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OFFSHORE AIR HANDLING UNITS

OILANDGAS

Company

At Dutch Blower, we are key experts at design, manufacture and delivery of custom-made Air Handling Units. We focus on offices and stores, off-shore and (food) industry. All our products are marked by our very flexible production, wide range of possibilities and application of reliable materials and sturdy components. All this combined with the latest technologies, we reach this high level without compromising on delivery times.

History

Dutch Blower was founded in 1985, building Air Handling Units. Five years later, the company, with a staff of 8, moved to a brand new facility at the Business Park Twente near Almelo. In 2007, another production hall was added and offices were expanded. Nowadays, Dutch Blower has a 3,000 m2 production facility with a workforce of more than 60 professionals, designing and manufacturing air handling units meeting the highest quality demands.



You don't need eyes to see, you need vision

🗕 unknown

Dutch Blower: solid and reliable solutions

Like nobody else in the business, Dutch Blower realizes that product liability in the offshore industry is of the highest importance.

Dutch Blower has built up many years of experience in navy and offshore business where all systems must be reliable, manufactured of the most solid materials. Top quality is an absolute must!

The end user wants safe working conditions at all times. The maintenance department doesn't want hold-up times during production. The technical specialists of Dutch Blower guarantee a solid and reliable climate solution for your production process.

Dutch Blower's force is recognized in:

- efficient and sharp-witted solutions
- reliability
- optimal price/quality ratio
- reliable suppliers
- use of solid materials
- accessibility and internal short internal connections
- several functionalities within one unit
- short delivery times



If you don't know where you are going, any road will get you there; just choose the road

Lewis Carroll

Branches

Dutch Blower designs and builds air handling units for customers in various industries. The requirements in the offshore business are not identical to the demands of the food industry. With our extensive expertise and many years of experience in custom-made air treatment solutions, we are able to develop

the widest variety of demands.Food industryOffices and warehousesMarine

and build air handling units meeting

- Offshore oil and gas
- Renovation
- School ventilation
- Industry

Offshore AHU's

Dutch Blower has a vast know-how in building air handling units for marine application. The construction of the units must allow for fitting in the often limited space of ships, yachts, drill platforms and other offshore situations. Only the most sturdy materials are used to endure the salty sea-air, for a flawless operation must be guaranteed under often extreme conditions.





Applications

Dutch Blower designs and manufac- • Accommodation units tures marine units for larger yachts and commercial vessels. Besides using the units in accommodation rooms, our units are also applied for cooling the engine room and the extraction of smells in galleys. Our air handling units for marine application comprise:

- Fresh-air units
- Fan/coil units
- Exhaust units
- Engine-room coolers
- Galley units
- Condensing units
- Package units
- Air washers

Off shore units (explosionproof, ATEX zone I en II):

Dutch Blower builds air handling units for the offshore industry. Often the units are exposed to extreme cold or hot conditions, salty air and other extreme weather conditions. If the units are in hazardous locations such as in plants where an explosive atmosphere may occur (so-called zone I and II locations), they are built according to ATEX directives. Even plain air can be hazardous when it holds inflammable gases. Areas like that are called ATEX zones (ATmosphères EXplosibles). Anything that might cause

the tiniest spark is forbidden there. Since July 1, 2003, every company in Europe, active in these zones, must meet the ATEX 137 guideline (guideline 1999/92/EG) for personal and ATEX 95 guideline (guideline 94/9/EG) for equipments used in ATEX zones.

Air handling units must meet the ATEX regulations when handling Ex-atmosphere or positioned in Ex-atmosphere. Two types are distinguished: Zone I: explosion hazard under normal operation, and Zone II: explosion hazard not likely.



Casing The casing is built out of a fully welded stainless steel AISI316L framework holding double walled panels and, if required, provided with inspection doors. The thickness of the framework is at least 2mm, depending on size and application. The double walled panels are made of stainless steel AISI316 and insulated with 40mm thermal and acoustic insulation, Rockwool type 60. Sheet thicknesses are available from 1mm up to 2mm. Air handling units outdoors are provided with pitched roof plates and 50mm overhanging eaves.

Grounding All components are provided with 16mm² earth-bonding.

Doors The inspection doors are fitted with polished AISI316 stainless steel locks and hinges which are mounted on the outside of the panels to avoid thermal bridges. Doors that close overpressure sections are provided with a safeguard to prevent dangerous situations. Not self-adhesive EPDM rubbers are used to prevent air leakage.

Electric Heater Generally are EFFX heaters applied. This means that the entire heater including terminal housing, elements and casing are Zone 1 certified. The terminal box is made of 2mm stainless steel AISI316 and also the elements and element support consists of stainless steel AISI316. Optionally, the elements can be supplied in Incoloy 800. The surface temperature of the elements remains below 200°C (class T3). The heater complies with classification: Ex ed IIC T3 and protection degree: IP65. On the discharge side a 20 - 115°C auto reset is positioned free in the airstream. A 160°C, manual reset is clamped on an element, near the discharge side. The heater is provided with A501/421 Hawke cable glands.

Cooling coil The cooling coil is selected according to the project specific air conditions and refrigerant type. Direct expansion, seawater and chilled water are common applied refrigerants. The coil can be produced in Cu/Al, Cu/Cu, CuSn/CuSn, stainless steel/ aluminum or titanium in the case of seawater. An anti-corrosive Poly/Al coating can be applied after manufacturing. If the face-velocity of the coil is higher than 2.5 m/s a Polypropylene mist eliminator is installed. Optionally the mist eliminator is carried out in stainless steel AlSI304 or AlSI316. The cooling coil is provided with a stainless steel AlSI316 frame and positioned above a stainless steel AlSI316L drip tray provided with a 1" condensate drain.

Heating coils These can be supplied in the same design as the coolers except the heating coils are suitable for steam, hot water or another heating medium.

Base frame To support the units during transport and on-site, the air handling units are mounted on a rigid base frame. The base frame is made of hot dipped galvanized mild steel beams or bended 4 mm stainless steel AISI316L U-profiles which are welded by certified welders. The main welds can be exposed to non-destructive testing (NDT) to check on imperfections. Hoisting lugs are standard equipped with a RAL1028 yellow coating. The frames are provided with diagonal positioned earth bosses.



























Filters The unit is standard fitted with ATEX F7 bag filters that will be mounted in stainless steel AISI316 filter frames. The filters are grounded through a detachable clip on the filter frame. An inspection door is provided on the inlet side of the filter, so maintenance and inspection takes place on the dirty side. Optionally, the unit can be equipped with HEPA filter or coalescer.

Dampers Contra rotating dampers, the casing, valves, shafts, levers and connecting rods are made of stainless steel AISI316. The rate of leakage is $\leq 0.032 \text{ m}^3/\text{s/m}^2$ at a pressure difference of 1000 Pascal (tested with a damper with dimensions of 1200x1500 mm.) The valves can be operated manually or by means of an electric servo motor or pneumatic actuator.

Air flanges The air flanges are carried out in 4mm to 6mm stainless steel AISI316, depending on the size and application, and foreseen with a specific-hole pattern.

Weatherlouvers If the unit takes in fresh air, the unit will be equipped with a stainless steel AISI316 weather louver. The inlet section can be performed with a stainless steel AISI316 mist eliminator behind the louver and the intake damper to avoid water infiltration during extreme weather conditions.

Fans Fans are generally direct driven plug-in type. The impeller consists of coated steel and the base frame is made of stainless steel AISI316. Optionally, stainless steel AISI316 backward curved double inlet centrifugal fans are used. The fan and motor are assembled on a common frame and isolated from the casing by vibration dampers and flexible connections. Fans for Zone 1 or Zone 2 are fitted with brass inlet cones and other measures to reduce the chance of sparks. Access to the fan sections is provided with perforated CE grids for safety.

Motors ATEX units are standard equipped with 3 phase low voltage 50 Hz and 60 Hz cast iron motors with offshore coating. The motors can be supplied in Zone 1 and Zone 2 version.

Controls/wiring The electric wiring consists of flame retardant PVC halogen-free cables both unarmed and armored. For the wiring of the various electrical components from the inside to the outside are standard brass CMP A2 cable glands for unarmored cables installed. In case of armored cables there will be standard E1FX TRI-STAR cable glands used. Optionally, the wiring can be performed on stainless steel AISI316 ship-ladder cable trays.

Standards

The units comply with the following guidelines: Machinery Directive 2006/42/EC Low Voltage Directive 2006/95/EC ATEX 94/9 / EC (ATEX 95) EMC Directive 2004/108/EC Pressure Equipment 97/23/EC The units conform to the following casing-properties (according to EN 1886): Mech. Strength class: D1 Air leakage enclosure class: L1 Filter bypass leakage: F9 Therm. Conduction: T2 Thermal bridge factor: TB2

Factory Acceptance Test (FAT)

During a "Factory Acceptance Test" (FAT), the air handling unit is exposed to a number of tests showing whether the system meets the required specifications (derived from the Functional Requirements Document (FRD), prepared by the customer. In our test room, we can include the following tests: • Volume / pressure test • Leak test acc. EN 1886 • Weighting test of complete unit • Motors running at 50Hz or 60Hz • Functional test of actuators and measuring instruments

Certificates

Equipment Certificates Material Certificates Conformity Certificates

Optional documentation / certificates

Test reports Dimensional Control Reports Procedures Reports Volume/pressure test Reports Air-Leakage Test Reports Fan Functional Test Reports Coil-Pressure Test Reports Coating datasheet Megger Test Reports Welding procedure specification/qualification (for coil)

Technical documents

Technical data sheets Drawings Weight and centre of gravity Spare parts lists Hoisting instructions Operation and maintenance instructions Sound Calculation

Options

Coating outside 180 um (epoxy primer, sealer and polyurethane top coating) Belt protection guard Pressure differential transmitter Manometer Measuring nipples An emergency push button An isolator switch Speed sensor



Swagelock tubing

Several References

Project	Year	Capacity
enture Heerema	2009	3.000 m³/h
lenture Heerema	2009	3.100 m³/h
OCRW Module	2009	1.110 m³/h
acktel Office Module	2010	15.500 m³/h
lorth Everest	2010	7.000 m³/h
Iorth Everest Exhaust	2010	6.215 m³/h
Chevron B13-A	2010	1.230 m³/h
616a-B AHU-1466B	2010	5.000 m³/h
616a-B AHU-1466B	2010	4.000 m³/h
hornton Bank	2011	8.400 m³/h
hornton Bank	2011	4.972 m³/h
Chevron	2011	2800/2080 m ³ /h
Shell Clipper	2011	15.660 m³/h
Shell Clipper	2011	2x 3.650 m³/h
DF-SUEZ D-18A 1466-B	2012	2x 5.000 m³/h
DF-SUEZ D-18A 1466-C	2012	2x 5.000 m³/h
Buzzard AHU	2012	10.250 m³/h
Buzzard Exhaust	2012	10.250 m³/h
Shell Leman	2013	2x 27.200 m³/h
nQuest Producer	2013	174.900 m ³ /h total







Even the loungest journey starts with a first step

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Why you should consider Dutch Blower

You can depend on our:

- quality
- craftmanship
- attention to the product
- knowhow
- flexibility
- reliability
- responsibility



Bedrijvenpark Twente 52, 7602 KC Almelo Pb 26, 7640 AA Wierden (Netherlands) T +31 546 - 57 64 00 I F +31 546 - 57 27 82 E info@dutch-blower.nl I www.dutch-blower.nl