Air Handling Units

Geniox

Quick guide

geniox

systemair

Comfort ventilation by Systemair

Comfort ventilation describes the ventilation systems most often used in hospitals, hotels, schools, offices or in your own home. The purpose of this ventilation system is to create a healthy and comfortable indoor climate.

Geniox offers the opportunity to adapt the air handling unit completely to your project. The unit is designed in flexible modules. This gives you the freedom to choose precisely the features that you need.

Geniox is certified by Eurovent. The Eurovent certification is your security that Geniox air handling units meet the described technical specifications.

Geniox

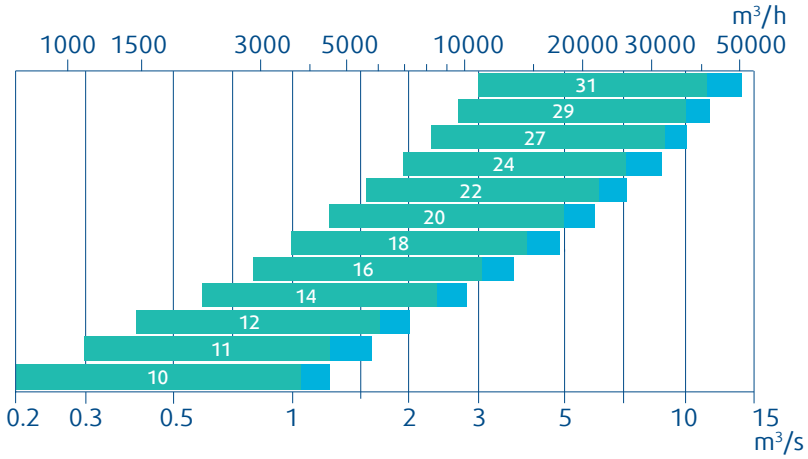
- Modular construction
- Fully customised
- Freedom of choice.

Geniox

Geniox is designed as a modular air handling unit. Each function is placed into an air handling unit casing consisting of one or more modules. The modular functions can be configured for many different applications to make up the heart of any ventilation system.

- Geniox, modular air handling unit:
  12 sizes with airflows 750-48,000 m^3/h (0.2-13.3 m^3/s).
- With rotary heat exchanger, run-around coil heat exchanger, cross flow heat exchanger, or counter flow heat exchanger.
- Plug fan with EC motor IE5, PM motor IE4, or AC motor IE3.
- Filter classes: Coarse 65% (G4), ePM10 60% (M5), ePM2.5 50% (M6), ePM1 60% (F7), ePM1 75% (F8), ePM1 85% (F9), CITY-FLO ePM1 60% (F7 City-Flo), metal filter (G2) or carbon filter.
- With water heating coil, electric heating coil, and/or cooling coil.
- Can be supplied with integrated heat pump.
- Can be supplied with humidifier/adiabatic cooling.
- With Systemair Access control system, without control system, or Controller Ready.
- For indoor or outdoor installation.
- Eurovent certified.

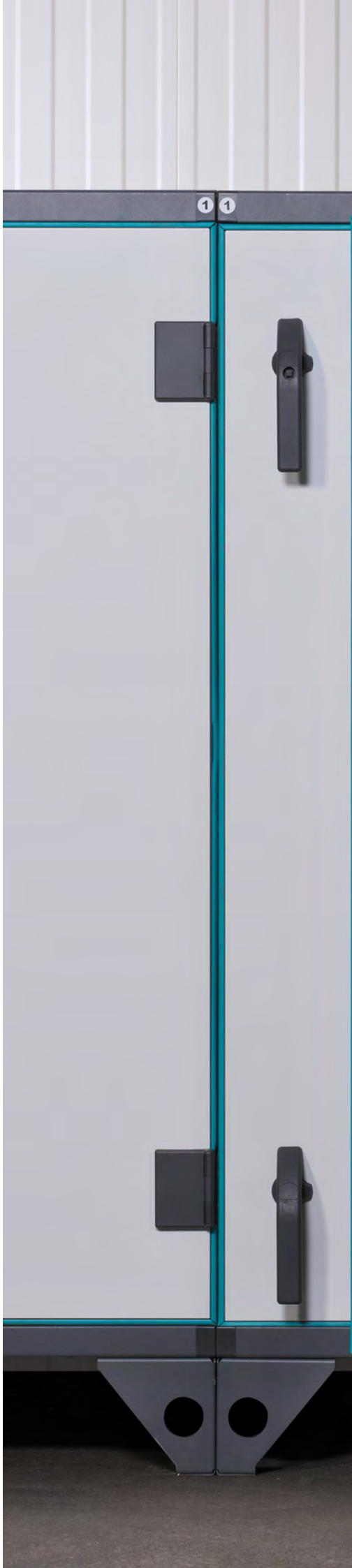
Geniox airflows

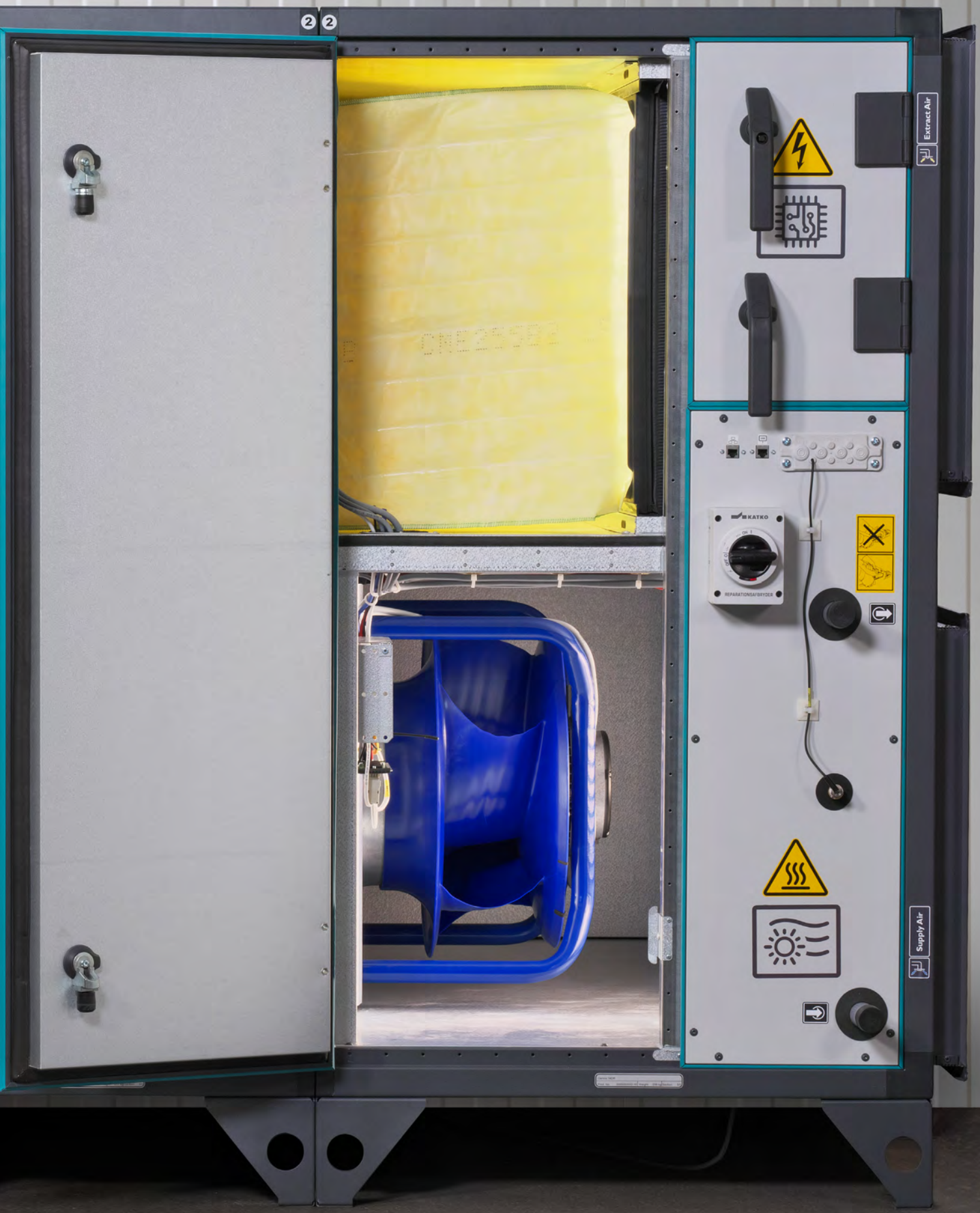


Airflow range for Geniox complying with Ecodesign.

Full airflow range for Geniox.

The above airflows are calculated with rotary heat exchanger and EC motors.




Extract Air
KATKO
REPARATIONSAFBRYDER
Supply Air

Geniox, innovative solutions

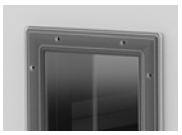
Casing
- Thermal bridging class TB2.
- Thermal insulation class T2.
- Deflection class D1.
- Air leakage class L1.

Official model box EN 1886 results.

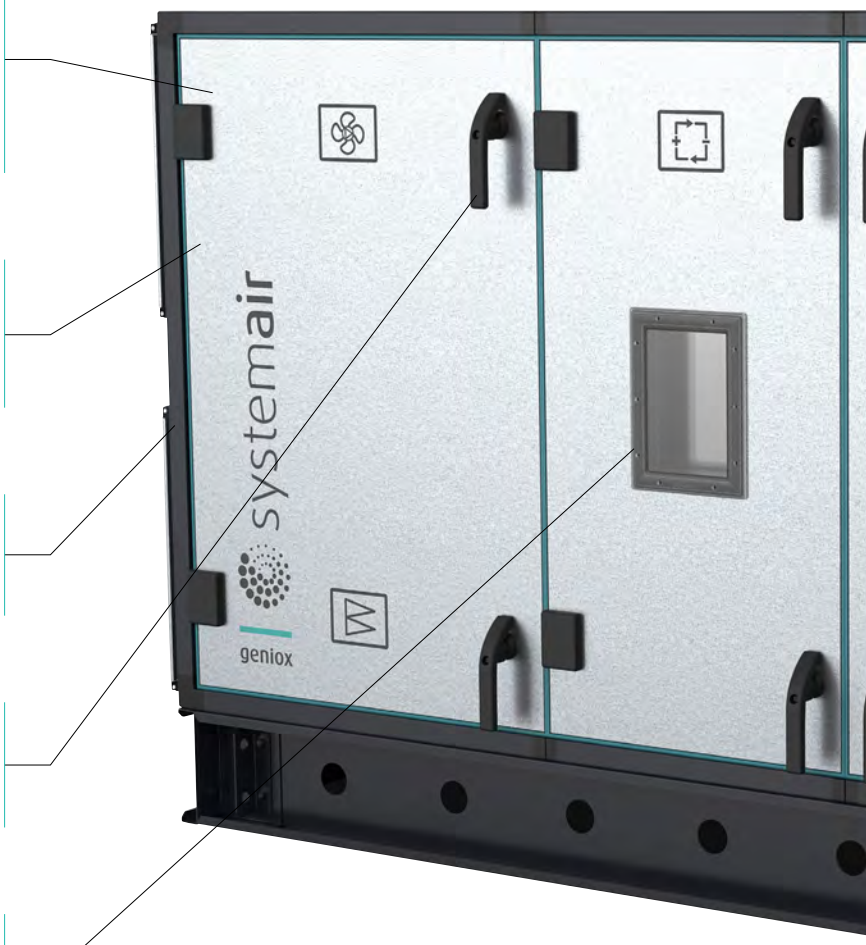
Panels. Reduction of thermal bridges. Separation between inner sheet and outer sheet (0,8 mm) with 60 mm insulating mineral wool. Density: 60 kg/m³. Aluzinc AZ 185 or pre-painted steel sheets in black RAL 9005 or in light grey RAL 7035 ensure a corrosion protection class C4 according to the standard EN ISO 12944-2:2000.

Frame profiles.
- Corrosion class C4.
- Powder-painted Z275 galvanized profiles inside, 1,0/1,5 mm.

Handles and hinges. Practical handles and hinges make it possible to take off all doors and provide a space-saving solution that is easy to service.



Inspection windows. The windows have been designed exclusively for Systemair and provide a large area for easy inspection.



Service and maintenance. All doors provide easy access for cleaning and service.
Transportation. Casing design and standard packaging allows for easy transportation.

Roof unit. Geniox is available as roof unit, designed for outdoor installation. In this version the unit is assembled on a base frame. The roof unit can be delivered with three different types of roof:
Steel profile roof, Aluzinc protected corrugated steel sheets and profiles for fastening and finishing the roof.
Rubber sheeting roof and bitumen membrane roof, very easy to handle and has a good weather protection.
Pre-painted unit. Black RAL 9005 or light grey RAL 7035. Frame profiles in RAL 7024 for both solutions.

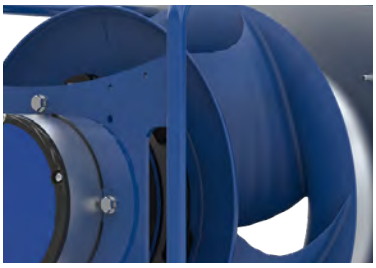
Operating pressure
Difference between external and internal pressure:
0 - 2000 Pa.

Operating temperatures
Standard design: -40/+40 °C
Special design: -40/+60 °C.

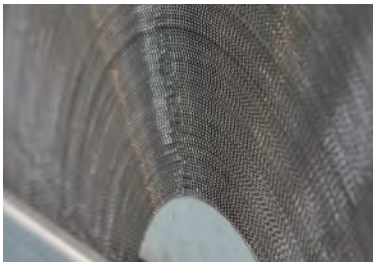
Directives. Geniox fulfils the following directives:
- Machinery Directive 2006/42/EC
- Ecodesign Directive 1253/2014
- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Pressure Equipment Directive 2014/68/EU.

Eurovent certification
Geniox is constructed in accordance with European standards and is certified by Eurovent.

Geniox functions



The plug fan has the impeller fitted with air foiled blades to obtain the highest possible efficiency. The fan is a single inlet, free-blowing fan where the unit casing acts as fan housing. The plug fan has a static efficiency of up to 75%. The plug fan can be supplied with EC motor (IE5), PM motor (IE4), or AC motor (IE3). Fan impeller and motor are statically and dynamically balanced.



The rotary heat exchanger is available in three variants: Condensation, sorption hybrid and sorption heat exchanger. Generally, the rotary heat exchanger has a high efficiency from 75% to 87% depending on operating conditions. It can recover moisture and is the heat exchanger that requires the least space. The sorption hybrid exchanger recovers more moisture, and therefore contributes to the humidification of the supply air. The sorption exchanger dehumidifies the air more, making it particularly suitable for dehumidifying the outdoor air, for example before cooling.

The plate heat exchanger is available in two variants: Cross flow and counter flow heat exchangers. Generally, the plate heat exchanger has a high efficiency. It has separated airflows, and thus the transfer of odours to the supply air is avoided. There is no transfer of moisture between the two airflows.

The cross flow exchanger has an efficiency of up to 85% depending on air speed and unit size. It is made of aluminium for comfort.

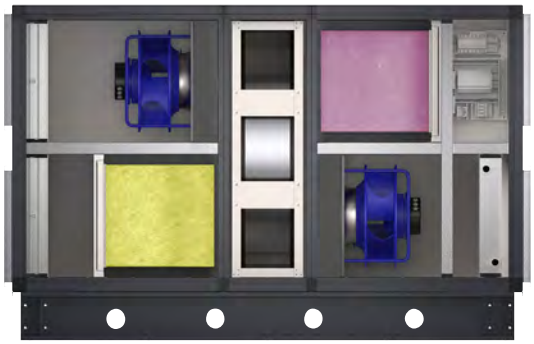
The counter flow exchanger has a efficiency of up to 90% and is supplied only in aluminium. The heat exchangers are fitted with by-pass for capacity control and for frost protection, and have a built-in drip tray with slope.

The run-around coil heat exchangers have an efficiency of up to 80% depending on air speed through the coil, and are used, where the two airflows must be kept completely separate, or where the airflows are in different places.

The heating coil is used for heating the supply air. The heating can be effected by hot water or condensation of refrigerant. These coils consist of copper tubes and aluminium fins. Heating can also be effected by electricity. These coils consist of heating elements of stainless steel and have built-in safety control system.

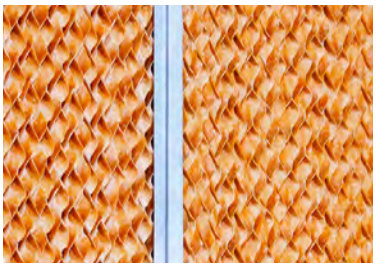
The cooling coil is used for cooling the supply air. It can be effected by cold water or direct evaporative refrigerant. A cooling coil for evaporation has the liquid distributor placed in the unit. These coils consist of copper tubes and aluminium fins.

The change-over coil is basically a cooling coil for cold water, which can also be used for heating by changing the water temperature from cold to warm as required.

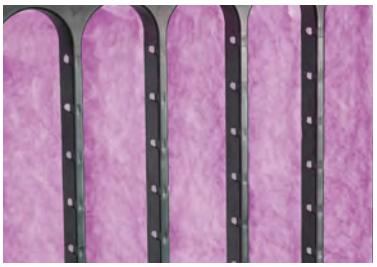


The heat pump is an integrated reversible heat pump system built into a unit section. The system consists of a reversible heat pump and a rotary heat exchanger that enables both heating and cooling. The unit is equipped with scroll compressors, and cooling/heating capacity is stepless variable in the range 5-100%. The heat pump is based on R-410A refrigerant. The heat pump is equipped with a complete control system.

The humidifier is made as a complete unit, which includes humidification elements, tray and frame made of stainless steel AISI 304, circulation pump, irrigation regulation valves, overflow, bleed-off regulation valve, float valve for controlling the water supply to the tray and valve for emptying the tray. The function of the humidifier is based on the natural process that water evaporates when air passes a wet surface. The humidifier can either be placed in the supply air after a heating coil or used as indirect adiabatic cooling by placing it in the extract air before a heat exchanger.

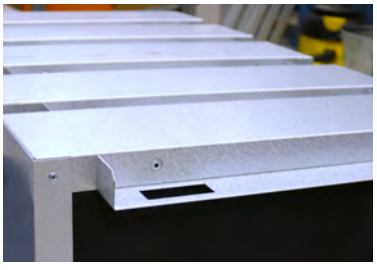


The panel filter is a basic filter class Coarse 65% (G4) according to EN ISO 16890 with a short building length. It is designed on pleated filter principle.
The bag filter is a bag filter, which design provides a large filter area. The filter has a long lifetime and thus good overall economy. The filter can be supplied in the filter classes Coarse 65% (G4), ePM10 60% (M5), ePM2.5 50% (M6), ePM1 60% (F7), ePM1 75% (F8), ePM1 85% (F9), or CITY-FLO ePM1 60% (F7 City-Flo) according to EN ISO 16890. CITY-FLO ePM1 60% is a filter with particle and molecular filtration, specially designed for use in urban areas and areas with heavy traffic. Bag filters are available in 2 lengths; 520 and 640 mm.
Metal filter. Class G2.
Carbon filter. Carbon type CEX003 in a cylindrical cartridge.



The dampers comply with tightness class 4 C according to EN 1751:2014. The dampers have counter rotating aerodynamically shaped damper blades made of aluminium, which ensure a low pressure loss when open.

The sound attenuator is an absorption attenuator with baffles. It is used to reduce the sound power level from the air handling unit to the duct system. Can be delivered for dry and wet cleaning.



Dynamic flow chart in the control panel NaviPad

Systemair Access; Complete control system

Sysemair Access is the complete control system for Geniox. Access has been developed by Systemair for Geniox air handling units. Access can be controlled with the NaviPad control panel.

We have selected the most important functions for NaviPad to make it simple and user-friendly for you. NaviPad has an intuitive user interface, as you know from your smartphone. It is easy to gain an overview of the Access controller where you can connect all external components.

- The NaviPad control panel has a 7" touch screen.
- We have developed a logical navigation structure, inspired by smartphones.
- Name and connect up to 9 air handling units to the same control panel.
- BMS communication via ModBus, BACnet as well as cloud access to Systemair Connect.
- Dynamic flow chart: Press the function, change the setting and go!
- Quickly and safely connect external sensors to the controller.
- Editable name on external components for better overview.
- Plug and play – prepared for easy start-up and operation.

Download SystemairCAD from Systemair's website.

Configure Geniox with SystemairCAD

SystemairCAD is a user-friendly design program which ensures an optimal dimensioning of the air handling unit's functions. When the unit design is finished, SystemairCAD makes a technical calculation and automatically generates a complete technical documentation in pdf format for the selected unit.

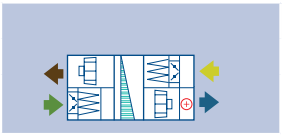
The documentation includes the following highlights:

- Technical data
- Detailed drawing
- Shipping, dimensions and weights
- Control system description like control functions, flow chart and connection diagrams
- Molliere diagram
- Specification text
- ErP 2018
- LCC calculations.

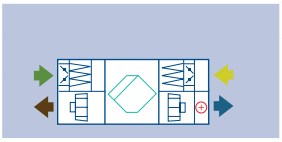
The drawn to scale drawings from SystemairCAD can be exported to other CAD software and for use in BIM and:

- Export of DXF files 2D and 3D.
- Export of DMR files to Autodesk Revit.
- SystemairCAD project files can be opened directly in AutoCAD via MagiCAD plugin and in Autodesk Revit via Revit plugin.

Quick selection of Geniox

Rotary heat exchanger		Unit size 10	11	12	14	16	18	20	22	24	27	29	31
Unit	Width	1082	1182	1282	1482	1682	1882	2082	2282	2482	2782	2982	3182
	Height*	1082	1182	1282	1482	1682	1882	2082	2282	2482	2764	2964	3164
	Length	2282	2282	2282	2282	2282	2282	2382	2464	2464	2946	3146	3146

The above dimensions are a guideline only. Accurate values and combinations are calculated in SystemairCAD.
* Height excl. legs/base frame.

Plate heat exchanger Counter flow heat exchanger		Unit size 10	11	12	14	16	18	20
Unit	Width	1082	1182	1282	1482	1682	1882	2082
	Height*	1082	1182	1282	1482	1682	1882	2082
	Length	3182	3382	3382	3482	3782	3782	3982

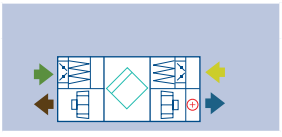
The above dimensions are a guideline only. Accurate values and combinations are calculated in SystemairCAD. * Height excl. legs/base frame.

Design an air handling unit

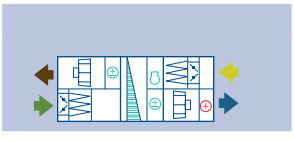
Geniox contains countless combination options. To ease the process of designing a unit the most popular combinations are illustrated here.

Key to symbols

Exhaust air ◀ Extract air ◀
Outdoor air ▶ Supply air ▶

Plate heat exchanger Cross flow heat exchanger		Unit size 10	11	12	14	16	18	20	22	24	27	29	31
Unit	Width	1082	1182	1282	1482	1682	1882	2082	2282	2482	2782	2982	3182
	Height*	1082	1182	1282	1482	1682	1882	2082	2282	2482	2764	2964	3164
	Length	2982	3082	3182	3382	3582	3782	3782	4446	4746	4946	5446	5446

The above dimensions are a guideline only. Accurate values and combinations are calculated in SystemairCAD.
* Height excl. legs/base frame.

Integrated reversible heat pump		Unit size 10	11	12	14	16	18	20	22	24
Unit	Width	1082	1182	1282	1482	1682	1882	2082	2282	2482
	Height*	1082	1182	1282	1482	1682	1882	2082	2282	2482
	Length	3282	3282	3282	3282	3482	3482	4082	4346	4546

The above dimensions are a guideline only. Accurate values and combinations are calculated in SystemairCAD.
* Height excl. legs/base frame.

Directives and certifications

Eurovent certification
Geniox air handling units are Eurovent certified. This ensures the conformity between the calculated performance in SystemairCAD design program, and the measured performance at independent test laboratories. Certificate 17.07.012.

Eurovent energy classification
Geniox air handling units are energy classified according to Eurovent's guidelines for air handling units. The energy class expresses the unit's total energy consumption. The energy class is calculated by the design program SystemairCAD based on the actual data of the designed unit.

Ecodesign Directive
The Ecodesign Directive 1253/2014 prescribes minimum requirements regarding heat recovery efficiency, fan efficiency, SFP internal values, and operation of the air handling unit. The selection software SystemairCAD is updated with an automatic Ecodesign calculation that will tell you if the requirements for 2018 are fulfilled.

Machinery directive
Geniox air handling units are manufactured according to the safety demands of the EU Machinery Directive 2006/42/EC. This is confirmed through the issuance of corresponding Declaration of Conformity and CE label.

Standards

The Geniox design is based on the demands in the following CEN and ISO standards:

EN 305:1997
Heat exchangers. Definition and test procedures.

EN 308:1997
Heat exchangers. Test procedures.

EN 378-1&2:2016
Refrigerating systems and heat pumps safety and environmental requirements.

EN ISO 16890
Air filters for general ventilation.

EN 1216:1999
Heat exchangers.

EN 1751:2014
Aerodynamic testing of dampers and valves.

EN 1886:2008
Air handling units.
Mechanical performance.

EN 13053:2011
Ratings and performance for units and components.

EN 13779:2007
Ventilation for non-residential buildings. Performance requirements.

EN 60204-1:2006
Machine safety.
Electrical equipment of machines.

EN ISO 3741:2010
Determination of sound power level in reverberation rooms.

EN ISO 5136:2009
Determination of sound power level in a duct.

EN ISO 12100:2011
Safety of machinery.

EN ISO 12944-2:2000
Corrosion protection.
Classification of environments.

DS 428
Danish Standard for fire technical precautions, indoor air handling units comply with class A2-s1,d0.

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