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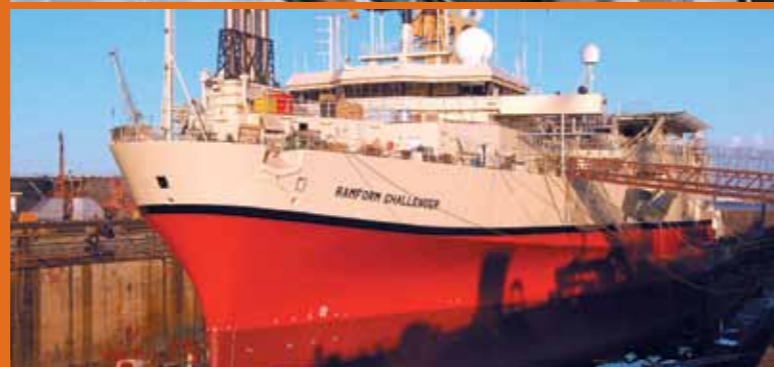
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*AERON - Your total service partner in HVAC Systems
to the global shipping industry*

Blue Environmental Effect

Most people would agree that it is important to protect the environment and there is increasing focus on "green" ships. We believe that even more investments would be made in green solutions if these were also cost-effective.

The world needs more efficient energy solutions. Our commitment is to provide smart and energy efficient technical solutions that will benefit our customers and the environment.

The crew of a modern ship needs a good indoor climate when sailing in the tropics or cold climates. A good indoor climate improves well-being and productivity and prolongs the life-time of the technical equipment.

Aeron is a leader in supplying energy efficient HVAC systems that ensure a good indoor climate on-board a modern ship. During the ship's lifetime, this benefits the customer and the environment. We call this the Blue Environmental Effect.

- ✓ Benefits the customer
- ✓ Benefits the environment

- Energy efficient
- Comfortable indoor climate
- High quality Marine HVAC systems



A lifecycle HVAC partner

We want to be a partner for our customers throughout the ship's lifetime, right from pilot studies, design, project execution and through maintenance.

By being such a partner, our customer can be sure they have a good indoor climate provided with energy efficient solutions that benefits both the customer and the environment.



Head office in Flekkefjord, Norway

Aeron is a total contractor for marine and industrial Heating, Ventilation and Air-Conditioning - HVAC systems. We are a leading supplier of complete HVAC systems to the global shipping industry with headquarters in the Norwegian coastal city of Flekkefjord.

AERON MARINE HVAC systems are designed to ensure optimal climate solutions for personnel, cargo, machinery and instruments on board all types of ships. We want to be involved at all stages of the building process and for the entire lifespan of installed systems.

With more than 30 years of experience in the HVAC business, AERON has developed a high quality product range specially designed for shipboard environments. Years of experience have made us a reliable company with a good track record.

Aeron makes shipbuilding even more attractive through providing specialised products and services tailored for modern quality ships. We offer complete Heating, Ventilation and Air-Conditioning system packages comprising:

- Pilot studies / Analyses
- Design & Engineering
- Equipment delivery
- Installation/Supervising
- Commissioning/Testing
- Operator Training
- After Sales services

You will find more technical information in our product catalogue at our web site www.aeron.no



AERON AFTER SALES SERVICE

Our After Sales Department is the customer's link and lifeline to spare parts and maintenance. Our staff will ensure that our plants continue to live up to the customer's expectations. Our after sales service department will always be on hand and offers a variety of service programmes, from service on demand, service contracts for preventive maintenance to system management. AERON will be at your service with professionals ready to analyse and solve any problem before it becomes critical.

Retrofit provides services for conversions, upgrades and replacement of all types of HVAC systems, including those from other manufacturers. We specialise in surveys and proposals for complete conversions, including design, materials, installation and commissioning. We have extensive dry dock experience, typically involving exchange and installation of equipment on vessels ranging from cruise ships and ferries to merchant vessels. Our key clients are ship owners and shipyards across the world.

A RELIABLE PARTNER

Aeron has supplied HVAC systems for over 30 years, and one of our core values is Reliability and Aeron for sure is a partner our customers know they can trust. We are proud that so many of our customers choose Aeron again and again, year after year. But we do not let success go to our heads, and work hard to fulfil the requirements and expectations our customers have of us.

Aeron believes strongly that job satisfaction is vital to maintain highly skilled personnel, a policy confirmed by the extremely low personnel turnover we experience, and taking Aeron from a small company to one of the world leaders within maritime HVAC systems.

Consequently, we have a very high level of experienced and skilled engineers and service engineers within a wide range of fields, and which are flexible, service-minded and used to travelling all over the world on behalf of our customers.

WE PUT ENERGY IN ENERGY TO SAVE MONEY

Investing to save money is well worthwhile! At Aeron, we analyse HVAC plants and compile a status report, propose improvements and energy-saving solutions to improve the indoor climate and reduce energy consumption.

Within the AF Group, we have extensive experience of spotting opportunities for energy savings in buildings on land, and now offer the same for ships. We know the world faces high energy demands in the future, and that it is important to save energy where we can. And when it is possible to save money in the process, the choice is simple.

We recommend shipowners to focus on costs over the vessel's lifetime, and not just the cost of building. By investing in more energy-saving solutions, the result is an environment-friendly ship, which can repay the extra investment within a few years.

More and more shipping lines are realising that investment in an advanced HVAC plant is money saved. And when the result is a better indoor climate with increased levels of employee satisfaction and efficiency, the wisdom of such investment becomes immediately apparent.





1

Pilot Studies/Analysis

- On board inspections
- Condition reports
- Clarifying requirements and demands
- Calculation of energy-saving potential
- Preparation and suggestion of optimised HVAC solutions



2

Design & Engineering

- Design and calculation of heating and cooling capacities
- Airflow and pressure calculations
- Design of an optimised HVAC system with components.
- All necessary approvals from authorities and classification bodies



3

Documentation

- Complete documentation for installation, maintenance and operation.
- Documentation of energy savings and environment-friendly solutions.
- Necessary documentation for comfort class with vibration and climate rating.
- Documentation of Clean Class, Clean Design and Green passport.



4

Equipment delivery

- Delivery of all Aeron marine HVAC components
 - Air Handling Units
 - Refrigeration machinery for air-conditioning
 - Automation control systems
 - Cabin units
 - Spiro pipes
 - Fans, louvers, sound traps, dampers



5

Execution & Installation

- Dismantling and/or installation
- Cleaning, conversions and upgrades
- Supervision



6

Commissioning

- Start-up and trial run of all HVAC systems
- Testing of all HVAC equipment
- Adjustment of airflow, temperature and humidity in all rooms
- Measuring and verifying all approved drawings

A lifecycle HVAC partner for the ship.

We want to be a partner for our customers throughout the ship's lifetime, right from pilot studies, to consultation, project execution and through to maintenance. By being such a partner, our customers can be sure that their own personnel have a well indoor climate provided with optimum energy-efficiency which saves money.

One of the key issue to make profitable investment is not only to focus on the investment of the newbuilding, but consider the total cost including the operation time. It is a known fact how important a well dimensioned HVAC system is for the indoor environment on-board a ship. Fresh air is vital to both personnel and machinery. Feeling good improves productivity.

We have always worked closely with our customers in the marine environment, learning their needs and meeting their special requirements. The experience gained has been incorporated into our products and made Aeron a highly competent supplier of marine HVAC systems.



7

Operation training

- On-site training and instruction of operating staff
- General training in HVAC products and systems



8

After sales service

- Supply of all spare parts for HVAC systems
- System management
- Preventive maintenance with service contracts
- On-line and on-site troubleshooting
- System optimisation
- Handling of warranty issues
- Cleaning and upgrading
- Conversion and replacement of equipment



UPGRADING & CONVERSIONS.

Retrofit provides services needed for conversions, upgrades and replacement of all types of HVAC systems. A ship is not just a workplace, but a second home for the crew. Under such conditions, it is important that the indoor climate works properly, delivering fresh air to the entire ship. A well indoor climate improves the health on board and reduces the risk of sickness among the crew.

Aeron specialises in HVAC plants, and knows what needs maintaining and when it will be cost-efficient to replace components to maintain a good indoor climate.

We find that many shipping lines want increased refrigeration capacity to be able to operate ships in warmer waters. Aeron can solve this dilemma by performing transmission calculations in every compartment to demonstrate level of need. With our long experience we know what to replace, what to keep and what to upgrade to make profitable investments for our customers.

THE AIR HANDLING UNIT AS THE HEART OF A HVAC SYSTEM.

The Air Handling Unit – AHU - is the heart of any HVAC system. This is where the air is filtered, cooled or heated, and humidity added or reduced. The dimensioning of the AHU along with the rest of the components is therefore the key to a good, energy-saving indoor climate.

Aeron supplies AHUs of excellent quality, custom-built for use on board ships. High quality and flexibility mean our AHU's are market leaders. "The Aeron Marine Air Handling Unit" is robust, and can tolerate even the most extreme climatic conditions, from the North Sea to the Equator. Our AHU's are designed and customised for each individual ship, and when replacing older equipment, can be built to fit within the same available space. They can also be adapted to fit the ship's existing air ducting to avoid expensive replacement.

AHU's which do not meet modern quality requirements, or which are too old to justify further maintenance, should be replaced. In many instances this is not an easy job, as it can often be a complicated and time-consuming operation, because many such plants are installed deep in the hull in a confined space. Previously, it used to be necessary to cut a large hole in the ship to be able to install a new AHU - but fortunately, this is no longer the case.



RETROFIT

The process of removing existing Air Handling Unit (AHU) and installation of a new AHU.

NEW - FLAT-PACK MARITIME AIR HANDLING UNITS.

We have developed a special system which makes it possible to supply 'flat-pack' AHUs as an alternative to fully assembled. This unique system means that the unit can be taken down to the ventilation compartment in pieces, and assembled there. This saves a lot of time and cost compared to cutting a hole in the hull!

Neither does the work have to be performed at a shipyard, as it can be done anywhere in the world, and even while the ship is in transit. Aeron supplies and installs AHUs all over the world and we can project-manage the entire process without involving external personnel if the customer so desires.

Aeron is based at Flekkefjord, south of Stavanger, the centre of the Norwegian oil and gas industry. If the customer requires it, we can perform all forms of upgrades simply and cost-efficiently here.



The room with the old AHU



Dismounting of the old AHU



The old AHU is removed



This time the AHU was delivered complete, ready for easy dismantling and rebuilding on site.



The base frame for the new AHU is installed



The spiro pipes may be slightly adjusted



The holes for spiro pipes can be taken on site to fit 100% with the spiro pipe system.



Installation of the spiro pipes connection to the AHU.



The new AHU is under installation



The new AHU is installed and the waterpipes will soon be finished.



SERVICE

Maintenance and service is vital to ensure optimum air quality and long life for the HVAC plants. Aeron offers both service "on demand" and a range of service agreements, which can be adapted to customer requirements.

Aeron can perform service on all ventilation and air-conditioning equipment on board, even if not supplied by Aeron. A normal on-board service visit will involve checking all service points listed in the maintenance manuals. Normally, we will also replace all consumables such as filters, drive belts, bearings and other key parts to ensure continued optimum function.

All our service engineers are skilled and trained in every detail of our HVAC systems. Supervising, commissioning and service is based on customer demand and is supplied worldwide. Service and inspection visits are conducted through our own trained service engineers or by authorized partners.

Our After Sales department is located at our head office in Flekkefjord, Norway, where we have skilled engineers ready for technical support.

NEW - PREVENTIVE MAINTENANCE & SERVICE AGREEMENTS

A breakdown on the HVAC systems may cause serious problems for the ship operation. To prevent any breakdown and keep the systems up to date, regularly maintenance and service is required.

Aeron has a number of service agreements customers in land based industry and we are now also offering a service agreement to our customers for all HVAC systems onboard any kind of ships. We offer regularly service, maintenance and priority for all our customers with service agreement. We also serve our customers with a service agreement with special reduced price for spare parts. We recommend to contact our service department for an offer of a service agreement. Please contact us at service@aeron.no

SPARE PARTS

Preventive maintenance helps reduce the risk of equipment breakdown at sea but cannot eliminate it entirely. Climate, temperature and vibration can all cause an air-conditioning system, refrigeration plant, or other crucial onboard equipment to break down. When this happens, the first priority is to get the equipment operating with minimal disruption to the vessel's schedule.



AERON AFTER SALES OFFERS:

- An extensive stock of filters and spare parts available
- Attractive prices for new filters and spare parts
- Spare parts normally sent by courier same day as ordered
- Worldwide network of representatives to assist you
- Experienced marine personnel ready to assist you
- Delivery of quality spare parts quickly and efficiently
- High quality spare parts at a favorable price



GREEN AND PROFITABLE COMFORT

Simple, economical measures can be all that are necessary to make a ship more environment-friendly, save energy and increase comfort. To follow are a few examples of measures Aeron can implement:

• Cleaning the ducting system

We can send micro-cameras into all air ducts to check their condition and perform necessary cleaning, including documentation of the finished result. This can be extra important if using a humidifier on board, as humidification can increase the build-up of bacteria and dirt in the system. To keep the spiroduct clean is profitable as it reduces spreading of bacteria, improves the air quality and reduces the resistance and the energy consumption in the HVAC system.

• Readjustment of the plant

After several years in use, the plant will often have been adjusted which can cause it to run out of balance, and the indoor climate can be improved by simply readjusting it, to obtain the correct air volume for all compartments.

• Pressure control of HVAC system for accommodation.

Automatic regulation of airflow pressure in accommodation reduces the energy consumption and prevents unbalance due to regulation in each single cabin. The phenomenon on board ships of the problem of reducing airflow in some compartments will increase the airflow in others because of the increase in pressure.

By using a frequency converter with a pressure regulator, the pressure in the system will be constant and increase the indoor comfort and reduce the energy consumption. An complete VAV system may also be delivered and will even increase the energy reduction.

• Temperature control of fans for thruster compartments.

Normally, fans for the thruster compartment do not have to be on all the time. They are usually designed to be able to cool the compartment when the thrusters are working at full speed. By installing frequency converters with temperature control, the air volume will be automatically reduced according to cooling need.

In addition to saving energy, drawing in humid air will also be avoided. This will reduce corrosion and thus increase the service life of the equipment fitted in the compartment.

• Temperature- and pressure-control of engine room fans.

Engine room fans are also designed to supply sufficient air when the engines are in use at maximum capacity. This means that the need for full air volume will not always be necessary. With modern, inexpensive frequency converters, we now recommend temperature and pressure control of engine room fans using frequency converters.

The pressure control will adjust the fans to secure necessary over pressure in the engine room. The temperature control will secure the right temperature at all times in the engine room.

This will also avoid unnecessary amount of humid air in the compartment, reducing corrosion and giving a better working environment. It will also reduce noise on deck, not to mention reducing costs by reducing energy needs, as the fans will never run more than necessary.

• Control of the water flow for cooling and heating

The correct amount of humidity is essential for heating and cooling. Even the best refrigeration and heating plants run inefficiently when they do not have the correct amount of water in their hot and cold supply pipes.

We often find the water amounts incorrect and by adjusting the water flows, the system becomes much better with correct performance and without cavitations. This is an important issue to check when new plants are commissioned and should also be checked during service inspections.



AVOID EXHAUST GAS INBOARD

Many ships have a problem with exhaust gas from the engines seeping into the air intakes, to the detriment of the indoor climate. Naturally, this must be taken into account when designing new ships, and the placement of intake louvers. Relocating the intakes on existing ships will be prohibitively expensive. Aeron can offer attractive solutions for installation of carbon filters to solve the problems of exhaust gas in AHUs. The use of Carbon filters will eliminate the exhaust gas from coming into the accommodation and you will easily get back your need for fresh air.



DROPLET SEPARATORS, FILTERS AND COALESCERS

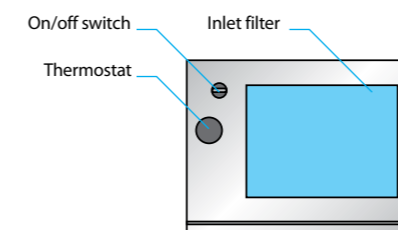
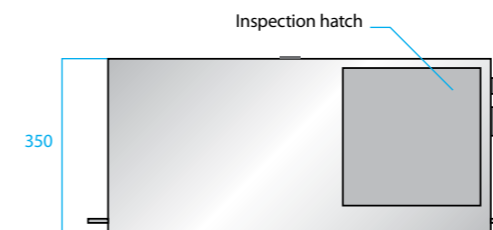
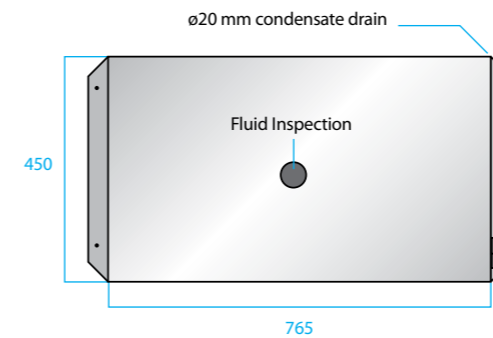
Damage caused to ships operating in bad weather conditions caused by humid air entering through the air intakes is a common problem. The humid and salty air accelerates corrosion and shortens the service life of equipment and the salt content in particular can cause serious damage, and even breakdown of electrical components. That's why it is important to take this into account when designing new ships and refitting older ships. Aeron can offer the following solutions.

- 1) Inlet Louvers with droplet separators*
- 2) Inlet louvers with droplet separators and filter coalescer.*
- 3) NEW – Special filter coalescer for Air Handling Units
- 4) Dehumidifiers**



* All kind of lovers may be delivered in different materials and with hatch or even in combination with heating to prevent icing at the lover intake.

** Dehumidifiers do not prevent humid air entering the ship, but can be a good solution to remove humidity in certain corrosion-sensitive compartments.



GENERAL DESCRIPTION

- AERON AM-01 is a lightweight, compact cooling unit designed for cooling of antenna systems
- AM-01 consists of a stainless steel casing equipped with compressor, evaporator and air-cooled condenser all fitted together to form a "ready to use" unit
- AM-01 can operate at surrounding temperatures up to 650C

TECHNICAL DATA:

Cooling medium: R-134a
 Current: 220V / 60 Hz
 Cooling capacity: ca 4kW (30°C / 7 °C)



REPRESENTATIVES

**BRAZIL – CHILE – CROATIA – HONGKONG – ICELAND – INDIA – POLAND – ROMANIA – SINGAPORE – SOUTH KOREA
SPAIN – TAIWAN – TURKEY – UNITED ARAB EMIRATES – USA – VIETNAM**

For updated information regarding our representatives, refer to our web site – www.aeron.no

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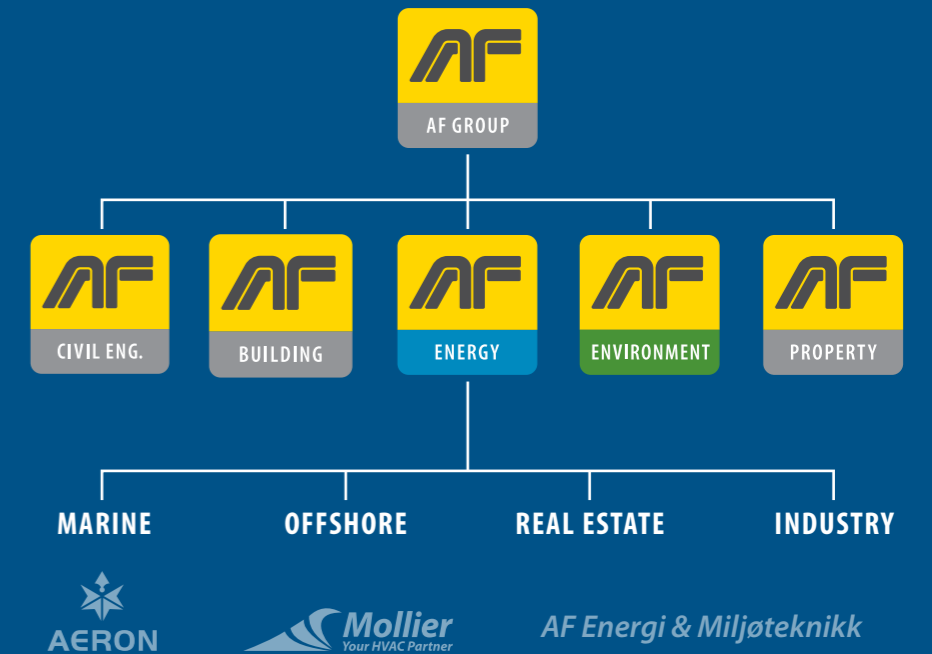
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AF Gruppen ASA is listed on the Oslo Stock Exchange and is one of Norway's leading contractor and industry group. Our core business areas comprise Property, Building, Civil Engineering, Environment and Energy.

Ther AF Group has always been an independent company, proud of our strength and ability to perform complex tasks. Our entrepreneurial spirit has been characterised by the ability and will to think differently and find better, more future-oriented ways in which to generate value. AF- Addressing Future!

Our core values

- Reliability
- Freedom to exercise the entrepreneurial spirit and discipline in relation to goals and requirements
- Thoroughness and hard work
- Persistence to profitable growth
- Management through presence and involvement

www.afgruppen.com