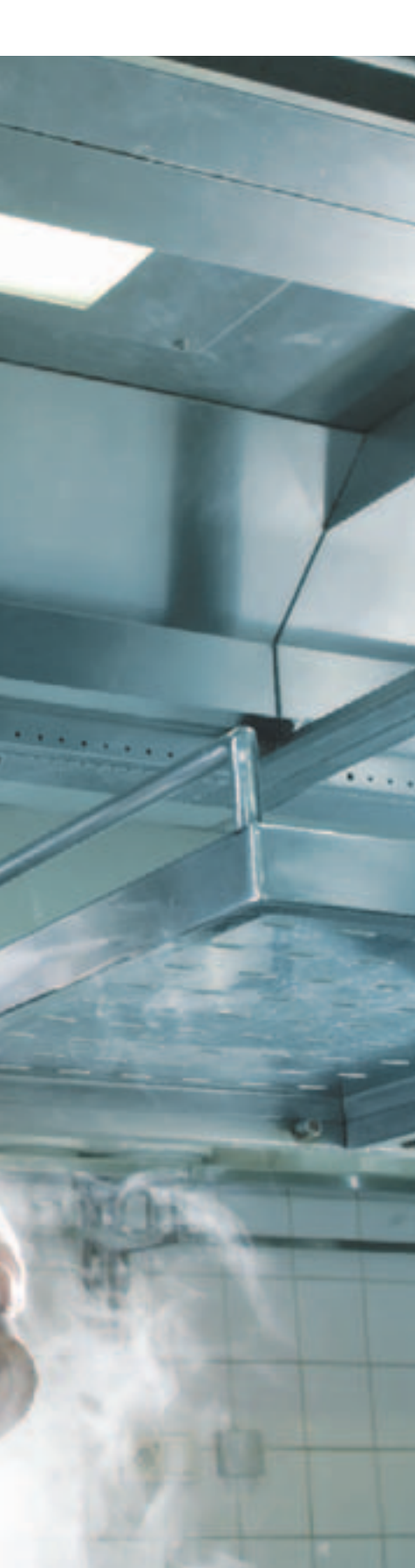


Halton Marine

– High-efficiency galley ventilation







Ingredients of a successful food service on board

Creating an enjoyable atmosphere, improving efficiency and safety – these are the priorities of many shipowners when it comes to a successful food service on board. The thermal environment and indoor climate quality have a direct impact on these areas.

Halton Group is the leading manufacturer of commercial kitchen and galley ventilation solutions in the world. Halton Marine, concentrating on demanding marine, navy and offshore applications has developed the unique concept for Galley Ventilation to create comfortable and safe working conditions for galleys at reduced operational costs. Providing cleaner, safer and more comfortable environment for crew and passengers has been a choice that many owners have taken – with no regret.



Better business from healthier indoor air

Everything starts with a good energy saving design; the stainless steel galley ventilation equipment is chosen according to type of cooking equipment, heat loads and the special requirements that are applied in the marine business. Halton Marine provides its customers with galley ventilation solutions all the way from the water wash hoods that utilize the state-of-the-art UV-light technology to diffusers that are specifically designed to be used in marine and offshore applications.

In practise, compared to traditional systems Halton hoods reduce both initial costs and running costs due to Halton's patented Capture Jet technology that reduces required airflows. In general the high efficiency of Halton Marine Water wash hoods, UV-hoods and Capture Jet hoods reduce preventive maintenance time and the expensive cleaning of the ducts and at the same time improve fire safety on board.

In addition to low running costs, reduced maintenance work and improved hygienic conditions, the total profitability of the Halton Galley Ventilation equipment has the added benefit of the increased productivity of personnel. Studies show that when the indoor temperature is too high, productivity and general comfort diminish rapidly. On the contrary comfortable thermal conditions decrease the number of accidents occurring in the work place and increase the productivity of personnel. This means a much faster payback time for the initial investment.





Providing high-efficiency galleys

Qcj = Capture Jet airflow
Qve = Exhaust airflow
eff = Capture efficiency

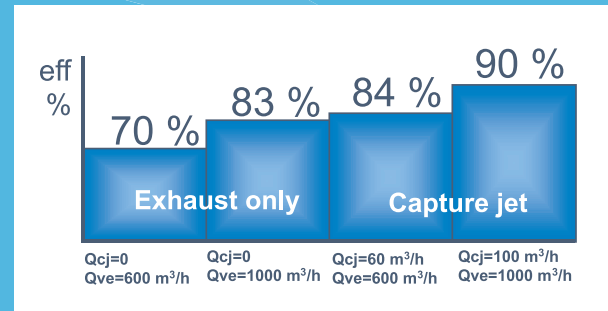
Halton Capture Jet Technology

– exhaust efficiency with reduced airflows

An efficient exhaust system is the key to a pleasant environment in galleys, pastries, pantries and sculleries. Halton Capture Jet prevents the heat and impurities produced by cooking appliances spreading to the work area. The hoods utilize Halton's patented Capture Jet technology in which small air jets push the uprising thermal current towards the filters. Compared to conventional exhaust only hoods, Capture Jet is up to 30% more efficient. Performance tests show that Capture Jet technology reduces required airflows resulting in savings in weight, space and energy consumption.

Water wash system – the best choice for galleys running at peak performance

Halton Marine KWH and KWT water wash hoods are equipped with an automatic washing system that cleans the filter equipment and the exhaust plenum at the set time without a need to remove the filters from the hood. Washing cycle is programmable with a separate control cabinet that can be connected to several hood groups. Halton Marine KWH and KWT water wash hoods utilize Capture Jet technology as standard.



The Halton Marine water wash hoods are especially designed for high capacity utilization in marine and offshore applications where improved hygienic conditions, safety and reliability play an important role.

Control cabinets – for intelligent operations

The heart of a functional hood system is a reliable, robust and easily maintained control cabinet that controls the washing cycles, ultraviolet lights and can be integrated to ship automation systems like ESD. Halton Marine delivers several types of control cabinets that can be programmed according to customers needs. More ship automation network-interfaced options are available through the new PLC, and network technology. (See additional features for more information)

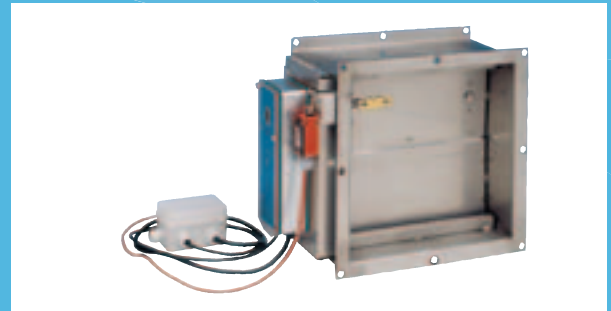


**Inbuilt certified fire damper
– for emergency situations**

For extra safety Halton Marine hoods can be equipped with an in-built fire damper in the exhaust connection that closes automatically in case of fire, preventing flames entering into the exhaust duct. Fire dampers are prewired at the factory and easily connectable to the water wash control cabinet or other systems. Halton Marine uses only top-quality A-class fire dampers in its hoods that are certified according to leading classification societies worldwide.

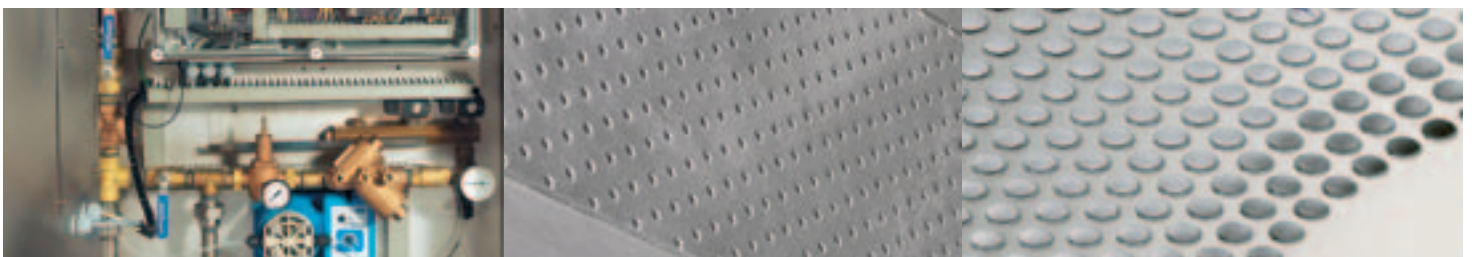
**Integrated supply air and stainless steel diffusers
– providing fresh air directly where it is needed**

In addition to their excellent exhaust efficiency, Halton Marine KWT galley water wash hoods and KVF galley hoods include an integral front supply air plenum, which provides cool, clean and fresh air directly to the working zone. Supply of fresh air provides more comfortable working conditions for galley personnel increasing productivity at the same time.



The stainless steel diffusers are a good choice to complete the demand of supply air in galleys. The low velocity TDM diffusers are specifically designed for galleys or similar spaces where low heights and the need for excellent hygienic conditions are required. The USPHS compatible TDM diffusers are easy to keep clean – the front plate of the diffusers is removable and can be washed in a washing machine.

>>> Improved hygienic conditions...



Superior grease filtration

Demand based filtration

– exhaust efficiency with reduced airflows

The convection plume from the cooking operation underneath the hood contains grease that has to be extracted as efficiently as possible. The amount of grease produced by cooking is a result of many variables including the type of appliance used for cooking, the temperature that food is being cooked at and the type of food being cooked. The purpose of mechanical filters is twofold:

- Provide fire protection by preventing flames entering the exhaust ductwork
- Remove large particles from the exhaust stream

The more the grease is extracted at the filter, the longer the exhaust ducts and fans stay clean - resulting in better fire safety. From a practical point of view, grease filters should be easily cleanable and clog-proof. If the filter becomes clogged in use, the pressure drop across the filter will increase and the exhaust airflow will be lower than designed. This can be avoided with Halton's automatic water wash system that keeps mechanical filters continuously clean.



Halton KSA filter

– the most efficient mechanical grease filter

Mechanical filtration is recommended to be used in hoods with low utilization rate and a cooking process producing mainly large grease particles (> 8 microns), e.g. food prepared with gas fryers, griddles and broilers (source ASHRAE).

At Halton, mechanical filtration is based on Halton's patented KSA multi-cyclone filter. The grease extractor is constructed of multiple cyclones that remove grease from the air stream with the aid of centrifugal force. The KSA filter can extract up to 95% of grease particles above 8 microns. Independent laboratory tests prove KSA to be the most efficient mechanical grease filter on the market.



>>> with UV-light technology

UV-light technology

— the most efficient grease filtration technology

Halton's UV-light technology is the most efficient solution for hoods with medium to high utilization rate and for cooking processes producing all sizes of grease particles, e.g. food prepared with electric ranges, griddles and all type of broilers.

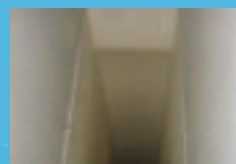
In galleys most of the grease exhausted from the hood can be classified as fatty acids; an example being oleic acid, which is the primary fat in ground beef. These substances consist of long chains of molecules connected by double bonds, which are chemically reactive.

In the UV-light concept, most of the grease particles are first filtered with mechanical filtration (type KSA). The mesh filter behind the KSA spreads the airflow and the remaining grease particles inside the hood chamber. This increases the filtration efficiency up to 50% with grease particle sizes between 5-8 microns. The remaining grease is then eliminated with ultraviolet-light technology, resulting in a clean exhaust ductwork.

Halton's UV-light technology breaks remaining small grease particles into smaller molecular units. Ozone generated by the UVC lamps reacts with the solid and



vaporised greases. The resulting substance will not stick to the ductwork or fans, this helps to reduce a serious fire risk and expensive cleaning of the ducts. Laboratory tests and real-life conditions have proven results that using Halton Marine water wash hoods and UV-light technology is the most effective choice for achieving ultra clean ducts. The UV-light technology is available for Halton hoods in new-buildings and refurbishments.



With UV-light technology



Without UV-light technology



Additional features

Network

— simplicity of saving in costs

Compared to traditional systems, a network offers many of the benefits when interfacing galley ventilation equipment in a network, and does it at a substantially lower cost and with greater simplicity. A single pair of cables, which handle power and communications, is used to control the network by means of “chaining” the individual hoods with the PLC in the control cabinet.

Benefits:

- One pair of cables connecting several hoods/ hood modules to PLC in the control cabinet instead of multiple cables crossing the galley ceiling. In addition to this, the cables save space and the weight load on the ceiling, it is faster and substantially easier to install than traditional/ standard cabling.
- Status of the hood systems can be individually monitored through their individual addresses which can be preset at the factory.
- Flexibility to easily add new systems (like UV-light technology) or system function, later on to the network. No new cabling needed.
- The PLC's clock can be synchronized with the ship's main clock adjusting to different time zones.
- When the Emergency Power system of the ship is in use, the control cabinet has an automatic changeover function to maintain only vital hood systems, like fire damper indication and controls.

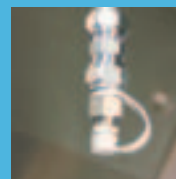
SOLAS
REQUIREMENT

K-5 Galley

— wet chemical fire suppression system

The K-5 is an electrically actuated fire suppression system that uses spot heat detectors to detect the fire conditions. The detectors are placed directly over the appliances or in the extract airflow above the appliances. On receiving the FIRE signal the system control panel sounds an audible alarm, shows visual alarms and immediately initiates shut down of the power. Simultaneously the control system deploys the suppressant liquid onto the fire.

- Direct integration to alarm system.
- K-5 fire suppression system together with Halton hoods form a superb combination that increase safety in galleys. Installation on galley hoods is already done at the Halton Marine factory.
- Simple and compact design made of stainless steel. No high pressure gas cartridges, mechanical pulleys, tensioning devices, levels or spring loaded plungers.



www.haltonmarine.com at your service
Halton Marine's website is a source for product, system and application information. With its comprehensive data, news and eServices the website is always at your service.



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HALTON MARINE GALLEY VENTILATION

KWT

High efficiency galley hood with Capture Jet, automatic water wash system, fire damper and supply air. UV-light technology available as an option. Manufactured according to USPHS requirements.

KWH

High efficiency galley hood with Capture Jet, automatic water wash system and fire damper. UV-light technology available as an option. Manufactured according to USPHS requirements.

KWT without automatic washing system

High efficiency galley hood with Capture Jet, fire damper and supply air. UV-light technology available as an option. Manufactured according to USPHS requirements.

KWH without automatic washing system

High efficiency galley hood with Capture Jet and fire damper. UV-light technology available as an option. Manufactured according to USPHS requirements.

KWH without Capture Jet

Galley hood with automatic water wash system and fire damper. UV-light technology available as an option. Manufactured according to USPHS requirements.

KWH without automatic washing system and Capture Jet

Galley hood with fire damper. UV-light technology available as an option. Manufactured according to USPHS requirements.

KVF

High efficiency galley hood with Capture Jet and supply air. UV-light technology available as an option.

KVI

High efficiency galley hood with Capture Jet. UV-light technology available as an option.

KVM

Condensate canopy. Manufactured according to USPHS requirements.

TDM

Stainless steel diffuser for galleys. Manufactured according to USPHS requirements

Network

Network to chain the individual hoods to PLC in the control cabinet

K-5

Wet chemical fire suppression system