

# Halton Marine

– Energy efficient cabins



# Get ready to take the next step

## The exciting world of marine transport

Today 95% of all commodities are transported by ship and the tendency is expected to increase in the future. The global contracting of new buildings of 2,000 DWT and GT and above, reached an all time high in 2007. In the cruise liner sector, the industry has had an average annual passenger growth rate of 8,2% per annum since the 1980's. As the marine sector has grown, so have the costs of energy risen drastically, affecting the bottom line of the ship owner. At the same time, it is expected that through the stricter emission limits and tougher rules, the marine world will be taking the next step for protecting its incredible working field. Demand for the energy-efficient HVAC installations that contribute to protecting the environment, is thus on a steady increase, but naturally without scarifying the passengers' comfort.

## Individual air comfort with demand based ventilation

Cruise ships today welcome large numbers of passengers and employees worldwide. Outside conditions can be extreme, but the requirements stay the same. Typically, passengers and crew appreciate comfortable air-conditioning, good air quality, and a safe indoor environment. Halton Marine specializes in providing individual air comfort technology, according to customers' needs.



## With a touch of green values

Halton Marine's intelligent and energy efficient cabin ventilation systems, reduce the energy demand that also contributes to environmental respect. The energy consumption has a direct link to CO2 emissions. Within the local energy efficiency solution, Halton's control systems are connected to switches that can detect the presence of passenger being in cabin (or in similar areas) so that the ventilation can be set to serve in a energy-efficient mode while the cabin is not occupied. In the centralized, more advanced solution, Halton Marine offers a state-of-the-art energy efficiency technology, which operates throughout the system in a network, providing up to 35% of energy saving potential in cabin HVAC without sacrificing any customer comfort. The results of simulations and real-world studies on board speak for themselves.



## Superior benefits for all applications

The continued development work and testing of new technology, enables Halton Marine to offer its customers solutions, that save money, provide ultimate air comfort, and at the same time, contribute to protecting the environment. Halton energy-efficient cabin ventilation solutions are available for both new buildings and retrofits.

- Local or Advanced energy efficiency options available
- Direct savings in energy consumption through Halton Marine demand-based ventilation
- Intelligent automation and controls together with network solutions
- An advanced interface for Hotel Management. Possibility of controlling and monitoring cabin ventilation via network. Savings in troubleshooting time.
- Halton Ethernet solution can be easily embedded to an existing network, which is normally used for other services such as IP-telephone, Internet, multimedia, IP-television etc.
- Commissioning services
- Less CO2 emissions through energy efficiency
- Real return on investment. Calculation models, tests at Halton SEAVIEW and the data on board a cruise ship under operating conditions, indicate that it is possible to save up to 35% of HVAC energy consumption in cabins
- Halton Marine co-operation partner, Saint-Gobain Marine Applications, supplies high-efficiency glass and weight-saving insulation materials, that add value to the common target: saving energy on board ship.





Photo courtesy of Royal Caribbean International

## Local energy efficiency

Halton's control systems are connected to switches that can detect the presence of a human being in cabin (and similar areas), so that the ventilation can be set to serve in a energy efficiency mode while the cabin is not occupied. When the passenger removes the key-card from its holder, the air-conditioning is forced into standby mode. Even though the unnecessary cooling and heating is limited while the cabin is not occupied, the indoor climate conditions are simply maintained at a comfortable level. The standby indoor climate conditions are easily preset for each cabin.

The individual comfort level is quickly re-established when the passenger returns to the cabin. In case the passenger opens the balcony door, the terminal unit damper closes to minimum, preventing any unnecessary cooling. With the local technology, it is possible to achieve up to 8% savings in cabin HVAC energy consumption.

### Halton scope of supply

Halton Marine scope of supply includes the following products and components that are easy to install, in order to build a locally operating energy efficient cabin:

- Halton semi-automatic or automatic terminal unit with energy saving inputs for key-card and balcony door switches
- Halton CP-unit (room thermostat)
- Inter-connection cable
- Commissioning services as an option



## Advanced energy efficiency

Connecting a Halton cabin ventilation system to a network enables substantial savings in energy consumption on board ship. One of the best benefits is the active operation between AHU (Air Handling Unit) and terminal units. Data from terminal units is collected and calculated to control the AHU in two ways:

### 1. Adjusting the fan operation to optimal level

The AHU control calculator monitors and collects data of the terminal units, as well as functional details. Collected data enables the calculator to determine the pressure in front of each unit. Pressure data is used to optimize the fan operation, which cuts down the unnecessary energy consumption. All this is done without losing any comfort in the cabins.

### 2. Minimizing the need to cool down the air inside the AHU

The AHU control calculator collects the re-heater information from each terminal unit. Based on the re-heater's utilization rates, AHU's chiller and heater

valves are controlled to cut down unnecessary cooling and prevent unnecessary electrical heating inside the terminal unit. The supply air is kept actively on optimum temperature 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 scope of supply

In addition to the Local energy efficiency solution, the Halton Marine Advanced cabin ventilation solution includes the following products and components:

- Automatic terminal unit
- LON or Ethernet adapters
- AHU control calculator
- Network components such as routers, repeaters, switches
- Tailored project based software
- Possibility to control, monitor and adjust the cabin parameters from ECR or hotel management

Halton Marine  
Main sales office and factory  
Pulttikatu 2  
FIN-15700 Lahti, Finland  
Tel. +358 (0)2079 2200  
Fax +358 (0)2079 22060

haltonmarine@halton.com  
www.haltonmarine.com

Halton Marine's distributors  
are listed at [www.haltonmarine.com](http://www.haltonmarine.com)

Sales office, China  
Tel. +86 (0)21 5868 4388  
Fax +86 (0)21 5868 4568

Sales office, Norway  
Tel. +47 5169 8308  
Fax +358 (0)2079 22060

After sales office, USA  
Tel. +1 270 393 7214  
Fax +1 270 843 9931

## HALTON MARINE ENERGY-EFFICIENCY CONCEPT

### HMF single-duct cabin unit

Automatic cabin unit with pressure independent or dependent operation system.

### HVB vertical, single-duct cabin unit

Automatic cabin unit with pressure independent or dependent operation system.

### HMR dual-duct cabin unit

Automatic cabin unit with pressure independent operation system.

### HFR/M multi-connection cabin unit

Automatic cabin unit with pressure independent or dependent operation system.

### HME sound attenuator and balancing box

Easily adjustable sound attenuator and balancing box for supply or exhaust.

### HMM single-duct cabin unit

Manual cabin unit. Electric re-heater with advanced controller available.

### HMC single-duct cabin unit

Manual cabin unit. Recommended to be used with Halton's TCL diffuser.

### FCU fancoil

For vertical or horizontal installation.

### LON / Ethernet networks

Network options to build an energy-efficient and comfortable air-conditioning solution on board.

### Network supervision software

To manage, control and adjust cabin indoor climate conditions via network.

### Control panels

A wide selection of room control panels with different designs.

### DLQ, TDM, TBM diffusers

Different types of diffusers. Architectural, perforated and solid models available.

### Exhaust products

A wide range of grilles and valves available.

### The Common Target

Halton Marine is in the business of improving our customer's profitability. We partner with like-minded companies to bring you the latest innovations. High-efficiency glass materials by Saint-Gobain Marine Applications are a part of Energy Efficient Cabin Ventilation.

  
www.saint-gobain-marine.com