



AIRSTREAM AHU

Air Handling Unit

Modular air handling unit made of double-walled insulated seawater-resistant aluminum. Air displacements of 150.000 m³/h.



For more information, downloads and videos, visit the Airstream AHU page on our website



The ultimate in air handling units: directly and indirectly fired

Mark has developed a range of air handling units with several options for a wide variety of applications. From a simple air intake unit to a fully automatically-controlled air handling unit suitable for both indoor or outdoor use.

There is a wide selection of heating systems, such as hot water batteries, gas or oil-fired modules, gas-fired make-up air systems or high performance gas-fired heating systems. Heat recovery and cooling are of course also possible.

Mark Airstream AHU air handling units are made from seawater-resistant aluminium panels with double-walled insulation as standard. This means lower weight and a longer lifespan. The Mark air handling unit is a highly developed, premium quality product that can be adjusted to the customer's requirements.

The mechanical strengths of the casing of the Mark Airstream AHU have been tested according to NEN-EN 1886.

- Deflection: Class D3
- Air leakage: Class L2
- Thermal transmission: Class T4
- Thermal bridging: Class TB4

The fans in the air handling units are equipped with high-efficiency intelligent centrifugal fans with EC-technology, the advantages of which are:

- The highest efficiency in case of speed control
- Up to 50% energy saving in case of partial load
- Almost completely linearly adjustable
- Long lifetime
- Low noise level
- Integrated electronic thermal protection

Product features

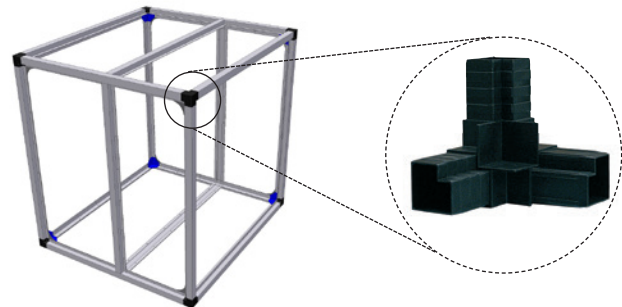
- Air displacements up to 150,000 m³/h
- Very economical to buy and use
- Integration of high-efficiency heating modules is possible
- Modular construction
- Easy to maintain
- Long life
- Flexible and variable
- Proven design
- Low weight

Dimensions

Type of air handling unit	Air displacement max.	Dimensions (Width x Height)
Airstream AHU 15 – 15	10 000 m ³ /h	975 x 975
Airstream AHU 15 – 20	14 150 m ³ /h	975 x 1280
Airstream AHU 20 – 20	19 150 m ³ /h	1280 x 1280
Airstream AHU 25 – 20	23 350 m ³ /h	1530 x 1280
Airstream AHU 30 – 20	29 150 m ³ /h	1890 x 1280
Airstream AHU 35 – 25	40 000 m ³ /h	2195 x 1530
Airstream AHU 35 – 35	60 000 m ³ /h	2195 x 2195
Airstream AHU 40 – 35	69 500 m ³ /h	2508 x 2195
Airstream AHU 50 – 50	150 000 m ³ /h	3120 x 3120
Projects on request	> 150 000 m ³ /h	

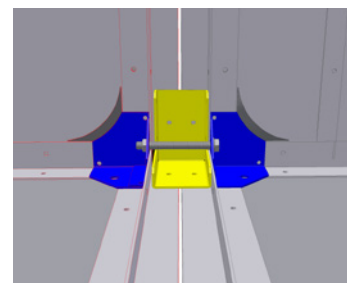
Construction

- The air handling unit is of modular construction.
- The frame construction consists of profiled closed aluminium tube profiles.
- The individual cabinet modules can be installed in different ways, either in line, next to each other or on top of each other.
- The tube profiles are attached to each other using plastic angled profiles to create a stable frame construction.



Modular construction

- The individual parts of the air handling unit are quick and easy to install due to a well thought out system.
- In almost every case, the modules are supplied pre-assembled.
- The individual modules are fixed to each other so that they are airtight.
- The double-walled aluminium panels are mounted in the frame in an airtight manner.
- The centering section in the corner of the module ensures correct installation to the next module.



Technical detail

The access doors are fitted with adjustable, maintenance-free hinges (adjustable both in height and at the sides). The hinges, or panel clips if required, are mounted on the outside of the air handling unit. This prevents dirt from building up on the inside of the unit.

The access doors of the air handling unit are fitted with lockable spring locks. The airtight closure of the doors against the housing is guaranteed by a special rubber profile.



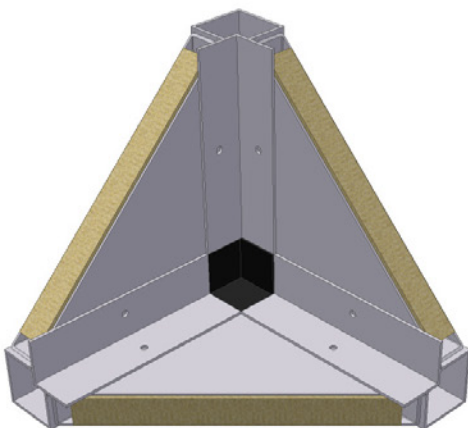
Sound and thermal insulation

Noise reduction is an important point for consideration in the design of an air handling unit. For this reason, we have opted to use a double-walled seawater-resistant aluminium panel with 25 or 40 mm mineral wool insulation. This also results in excellent thermal insulation.

A lot of attention is paid to the smooth finishing on the inside of the unit, which makes it easy to clean. See table for sound insulation values.

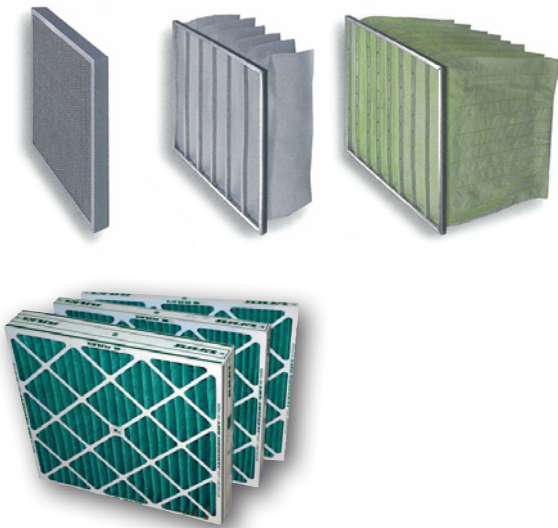
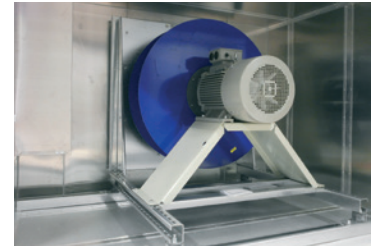
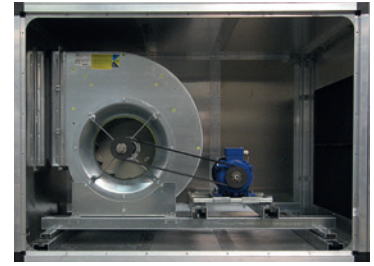
Air/noise insulation

Frequency (Hz)	125	250	500	1000	2000	4000	8000
Air/sound insulation (dB)	18	17	22	26	29	28	24



Optimal fan power

- The heart of the air handling unit is the fan.
- Mark selects the most suitable fan for the application requested.
- Depending on the application, a fan with forward or backward curved blades or a free-running fan can be used.
- The fan and the motor are placed on a frame. The frame is set up on shock absorbers in the housing.
- Delta P air flow monitoring is possible.



Filter section

To guarantee the right air quality, Mark offers a wide selection of filters.

All necessary care is taken in the sealing of the filter frames and filters.

Filters should be changed from the inside on the dirty side.

The filter options are:

- Panel filter
- Bag filter short
- Bag filter long
- High temperature filter

Special filters are available on request.

Delta P filter monitoring is possible.

Heating systems

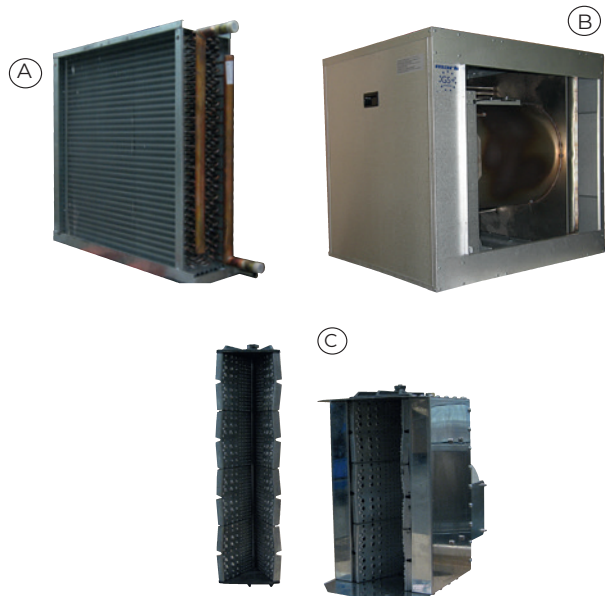
Mark air handling units can be equipped with various heat generators.

- A Hot water battery
- B Gas-fired condensing modulating high-efficiency air heater (> 106% efficiency)
- C Direct gas-fired make-up air burner, only applicable if all intake air is expelled in a controlled manner.

Benefits:

Gas-fired air heaters

- No heat intermediary
- No heat loss during stoppages
- Large selection of heating capacities
- High-efficiency
- Good temperature control
- The air handling unit can be supplied as plug & play.



Hot water batteries

Hot water batteries are designed as standard in copper-aluminium. The heat exchanger connections can be fitted internally or externally.

Optional:

- Hot-dip galvanised
- Anti-corrosion coating
- Steam, thermal oil
- Frost protection thermostat



Gas-fired condensing modulating air heater

- High modulation range
- Efficiency >106%
- Closed design.
- Electronic ignition of the main burner.
- Control: modulating.
- Module suitable for installation in an air handling unit.



Type		15	25	35	40	60	80	100	135	150	200	300	400	540	600	800
Nominal load (upper value)	kW	16,1	27,2	38,8	44,4	66,7	88,9	110,6	149,9	166,7	216,7	331,8	433,4	599,6	650,1	866,8
Maximal power	kW	13,6	23,0	33,4	38,4	56,2	75,6	96,6	128,9	141,0	185,7	279,9	371,4	515,6	557,1	742,8
Minimal load (upper value)	kW	4,6	6,8	9,6	9,6	13,9	24,5	10,8	21,1	36,6	41,6	32,4	83,2	84,4	124,8	166,4
Minimal power	kW	4,3	6,6	9,2	9,2	13,5	23,8	10,6	20,6	35,3	40,6	31,8	81,2	82,4	121,8	162,4
Efficiency at 100% load	%	94,1	93,9	95,7	94,8	94,2	94,3	94,2	95,1	94,8	93,6	94,8	93,6	95,1	94,8	93,6
Efficiency at min. load	%	104,4	106,1	107,3	107,3	107,4	106,2	106,3	107,9	107,0	107,3	107,0	107,3	107,9	107,0	107,3
Burner turndown ratio	+/-	3:1	4:1	4:1	5:1	5:1	7:1	6:1	7:1	4:1	5:1	4:1	5:1	7:1	4:1	5:1
Air volume, min.	m ³ /h	1250	2000	3760	3760	5640	7520	9400	13500	14200	17500	**	**	**	**	**
Air volume, max.*	m ³ /h	4100	4100	7200	7200	8640	13680	16200	20880	20880	24500	**	**	**	**	**

* Larger air volumes using a bypass.

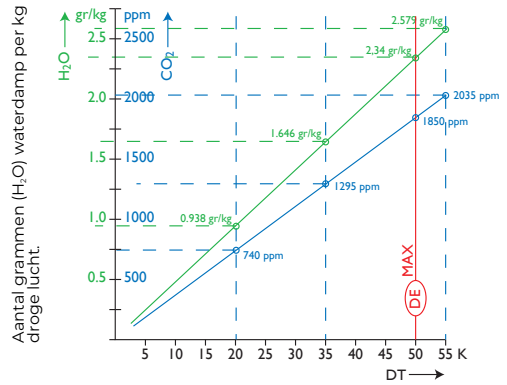
** On request

Direct gas-fired make-up air burner

Direct gas-fired air make-up air heaters are integrated into the air handling unit. This type of air heater is suitable only if the heated air is extracted mechanically.

Adjustment:
modulating 20:1.

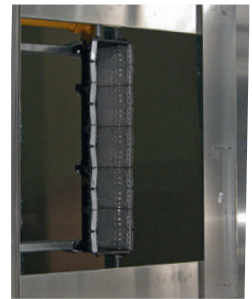
CO ≤ 5 ppm
NO ≤ 1 ppm
NO_x ≤ 1 ppm



DT als functie van het toegevoegde CO₂ gehalte in ppm.

1 m³ lucht 15° C = 1.20 kg.

MONO Type		55	110	165	220	275	330	385	440	495	550	660	770
Nominal load (upper value)	kW	71	142	213	284	356	427	498	569	640	712	854	996
Nominal load (lower value)	kW	64	128	192	256	320	384	448	512	576	640	768	896
Minimum load (lower value)	kW	3,2	6,4	9,6	12,8	16,0	19,2	22,4	25,6	28,8	32,0	37,4	44,8
Air volume, min.	m ³ /h	3500	7020	10450	14130	17510	20800	24350	27820	31210	39730	41680	48700
Air volume, max.	m ³ /h	9600	19200	28800	38400	48000	57600	67200	69500	69500	69500	69500	69500

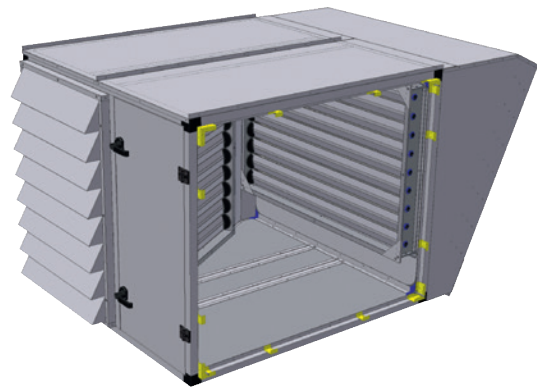


Mixing boxes

The air handling unit can be equipped with a mixing box. This box is placed between the air extraction section and the air inlet section. The mixing box can be fitted with servomotor-controlled dampers.

Optional:

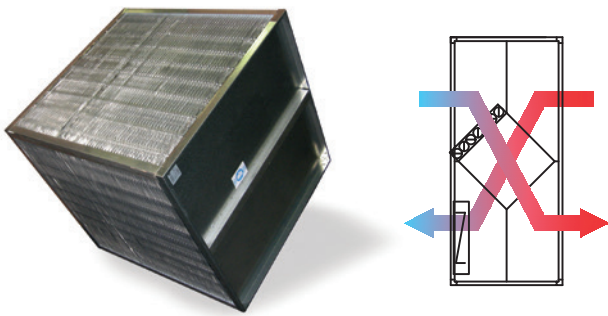
- Modulating - or open/closed control
- 24 V or 230 V.



Heat recovery

Operating costs can be reduced and the environment protected by the use of heat recovery. Heat can be recovered using the following systems:

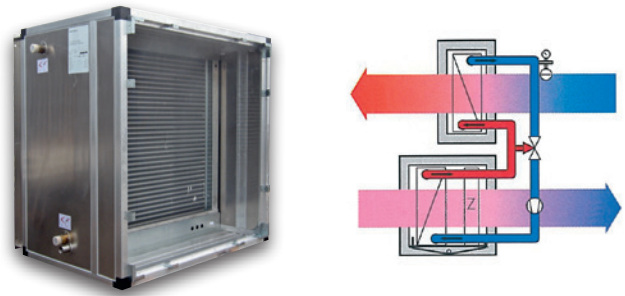
Cross-flow plate heat exchanger



Benefits:

- Durable, no mechanical moving parts
- Reliable
- Simple installation
- Separate air flows
- Air flow via a by-pass is possible
- Very economical solution for heat recovery
- Efficiency > 50%

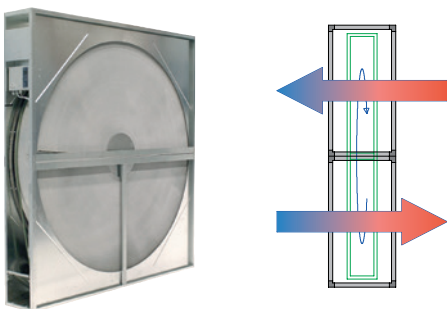
Twin-coil heat exchanger



Benefits:

- Fresh air and return air can be separated spatially
- Short installation length
- Suitable for installation in existing units
- Can also be used at higher temperatures, large selection of heat exchangers, number of tube rows and materials used (Cu/Al or galvanized steel)
- Efficiency up to approx. 50%

Heat wheel



Benefits:

- Low pressure drop
- Compact construction
- High heat-exchanging power
- Option to re-use latent heat
- Option to re-use available humidity
- Efficiency between 60% and 90% can be selected

Cooling

Direct cooling (air cooling), "DX system"
 Indirect cooling (water cooling), "Chiller"
 Adiabatic cooling, "soft cool" (optional)

Indirect cooling



Water is cooled in the cooling unit. Cold water is pumped into a cold water battery in the air handling unit. This will cool the air flow.

Benefits:

- The cooling unit is installed separately from the air handling unit.
- Low investment costs
- Short installation length
- Low operating costs
- Good cooling efficiency
- Excellent air dehumidification
- Control sends the quantity of cold water through the air-cooled cold water battery
- The cooling unit ensures the water temperature is constant
- Highly adjustable
- Guaranteed cooling capacity.

Direct cooling



The air flow is cooled directly, the humidifier is situated directly in the air flow that needs to be cooled.

Benefits:

- Low investment costs
- Short installation length
- Low operating costs
- No water-related problems (risk of freezing, glycol concentrate, corrosion)
- Good cooling efficiency
- Excellent air dehumidification.