

MARINE APPLICATIONS

## MARINE

» PRODUCTS AND SOLUTIONS  
FOR MARINE APPLICATIONS



**AT FLÄKTGROUP WE WANT TO EXCEED** the increasing demands for high living comfort, energy efficiency, safety and life-long profitability regardless of geographic location. Whether you operate in arctic or tropical conditions you can rely on our products and solutions to fulfill these demands. We achieve this through continuous product development and innovations as well as first class service, customer support and spare parts supply, utilising our global distribution network for your benefit.

**MARINE APPLICATIONS PUT HIGH DEMANDS** on HVAC products and solutions. The products must reliably provide the highest degree of indoor climate regardless of climate zone where the vessels are operating. We ensure excellent quality and performance to optimize the products to build complete HVAC solutions. Our manufacturing process is certified under ISO 9001, ISO 14001 and EMAS (environmental management). The aim of FläktGroup is to design for a good environment, a good indoor climate as well as low operating costs.



# MEETING THE HIGHEST DEMANDS

**EFFICIENT HVAC SOLUTIONS FROM  
ARCTICAL TO TROPICAL CONDITIONS**



# WE BRING AIR COMFORT AND FIRE SAFETY TO THE SEVEN SEAS

Based on a century of experience, FläktGroup provides the products needed to build complete HVAC systems and to create comfortable ventilation in cabins as well as public and service spaces. Our vast product range includes Air Handling Units, Fans, Ducts and Air Terminal Devices, all developed and manufactured especially for Marine applications. Our extensive reference list is a testament as to being a reliable partner in complex projects.

*Learn more at [www.flaktgroup.com](http://www.flaktgroup.com)*



## ADVANCED SELECTION TOOLS

Our range of selection tools is amongst the most comprehensive of its kind in the world. They are both powerful and easy to use, to ensure that you can always find the optimum functionality and most energy efficient product for your application.

*» Get access to all our selection tools at [www.flaktgroup.com](http://www.flaktgroup.com)*

# Energy efficiency – the essence of our solutions

All our research, development and testing activities are singularly focused to provide our customers with the best and most efficient solutions possible to their ventilation and indoor climate challenges. From new and innovative concepts, smart material choices and manufacturing processes to advanced controls, minimised running cost and easy maintenance, FläktGroup always strive to deliver the best for your long-term economy and our environment.



## With FläktGroup you can always count on...

# 1

Extensive knowledge of products and solutions for the marine industry, with an impressive track record.

# 2

An experienced manufacturer of high quality HVAC Products with specialisation in hazardous application (ATEX).

# 3

Dedicated Sales and Technical teams for global and local support.

# 4

Support to end-customers and designers during basic design and engineering for an optimised solution.

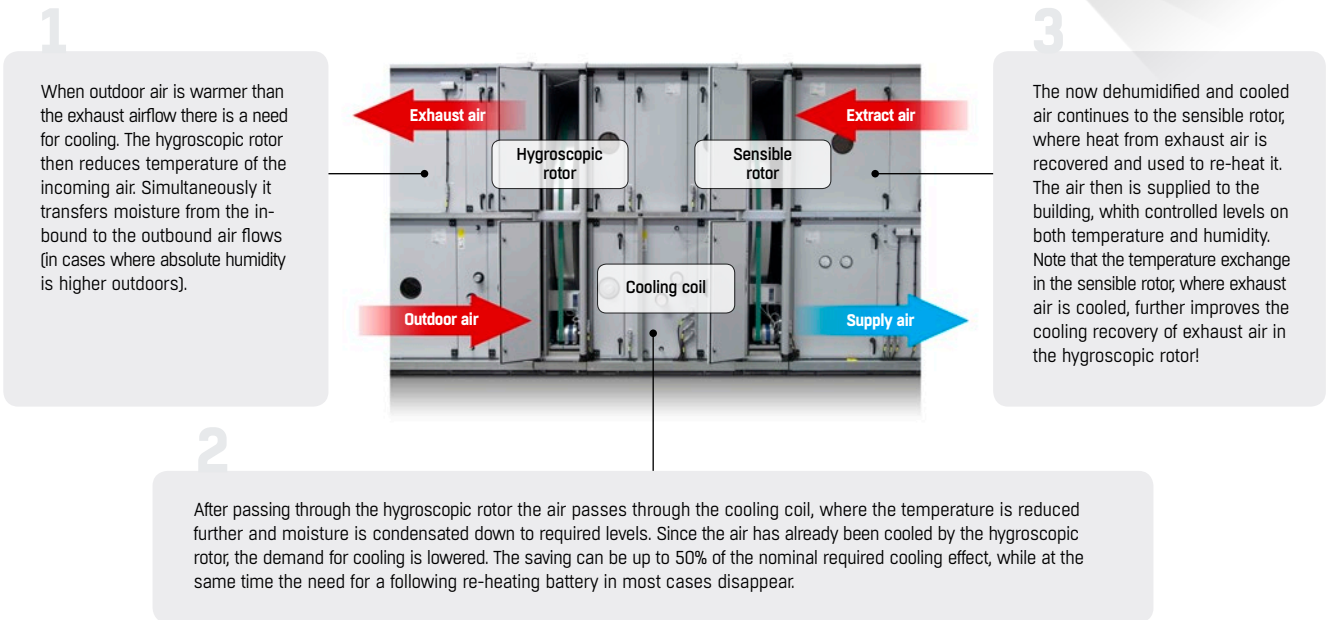
# 5

Reliable products, long life cycle, suitable for marine and hazardous environment and local service network.

# TWIN WHEEL SYSTEM HUMIDITY CONTROL AND ENERGY SAVING



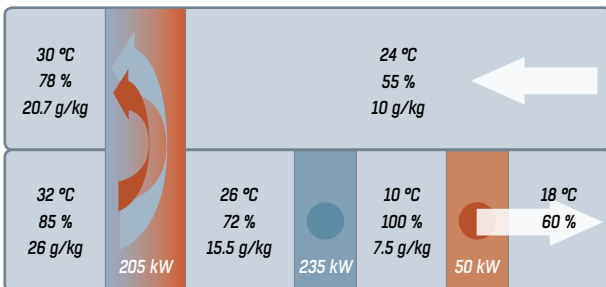
FläktGroup has designed the Twin Wheel system to improve on cooling and humidity control versus other solutions on the market. The purpose is to produce cool and dry air while lowering the cost for these processes compared to conventional systems. **The Twin Wheel system contains three main parts – the hygroscopic rotor, a cooling coil and a sensible rotor.**



## EXAMPLE | MIAMI SUMMER, AIR FLOW 5.25 m<sup>3</sup>/s

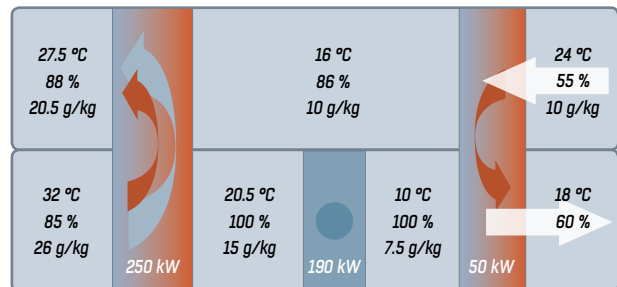
### > EXISTING SOLUTION

- Cooling coil: 235 kW
- Heating coil: 50 kW



### > TWIN WHEEL SOLUTION

- Cooling coil: 190 kW (-20%)
- Heating coil: None (-100%)



### IMPACT ON INVESTMENT COST:

- Reduction of cooling power by **45 kW (2.3 l/s / 7/12 °C)**
- Reduction of heating coil: no piping, no power nor energy for heating of air in AHU, by **50 kW (0.6 l/s / 80/60 °C)**

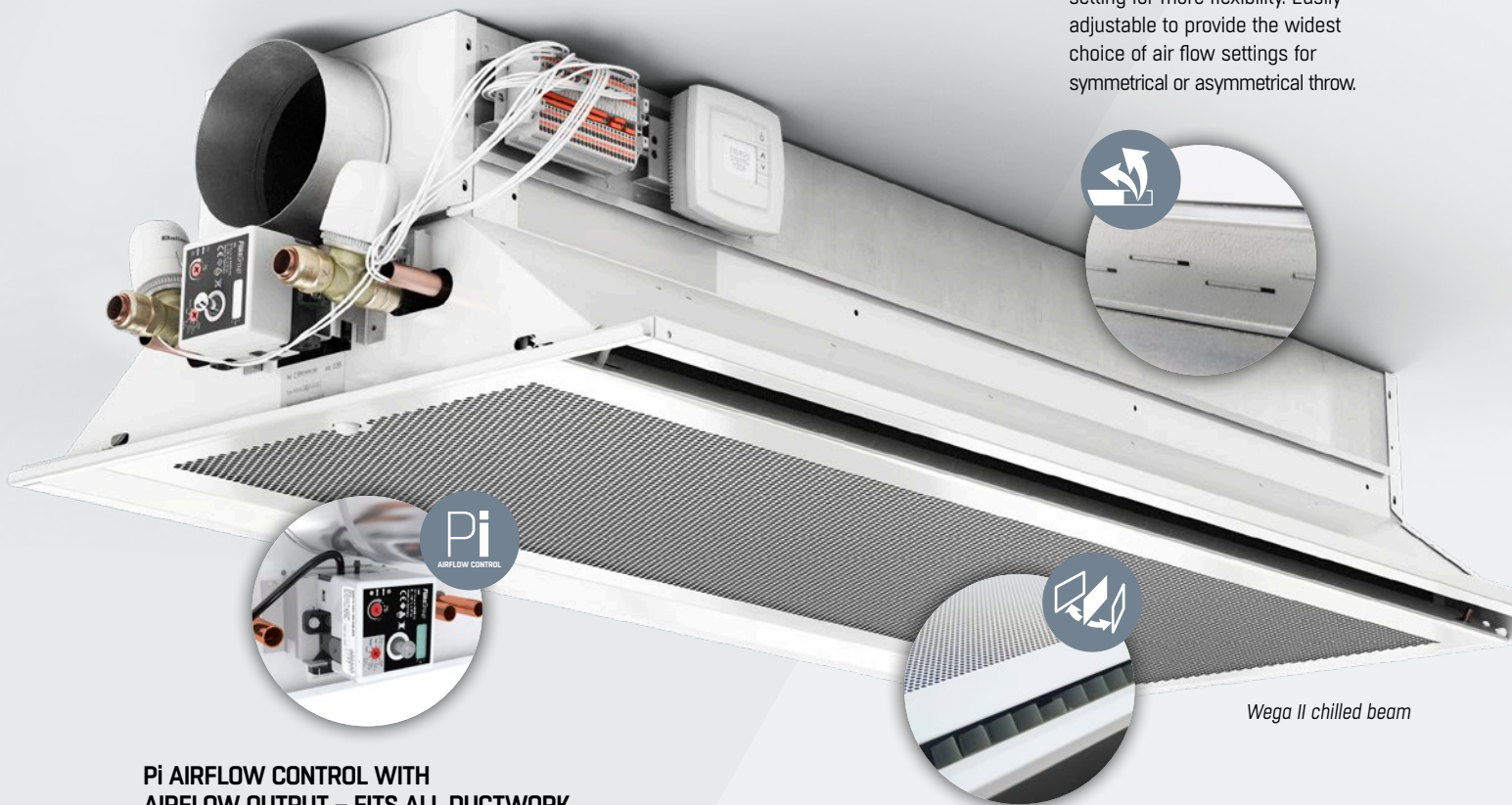
# FLÄKTGROUP CHILLED BEAMS

## A PERFECT MATCH FOR COMFORT AND EFFICIENCY ON BOARD

The Twin Wheel is the perfect match for our wide range of chilled beams. The chilled beams are themselves efficient parts of a circulating liquid-based flow, that besides energy savings also lowers noise, amount of duct-work and required capacity of the main Air Handling Unit.

### ENERGY CONTROL

Rail mounted variable geometry nozzles with 36 position airflow setting for more flexibility. Easily adjustable to provide the widest choice of air flow settings for symmetrical or asymmetrical throw.



Wega II chilled beam

### PI AIRFLOW CONTROL WITH AIRFLOW OUTPUT – FITS ALL DUCTWORK

For added energy saving, nozzle change can be actuated to match airflow to occupancy level and kept at set values regardless of pressure changes in ductwork. Simply link to presence or CO<sub>2</sub> detection devices. Airflow information is directly available for exhaust damper.

Linear airflow control provides optimal coanda control preventing dumping through the widest airflow range and thus maintaining comfort. Actual flow output is easily linked to exhaust for balancing ventilation.

The Pi-function is available as an option and can be retro fitted.

### FPC – FLOW PATTERN CONTROL

The adjustable plastic vanes enable optimized air diffusion. By a combination of different angles on each side, it is possible to adapt the flow pattern to always maintain optimal comfort in the room with the following benefits:

- Vary throw direction
- No tools required
- Accessible from room

## BETTER HYGIENE AND LESS CLEANING WITH CLEANVENT



Dirty supply and exhaust valves have become a common and unsightly view in many marine applications. Our innovative solution is CleanVent® – with the unique Avalvon® nano-technology coating – which makes the surfaces of air terminal devices dirt repellent.

- Less need for cleaning
- Better indoor air quality
- Aesthetic looks for longer
- Economical life cycle
- Safe & environmentally friendly
- Suitable for all marine and building applications
- Comes now as standard on all our metal supply & exhaust air valves

## WEIGHT SAVINGS EQUALS COST SAVINGS WITH FLÄKTGROUP MINIDUCT®

Miniduct is the optimum circular ductwork for your ship's air-handling system. It is lightweight, tight, easy to install and maintain and combines uniform appearance with robust construction that can handle the harshest environments. In particular the low weight of the Miniduct system can make a great contribution to substantial savings in propulsion costs.



## EXPERIENCE YOU CAN RELY ON

### CRUISE SHIPS

- Oasis 3, A34, Oasis-class RCCL, 2016 (ducts, fans, ATD's)
- Europa 1 & Europa 2, Hapag Lloyd, 2013 (AHU, fans, ducts, ATD's, cabin units)
- TUI 1, TUI Cruises, 2014 (AHU, fans, ducts, ATD's, cabin units)
- TUI 2, TUI Cruises, 2015 (AHU, fans, ducts, ATD's, cabin units)
- Viking Grace, Viking Line, 2013 (ducts, fans, ATD's)
- Oasis of the Seas, RCCL, 2009 (ducts, fans, ATD's)
- Allure of the Seas, RCCL, 2010 (ducts, fans, ATD's)
- Aida 1-6, Aida Cruises, 2006-2011 (AHU, cabin units, fans, ATD's)

### FERRIES

- MSC Cruises, MSC, 2006-2010 (AHU's, ducts, fans)
- Viking Line, XPRS, 2008 (fans, ducts)
- Brittany Ferries 1367 & 1368, 2010-2011 (ducts)

### NAVY

- US Navy/Coast Guard
- Royal Navy/Coast Guard
- Italian Navy/Coast Guard
- Swedish Navy/Coast Guard
- Turkish Coast Guard
- Malaysian Navy/Coast Guard
- Norwegian Navy/Coast Guard
- Greek Navy/Coast Guard
- Canadian Coast Guard



## Products for crew, cabin and communal areas

A large range of ventilation system products where the airflow is controlled and maintained individually in each cabin for maximum comfort, energy efficiency & recovery and durability.



### *Air Treatment* **AIR HANDLING UNITS**

EU, stable, high performance Air Handling Units with a large variety of different functional sections.



### *Air Distribution* **MINIDUCT**

Lightweight, easy to install, circular ductwork with excellent tightness for air handling systems.



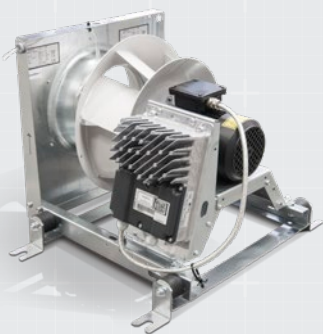
### *Air Distribution* **SOUND ABSORBERS**

Sound absorbers designed for optimum attenuation performance even at small sizes.



### *Air Diffusion* **AIR SUPPLY UNITS**

Air supply units with individual air flow adjustment for single or dual duct systems.



### *Air Movement* **PLUG FANS**

CentriFlow 3D plug fans – designed for optimised system efficiency and low noise. Air flow range from 200 to 60.000 m<sup>3</sup>/h.



### *Air Diffusion* **VALVES**

Exhaust valves for wall or ceiling mounting with low noise levels. With CleanVent as standard.



### *Air Diffusion* **DIFFUSERS & GRILLES**

Wide range of quiet ceiling diffusers with superb mixing of room air for optimum comfort. Grilles for wall or ceiling mounting, providing low sound level and easy adjustment.

## Products for machine and mechanical room areas



Air Technology equipment and solutions which complies to the strict demands and regulations for machine and mechanical room installations.



### Air Treatment **ATEX AIR HANDLING UNIT**

Modular ATEX certified AHU's in stainless steel offering full flexibility in size, options and functionality.



### Air Movement **AXIAL FANS**

Energy efficient axial fans in a wide range of sizes and capacities. Also for ATEX and high temperature use.



### Air Movement **ATEX FANS**

High efficiency direct driven plug fans and centrifugal fans in normal and HT specification. Covering airflows up to 10 m<sup>3</sup>/s and 50 m<sup>3</sup>/s respectively, with pressure rises up to 3300 Pa.



### Air Diffusion **GRILLES**

Grilles for wall or ceiling mounting, providing low sound level and easy adjustment.



### Air Management **FIRE & SHUT OFF DAMPERS**

Tested and certified self-closing dampers to prevent fire and toxic gases spreading via ventilation ducts and to isolate sections.



### Air Management **IRIS BY FLÅKTGROUP**

IRIS damper for exact and quick air measuring and regulation. Available in stainless and acid proof steel.



### Air Management **VAV DAMPERS**

Optivent Ultra with Ultrasound technology takes demand control ventilation to new levels in terms of precision, reliability and ease of installation.

## Products for restaurant, kitchen and spa areas

Restaurant guests want a comfortable, odour-free place to relax and enjoy their meal. Workers in the restaurant and kitchens need comfortable temperatures and clean indoor air, to maximise productivity. FläktGroup provide these solutions!



### Air Diffusion **AIR SUPPLY UNITS**

Range of insulated and uninsulated plenum boxes for all types of air diffusers.



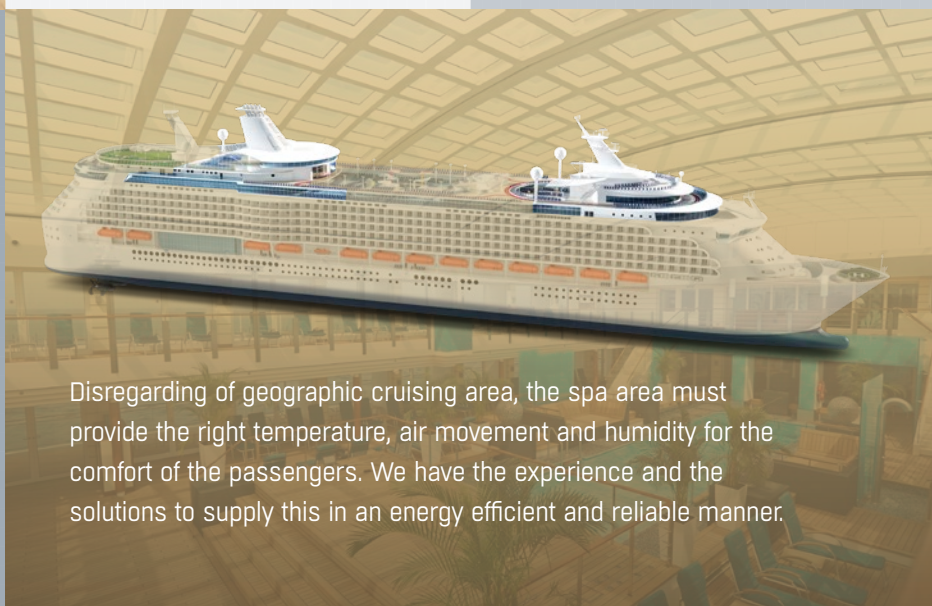
### Air Diffusion **GRILLES**

Grilles for wall or ceiling mounting, providing low sound level and easy adjustment.



### Air Diffusion **DIFFUSERS**

Designed for galleys and kitchens where demands on hygiene and corrosion resistance are high.



Disregarding of geographic cruising area, the spa area must provide the right temperature, air movement and humidity for the comfort of the passengers. We have the experience and the solutions to supply this in an energy efficient and reliable manner.



### Air Diffusion **VALVES**

Exhaust valves for wall or ceiling mounting with low noise levels. With CleanVent as standard.



### Air Diffusion **DIFFUSERS**

Wide range of quiet ceiling diffusers with superb mixing of room air for optimum comfort.



### Air Distribution **MINIDUCT**

Lightweight, easy to install, circular ductwork with excellent tightness for air handling systems.

## EXCELLENCE IN SOLUTIONS

WWW.FLAKTGROUP.COM

MARINE APPLICATIONS 10171GB

FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

### PRODUCT FUNCTIONS BY FLÄKTGROUP

Air Treatment | Air Movement | Air Diffusion  
Air Distribution | Air Filtration | Air Management & ATD's  
Air Conditioning & Heating | Controls | Service

» To learn more about our offering,  
please visit [www.flaktgroup.com](http://www.flaktgroup.com)

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