Halton - Capture Jet™ Technology

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Form#: BR-004
Capture Jet™ Brochure

Halton Foodservice specializes in indoor climate solutions for commercial kitchens and restaurants.

Our expertise, flexibility and proprietary technology, enable us to create memorable customer experiences and pleasant working environments increasing the profitability and productivity of food service operations around the world.

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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 the cooking process in professional kitchens. These systems allow for a more comfortable and productive thermal environment with reduced operational costs.

Halton Capture Jet™ technology can reduce a commercial kitchen's energy bill with no compromise to 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 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 more important.

Halton Capture Jet™ hoods are equipped with:

- Patented Capture Jet™ technology perimeter air jets for improved capture and containment of heat and grease emissions.
- High-efficiency KSA multi-cyclone grease extractors.
- Testing and Balancing (T.A.B.) ports which allow accurate measurement of the air flow rates and easy commissioning of the ventilation systems.
- L.E.D. imedded light emitter with aluminum heat sink guaranteeing 50 F.C. at the cooking surface.
- Stainless steel welded construction.
- Optional automatic water wash system and Capture Ray™ UV-C technology for grease destruction.

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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 an air curtain at the perimeter of the hood to assist in capture and containment of heat and grease emissions 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 and minimizing the fan and ductwork size. 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 of the same size, 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 multi-cyclone grease 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 T.A.B. (testing and balancing ports) system for easy on-site testing and balancing.

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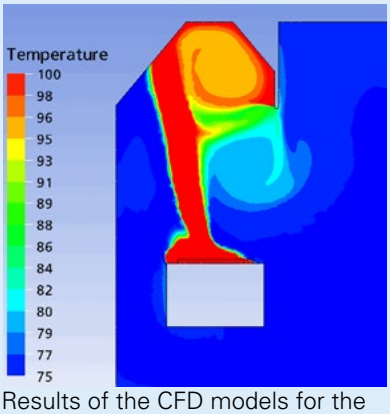
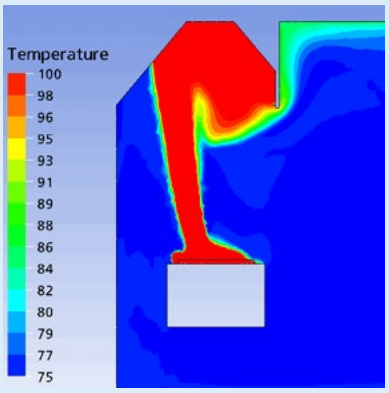


Results of the CFD models for the Capture Jet™ hood with Capture Jet ON.



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

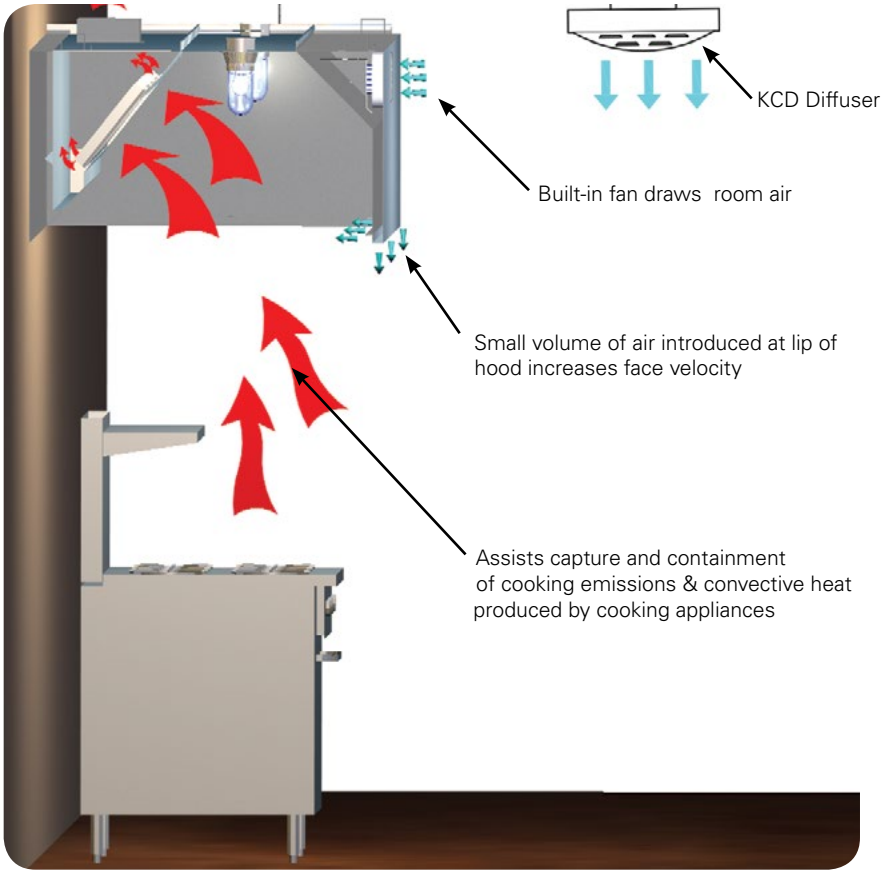
Integrated Design Approach for Optimal Energy Savings

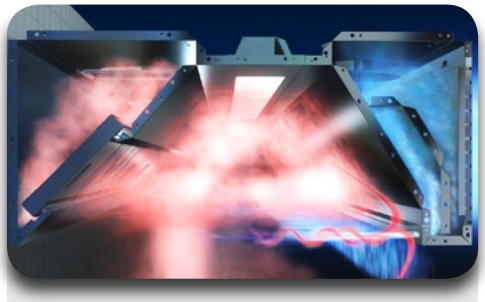
A universal concern regarding commercial kitchen spaces is having an effective ventilation system. A large proportion of kitchen ventilation planning is dedicated to proper exhaust of convective heat and grease emissions. Much less time is usually dedicated to planning how that volume of air is to be 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 convective heat and impurities 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 low velocity supply air diffusers create a working environment that is comfortable, energy efficient and mitigates disruptions of the thermal plume. Specially designed diffusers (Model KCD) can provide large volumes of air in a small foot print while complying with ASHRAE 90.1 guidelines for velocity around 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.





Start with the most efficient exhaust system, Capture Jet technology:

Capture Jet technology allows for reduction of total CFM exhaust volume requirement upwards of 20 to 40% when compared to exhaust only systems of the same size.

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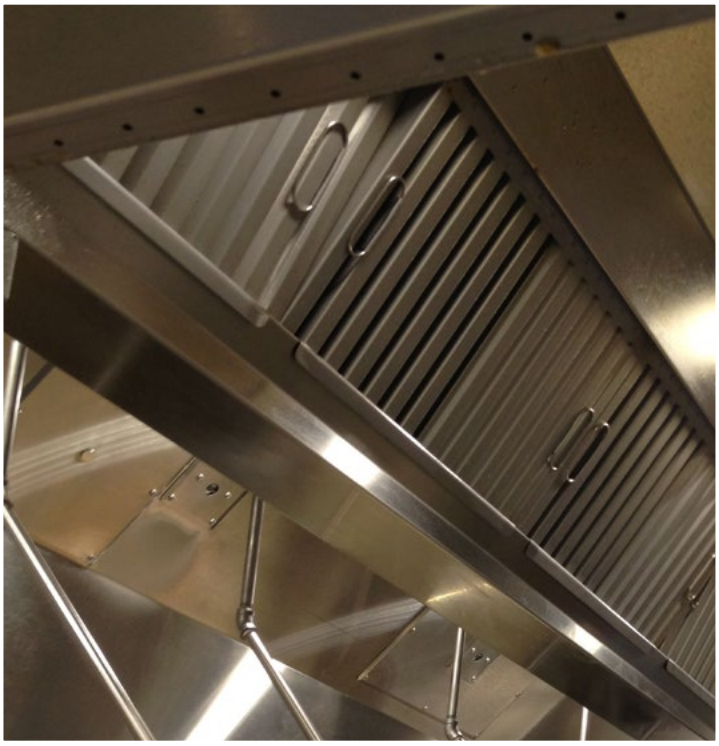
High-Efficiency Grease Extraction and Emission Control Technologies

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 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.

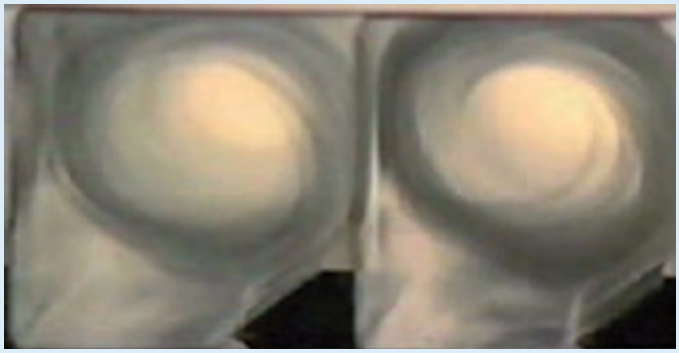
With its individual chambers, the KSA extractor has a large free area ratio when compared to traditional grease filters. This, in turn, allows for a smaller pressure loss across the extractor which reduces the energy requirements of the exhaust fan and assures silent hood operation while still reducing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

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, improved hygiene and fire safety.

Larger grease particles are extracted via mechanical filtration and the remaining smaller particles and grease vapors are then oxidized with the UV-C light technology leaving virtually grease-free ducts and reducing emissions at discharge.



KSA Cross Section

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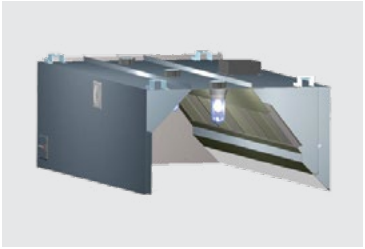
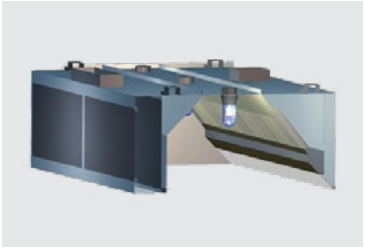
Capture Jet™ Hoods

KVE - Capture Jet™ Hood with Side-Jet Technology



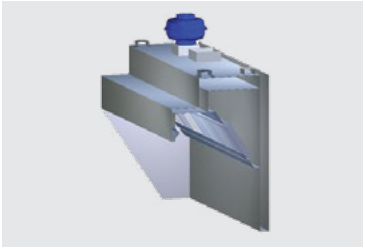
KVE hood comprises of Capture Jet™ with Side-Jet technology, lighting fixtures, airflow measurement ports and high efficiency KSA grease extractors.

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



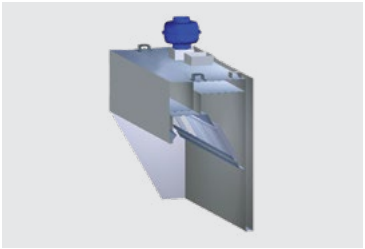
The model KVC Capture Jet™ hood with Side-Jet technology equipped with low velocity supply air unit, airflow measurement ports and high efficiency KSA grease extractors.

KVL-P -Capture Jet™ Low Profile Hood with Plate Shelf



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

KVL-U - Capture Jet™ Low Profile Hood with Underhang



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

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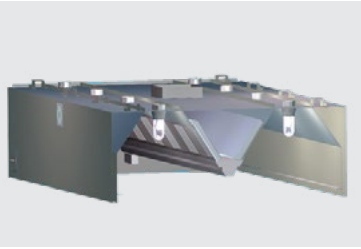
KVM - Capture Jet™ Hybrid Backshelf Hood

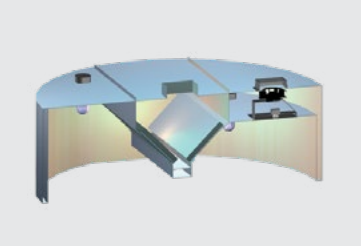
The KVM Hybrid Capture Jet™ Backshelf hood is a highly efficient kitchen ventilation hood that removes contaminated air and excess heat emitted by cooking equipment, helping to provide a comfortable and clean environment

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



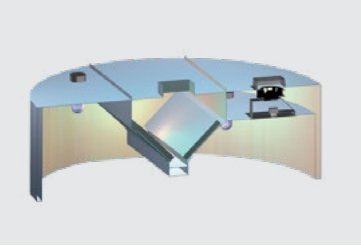
KVW V-bank Capture Jet™ hood with Side-Jet technology with high efficiency KSA grease extractors and comprises of a light fixtures and airflow measurement ports.

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 Jet™ Hood Accessories

- Closure Panels - for canopies below ceiling level
- Backsplash
- Side Skirts
- KFR - Filter Removal Tool
- LED Dimmable Lighting
- Recessed Fluorescent or Incandescent Lighting
- Incandescent Globe Type Lights
- MEP - Master Electrical Panels
- Face or Remote Mounted Switch Panels
- Factory Prepiped Fire Protection
- Powder Coating in a Variety of Colors
- Custom/Design Stainless Steel Exterior Textures and Finishes
- Listed Exhaust Duct Balancing Damper
- Hood Mounted Fire Cabinet
- M.A.R.V.E.L. Demand Control w/VFD by Halton

Halton

Efficient Exhaust is Only Half the Equation

For a kitchen ventilation system to be truly efficient, the introduction and control of supply air must be an integral part of the design. Whether using constant volume or M.A.R.V.E.L. Demand Control Kitchen Ventilation (DCKV), appropriate air volumes and velocities must be maintained to ensure proper space balance and comfortable working conditions.

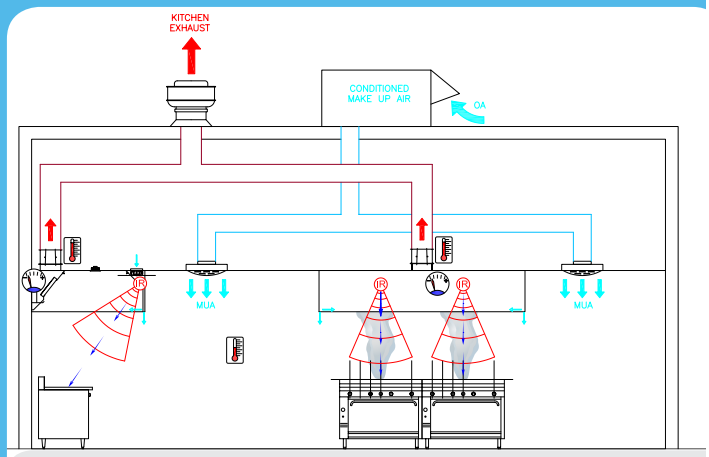
Halton provides a total solution for exhaust and supply air distribution and control. The KCD supply air diffusers were specifically developed to introduce large volumes of air in a small footprint while staying within the ASHRAE 90.1 guidelines for velocity at the hood face. In addition, when deploying M.A.R.V.E.L., supply air volumes can be zoned. Zoning of supply air allows for the appropriate volume of air to be introduced in proximity to the hoods that are exhausting during variable volume operation in the correct volume.

M.A.R.V.E.L. I

(DCKV - Demand Control Kitchen Ventilation with no Automatic Balancing Dampers (ABD))

Ideal with single fan and single hood configuration

- Continuous measurement and reporting exhaust airflow for each hood.
- Automatic balancing to design airflows at system commissioning stage.
- Web connectivity.
- Ability to remotely monitor and troubleshoot.
- Ability to communicate with upper level Building Management Systems.
- Fully expandable to Halton's F.O.R.M. (Facility Optimization & Resource Management).



When the kitchen is fully active, most of the equipment enters cooking mode while the other equipment generally remains on standby. The infrared sensors will detect this change in activity, as it occurs. The exhaust flow rate is then automatically adapted to the change in requirements, exhaust hood by exhaust hood in real time.

M.A.R.V.E.L. II

(DCKV with Automatic Balancing Dampers (ABD))

Same control sequence and functionality as M.A.R.V.E.L. I

- Used with MULTIPLE hoods on a common fan/duct configuration.
- Uses automated balancing dampers to individually control airflow for each hood section.

M.A.R.V.E.L.+ (M.A.R.V.E.L. Plus)

(DCKV with Exhaust & Supply Modulation including Kitchen Zone Control)

Same control sequence and functionality as M.A.R.V.E.L. I & M.A.R.V.E.L. II

- Provides Supply Air Zone Control with VAV terminal units and KCD Kitchen Supply Diffusers.
- Continually maintains space balance during variable exhaust volume.
- Non-Disruptive Air Distribution specifically designed for the kitchen space.

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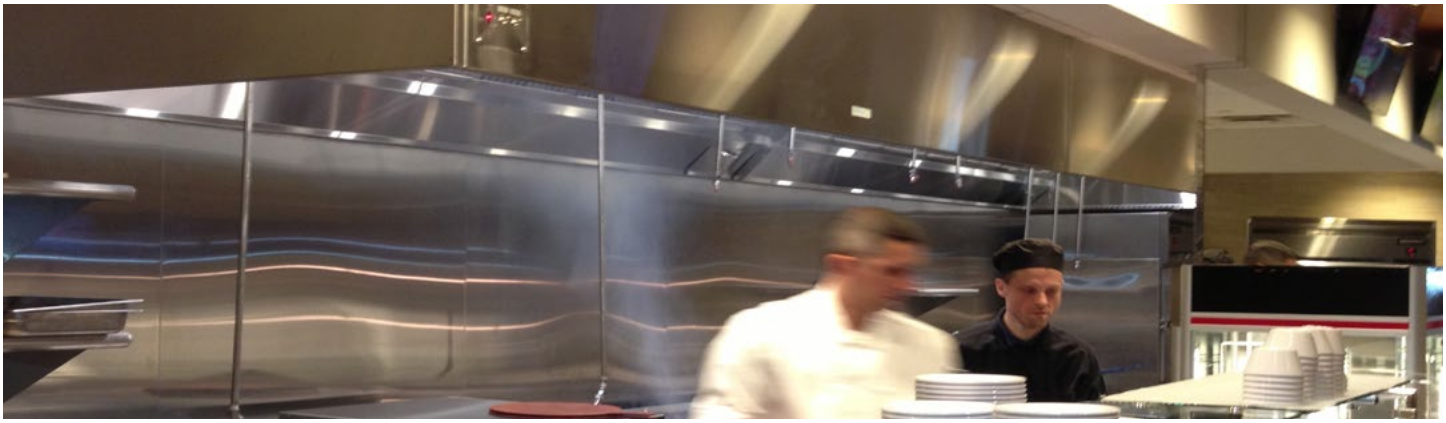

System Enhancements

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

KCD - Kitchen Ceiling Diffuser provides for high volume, low velocity discharge of supply air without disrupting hood performance. Tested performance of supply air discharge ensures proper application of even air distribution in proximity to the hood to achieve optimum results. Part of the M.A.R.V.E.L.+ system, the KCD diffuser is a key component of the total air balancing solution for commercial kitchen ventilation.

KVV-R & KVV-S VAV Units - Energy efficient variable air volume (VAV) boxes are used in conjunction with the M.A.R.V.E.L.+ Self Balancing Kitchen system. A special sensor in each VAV box measures four quadrant centre average airflow ensuring accurate zone control. M.A.R.V.E.L.+ provides the appropriate supply air signal by measuring exhaust airflow from each hood.

Capture Ray (UV) - 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, improved hygiene and fire safety.

Water Wash – Automatic wash-down systems combine the Capture Jet™ hood efficiency with filter and exhaust plenum cleaning. The optional wash feature cleans the grease extractors daily and keeps 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.

KGS - Kitchen Grease Sensor system assesses the level of grease deposits in a kitchen's entire exhaust duct network. As soon as this level exceeds the threshold defined in standard NFPA-96 (or local equivalent), an alarm is triggered and a signal can be sent to the Building Management System. It is necessary to clean the network.

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.

Electrostatic Precipitator - Halton's Ecology-E is an electrostatic precipitator used to extract cooking effluents and odors from commercial kitchen exhaust. Ecology-E is a reliable solution for minimizing the restaurants impact on the surrounding environment. It's available in side access units for use with central air handlers or as a stand alone fan powered unit.

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.

Halton

ABOUT US

Halton Group is the global technology leader in indoor air solutions for demanding spaces. The company develops and provides solutions for commercial and public premises, healthcare institutions and laboratories, professional kitchens and restaurants as well as energy production environments and marine vessels. Halton's mission is to provide its end-users with safe, comfortable and productive indoor environments that are energy-effi cient and comply with sustainable principles.

The company was founded in Finland in 1969. Today, Halton Group has production units in ten and R&D units in eight countries. Licensed production is carried out in four countries. Halton Group employs nearly 1500 people in over 30 countries. The company's turnover in 2016 was approximately 200 million euros. For more information, visit www.halton.com.

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