GHR

Dehumidifiers for radiant cooling systems with heat recovery

R134a

R407C

The units have been designed to dehumidify both in neutrum air, that is at the same temperature at which it's taken, and with cooled air, managing very small air flows and avoiding so the annoying typical air currents of the traditional air conditioning systems.

The dehumidifiers with heat recovery, series GHR, are the best ones for residential building or for small factories. The units can adapt to any kind of ambient since they are very silent and versatile.

VERSIONS

- Version suitable for swimming pool installation: Supplied with painted frame and heat exchangers suitable for swimming pool
- WZ version: Units supplied with double condenser (the first is an air condenser, the second is a water one) and of a logic which allows the dehumidification with neutrum air or with cooled air.

ACCESSORIES

- Remote mechanical hygrostat
- Remote mechanical hygrostat + thermostat (WZ versions only)

GHR

Mod.		GHR25	GHR25WZ	GHR50	GHR50WZ
Moisture removed [1]	l/24h	20,1	20,1	48,5	48,5
Cooling capacity [1]	W	---	1250	---	3500
Nominal input power [1]	W	340	340	700	700
Maximum input power [2]	W	450	450	800	800
Nominal input current [1]	A	2,5	2,5	4,6	4,6
Maximum input current [2]	A	2,8	2,8	4,9	4,9
Cold water coils	l/h	150	---	500	---
	kPa	8	---	17	---
Condenser waterflow	l/h	---	150	---	500
	kPa	---	7,8	---	22
Air flow	m^3/h	250	250	600	600
Available static pressure (max. speed)	Pa	35	35	60	60
Refrigerant		R134a	R134a	R407C	R407C
Sound pressure [3]	dB(A)	39	39	44	44
Temperature operating range	°C	15-35	15-35	15-35	15-35
Campo di lavoro umidità	%	40-99	40-99	40-99	40-99
Weight	Kg	35	37	52	55
Power supply	V/Ph/Hz	230/1~/50			

Mod.		GHR100	GHR100WZ	GHR100	GHR100WZ
Moisture removed [1]	l/24h	87,2	87,2	164	164
Cooling capacity [1]	W	---	6000	---	11300
Nominal input power [1]	W	1450	1450	2450	2450
Maximum input power [2]	W	1600	1600	2950	2950
Nominal input current [1]	A	7	7	13,5	13,5
Maximum input current [2]	A	8,8	8,8	15	15
Cold water coils	l/h	600	---	900	---
	kPa	32	---	48	---
Condenser waterflow	l/h	---	600	---	900
	kPa	---	39,5	---	64
Air flow	m^3/h	1000	1000	1850	1850
Available static pressure (max. speed)	Pa	75	75	120	120
Refrigerant		R407C	R407C	R407C	R407C
Sound pressure [3]	dB(A)	51	51	58	58
Temperature operating range	°C	15-35	15-35	15-35	15-35
Campo di lavoro umidità	%	40-99	40-99	40-99	40-99
Weight	Kg	87	90	115	120
Power supply	V/Ph/Hz	230/1~/50			

1) Performances refer to the following conditions: Room temperature 26°C; relative humidity 65% with cold water coil water inlet temp. 15°C.
2) Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
3) Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746, minimum fan speed.

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FRAME

All units GHR series are made from hot-galvanised thick sheet metal, to ensure the best resistance against the corrosions. The frame is self-supporting with removable panels. The drip tray is present standard in all units and is made of plastic material for model 25 and in metal material for models 50-100-200.

REFRIGERANT CIRCUIT

The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant gas used in these units is R134a for the model 25 and R407C for the models 50-100-200.The refrigerant circuit includes: filter drier, capillary expansion device, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor (for model 25) is alternative or rotative type (for models 50-100-200), equipped with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers to reduce the noise.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe. In all units WZ besides these exchangers, there is a third stainless steel INOX AISI 316 plate exchanger used us condenser in cooling modality.

PRE AND POST WATER COOLING COILS

The pre and post cold water coils are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The pre-cooling coil is used to increase the dehumidification capacity of the unit, while the post-cooling coil is used to keep the outlet air temperature at the same inlet value. In WZ version only the pre cooled water coil is present.

SUPPLY FAN

The supply fan is centrifugal type, double inlet with forwards blades, dynamically and statically balanced and directly connected to a 3 speed fan motor.

RECOVERY

Aluminium crossed flow plate recovery, with efficiency > of 60%, supplied with stainless steel condensate drip tray.

RECOVERY FAN

The recovery fan is centrifugal type, double inlet with forwards blades, dynamically and statically balanced and directly connected to a 3 speed fan motor.

AIR FILTER

For the model GHR 25-50 it's supplied standard with the unit and it's built in nylon. It can be removed for differential disposal, class G2, according to EN 779:2002.
Regarding the model GHR 100-GHR 200 instead, it's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002

MICROPROCESSOR

All units GHR are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit. Ready for the connection to the power and to the consensus control, The terminal board is also supplied with voltage free contacts for remote ON-OFF. The terminal block is also built with a clean contact to allow the operation of single-mode ventilation, while the second for the cooling version (WZ). By closing the first contact, only the fan is abled to work, while the dehumidification is disabled.

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REFRIGERANT CIRCUIT STANDARD VERSION

The functioning of the dehumidifier model GHR is as follows: the fan takes the air from the ambient (7) and it's made go through the filter (1) and the pre-cooling water coil (2) where it's cooled and brought to a condition closed to saturation. Now it passes through the evaporating coil (3) where it's fatherly cooled and dehumidified. The air passes now through the condensing coil (5) where it's post heated (with a constant humidity) and in the post-cooling coil (6) where it's reported to the required conditions.
All the dehumidifiers model GHR can work without the help of the pre and post cooling coils. This function is very useful in case there is the request of dehumidification in middle-season or when the chiller is off. Obviously, if the unit works without the help of the cold water, the air in outlet will be hotter than the air in inlet.

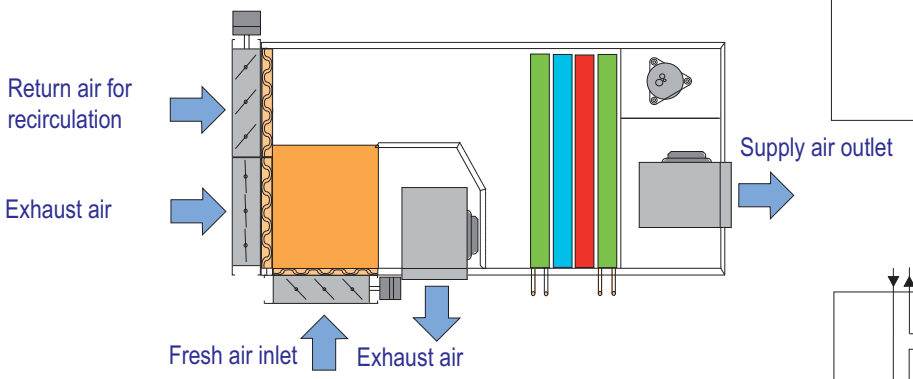
REFRIGERANT CIRCUIT WZ VERSION

The operation of the dehumidifier model GH is as follows: the fan takes the air from the ambient (7) and it's made go through the filter (1) and the pre-cooling water coil (2) where it's cooled and brought to a condition closed to saturation. Now it passes through the evaporating coil (3) where it's fatherly cooled and dehumidified.
At this point there are two possible modalities:

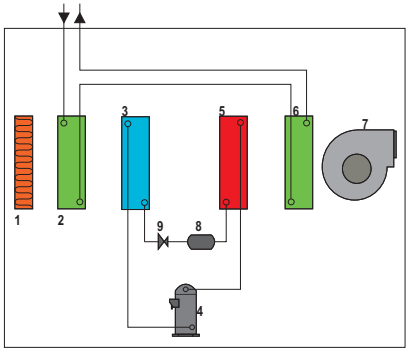
Dehumidification mode.
The air passes now through the condensing coil (5) which allows to condensate the 50% of the total gas, (the unit condensate the 50% on air with the heat –exchanger (5) and the 50% in water with the heat exchanger (10)) then there is the post-heating so that to avoid to send air in the ambient in neutrum thermic conditions.

Dehumidification with cooling mode.
The unit condensates the 100% in water through the heat –exchanger (10). The air, then, go through the condenser (5) (disabled) where does not change its characteristics (temperature and humidity).

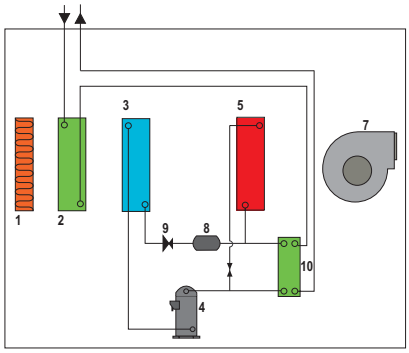
Main Components



Refrigerant circuit GHR



Refrigerant circuit GHRWZ



1	Air filter
2	Pre-cooling coil
3	Evaporator
4	Compressor
5	Condenser

6	Post-cooling coil
7	Fan
8	Dry filter
9	Expansion device
10	Water condenser

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RECIRCULATION MODE

Setting this function, the unit will make the ambient air re-circle only through the dehumidifier “part”.
This setting allows the following functions:

GHR VERSION

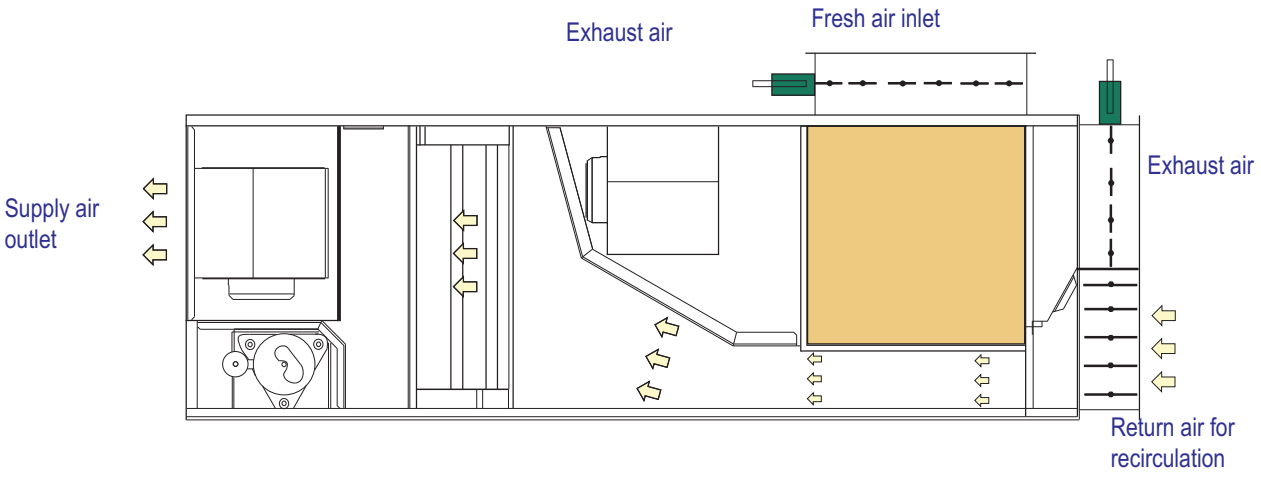
Summer function
Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat).
Dehumidification with water on the pre-post treatment coils (dehumidified and neutrum air).

Winter operation
Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat).
Dehumidification + integration in heating with hot water on the post-coil (air dehumidified and post-heated in the post- coil supplied with hot water).
Only air heating (by closing the fan contact and supplying the hot water coils, the unit will make the re-circle and the heating of the air through the coils supplied with hot water).

GHR/WZ VERSION

Summer function
Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air.
Dehumidification with 100% of the condensation in water.

Winter operation
Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air).
Dehumidification + with only air heating (by closing the fan contact and supplying the hot water coils, the unit will make the re-circle and the heating of the air through the coils supplied with hot water). Integration in heating.



FRESH AIR MODE

By setting this function, the unit will renew the room air with the ambient air through the heat recovery.
The possible functions are:

GHR VERSION

Summer function
Renew+ Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat).
Renew + Dehumidification with water on the pre-post treatment coils (dehumidified and neutrum air).

Winter operation
Renew - Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat)
Renew-Dehumidification+integration in heating with hot water on the post-coil (air dehumidified and post-heated in the post- coil supplied with hot water).
Dehumidification + with only air heating (by closing the fan contact and supplying the hot water coils, the unit will make the re-circle and the heating of the air through the coils supplied with hot water).

GHR/WZ VERSION

Summer function
Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air.
Renew + Dehumidification with 100% of the condensation in water (dehumidified and cooled air).

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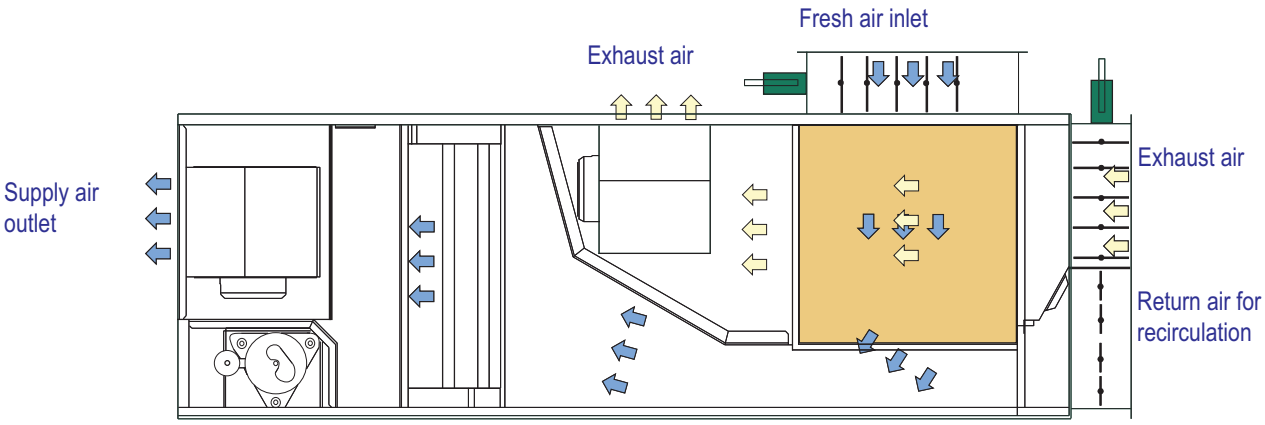
Winter operation

Renew + Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air.

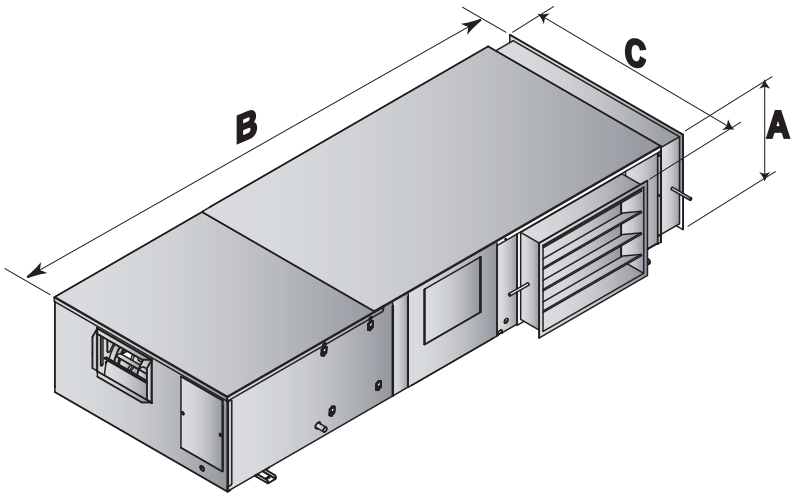
Dehumidification + with only air heating (by closing the fan contact and supplying the hot water coils, the unit will make the recircle and the heating of the air through the coils supplied with hot water). Integration in heating.



Mod.	GHR25	GHR25WZ	GHR50	GHR50WZ
Fresh air + recirculation dampers, supplied with on-off servomotor	●	●	●	●
Remote mechanical hygrostat + thermostat	–	○	–	○

Mod.	GHR100	GHR100WZ	GHR200	GHR200WZ
Fresh air + recirculation dampers, supplied with on-off servomotor	●	●	●	●
Remote mechanical hygrostat + thermostat	–	○	–	○

● Standard, ○ Optional, – Not Available.



Mod.	A (mm)	B (mm)	C (mm)
25	253	1546	698
50	353	1821	700
100	394	1991	847
200	469	2444	1094
25WZ	253	1546	698
50WZ	353	1821	700
100WZ	394	1991	847
200WZ	469	2444	1094