DOĞU
İKLİMLENDİRME | HVAC SYSTEMS

FOUR-HPGK

Heat Pump Heat Recovery Unit

FOUR SEASONS®

Venues Breathe with DOGU HVAC Systems!

DOGU HVAC founded in 1999, and ever since has been manufacturing energy and cost efficient products as Air Handling Units, Air Distribution & Management & Movement Systems [HVAC Components] and constantly enhancing to provide an integrated solution for well-being. DOGU HVAC's core business products which are subsumed under 6 major groups as Air Handling Units, Rooftop Units, Heat/Energy Recovery Units, Air Purifiers, Air Distribution & Management Products and Kitchen Ventilation Equipments are all produced under the compliance with EU standarts. Particularly AHU and HRU-ER units are entitled under the "FOUR SEASONS" brand name for domestic and foreign markets. DOGU HVAC's, headquarter in Izmir/Turkey, operates in a large-sized plant spread over 2 factories, in total area of 32.000 sqm in which 17.500 sqm indoor space that enables DOGU HVAC manufactures 180 various type of products. Additionally, DOGU HVAC has a powerful sales network with 4 sales offices located in İstanbul, Ankara, Antalya and Adana in Turkey as well as authorized dealers in many other countries for sales and after sales operations. DOGU HVAC has been exporting to more than 55 countries.

Thanks to our "Customer Satisfaction","Zero-Defect Policy" motto and reinforced by complete certified products, more than 250 employees. DOGU HVAC R&D center developed exclusive products, such as Double Skin Make-Up Kitchen Hood, Recirculated Laminar Airflow Unit, Single Piece Square Ceiling Diffuser and Ecology Units, for the first time have brought to the sector. DOGU HVAC R&D has the ability to make customized production which can meet the requirement of the customers by means of special software such as "ANSYS FLUENT". DOGU HVAC guaranteed its quality of management by having advantages of ISO 9001, ISO 14001, ISO 18001 certifications. Air Handling Units have EUROVENT, TUV Hygiene [in accordance with DIN1946-4, VDI 6022-1, DIN EN 13053 standarts], CE, TSEK, GOST-R certifications; Fire Dampers have EN 1366-2 and EN 13501-3 CE certifications; Smoke Control Dampers have EN 1366-10 and 12101-8 CE certifications; Kitchen Ventilation Products have TSEK, CE and GOST-R quality certifications.

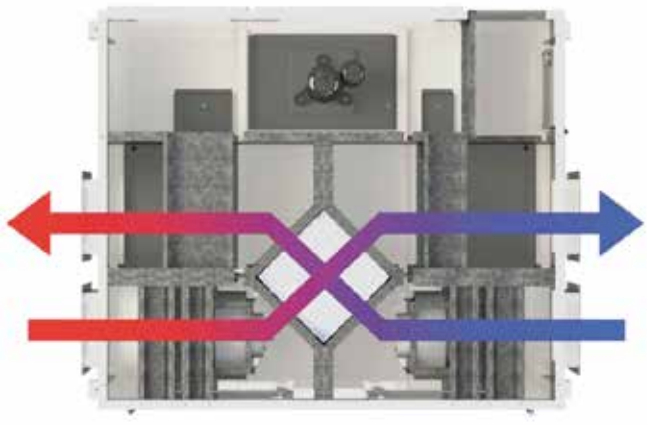
GENERAL FEATURES

Using this device at places where fresh air circulation is not done properly and where air conditioning is used constantly such as malls, restaurants, historic buildings will meet the requested need of fresh air circulation advancely. Being adjusted to the comfort zone, fresh air is supplied to the environment. By using this device, fresh air is being transferred to the room without any change on the indoor environment. To prevent the overuse of air conditions at new project type buildings, this device is mostly preferred.

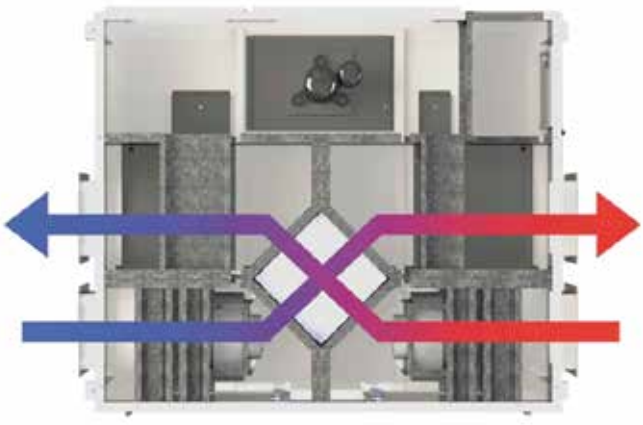
The device is compact. There is no need for a condensing unit and it is easy mountable. It is easily functioning with the dashboard.

Working Principles

Heat Pump Heat Recovery Units are used to meet the active need of fresh air of the environment. The device uses the fresh air and the exhaust air combination of the environment through the cross flow heat exchanger to create and supply the adjusted temperative air into inner environment. If the heat transfer is not enough, the heat pump is activated and meets the required aims of conditioning. The compact device can be easily placed at the ceiling.



Summer Type Air Flow Template



Winter Type Air Flow Template

Cross Flow Heat Exchanger

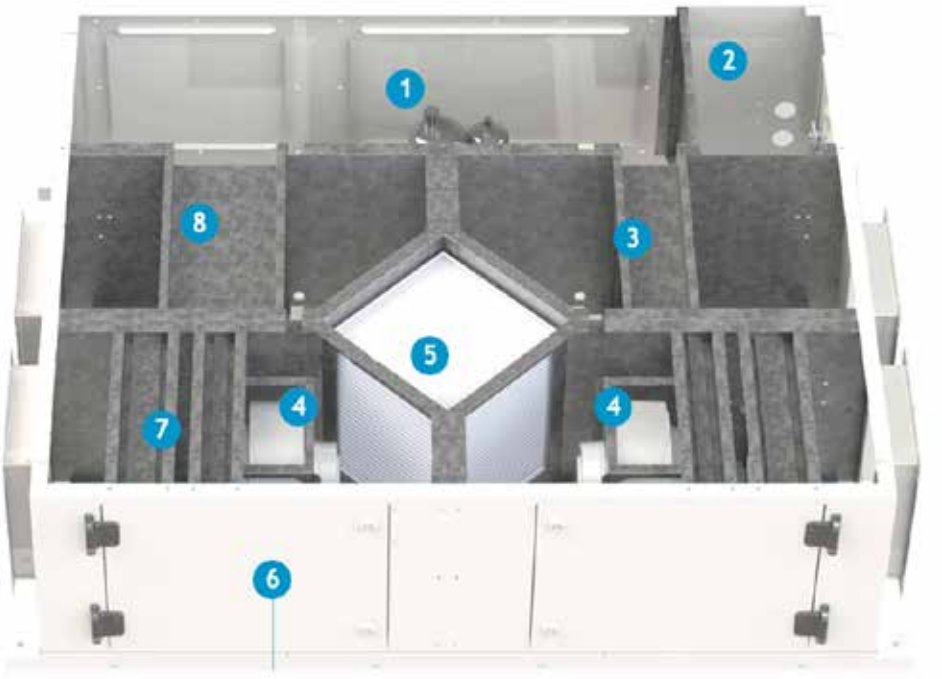
Cross flow heat exchangers do air transferring without mixing the supply and exhaust air over the aluminium plates of the exchanger. On the HPGK, through the optimization of heat exchanger, temperature and humidity efficiency is increased, pressure drop is decreased. A stainless steel drain pan is placed below the exchanger to catch any condensated water.

Heat Pump

The Heat pump is used for the transferring of the condensing water from one environment into another. It is pressed in the refrigerant compressor and it is expanded in the expansion valve. While these environment changings, the heat pump transfers the air through the coils into the environment. The HPGK heat pumps far more efficient than standard heat pumps due to the circulation system of the device. If the outer temperatures are on reasonable levels, the device goes with 'Freecooling' mode without any spend of extra energy

Fans

- Backward curved radial fan.
- Optimal efficiency, low sound level.
- Economic AC fan selection
- High efficiency EC fan selection
- 10 years lifetime (40.000 hours)



1- Compressor
2- Electric Board
3- Evaporator
4- Fans
5- Heat recovery exchanger
6- Intervention lids
7- Filters
8- Condenser

1. Evaporator and Condenser

Cross flow heat exchangers do air transferring without mixing the supply and exhaust air over the aluminium plates of the exchanger. On the HPGK, through the optimization of heat exchanger, temperature and humidity efficiency is increased, pressure drop is decreased. A stainless steel drain pan is placed below the exchanger to catch any condensated water.

1. Evaporator and Condenser

2. Compressor

Adjusted to seasonal working principals. Including the high/low pressure drop feature, all of the features of the heat pump are protected and the lifetime is increased to the max.

3. Electric Boards

The electric board is placed in a separate case so that it stays out of any harm including air flow.

3. Electric Board

4. Heat Recovery Exchanger

With its special construction, the heat exchanger prevents any type of air leak. According to its capacity, the device is designed to hold the balance between pressure drop and efficiency. Allexchangers are EUROVENT certificated. Recuperatorhas on each of its air ducts AISI304 stainless drainpans.

5. Intervention Lids

To reach the fans easily, there are interventions lids with locks.

5. Intervention Lids

6. Filters

Due to ISO ePM Coarse %55 the heat exchanger stays clean and provides efficient function including the increased conditioning quality.

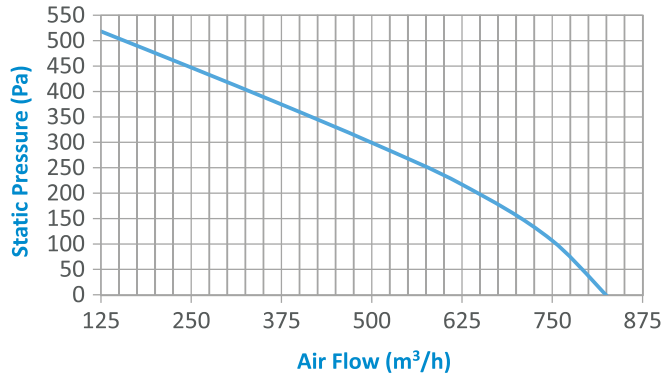
7. Fans

Fans are backward leaning bladed, efficient radial fans.

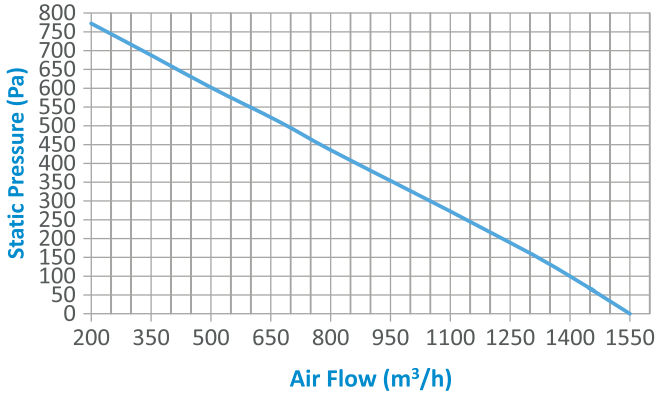
6. Filters and Fans

Performance Statics (EC)

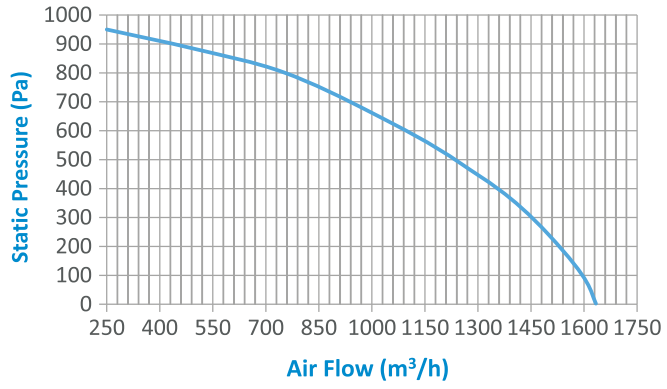
HPGK-07



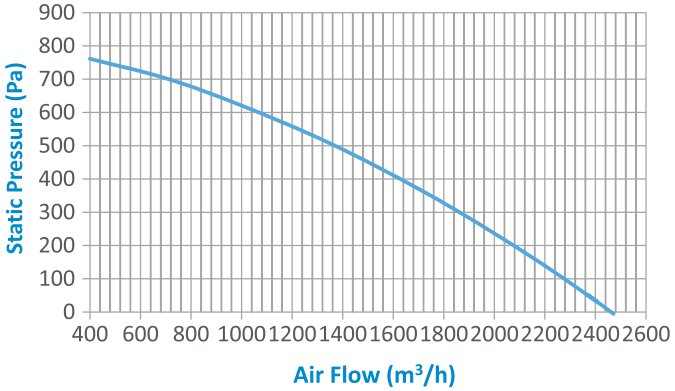
HPGK-10



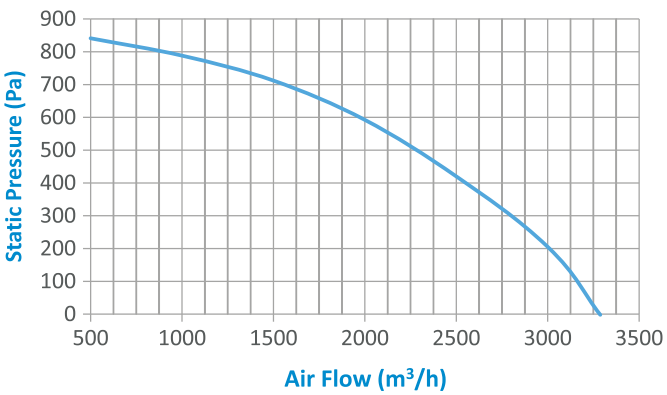
HPGK-15



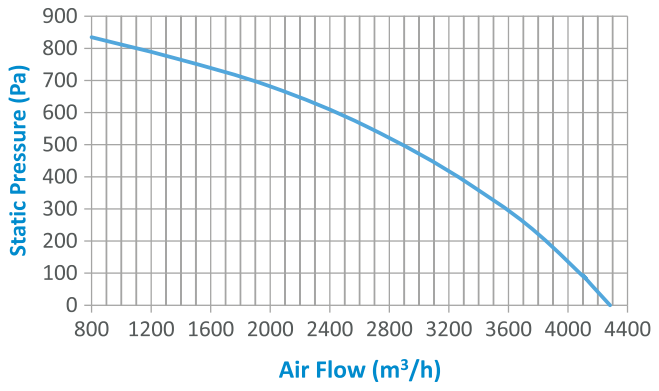
HPGK-20



HPGK-30

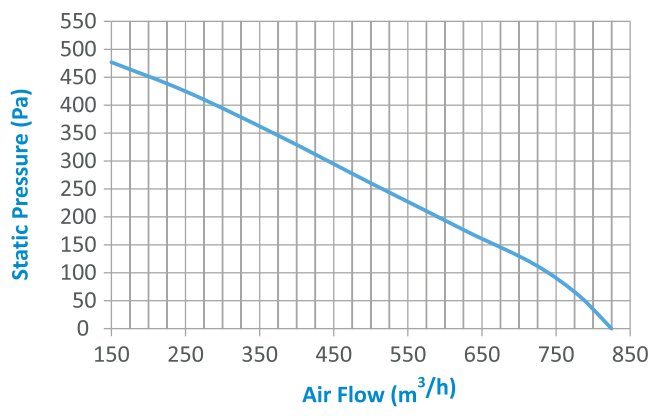


HPGK-40

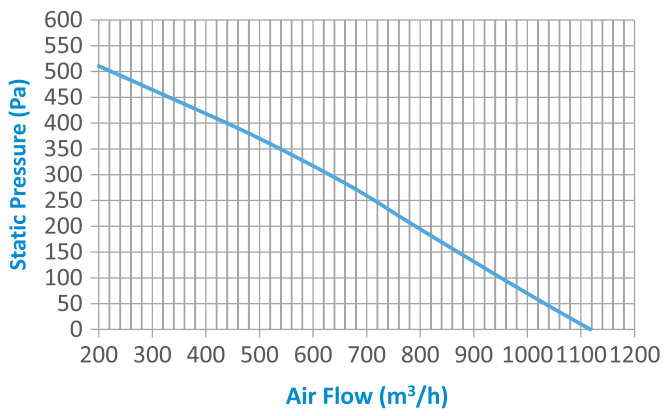


Performance Statics (AC)

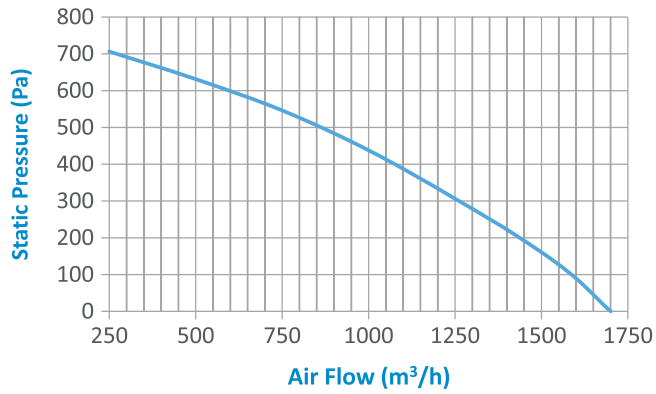
HPGK-07



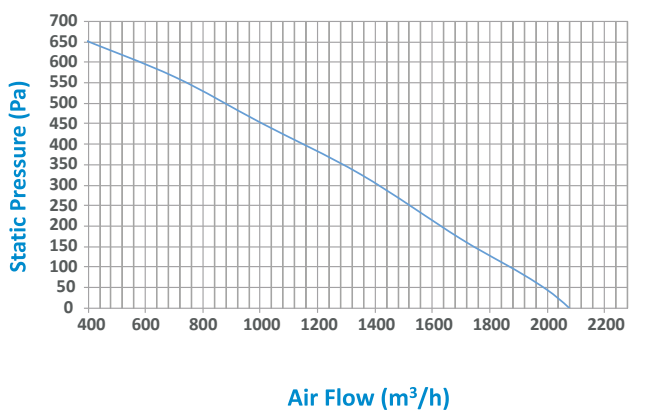
HPGK-10



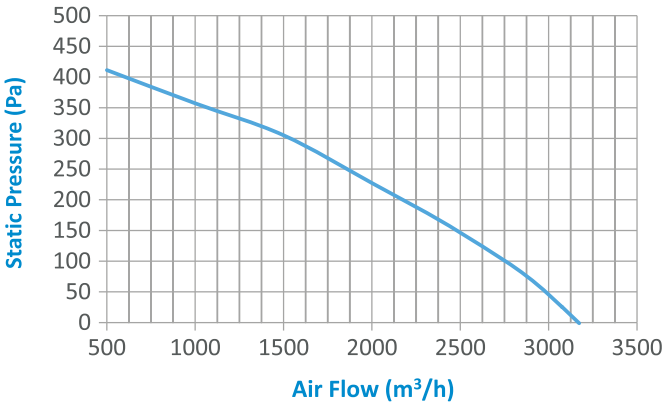
HPGK-15



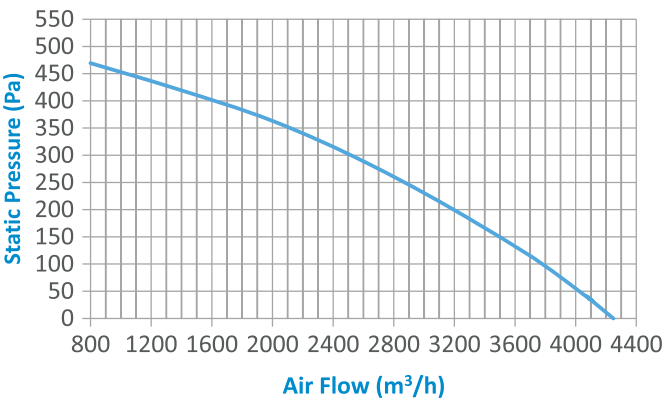
HPGK-20



HPGK-30



HPGK-40



Technical Features Chart

HPGK-EC Fans

DEVICES FEATURES		HPGK-07	HPGK-10	HPGK-15	HPGK-20	HPGK-30	HPGK-40
AR => Air	m^3/h	750	1000	1500	2000	3000	4000
External Static Pressure (Supply)	Pa	126.6	327.04	240.43	236.39	205.16	135.69
Supply Expansion	V-Hz	230-50	230/50	230/50	230/50	380/50	380/50
Total Fan Power	kW	0.34	0.77	0.94	1.00	1.58	2.28
Motor Type		EC	EC	EC	EC	EC	EC

HPGK-AC FANS

DEVICES FEATURES		HPGK-07	HPGK-10	HPGK-15	HPGK-20	HPGK-30	HPGK-40
AR => Air	m^3/h	750	1000	1500	2000	3000	4000
External Static Pressure (Supply)	Pa	183.4	69.94	160.73	42.19	45.56	55.01
Supply Expansion	V-Hz	230-50	230/50	230/50	230/50	230/50	230/50
Total Fan Power	kW	0.42	0.45	1.03	0.94	1.36	2.6
Motor Type		AC	AC	AC	AC	AC	AC

Compressor

DEVICES FEATURES		HPGK-07	HPGK-10	HPGK-15	HPGK-20	HPGK-30	HPGK-40
Power	kW	1.192	1.379	1.71	2.3	2.8	3.52
Supply Expansion	V-Hz	230-50	230-50	230-50	380-50	380-50	380-50

Cooling Features

GENERAL FEATURES		HPGK-07	HPGK-10	HPGK-15	HPGK-20	HPGK-30	HPGK-40
Total Refrigerant Capacity	kW	4.1	5.42	8.5	11.7	14.9	18.2
Total Cooling COP		3.44	3.93	4.97	5.08	5.32	5.2

Heating Features

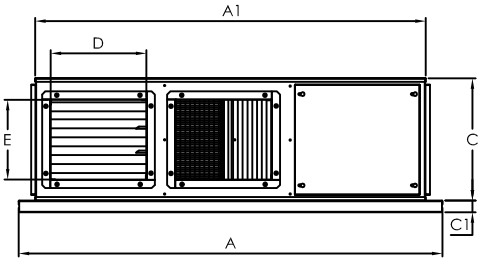
DEVICE FEATURES		HPGK-07	HPGK-10	HPGK-15	HPGK-20	HPGK-30	HPGK-40
Total Heating Capacity	kW	5.535	6.041	10.742	15.729	19.42	25.83
Total Heating COP		4.64	4.38	6.28	6.84	6.93	7.35

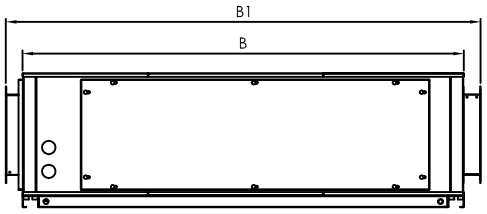
Electrical Heater(Optional)

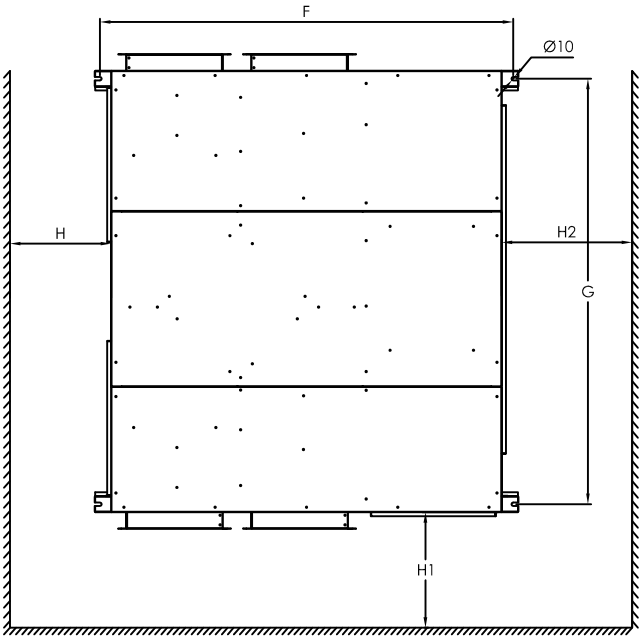
DEVICE FEATURE		HPGK-07	HPGK-10	HPGK-15	HPGK-20	HPGK-30	HPGK-40
Capacity	kW (max.)	1.5	2	4	10	10	10

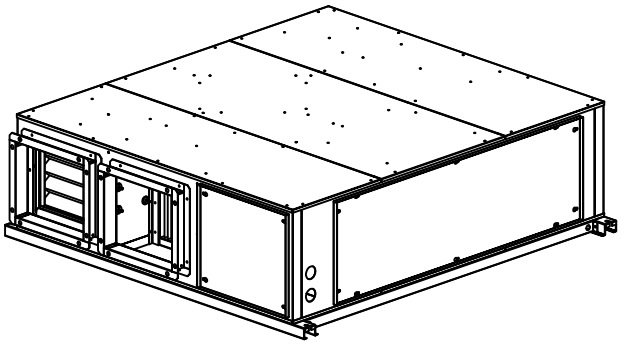
Filter

DEVICE FEATURE	HPGK-07	HPGK-10	HPGK-15	HPGK-20	HPGK-30	HPGK-40
Splitter Type Filter Class	ISO ePM Coarse %55	ISO ePM Coarse %55	ISO ePM Coarse %55	ISO ePM Coarse %55	ISO ePM Coarse %55	ISO ePM Coarse %55







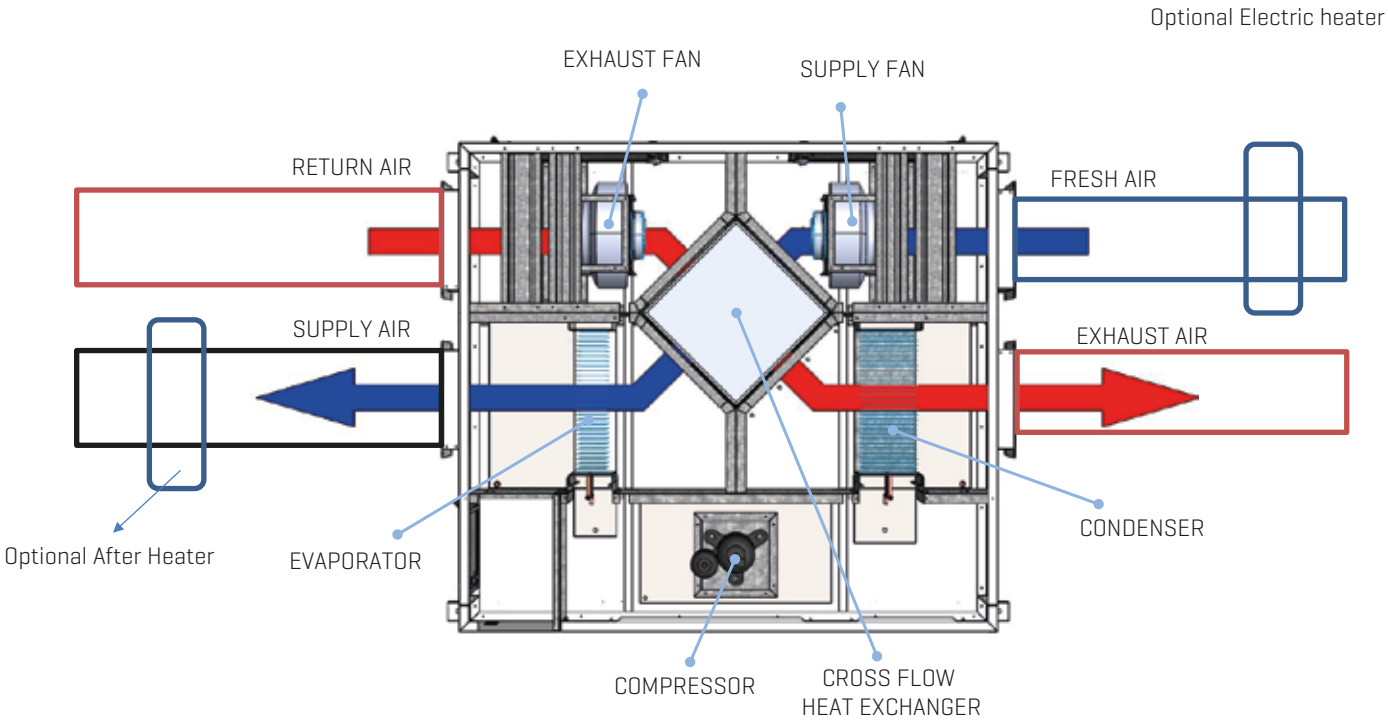


Device Dimensions

	A	A1	B	B1	C	C1	D	E	F	G	H (Min.)	H1 (Min.)	H2 (Min.)	WEIGHT(KG)
HPGK-07	1279	1174.5	1453.5	1557.8	383.5	37	280	210	1245	1403.5	500	500	500	150
HPGK-10	1329	1224.5	1383.5	1487.8	383.5	37	300	210	1295	1333.5	500	500	500	175
HPGK-15	1545	1444.5	1558.5	1662.8	434.5	37	400	310	1515	1508.5	600	500	600	200
HPGK-20	1605	1504.5	1698.5	1802.8	499.5	37	410	410	1575	1648.5	600	500	600	250
HPGK-30	1765	1664.5	1883.5	1987.8	601.5	37	510	510	1735	1833.5	700	500	600	300
HPGK-40	2125	2024.5	1918.5	2024	666.5	37	600	510	2095	1868.5	700	500	600	375

"All dimensions are mm"

Heating Capacity Features



Control Panel

HPGK series device standards includes multifunctional control units and a room control panel. These are general features of the Control Panel;

Features	Working Principal	Situation
On / Off	Done over the room control panel	Standard
Display	Through the screen of the room control panel; fan return speed, fail/alarm notification and temperature value scan be displayed	Standard
Fan Control	The fans can be controlled separatelyand automatically switched on.	Standard
	Otomatic modeon, the pressure sensor helps to adjust the requested values according the wish. On HPGK, if the contamination rises, the fans will increase their air flow to hold the efficiency according the desired conditioning	Optional
	When confronting fan problems, the system will automatically shut down to hold protection mode.	Optional
Heat-Pump Control	Manual selection and cooling/heating selection is made over the room control panel. Being connected to the heating sensor otomatically, to reach the aimed comfort temperature, the heat pump system can be used in meeting the required cooling or heating.	Standard
	When cooling and heating is switched on, the gas pressure sensors manages to run the system safely and high efficient with the help of low/high pressure protection equipments.	Standard
	On any problematic occasion with the heat pump system, it will automatically go in the protection mode through its sensors.	Standard
Timer	HPGK can adjust time and date configurations with the room control panel. With the timer mode ,off, special days (holidays), each day of the week can be selected for function.	Standard
BMS	Power control unit and the central control system of the buildingare equipped to work together.	Standard
Modbus	HPGK devicescan be controlled through the Modbus protocol.	Standard
Filter Filthiness	Through the sensors inside the device, the dirtiness can be seen on the control panel. Alarm signs can be seen on the warning side.	Standard

NOTES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180 different types of products.
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