

HVAC for Cruise Ships & Ferries



Photo for illustration purposes courtesy of MSC Cruises.

Safe, energy-efficient comfortable indoor air

Enabling Wellbeing for people

Halton is passionate about indoor environments. The company offers business-enhancing solutions for safe, comfortable and energy-efficient environments for companies that value the wellbeing and productivity of their customers and personnel.

Why? Poor indoor air quality can cause headaches, fatigue, nausea, sinus congestion, and dryness, as well as irritation of the eyes, nose, throat, and skin – just to name a few. Poor indoor air solutions can cause too much noise and a feeling of a draft which affects passengers. It can also waste an unnecessary amount of energy or use too little outdoor air.

Quality

Designing and selecting equipment should always be done according to the operational environment. The HVAC installation should always maintain the designed performance level. New technologies from Halton that are utilizing automation enable a supervision and monitoring system that adds value to the operators.

Type approvals from all the major classification societies and worldwide references are solid proof about the Halton product quality. As a reliable manufacturer, Halton's operations comply and are certified according to ISO 9001, ISO 14001, OHSAS 18001, and ATEX.

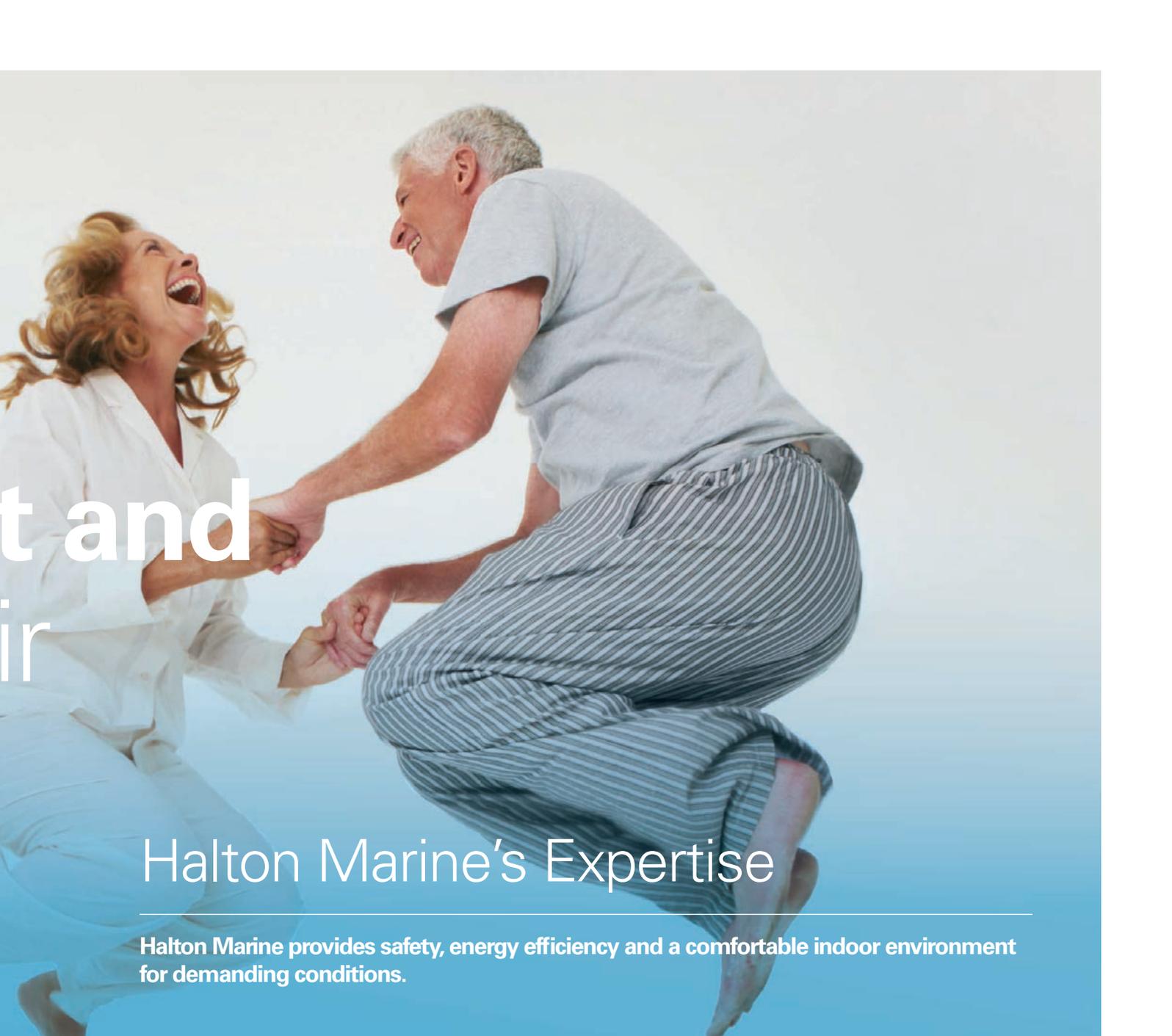
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Halton Marine's Expertise

Halton Marine provides safety, energy efficiency and a comfortable indoor environment for demanding conditions.

Safety

Halton Marine's products and systems have been designed specifically for marine environments, where safety, robustness, and controllability play an important role.

Whether it is a question of high-quality fire and gas dampers that prevent the progression of fire in ductwork or an active smoke control solution that secures escape routes in case of fire, Halton is proud to be your first choice of safety solutions for demanding environments.

Energy efficiency

Halton Marine is the leader in energy-efficient HVAC solutions for galleys and cabins on board. In addition to energy-efficient products, Halton's automation technology enables the benefits of demand-based ventilation systems with improved indoor air environments.

Halton Marine provides energy-efficient solutions for both new-builds and retrofits, and carries out comparative measurements and verification tests.

Indoor environment

A good indoor environment has a direct impact on health, wellbeing, and productivity. Halton offers a comfortable, silent, user-friendly and individually adjustable indoor air that is energy efficient, safe and easily controllable. Halton's Innovation HUBs enable proper testing, measuring and verification of indoor environmental conditions for different applications.

Halton Marine has research facilities where it is possible to test and measure full-scale cabin ventilation solutions in different environments and conditions.

Individual cabin ventilation

Silent, user-friendly and energy-efficient solutions



Photo for illustration purposes courtesy of MSC Cruises.



Halton offers HVAC solutions for different types of cabins and rooms. Cabin terminal units with intelligent automation and a thermostat can operate as a stand-alone unit or in a network that enables the indoor air conditions to be controlled, monitored and adjusted by a supervision system.

Cabin units

Halton pressure-independent cabin units control and maintain airflow individually in each cabin and thus sound levels and comfort are kept in optimal conditions.

The cabin unit is actively monitoring the environment and adapting to the changing conditions.

Halton Marine cabin ventilation equipment can be connected to LON, Ethernet or Wi-Fi networks with a dedicated network adapter.

Halton cabin units are also available without airflow measurement as pressure-dependent units. The manually operated cabin units include reheater and control unit or just a manual damper (manual model) which both allow the manual adjustment of airflow quantity.

Fancoils

Halton fancoil is a versatile solution for air treatment and control that has been specifically designed for silent cabin comfort. The compact design possibilities and excellent performance levels make Halton fancoil solution easily adaptable for different types of projects.



CABEAM

Halton revolutionizes cabin ventilation by bringing to the market a completely new kind of patented ventilation solution which offers the next level of comfort what comes to air distribution and HVAC sound levels in cabins. The operating costs for the system is substantially lower than with any mechanical HVAC solution.

Active smoke control

Halton Marine cabin ventilation system can be equipped with components and controls that, combined with the ship's or platform's fire alarm system, act as an Active Smoke Control system.

In case of fire, the solution keeps the escape routes clear from smoke and prevents toxic gases from spreading to non-affected areas. Halton's Active Smoke Control solution is compatible with different kinds of emergency and evacuation strategies.



A network takes it to the next level

What if you were able to control, monitor and adjust cabin indoor climate centralized via network?

A network offers many advantages

In a network, selected HVAC parameters can be managed through an HMI (Human Machine Interface). Network solution opens numerous possibilities to include additional safety and energy efficiency features in cabin ventilation. Units can be adjusted and controlled by an HMI according to the customer's needs. It is also possible to connect additional sensors, e.g. pressure and fire detection in cabin units. All selected parameters and indications are visible on the HMI.

The network also enables optimization of the cabin ventilation system. Halton pressure-independent operation system working in a network enables the lowest energy consumption. It also gives a possibility to trace the trend of each cabin on the HMI. Monitoring and controlling can be done without entering the cabin.

Advanced energy efficiency

The Halton calculator collects the information from each terminal unit and signals to the Air Handling Unit (AHU) to adapt to the demand. Based on the information from terminal units, AHU's supply air temperature is regulated to cut down unnecessary cooling and prevent unnecessary electrical heating inside the terminal unit. The supply air temperature is kept actively at an optimum level together with humidity control. With Halton Marine advanced energy efficiency technology it is possible to save up to 35% in cabin HVAC energy consumption.

Halton networks

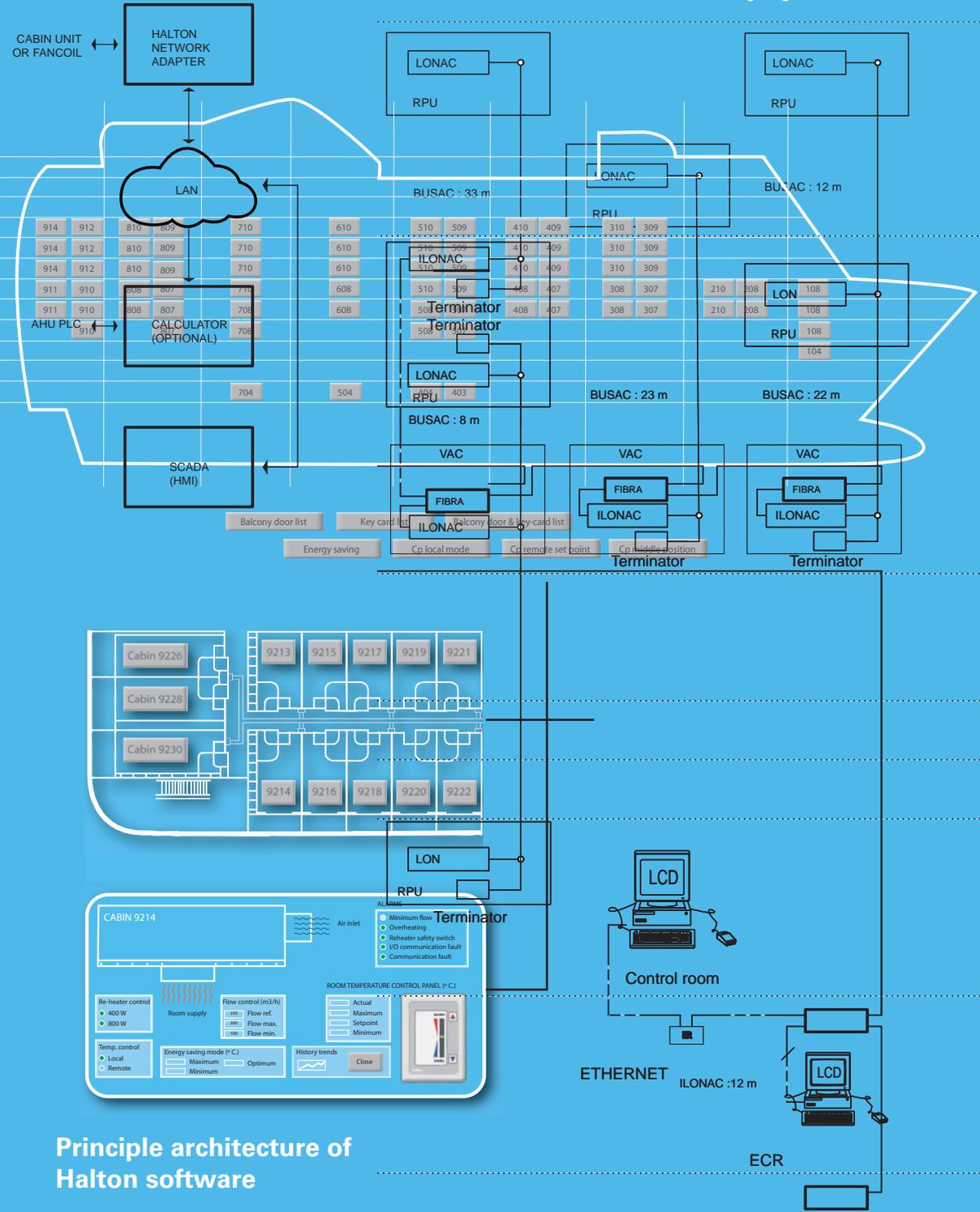
Halton Marine cabin ventilation solutions can be connected to LON, Ethernet or Wi-Fi networks or a combination of them.

Cabin ventilation products operating as stand-alone are easy to connect to a network simply by adding a network adapter.

Halton network solution can be adapted to an existing Ethernet network built on board, which is normally used for other services such as IP-telephone, Internet, multimedia, IP-television, etc.

Network architecture

Halton Marine offers its services for designing the network architecture



Principle architecture of Halton software

The software offers an overview from a cabin ventilation system, to each cabin that can be individually adjusted, controlled and monitored via the network. Halton's supervision system interface is always built according to the customer's needs.

HVAC dampers



Safety is the number one priority on board.

Because smoke and toxic gases can be more dangerous than fire itself, the fire dampers must prevent smoke from spreading. Halton is the top manufacturer of gas-tight fire dampers.



INDUSTRY PREFERRED

A0(60) fire and gas dampers

To prevent the spread of fire, smoke and gas between fire zones. Halton FDB2 dampers include seals for blades that are effective up to 300 °C (572 °F) and thermally-activated seals that expand when the heat rises to 150 °C (302 °F) in ductwork. These unique safety features ensure air tightness and low leakage of Halton FDB2 dampers.

Shut-off and airflow control dampers

Halton offers a wide range of products to control and balance the supply of fresh air. When necessary, dampers can be used to shut-off the ventilation ducts (possible emergency situation).

H-Class fire dampers and ATEX dampers

New energy source technologies demand higher integrity protection. Halton offers H-Class and ATEX approved dampers for example for ships that utilize LNG, batteries etc.

Why Halton Marine dampers?

- Excellent quality recognized by the owners and the major classification societies worldwide
- Manufacturer of over 150 000 classified fire dampers for marine market
- Proven results from independent reaserch instutes; fire tests, leakage tests, shock tests

Non-return and pressure relief dampers

Halton BLD non-return dampers prevent backflow and protect the fan and other system components against pressure. BRD pressure relief dampers regulate over pressure in designated areas and vent excess pressure e.g. in applications of gaseous fire fighting systems.

For demanding conditions

Halton has tested FDA, FDB2, UTA, BRD dampers in demanding cold conditions. The test results show that the dampers operated normally for the full duration of the test and kept their performance level after the test.

Droplet separators

In adverse conditions...



Even the calmest weather conditions contain salty spray particles that must be removed to protect ventilation systems, air handling units, generators, and engines. The high-efficient droplet separator results in maintenance, repair and replacement cost savings.

PROVEN RESULTS

Droplet separators

Halton DSH droplet separators are designed for demanding applications where reliability, easy installation and special design play an important role.

Separator vanes are designed to restrict the passage of moisture, salt spray and rain water e.g. into HVAC systems or engine room intakes. The unique design of the separator vanes enables high efficiency separation.

Halton DSH is used in a wide range of applications, where there are differences in wind speed and direction, levels of local turbulence, rate and droplet size, distribution of rainfall and surface water flow from the surrounding structure. DSH has been tested at the independent research center according to the EN13030 performance test with A-Class results for louvers subjected to simulated rain. Proven performance data is available.

External louvres

When droplet separation is not needed, an external louvre is effective in preventing objects entering into the ductwork. Louvres can be also used in air intakes.



For cold conditions

Halton offers also high-efficiency droplet separators with heated vanes to keep intake clear during critical weather conditions.

A solution for continuous operation during extreme conditions such as real arctic fog is also available. Contact Halton Marine for more information.



High-efficiency galley ventilation

Meet proven reliability, usability and hygienic conditions with low maintenance needs

Halton Marine is the leading supplier of galley ventilation equipment. With many years of experience, Halton Marine provides a wide range of solutions for demanding applications with technological advantages.

SAVE ENERGY

Capture Jet³ technology enables maximum capture with reduced airflows, smaller ducts, fans and reduced sound levels

Halton Capture Jet³ prevents the heat and impurities produced by cooking appliances from spreading to a galley. Compared to conventional galley hoods, Capture Jet³ technology enables a hood to operate with up to 45% lower exhaust airflow rates with the same capture efficiency. This opens a possibility to design smaller fans and ductwork. In the supply side, less make up air is needed for cooling purposes, enabling savings in air handling units and chillers. The technology results in savings of weight, space and energy consumption. Capture Jet³ does not necessarily require a separate supply air duct. In this case, a Capture Jet Fan takes the required air from the galley. This also saves space as well as construction and operational costs.

Water wash system for easy service

Halton KWH, KWT and KW3 hoods are equipped with an automatic washing system that cleans the filters, UV-lamps and the exhaust plenum at programmable time. The washing cycle is automated with a separate control cabinet. KWH, KWT and KW3 are especially designed for high capacity utilization in demanding applications where improved hygienic conditions, safety and reliability play an important role.

AWARD WINNING

M.A.R.V.E.L. demand based ventilation

The Halton M.A.R.V.E.L. system monitors the activity of cooking and optimizes the airflows in galleys. This intelligent system enables substantial savings in energy consumption while keeping the indoor environment conditions at an excellent level. Hundreds of customers worldwide rely on Halton M.A.R.V.E.L..

ALSO FOR RETROFITTS

The best grease filtration in the market

Based on Halton's patented highly efficiency Capture Jet solution and advanced mechanical KSA filter technology, the UV-light technology feature with scheduled maintenance keeps the plenum and duct virtually grease-free and mitigates the cooking odor and emissions. This also helps to reduce a serious fire risk and repetitive cleaning of the ducts.

WITHOUT UV-LIGHT TECHNOLOGY

Exhaust duct



Hood damper



WITH UV-LIGHT TECHNOLOGY

Exhaust duct



Hood damper







Innovations for cooking onboard

Show-cooking? Challenging spaces? Not a problem. Check out Halton's solutions.

MobiChef

Halton's MobiChef unleashes cooking from any ventilation ductwork. It is a completely autonomous mobile cooking station that can be used with light to medium-duty electrical appliances. To prevent the spread of smoke, heat, and impurities, Halton MobiChef utilizes the Capture Jet technology. The Capture Jets create an air curtain to contain and direct impurities released by the cooking process toward high-efficiency filters into an integrated recycling unit. Halton MobiChef continuously delivers the correct airflow, no more, no less. The speed of the fan is adjusted automatically to compensate for filter pressure losses as the filters get dirty. The exhaust airflow is then kept constant, ensuring that the capture efficiency remains at its maximum level.

JES

The Jet Extraction System (JES) has been specifically designed for the front cooking areas or architectural cooking concepts integrating appliances with medium input power. JES provides full capture and containment efficiency. The combination of glass and stainless steel makes JES aesthetically pleasing and gives cooking areas a unique style.



PolluStop

Non-traditional sites often require uncommon solutions for galley ventilation challenges. There might be strong requirements for the discharge of smoke and grease, high extra costs for exhaust duct runs, limited space etc. to consider. Halton's PolluStop advanced air purification system enables you to put a cooking appliances virtually anywhere. They have been specifically designed to efficiently control the emissions of professional kitchens and galleys. Thanks to the PolluStop, grease particles from the hood are neutralized and airborne cooking odours will be so minimal that it can negate the need to discharge the exhaust air at a high level of the ship.





Central vacuum cleaning system

Keeping it clean with invisible suction power and incredibly low maintenance costs



QUALITY CHOICE
over
2500
 SYSTEMS DELIVERED



Central unit



Inlet valve

**A traditional vacuum cleaner - what a waste!
 Halton ProClean central vacuum cleaning system is
 designed to last as long as the vessel. It is not only
 ecological system but it is super ecological.**

System description

Halton has developed a unique module-based design of a central vacuum cleaning system together with the Technical University of Tampere, Finland. Every Halton ProClean vacuum unit serves multiple simultaneous users. The module design minimizes investment and maintenance. A single fire zone can be operated even with only one central vacuum cleaning unit. A module contains a central unit (complete unit with two-stage filtration: cyclone and a fine filter, dust container, control cabinet, automatic filter cleaning), piping, inlet valves, pipe cleaning valves, and vacuum cleaning equipment. When a cleaning hose is plugged into an inlet valve, the central unit starts. Sensors optimize vacuum power and minimize power consumption continuously. When unplugged, the system is inactive. The Halton central vacuum cleaning requires minimum maintenance which results in fewer maintenance costs. The central unit, inlet valves and cleaning valves are all made of robust materials. Pipelines are designed to withstand vibrations, heavy use, and high suction pressure. Halton ProClean is available for new buildings and retrofits.

Advantages

- Ecological, designed to last as long as the vessel
- Usage of Halton ProClean promotes a healthier environment by removing hazardous micro dust and not creating dust raising swirls (proven results)
- Represents green values
- Silent and an odor-free operation. No need to isolate spaces due to cleaning
- Lightweight, fast, safe and easy to use
- Frees space for cabins
- Available from components to the whole scope including design services and installation

At your service

Halton is at your service throughout the whole life-cycle of the ship

In addition to designing and manufacturing products and systems specifically for ships, Halton Marine offers services to test and verify that the adapted solutions match and even exceed the customer needs. Halton increases safety, energy efficiency, indoor environmental conditions with its systems and services.

04 Retrofit

A successful dry-docking requires a lot of planning and some services should and can be done. Prior to dry-docking, Halton offers a detailed assessment and report of the improvements that would upgrade the ship to a more efficient, safe and better indoor climate condition solution. Halton has offered a substantial return on investment.

03 Operation

For ships in operation, Halton offers product and system monitoring, reporting and analytics it is possible to detect issues and if there is a need for maintenance, efficiency, safety, and indoor climate. User-friendly customer interface for maintenance for galley and engine room are connected to a network. Spare parts for Halton products are available from Halton sales offices around the world. Halton gives a complete solution for ship operation. Maintenance services complete the offering.

fits

g and renovation requires a great deal
erious decisions concerning what
can offer an HVAC Audits to analyze
the HVAC system with more energy-
utions. Typically Halton upgrades have

Design

01

In addition to extensive product data that helps in the design phase, Halton Marine offers testing and simulation services from full-scale mock-ups, fire tests, leakage tests, shock tests to CFD simulation services. Halton has Innovation Hubs and manufacturing facilities on three continents.

Halton services



Halton services

em surveys as well as system
d analyzing services. Based on the
see how the system is functioning
updates that improve energy
floor climate conditions.
interface enables proactive
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top priority for deliveries for ships in
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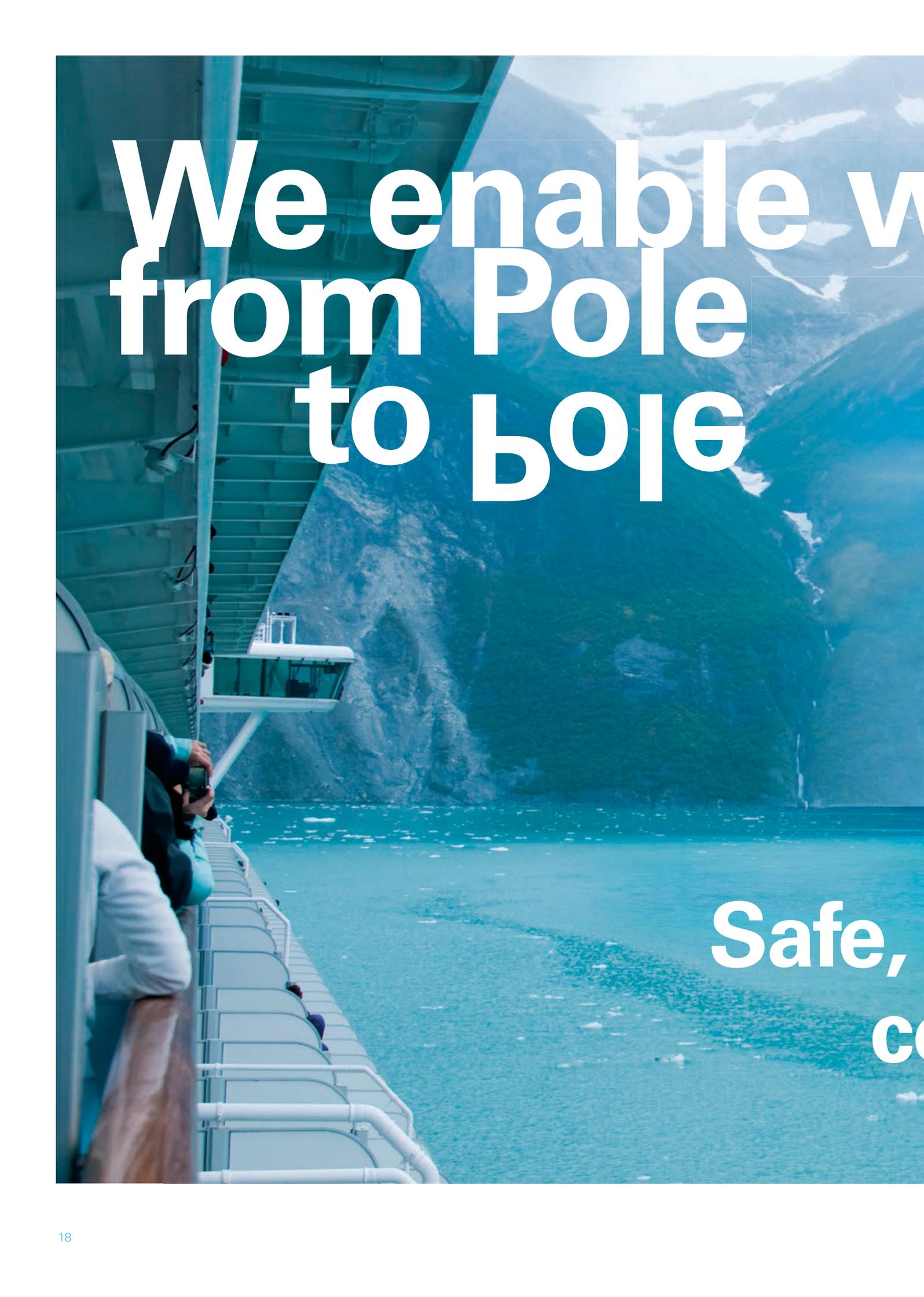
Building

02

Beyond comprehensive product and system deliveries, Halton offers commissioning services and user training.

Halton's project team is at the customer's disposal during the building stage.

Halton Marine guarantees all its products. Halton Marine can also offer extended warranty service that is tailored to match the needs of the customer.



**We enable you
from Pole
to Pole**

**Safe,
con**

A large white cruise ship is docked at a pier in turquoise water. The ship has multiple decks with glass railings and a prominent funnel. The background shows a blue sky with light clouds and a mountain range. The text 'wellbeing' is overlaid in large white font at the top left.

wellbeing

**energy-efficient and
comfortable indoor air**

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About us

Halton Marine

Halton Marine, one of the world's leading suppliers of marine HVAC, develops, manufactures and markets reliable, high-quality ventilation solutions specifically designed for different types of ships, offshore oil & gas, heavy industry and offshore wind. Our track record includes deliveries to over 150 major cruise ships, 200 oil & gas projects and 100 naval vessels.

Halton Group

Halton Group specializes in indoor environment solutions, ranging from public and commercial buildings to foodservice facilities. Founded in Finland in 1969, Halton operates today in over 35 countries around the world, with annual sales of €220 million and over 1600 employees. The company has production facilities in Brazil, Canada, China, France, Finland, Germany, Malaysia, United Kingdom, and the USA.