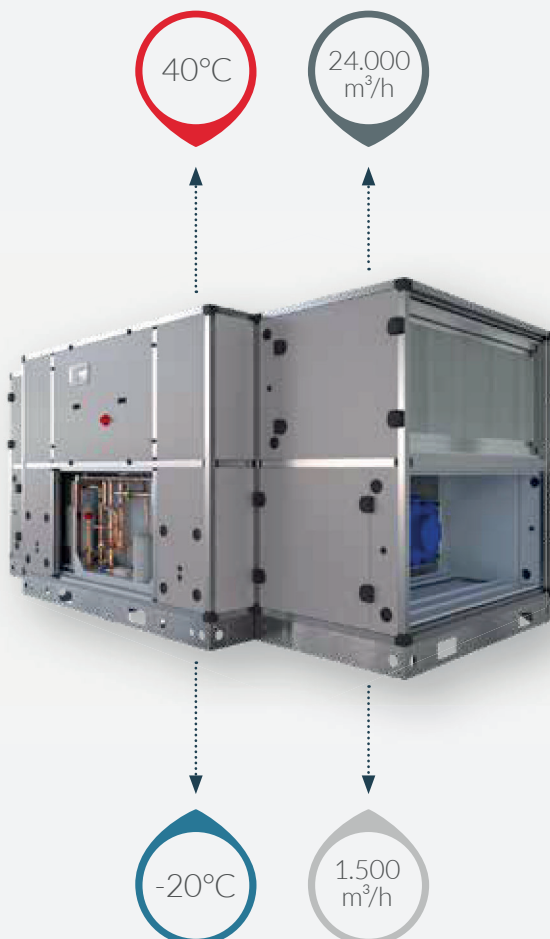


HPH-FLEX

Heat recovery unit
WITH HIGH EFFICIENCY,
MODULATING HEAT
PUMP CIRCUIT AND PLATE
HEAT RECOVERY
from 1.500 to 24.000 m³/h

The high efficiency heat recovery units with integrated HPH refrigerant circuit have been designed and created for commercial and industrial applications and combine the need for air recirculation with maximum energy saving, thanks to the adoption of high efficiency components.

By their very nature, they are units that are generally well suited for use within traditional heating/cooling systems, even if, under certain environmental conditions, they can be used completely autonomously.



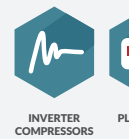
HEAT PUMP



PLATES



EFFICIENCY

EC
FANSINVERTER
COMPRESSORS

PLUG&PLAY

INDOOR
INSTALLATIONOUTDOOR
INSTALLATION

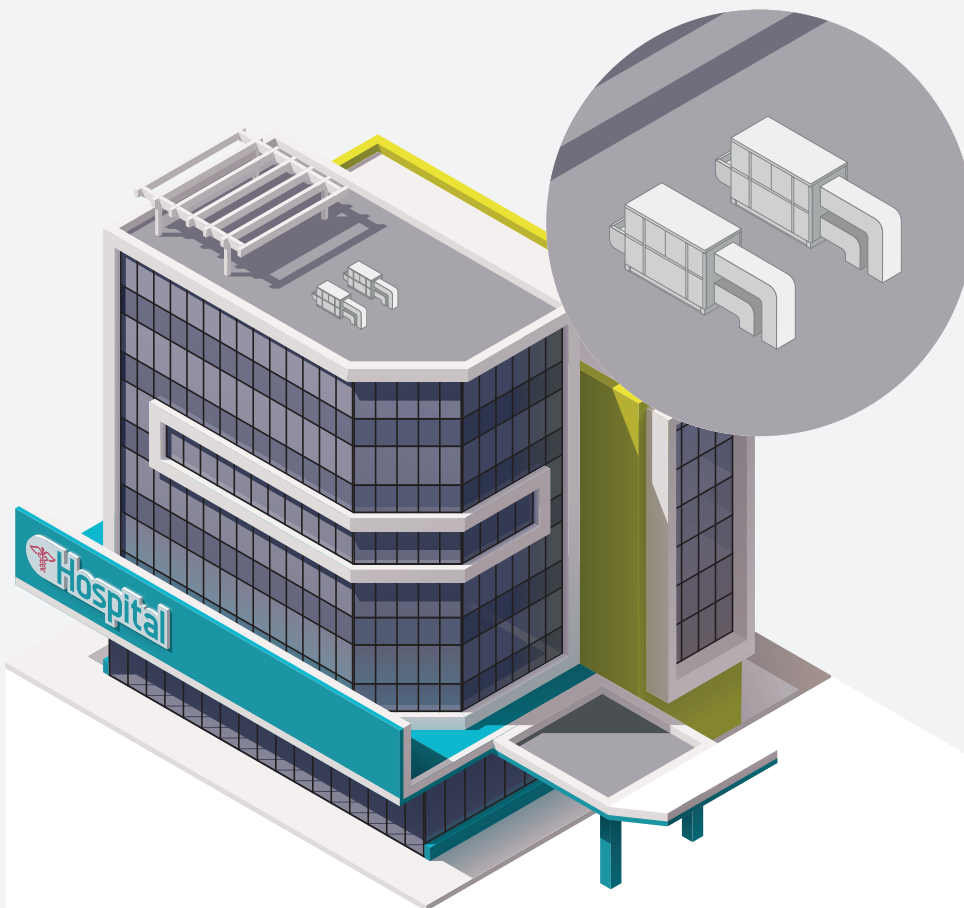
R410A

ADVANTAGES

- High recovery efficiency
- Reduced energy consumption
- Separate flow plate recovery unit suitable for hospital use
- Integration with the most common supervision systems
- Easy to install

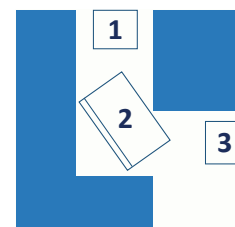
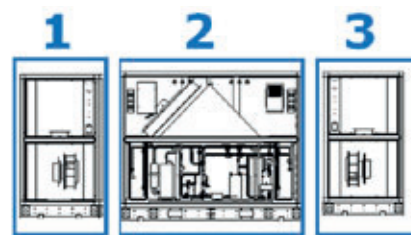
HPH OPERATION

The units in the HPH range recirculate the air in the environments to be treated, recovering up to 70% of the air exhaust and containing the additional energy supply to reach the air intake temperature in the environment.



MODULARITY

The new configuration of the HP units, into 3 sections at the time of installation, allows easier handling and the installation of additional accessories on site (e.g. silencers, additional filters, coils).



TECHNICAL SPECIFICATIONS

- Supporting structure in extruded aluminium profiles, panels (th. 42 mm), sandwich type, with special sealing gaskets; external finish RAL 9002; thermoacoustic insulation in high density 0 class rockwool.
- High efficiency static heat recovery (> 70%) of the cross-flow air-air type with aluminium plates, integrated with a total motorised by-pass system; aluminium condensate collection tank, with a 1" double side discharge.
- Dynamic recovery section created with R410A reversiblerefrigerant circuit, consisting of: EC twin rotary brushless hermetic compressor(s) with dedicated inverter, Cu/Al finned tube evaporator/condenser, electronic expansion valve, cycle reversing valve, high pressure switch, high and low pressure transducers, liquid separators and receivers.
- Compact filters th. 98 mm on the air recovered from the environment, in efficiency class ISO ePM10 50% (according to ISO 16890: 2017), extractable from both sides and compact filters th. 98 mm on the recirculation air, in efficiency class ISO ePM1 50% (according to ISO 16890: 2017), extractable from both sides.
- Centrifugal fans with free impeller with backward curved blades directly coupled to an EC motor equipped with built-in control electronics, extractable from both sides.
- Electrical panel complete with on-board machine display and microprocessor to manage the fixed-point thermoregulation in delivery, based on operating logics designed to maximise energy savings and environmental comfort, thanks to the modulation of cooling capacity and air flow guaranteed by the inverter technology. The unit is prepared for connection via RS485 to supervision systems based on Modbus RTU/ Modbus RTU/RS 485/Modbus TCP/IP protocol; Bacnet TCP; Webserver.

ACCESSORIES

Sanitation module with UVC plasma and antivirus filter	Kvir-P
Electric pre-heater	SKEp
Modulating electric reheater	SKEr
Ball Siphon kit	BTS
Hot water preheater coil with valve	SKWp V33
Hot water reheating coil with valve	SKWr V33
Heating/cooling coil section	CCS V33
Twin damper with modulating servomotors	SKR2
F9 (ISO ePM1 85%) fresh air filter	FC9
Air filter pressure switch	PSTD
Differential pressure sensor - constant airflow	DPSa
Differential pressure sensor - constant pressure	DPSp
CO2 sensor	AQS
Twin sound attenuator	SILm/SILf
Room winter temp. Speed-up kit	MRE/MRW
Flexible connection	GAT
Rain Hood	CFA A/ CFA B
Roof cover	TPR/ TPRs/ TPRc

MODELS

HPH-FLEX			35	50	80	92	144	205	250
Airflow	Nom	m ³ /h	3000	5200	7300	9500	13000	17000	21000
Available static pressure	Nom	Pa	250						
Radiated sound power	Nom	dB(A)	64	70	77	82	78	82	80
ELECTRICAL ABSORPTION									
Total current	Nom (1)		13	18	23	29	38	50	54
	Nom (2)	A	19	28	34	42	57	76	85
	Nom (1)		29	37	41	57	78	104	134
Total absorbed power	Nom (1)		4.1	8.1	12.0	16.6	23.8	30.9	35.5
	Nom (2)	kW	4.6	9.8	14.1	19.3	26.9	36.3	41.6
	Max (3)		9.0	14.0	17.0	23.0	32.0	42.0	56.0
Electrical power supply	V-Ph-Hz		400-3-50						
ENERGY RECOVERY (1)									
Recovered power		kW	24.0	41.1	55.9	73.8	98.1	130.5	162.8
Recovery efficiency		%	75.6	74.9	72.7	73.7	71.4	72.8	73.5
Power transferred by the heat pump		kW	14.2	25.2	36.2	46.5	65.8	83.7	102.7
Total power transferred		kW	38.2	66.3	92.1	120.3	163.9	214.2	265.5
Net COP		W/W	9.3	8.2	7.7	7.1	6.9	6.9	7.4
Input temperature		°C	25.0						
ENERGY RECOVERY (2)									
Recovered power		kW	3.5	6.0	8.4	10.6	14.9	19.8	24.2
Recovery efficiency		%	60.6	60.0	61.0	59.0	60.0	60.2	60.7
Power transferred by the heat pump		kW	13.8	25.0	34.7	45.5	62.3	81.2	100.5
Total power transferred		kW	17.3	31.0	43.1	56.1	77.2	101.0	124.7
Net EER		W/W	3.8	3.2	3.1	2.9	2.9	2.8	3.0
Input temperature		°C	20.5						
OPERATING LIMITS (BASE UNIT)									
Winter outdoor air temperature min.			-12°C (ambient min. 20°C 50% UR (A))						
Summer outdoor air max.			36°C - 45% (ambient max. 27°C) (B)						

(A) Input temperature ≤ 20°C; balanced air flow rates

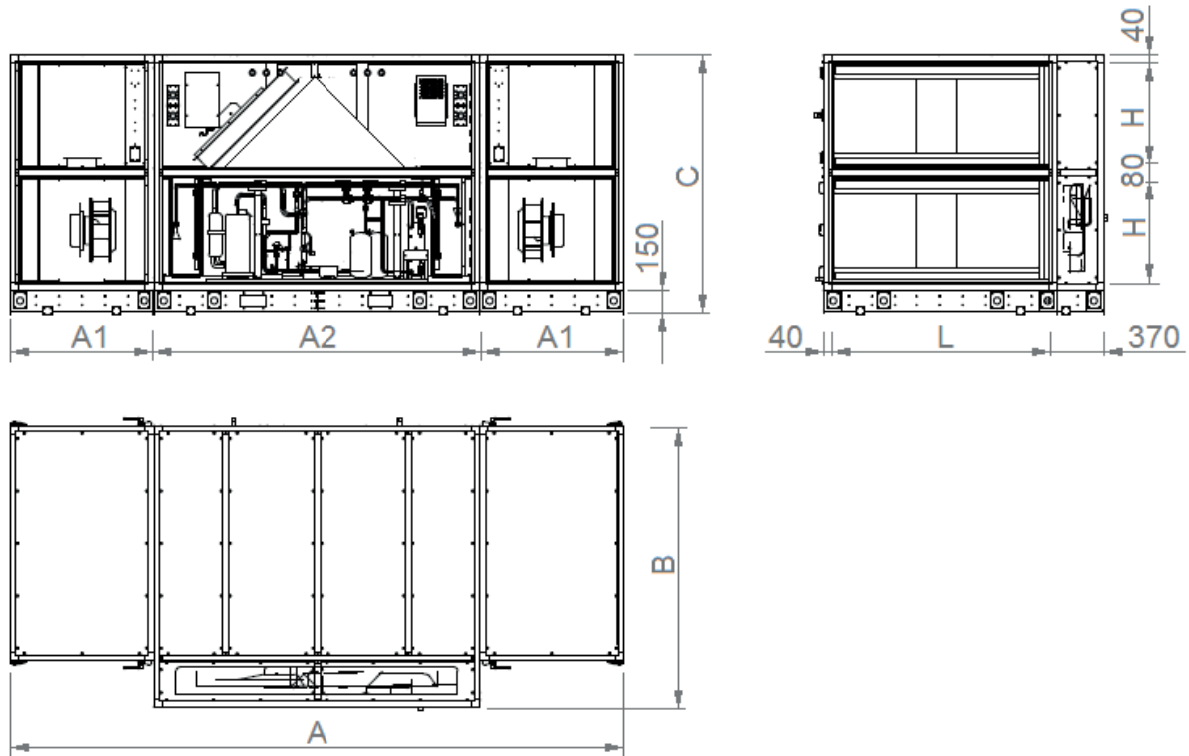
(B) Input temperature ≥ 22°C; balanced air flow rates

(1) outdoor air at -10°C 90% RH, ambient air at 22°C 50% RH; nominal air flow rate

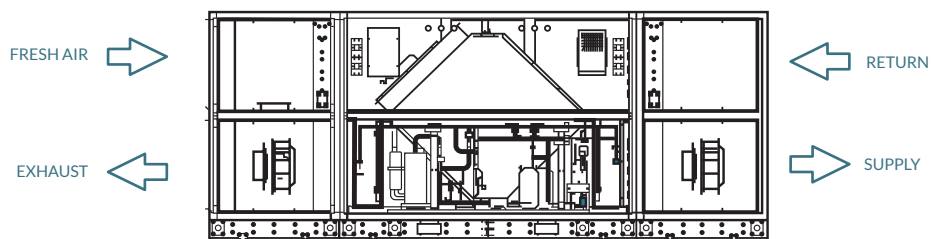
(2) outdoor air at 32°C 50% RH, ambient air at 26°C 50% RH; nominal air flow rate

(3) with ventilation regulation signals and heat pump at the maximum permissible value

DIMENSIONS AND WEIGHTS

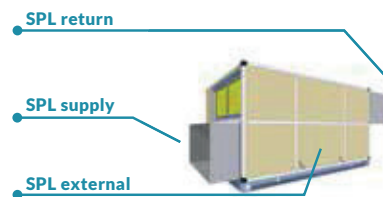


HPH-FLEX		35	50	80	92	144	205	250
A	mm	3750	3750	4410	4410	4740	4410	4410
A1	mm	1030	1030	1030	1030	1030	1030	1030
A2	mm	1690	1690	2350	2350	2680	2350	2350
B	mm	1360	1690	1855	2020	2350	2350	2845
C	mm	1510	1510	1840	1840	2170	2500	2500
L	mm	950	1280	1445	1610	1940	1940	2440
H	mm	600	600	765	765	930	1095	1095
Weight	kg	900	1050	1150	1250	1450	1800	2150



SOUND LEVELS

With reference to the nominal operating conditions, the following table shows the sound power values (SWL) in octave band and the related results; the sound pressure values (SPL) at 1m, 5m and 10m in supply, in return and outside of the unit are also highlighted, under ducted unit conditions.



HPH-FLEX	SWL [dB] IN OCTAVE BAND [HZ]								SWL		SPL SUPPLY			SPL RETURN			SPL EXTERNAL		
											1 m	5 m	10 m	1 m	5 m	10 m	1 m	5 m	10 m
	63	125	250	500	1000	2000	4000	8000	dB	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
35	66	73	72	71	71	67	62	57	78	75	64	57	54	47	40	39	41	29	21
50	69	76	80	77	77	73	69	67	85	81	70	63	60	54	47	44	46	32	26
80	76	75	87	83	85	81	77	80	91	89	77	70	67	59	52	49	53	39	34
92	79	80	90	87	88	86	81	80	95	93	82	75	72	62	55	52	57	43	37
144	76	75	87	83	85	80	76	78	91	89	78	71	68	60	53	50	54	40	34
205	80	82	92	88	89	86	82	81	96	93	82	75	72	62	55	52	57	43	37
250	78	77	89	85	87	83	79	83	94	91	80	73	69	67	59	55	56	42	36



Electronic expansion valve



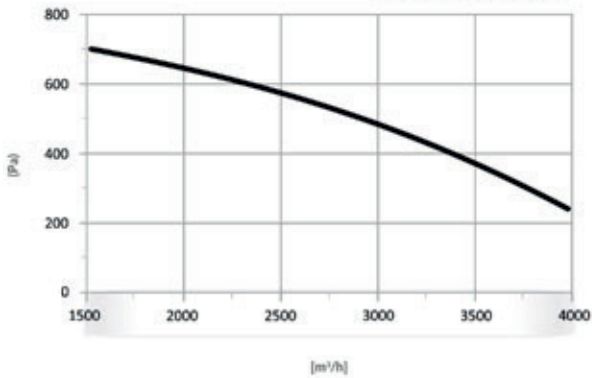
Device for constant flow (or constant pressure)
Working mode



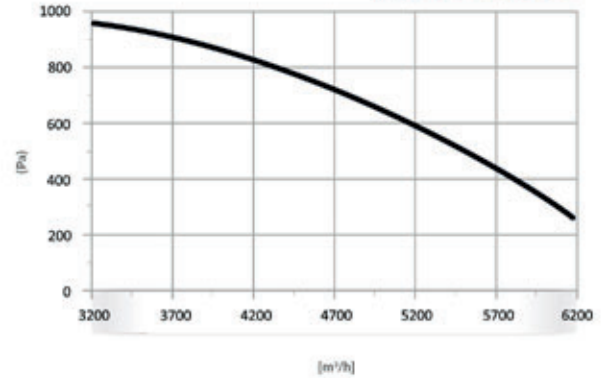
Modulating fans and high efficiency filters

PERFORMANCE

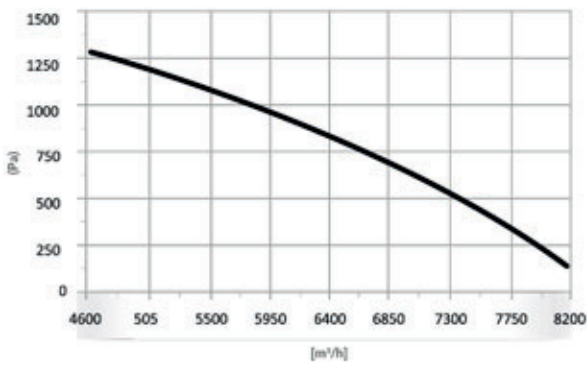
HPH-FLEX 35



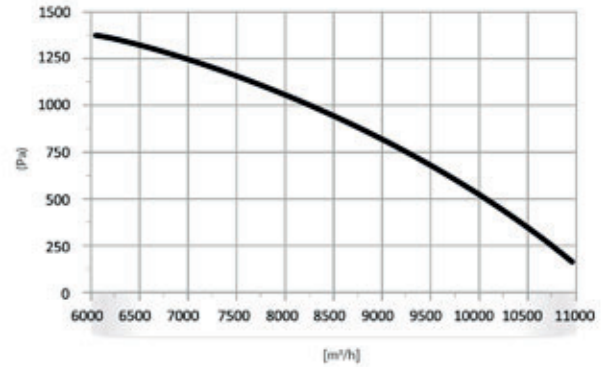
HPH-FLEX 50



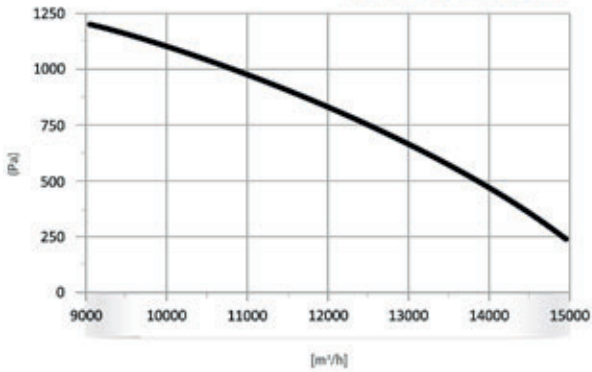
HPH-FLEX 80



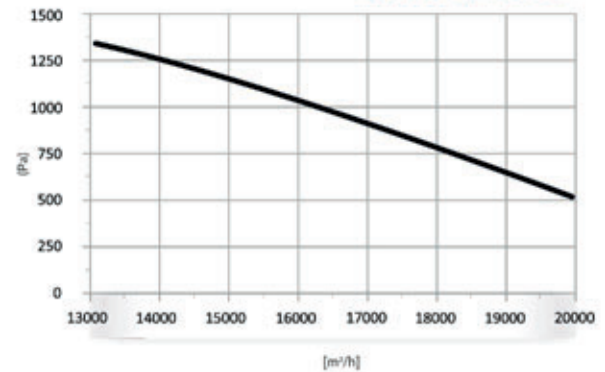
HPH-FLEX 92



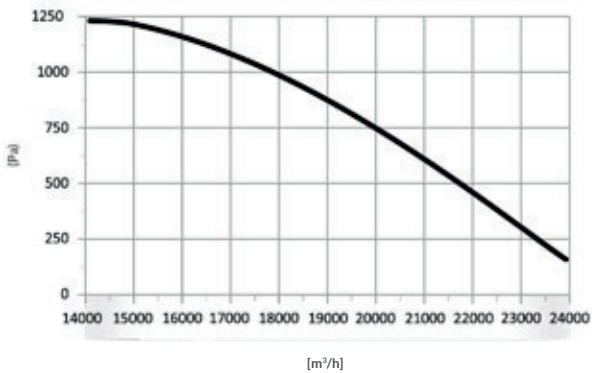
HPH-FLEX 144



HPH-FLEX 205



HPH-FLEX 250



The graphs provide an indication of the useful static pressure (Pa) as the airflow [m³/h] supplied by the base inlet unit varies. Consult the technical bulletin to check the specific data of the unit's aerualic performance.