Clean air on board.

A maritime Air Handling Unit. The best of its class.

COVENT AS

Life on board. This is what it is all about. About people who value their workplace as much as anyone else. People who have chosen a life at sea, because this is where they feel alive. Aboard fishing trawlers, tankers, or even out on the oil rigs. Small, close-knit communities where the individual is always the critical factor. Relationships between people mean more than anything else out here. Solidarity. Reciprocity. Respect. A ship is not just a place of work. You also live here and spend time aboard. You need a bit of fresh air between job shifts to regain energy for the next turn of work. Rest. Sleep. In the same boat. 24 hours a day. Going on for weeks at a time. Maybe even months.

Under these conditions, it is self-evident that only the highest standards are set for a good indoor climate. The ventilation system should be in order. It should be adapted to the ship's character and have enough capacity so everyone aboard is supplied fresh air, regardless of where one works on the ship. This is the least you should expect.

A good indoor climate is an investment that always pays off. Leaders who are able to create a positive and healthy working and living environment are able to attract and keep the best staff. It has something to do with being taken seriously and feeling appreciated. Good working conditions reduce absence due to illness and increase workplace enjoyment. You simply do a better job.

Distribution Section

Fan Section

Cooling Coil

CECE Marine Air Handling Unit

World-class, No

Quality and flexibility make this the best Air Handling Unit available on the market today. It has also been developed and produced at our factory at Bjerkreim, just outside of Stavanger. Pure Norwegian, in other words. And with all the qualities that Covent is known for the last 25 years.

Its construction is robust, tolerating the most extreme weather conditions, in all climatic zones, in the Arctic Sea or around the equator. The Air Handling Unit is specially-designed and fitted to each ship. It is correctly dimensioned and always has a safe margin for extra capacity.

Heathing Coil

Filter

Damper

rwegian quality.

It is far better than international regulations require, with a uniquely long service life.

The Air Handling Unit shown in this image is only one example of how a tailor-made solution might look. In principle, all our models are constructed in the same way, whether these are adapted to a fishing vessel or a large passenger vessel. The following pages give some insight into the unit's different components, and how these are constructed. The Air Handling Unit are delivered as single or double-flow systems with heat recovery, depending on your needs.

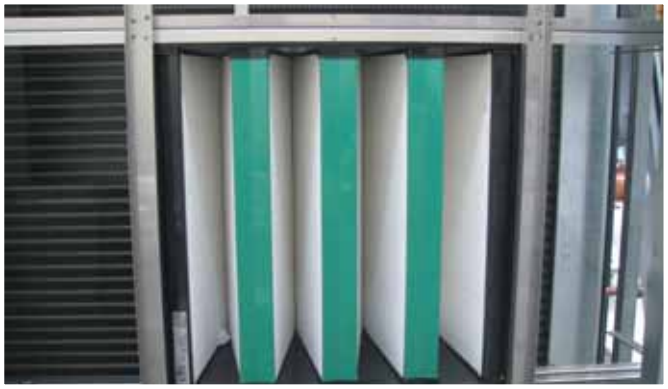
General

GENERAL DESIGN
Air handling unit, CECE is made in marine execution.
The casing is built to withstand high air pressure condition. Panels and inspection doors are made by sandwich construction, galvanized steel sheet, 0,9 mm inside and outside. Sound and heat insulated with 50 mm mineral wool, 65 kg/m^3.
Panels and inspections doors are sealed with EPDM-profile.

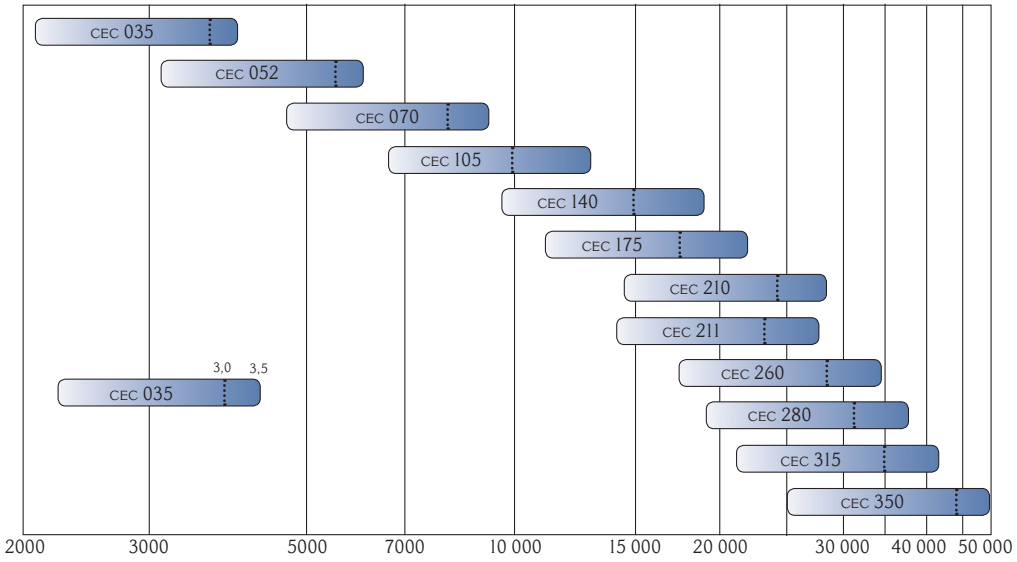
Framework is made of closed galvanized steel profile, thickness 1,5 mm, and corners in cast aluminum.
The casing is tested by TUV-Nord according NS-EN 1886, casing strength class 1A (+/- 2500 Pa without damage) Base frame in 3 mm galvanized steel with holes for lifting.

Alternative executions:
Framework in stainless steel, AISI 316L
Panels inside and outside in aluminum or stainless steel AISI 304L and AISI 316L.
Profiles inside insulated with mineral wool.

design



QUIC SELECTION



GENERAL DIMENSION

Dimesion			Filter	Airflow [m³/h] Air velocity in filter and cooling coil		
	With [mm]	Hight [mm]	area [m²]	2,0 m/s	3,0 m/s	3,5 m/s
CECE 035	740	700	0,36	2400	3600	4200
CECE 052	1050	700	0,54	3500	5300	6200
CECE 070	1050	1010	0,72	5400	8000	9500
CECE 105	1290	1010	1,08	6800	10000	12000
CECE 140	1440	1300	1,44	10000	15000	18000
CECE 175	1730	1300	1,80	12000	18000	21500
CECE 210	1730	1690	2,16	16000	24500	28500
CECE 211	1980	1400	2,16	15000	23000	26500
CECE 260	1980	1690	2,70	19000	28000	33000
CECE 280	2480	1500	2,88	20000	31000	36000
CECE 315	2180	1940	3,24	24000	35000	41000
CECE 350	3120	1690	3,60	29000	44000	51000

DAMPERS:
Dampers are installed outside the casing, and are delivered with square shaft 12x12 mm for manual handle or damper actuator. Standard dampers are supplied in leakage class 3 and made of aluminum, alloy 6060.
The blades are equipped with rubber sealing strips between the blades themselves and the frame.
The dampers are designed with bearings and cogwheel in glass fiber with minimum needs for maintenance.
Standard execution damper for fresh air in gable, and damper for mixing air on top. But our flexibility may easy change to opposite position.

Duct connection by flange.

Options:
Counter flange
Flexible connection.

FILTER SECTION:
Filter front and floor in filter section is made in stainless steel, AISI 304. Bag filter are mounted in slide guide, and filter frame is squeezed to gasket by manual handle. Several types of filters are available. Bag filter with large surface area. Panel filter, thickness 50 mm.

Standard filter supplied in class F6, length of bags 380 mm.
Also available in class G3 – F5 – F7.

Panel filter is available in class G3.

News: Special filter execution:
Compact filter, CAM-GT, in class F7 or F9.
This filter is specially made for offshore and marine installations. Its performance is maintained in humid or wet conditions. The construction of filter allows trapped filter to drain freely from the filter during operation, thus avoiding reentryment of dissolved impurities and maintaining low pressure drop under high humidity condition.
Drip tray with drain in front of filter.
See page 14.

HEATING SECTION:
Different kind of heating coils are available:

Electric heaters are delivered in steps according to capacity and airflow. Connection box are outside the AHU and easy for electric connection. Inside the connection box we have a stand still heater. Heating elements are in stainless steel and frame in galvanized steel. Two safety cut-off thermostats are always supplied, one with variable set point and one with fixed set point.

Heating coils, hot water, are made in copper pipe and aluminum-magnesium fins (AlMg2,5). The coils are fitted with a connection piece to fit a temperature sensor in the water circuit.

Alternative execution:
Fins in copper, AISI 304 or AISI 316
Pipe in AISI 304 or AISI 316
Frame in AISI 304

Heating coil, steam:
Coils for maximum 4 bar pressure delivered with pipe in copper. Higher steam pressure than 4 bar, pipe is supplied in AISI 304.

Fins in aluminium-magnesium, AlMg2,5.

COOLING COIL:
Cooling coils are delivered for either chilled water or directly evaporation. Pipes are in copper and fins in aluminum-magnesium, AlMg2,5.
A drip tray with drain is fitted in the cooling section to collect condensation. Two drains at the drip tray make sure that condense water easily leave the tray during sailing condition.

Water trap with ball is used at the drip tray.

To eliminate the risk of water droplets being carried into the airflow, cooling section are supplied with droplet eliminator when face velocity across 2,0 m/s. Droplet eliminator is made of polypropylene.

Pipe connection at dx-cooling coils are by welding. Connection at cooling coil for chilled water is by threaded pipes.

Alterative execution:
Fins in copper, AISI 304 or AISI 316
Pipe in AISI 304 or AISI 316
Frame in AISI 304

HUMIDIFIER SECTION
Different systems are available for humidification of supply air depends on available system on board the ship.

Low pressure steam pipe connected to a boiler.

High pressure steam pipe connected to steam generator.

Sprayed water nozzles.
With use of spayed water nozzles, heating coil have to be calculated according ix-diagram.

FAN SECTION:
Fans can be delivered in high pressure (±2 500 Pa) and low pressure (± 1 200 Pa).

Double inlet fans with backwards-curved blades and with V-belt drive, are used for both high and low pressure. Fan has high level of efficiency. These fans provide very stable pressure and air flow. The fan and motor are built at a very stable frame, mounted at rubber anti vibrators.
V-belt pulleys are fitted with taper bush, and are easy to gearing.

PLUG FAN
Plug fan are used for low pressure. The impeller is mounted directly at the electric motor shaft, and V-belt drive is not needed. The fan and motor are built at a very stable frame mounted at rubber anti vibrators.

Motors are in IP55, insulation class F and temperature class B.

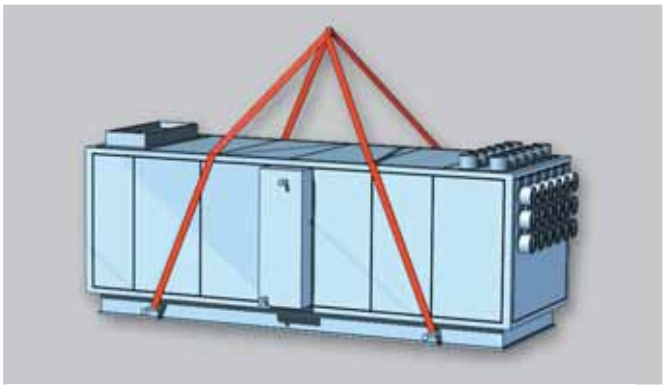
Inspection door is fitted with inspection window for easy inspection during running time.

Alternative execution:
Two speed motors
Anti condensation heater in connection box
PTC thermistor or bi-metal contactors for overheating protection and signaling.
SPM nipples mounted

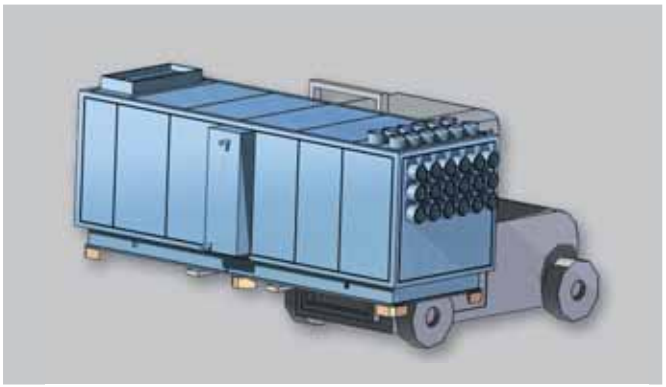
DISTRIBUTION SECTION
Distribution section is available in different configurations, but standard execution is with spigots diameter 160 mm. Spigots are delivered with gaskets for easy connection to duct system.

At fan outlet air distributor is mounted.

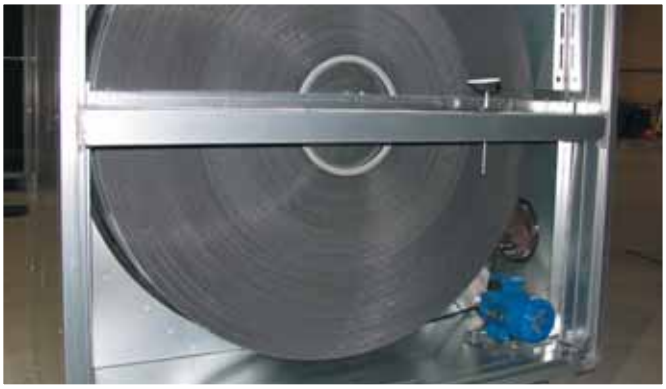
Distribution section is available to install both at end and top of the fan section.



LIFTING INSTRUCTIONS
Lifting with crane: Lifting the air handling units with shafts trough the base frame. Holes in base frame Ø55 mm.



LIFTING WITH FORK TRUCK / JACK
Important notice: By use of fork truck or jack, always ensure that the lifting arms reach outside the frame.



ASSECCORIES
The CECE marine Air Handling Unit can be fitted with many different options:

Air flow sensor with manometer at fan to measure air flow.
Damper actuators, 24V and 230V
Light in fan section
Flexible connection at duct inlet and outlet
Silencer
Converters for fan motor
Internal electric wiring
Temperature and pressure sensors
Painted execution
Spare parts

HEAT RECOVERY
If central exhaust fan are placed together with supply Air Handling Unit, you are able to save a lot of energy in winter and summer with heat recovery.
Different types of heat recovery systems are available.

High efficient rotary heat exhanger can be delivered in different types, standard wheel, hygroscopic wheel or enthalpy wheel. Temperature efficiency up to 85%.

Run-a-round coils are used when supply air and exhaust air are not able to stay side by side. Temperature efficiency up to 50%.

New items!
Water separation on the air intake prevent moisture from penetrating into the system.

Moisture in Air Handling Units is a well-known problem. It not only leads to condensation, but also creates a fertile environment for the growth of microorganisms. Indoor climates can deteriorate significantly and health problems are imminent. Moisture will always be an unpleasant factor for Air Handling Units. Corrosion can obstruct quality and reduce the unit's lifetime.

We have now managed to deal with this problem. A specially-designed filter traps water at the air intake, hindering further moisture from entering the system. This ensures dry, clean air flowing from the air intake.

Flat packed ready for assembly.

Air Handling Units that are not up to today's quality, or too old to perform further maintenance, should be replaced. In many cases, it's not easy. It may be a complicated and time-consuming operation. The Air Handling Units are mounted in small spaces inside the vessel, which make these operations very difficult. Usually, one needs to make opening through the hull, to install a new unit, but now this is only history.

We recommend using our new flat pack system for easy assembling. This means you get the Air Handling Unit in separate parts, and you can install them on-site, without making any opening through the hull. Ingenious and simple, in other words. To change from old and damaged Air Handling Unit to a complete new modern unit, take not more than a week, and may be done wherever the ship may be on its regular service. Our technicians are always ready to assist during installation.

"Covent AS is the largest producer of Air Handling Units and Rotating Heat Recoveries in Norway. Main office and factory is located in Bjerkrem, Rogaland, with sales office in Oslo. Air Handling Units for Offshore and Marine are also a natural part in the product range, in addition to public and industrial buildings ashore. Covent launched a series of Energy Efficient Heat Recovery Units in 2007, and became the largest in energy recovery in Norway."

COVENT AS

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