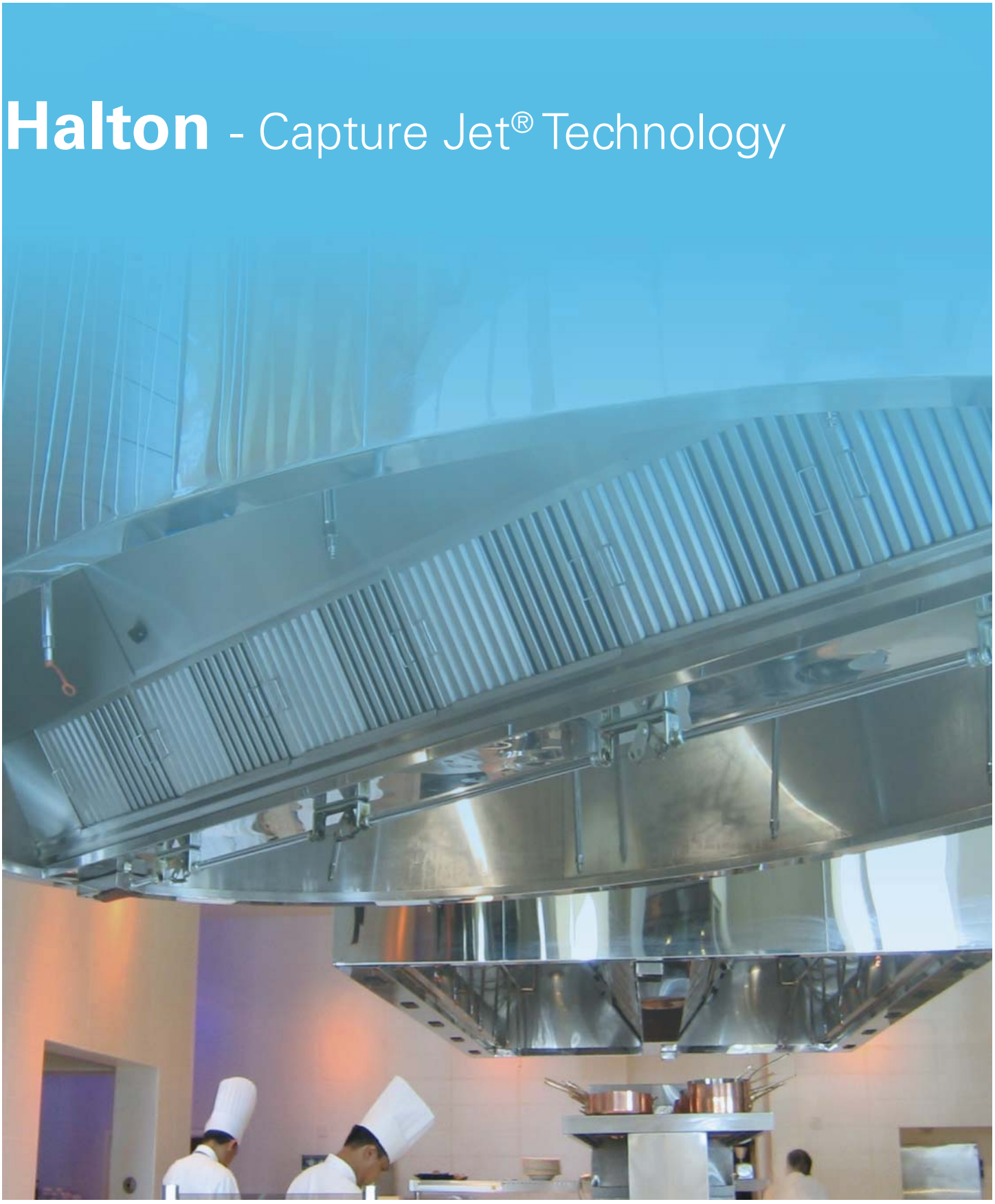
Halton - Capture Jet® Technology



Care for Indoor Air

Halton
CARE FOR INDOOR AIR

Halton - Capture Jet® Technology

High-Efficiency Kitchen Ventilation Solutions

Utilizing state-of-the-art technologies and extensive expertise, Halton has focused on developing unique systems that provide energy-saving solutions for capturing heat and emissions associated with cooking process in professional kitchens. These systems allow for a more comfortable and productive thermal environment with reduced operational costs.

Halton Capture Jet® technology is the only system that can reduce a commercial kitchen's energy bill by 30% or more with no compromise of the air quality of the food service environment. In every business venture, the initial investment and subsequent operating costs are the critical factors determining viability. By improving the total efficiency of the ventilation system, it is possible to gain savings in both running and installation cost savings, while also increasing worker productivity by improving indoor climate conditions. With a shortage of skilled kitchen staff, and an increasing demand for sustainable and environmentally sound operations, efficient food service environment solutions have never been so important.

Halton Capture Jet® hoods are equipped with:

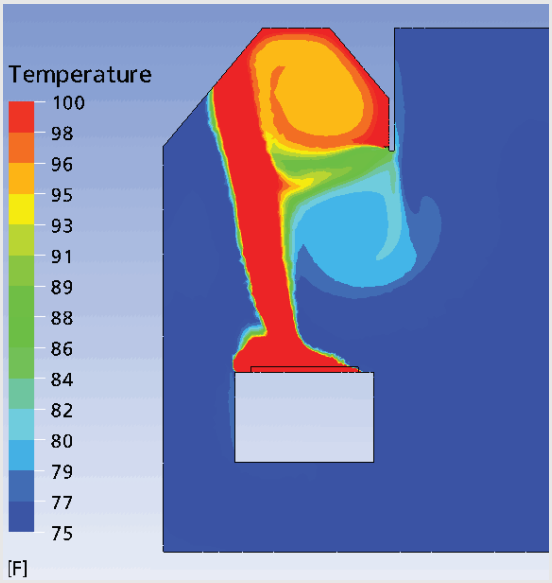
- Patented Capture Jet® technology for improved capture and containment of pollutants
- High-efficiency KSA multi-cyclone extractors
- TAB testing and balancing taps, which allow accurate measurement of the air flow rates and effective commissioning of the ventilation systems
- A fluorescent light fixture providing approximately 500 lux at the work surface
- Stainless steel welded construction
- Option for equipment with automatic water wash system and Capture Ray™ UV-C technology for grease destruction

Halton Capture Jet® technology increases hood efficiency

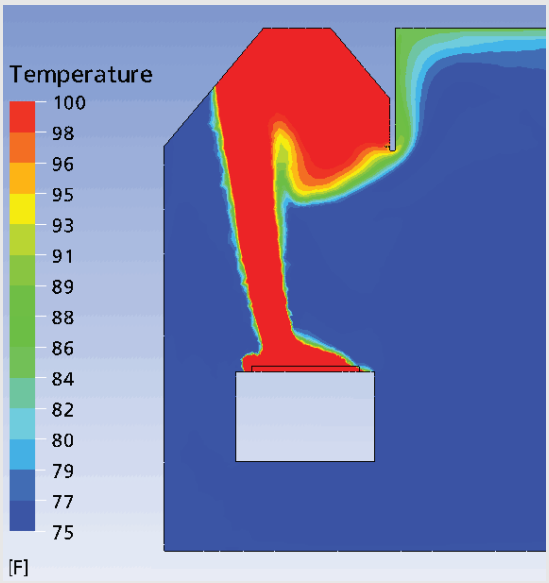
Capture efficiency is the ability of the kitchen ventilation system to provide sufficient capture and containment of the convective plume at a minimal exhaust flow rate. Halton Capture Jet® technology creates air curtains to assists in capture and containment of heat and effluents in the critical work area.

The high efficiency of Halton kitchen ventilation systems are based on the unique Capture Jet® technology, which reduces the effective net exhaust volumes while improving extraction efficiency, with fan and ductwork size minimized. Capture Jet® hoods prevent the heat and impurities produced by cooking appliances from spreading to the work area. The hood utilizes strategically placed air curtains – the Capture Jet®, to increase hood face velocity and push the upward-flowing thermal plume toward the KSA extractors.

Compared to conventional exhaust (suction only) hoods, Capture Jet® technology has a 20 to 40% lower required exhaust volume for extracting an equivalent heat and contaminant load. This yields direct savings in both running and installation cost savings. Capture Jet® hoods include unique mechanical KSA extractors, 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.



Results of the CFD models for the Capture Jet® hood with Capture Jet ON.



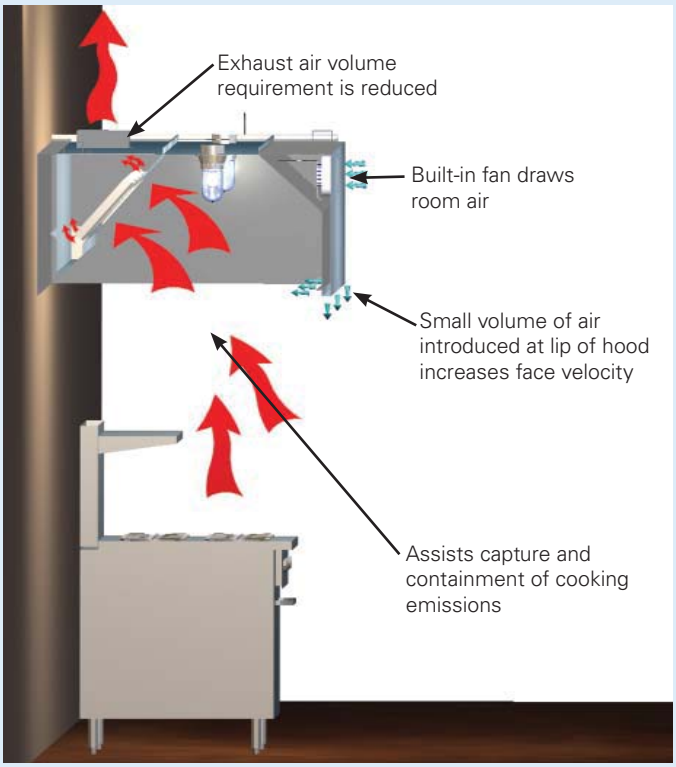
Results of the CFD models for the Capture Jet® hood with Capture Jet OFF, similar to a standard exhaust only model.

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 drafts 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 realized with various exhaust hood applications and their associated methods for distributing replacement air. However, with analysis the potential for increased energy savings can be realized with an integrated Total Kitchen HVAC® approach 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.



Halton's integrated design approach accounts for indoor air quality, fire prevention, safety, employee comfort, equipment investment costs, operating costs, and maintenance costs.

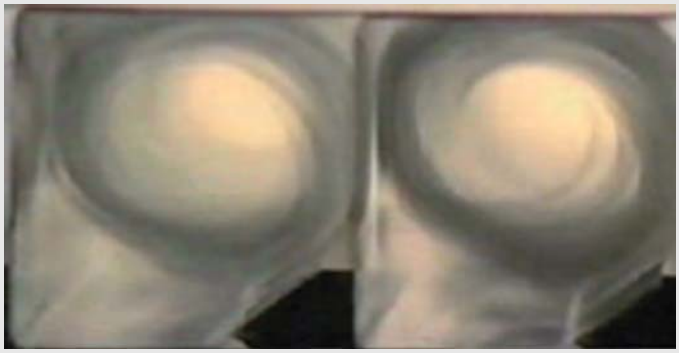
High-Efficiency Grease Extraction and Emission Control Technologies

The purpose of a mechanical filter is to remove grease particles from the exhaust stream and to provide fire protection by preventing flames from entering the exhaust 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 cyclonic chambers that remove 95% of grease particles sized eight microns and above. High-efficiency grease filtering is achieved by a unique form of spiraling air flow inside the cyclonic chambers. Air flows continuously in the same direction, and thus grease particles are centrifugally separated from the air.

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

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



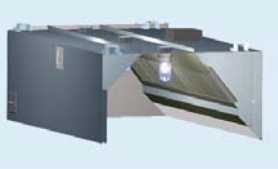
KSA Cross Section

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, most of the grease particles are filtered out via mechanical filtration, and the remaining smaller particles and grease vapors are then oxidized with the UV-C technology, leaving grease-free ducts and reducing emissions at discharge.

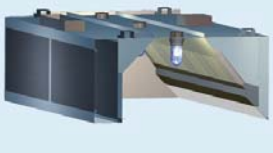
Capture Jet® hoods

Halton Capture Jet® hoods prevent the heat and impurities produced by the cooking process from spreading to the work area. The hoods deliver a low volume, high velocity perimeter air jet - the Capture Jet® - that pushes the uprising thermal current to the filters. Compared to conventional exhaust-only hoods, Capture Jet® is more efficient, reducing energy consumption by 30% or more due to its reduced air flow rates while providing full capture and containment of the convective plume and effluent. Direct savings are realized in both running and installation cost savings. Capture Jet® hoods also include the unique mechanical KSA grease extractor, which removes between 70 to 98% of grease particles of 5 and 15 microns in diameter per ASTM F2519. Increased grease extraction reduces hood and duct maintenance in addition to the smaller static pressure loss design. The KSA extractors are stainless steel and easy to clean. Hoods also include a T.A.B. (Testing & Balancing) port system for easy system testing and balancing.



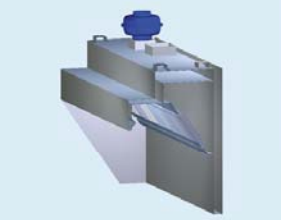
KVE - Capture Jet® Hood with Side-Jet Technology

KVE hood comprises of Capture Jet® with Side-Jet technology, lighting fixtures, airflow measurement ports and highly efficiency KSA grease extractors.



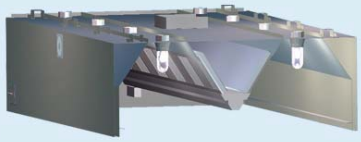
KVC -Capture Jet® Hood with Supply Air and Side-Jet Technology

The model KVC Capture Jet® hood with Side-Jet technology equipped with low velocity supply air unit, high efficiency KSA grease extractors and Ultraviolet cassette with complete controls and safety features.



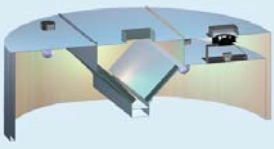
KVL -Capture Jet® Backshelf Hood

KVL backshelf type Capture Jet® hood equipped with high efficiency KSA grease extractors and comprises light fixtures and airflow measurement ports.



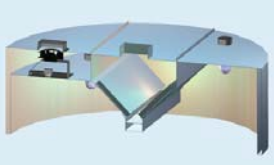
KVW - Capture Jet® Island Hood with Side-Jet Technology

KVW V-bank Capture Jet® hood with Side-Jet technology with high efficiency KSA grease extractors and comprises of a light fixtures and airflow measurement ports.



KVO - Capture Jet® Oval Hood with Perimeter Jets

The KVO Oval Island Capture Jet® hood with Perimeter Jets is a highly efficient kitchen ventilation hood that removes contaminated air and excess heat emitted by cooking equipment, helping to provide a comfortable and clean environment. This model is specially designed for island applications.



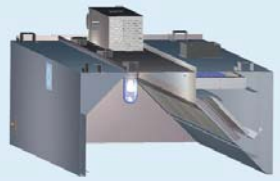
KVR - Capture Jet® Round Hood with Perimeter Jets

The KVR Round Island Capture Jet® hood with Perimeter Jets is a highly efficient kitchen ventilation hood that removes contaminated air and excess heat emitted by cooking equipment, helping to provide a comfortable and clean environment.

Capture Ray™ UV-C Hoods

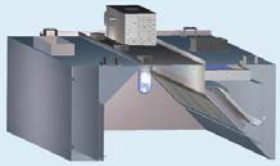
Many kitchens require emission control in their exhaust systems, to comply with the increasing demand for environmentally friendly operations. Halton Capture Ray™ hoods are based on Halton's patented Capture Jet® solution, advanced mechanical KSA extractor technology, and a UV-C system for the destruction 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.

Odor 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.



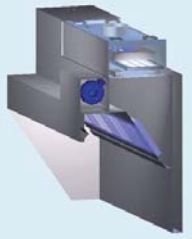
KVE-UV - Capture Jet® Hood with UV Technology

KVE Capture Jet® hood equipped with high efficiency KSA grease extractors and Ultraviolet cassette(s) with complete controls and safety features.



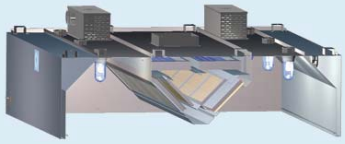
KVC-UV - Capture Jet® Hood with Supply Air and UV Technology

KVC Capture Jet® hood equipped with low velocity supply air unit, high efficiency KSA grease extractors and Ultraviolet cassette(s) with complete controls and safety features.



KVL-UV - Backshelf Capture Jet® Hood with UV Technology

KVL backshelf type Capture Jet® hood equipped with high efficiency KSA grease extractors and Ultraviolet cassette(s) with complete controls and safety features.



KVW-UV - Capture Jet® Island Hood with UV Technology

KVW Capture Jet® Island hood equipped with a low velocity supply air unit, high efficiency KSA grease extractors and Ultraviolet cassette with complete controls and safety features.

System Enhancements

Halton offers the first intelligent Demand Control Ventilation system. Halton's M.A.R.V.E.L. (Model based Automated Regulation of Ventilation Exhaust Levels) system uses infrared sensoring to match exhaust requirement to appliance usage resulting in energy savings to the operator.

Varying exhaust air and supply air volumes based on appliance usage is only the beginning. The Halton M.A.R.V.E.L. system can be delivered as a stand alone controller or it can be designed to communicate with an upper level building management system. This system will automatically balance single or multiple hoods operating on one common duct based on their individual set points.

Halton M.A.R.V.E.L. will reduce energy usage from 15% to 50% depending on hours of operation and variability of cooking process.

Multiple infrared cooking activity sensor readings are translated to specific calculation algorithm for the appliances and respond proactively to change in cooking status adjusting exhaust and supply rates accordingly.

Remote via the internet system monitoring and control.

System is easily expandable for monitoring of other critical systems such as freezer and cooler temperature, compressor cycling, lights etc.

Each ventilation design presents its own unique challenges, for that reason Halton offers a line of hood accessories to address those project specific issues.

Water Wash – The 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. With our advanced design the filters do not have to be removed from the hood, reducing labor costs.

ABD – Automated Balancing Damper – works with Halton's M.A.R.V.E.L. system for multiple hoods connected to a common exhaust system

MBD – Manual Balancing Dampers – for easy balancing of exhaust airflow for multiple hoods connected to a common exhaust system

TKHVAC™ - Total Kitchen HVAC® reduces energy consumption and greenhouse gases while improving comfort through temperature and humidity control.

Fire Suppression - Fire Suppression system can be designed to economically fit particular sizes of kitchen equipment and canopy arrangements.

Pollution Control - Halton Ecology units meet the increasingly stringent environmental demands and building regulations that have placed considerable limitations on the location of commercial kitchens.

Halton - Capture Jet® Technology

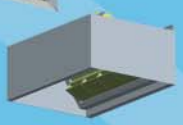
At Your Service

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.

Halton's Engineered Systems also include:

Capture Jet Hoods



Extraction Hoods

Ventilated Ceiling System

Utility Distribution

Air Purification

Ductless Systems

Roof Top Equipment

Fire Safety

Air Flow Management

Displacement Ventilation

Chilled Beams

Halton Company
101 Industrial Drive
Scottsville, KY 42164
USA
Tel: 270 237 5700
Fax: 270 237 5600
Website: www.haltoncompany.com

Halton Indoor Climate Systems, Ltd.
1021 Brevik Place
Mississauga, ON L4W 3R7
Canada
Tel: 905 624 0301
Fax: 905 624 5547
Website: www.haltoncanada.com