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MEDILINE PACKAGE HYGIENE

AIR HANDLING UNIT

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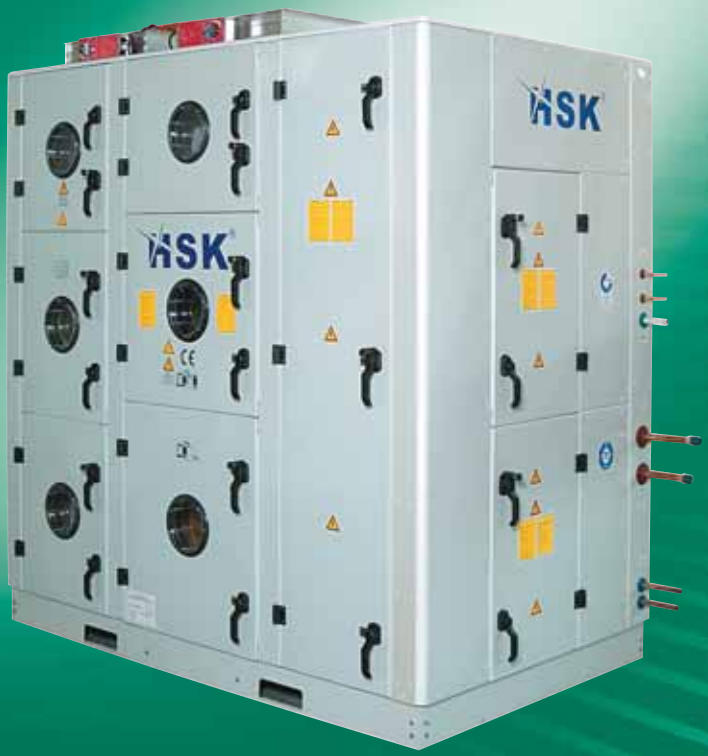


"Powered by its Quality"

MEDILINE PACKAGET HYGIENE

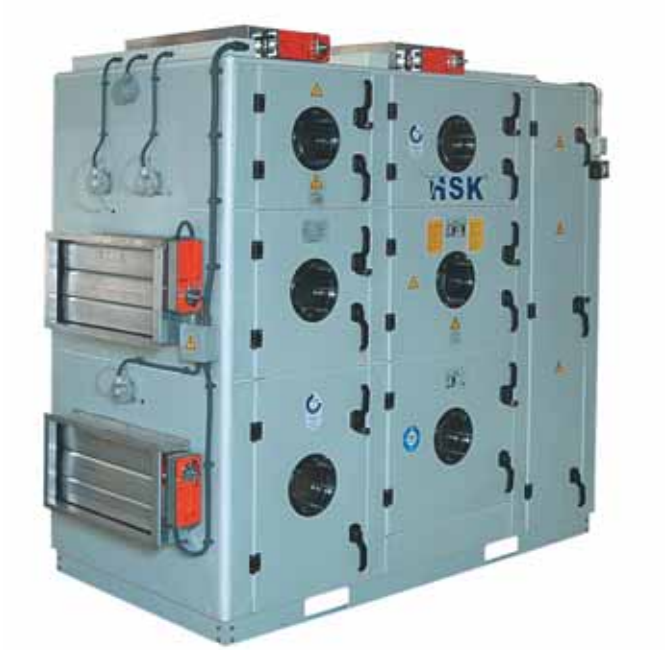
AIR HANDLING UNIT

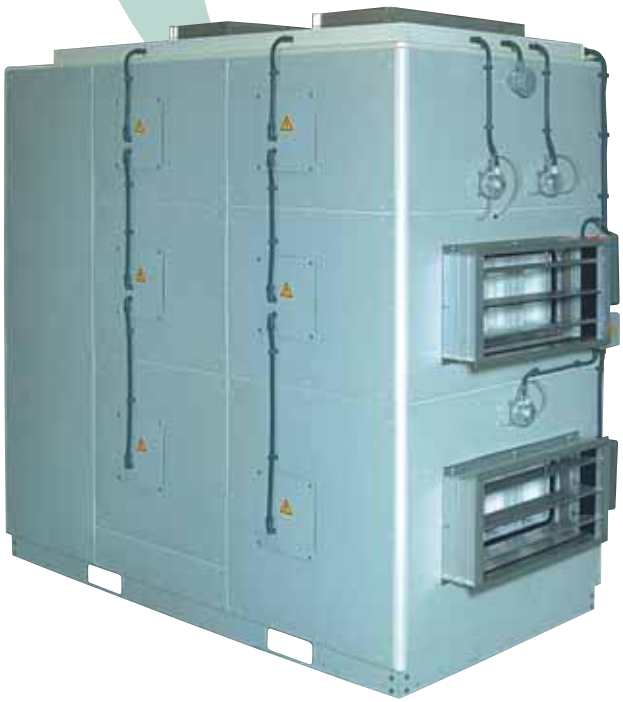
General Specifications

Mediline Serie Package Hygienic Air-handling units have been developed by HSK with the aim of meeting the state–of-the-medicine technology of today and clean room requirements.

Mediline Serie Package Hygienic Air-handling units have being used in order to meet air requirements and positive and negative pressure requirements in operation rooms, clean rooms, food, air defense, space and aviation industries and the industries of medicine and chemistry and also in all of the industries that require hygienic
conditions where similar sterile applications are being required.

It removes the gasses used during anesthesia within the operation room and the odor stemming from chemical materials used for cleaning purposes away from the sterile environment and meets the requirement of fresh air in the meantime. The fresh air passes through the front filter while entering the device, then the last filter at the exit of the device and lastly through the hepa filter at the entrance of sterile environment and thus air filtering process is executed at a
very high level.





Cooling cycle is designed by using two different circuits and two separate compressors. For cooling, capacity control is implemented by using the hot gas bypass regulator on the first compressor that steps in. In the gas circuits, refrigerant that does not damage ozone layer is used as cooling fluid.

Mediline series devices have the control equipments that can measure the values of temperature, humidity, filter and pressure within the sterile environment and keep these values under control. Whenever Mediline device is shut off for any reason, the spring return dampers get closed and the entrance of uncontrolled air into the environment is obscured.

It enables the performance of aseptic and septic operations and control of positive and negative pressure in order not to be affected by the indications caused by pathogens.

Main power and control panel, in which automation and power information is gathered, are located within the same body as the device however completely isolated from the device.

Mediline Package Hygienic AHU has a very low level of noise by the help of the body structure and the thickness of the isolation. It does not cause any noise pollution between its own environment and other spaces.

Mediline Series Hygienic AHUs have been manufactured in accordance with the norms of VDI 6022-1, VDI 6022- 3, EN 1886, DIN EN 1946-4 and EN 13053. It has the hygiene certificate of TÜV-NORD DIN-1946-4 EN 1751 VDI-30803.

Body Structure:

The body carcass, which forms the main structure the panels are connected to, has a thickness of 2 mm, and is made of galvanized steel case profiles with painted electronic static furnaces. Thus, a maximum degree of case resistance is guaranteed. Panels which can be connected onto the carcass body are mounted so that they can be mounted to and removed from the central carcass easily due to the special profile structures. This also facilitates maintenance procedures. The panels fit onto the profile surfaces easily and without any recesses or protrusions for maximum sealing. The panels are made of PVC profiles which connect interior and exterior sheet surfaces to each other. These profiles have an air pocket with 7 chambers which do not allow no condensation inside the body, and thus no heat bridge is formed. RAL7035 electro static furnace painted galvanized sheets are used as exterior sheets, and stainless sheets are used as interior sheets for the production of the panels. The thickness of both sheet surfaces is 1 mm.

The standard used in the interior of the panels is rock wool with a thickness of 50 mm for heat and noise insulation, of the A1 fire class, and a density of 52 kg/m3. Surfaces are obtained which can be cleaned easily, since they do not collect dirt in their interiors, because the luminaries (illumination armatures) are hidden inside the panels.

A lock mechanism with handle and hinges have been used to make the service door close completely and apply sufficient pressure to the seals in order to prevent air leak. The interior surface of the control room is smooth and with no recesses-protrusions, and has prevented the collection of dirt and pathogens. The materials used have been selected so that they will not react with the chemicals.

Fans:

Within the AHU, the plug backward curved fans were used for the reason that they are easily cleaned and suitable for rpm control. Fan rotor was balanced as dynamic and static according to ISO 1940-G6.3 norm.

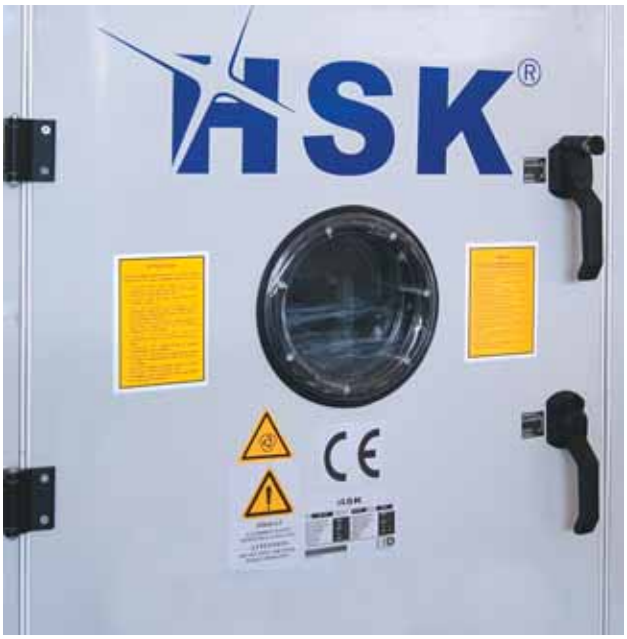
The motor is directly coupled to fan rotor. Thus, the losses of power arising out of transmission equipments were eliminated.

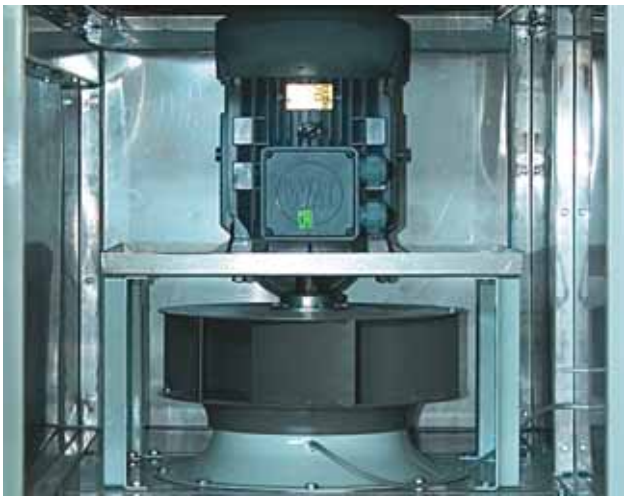
Moreover, belt dust pollution and the risk of breaking that is seen in the systems with belts were eliminated as well. As the fan and motor rpm are the same, flow control can be done with frequency converter. For the inducement of the fans, the motors that are in the class of 380 Volt/50 Hz-3 Phases asynchronous IP 55 protection and in the class of F isolation are being used.

Motor body was manufactured of aluminum material that has a high level of heat transmission function. Engine utilization in different voltages is optional for each model.

Air Control Dampers:

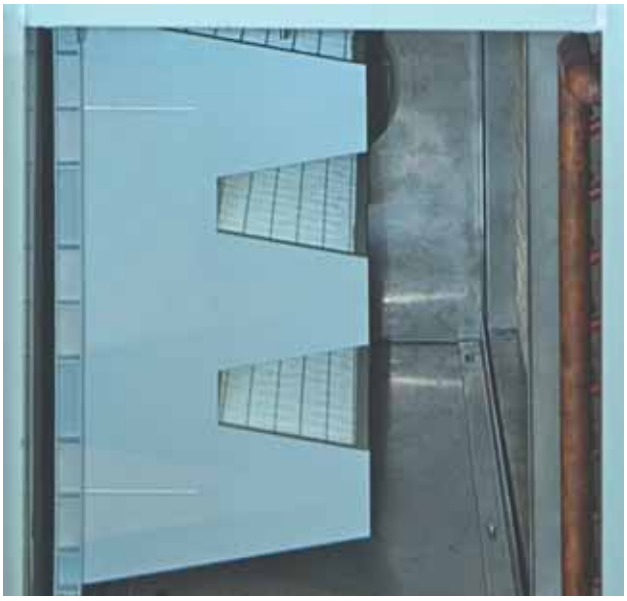
In the device entrances, exits and in all of the dampers that ensure the adjustment of air mixture, aerodynamic, smooth, aluminum blode profiles that are double surface and that show minimum resistance are being used. The frames of the dampers are manufactured of aluminum and gaskets are used in the blodes and frames. In the air entry and exit dampers that are connected to the sterile environment, spring return On/off servo motor is used.





Filters:

In the fresh air inlet of the Mediline Package Hygienic AHU s, F7 rigid filter, in the supply outlet, F9 rigid filter and in the exhaust inlet, F7 rigid filter are used. The reason for preferring these filters is that they have a high capacity of particle filtering dusts, they are light and their installation is easy. Special gasket filter frame is used in order to maintain filter tightness and continuity. They have
differencial pressure switches for tracking the filter pollutions.



Coolers:

Coolers are manufactured of copper pipe and epoxy coated aluminum fins. Thanks to their stainless steel frames, they have
a high resistance against corrosion. They are protected from corrosive effects of condensation with copper head. In all of the models, the cooler assembly has been applied in such a way to prevent air bypass around. They were mounted on the slides in such a way to enable servicing by completely taking out after all of piping connections are dismantled and all of the bypass sheet metals and slides are manufactured of stainless sheet metal. The cooler has two gas circuits for two separate compressors

Heaters:

Heating heat exchangers have fins that are manufactured of copper pipes and epoxy coated aluminum. Its corrosion resistance is very high by the help of stainless steel sheet metal frame and copper headers. The heating heat exchanger assembly was mounted in such a way to prevent air by-pass around. The heating heat exchanger was mounted on the slides in such a way to enable servicing by completely taking out after all of piping connections are dismantled and all of the bypass sheet metals and slides are manufactured of stainless steel sheet metal.

Electricity Heater:

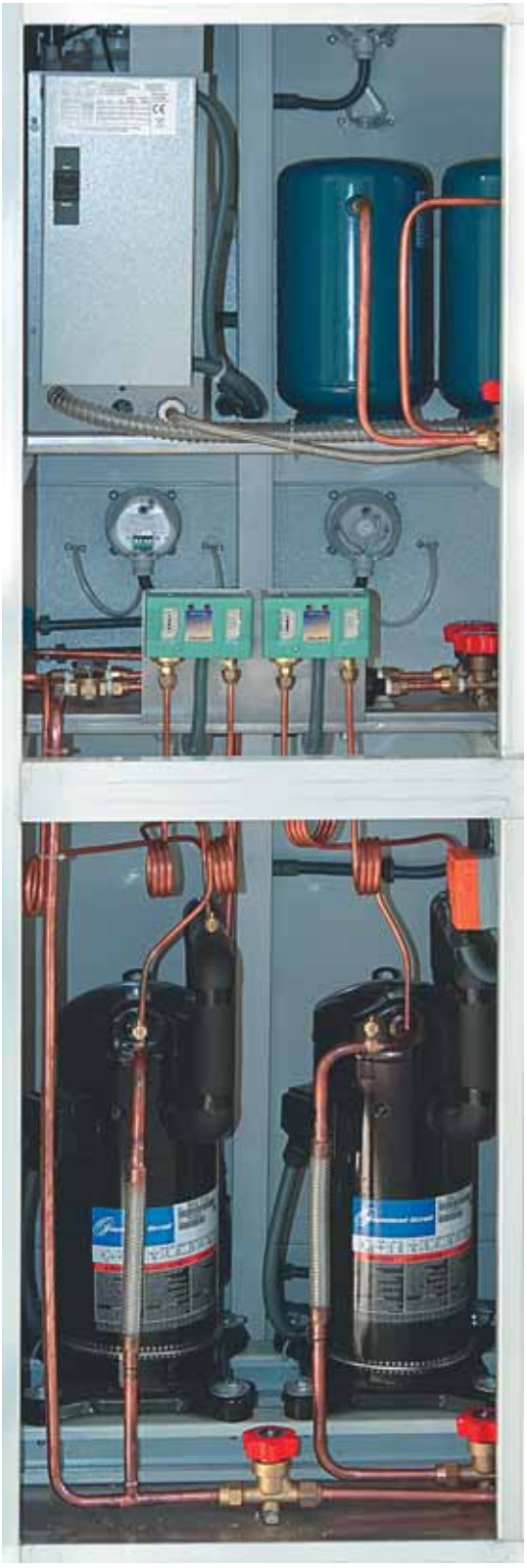
It is used with the aim of dehumidifying and the reheating. In the heater body, the resistors that are manufactured of stainless steel are used.
The resistors are manufactured as stainless steel framed. They are placed at the outlet of the cooling heat exchangers.

Steam Humidifier:

There is a humidifier unit in Mediline series devices that can operate with electro-boiler standard proportional control signal. Thus, humidification in accordance with requirement can be applied.

Compressor:

Cooling capacity has been determined separately for each model in accordance with the flow and location requirement. All of the models have a pair of compressors. Thus, in the periods when there is low external air temperature and capacity requirement is less, capacity control can be achieved. Moreover, sensitive capacity control can be done by applying hot gas by-pass in one of the compressors. It was preferred to use scroll type compressors in Mediline Package Hygienic AHUs in order to operate noiseless and vibration free, they have very low losses and they have high efficiency. As cooling refrigerant that does not damage the environment is used.

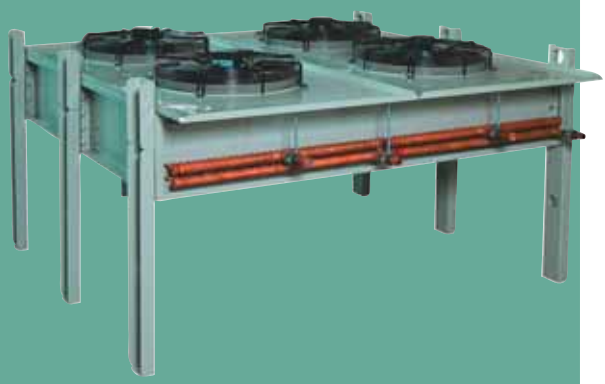


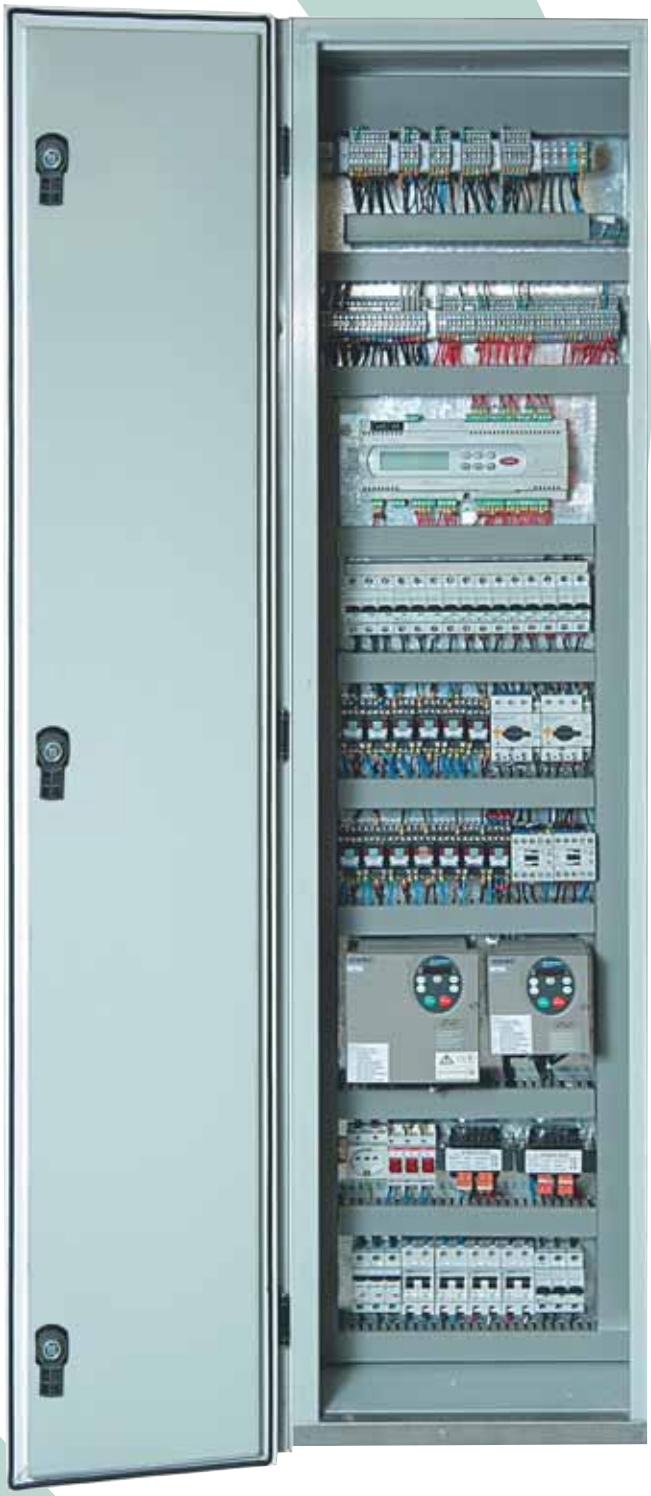
Control General Operation Principle:

With the help of the microprocessor control panel and control equipments, the clean and filtered air, temperature, humidity, positive and negative pressure requirements that are need in the sterile environment can be easily provided. In the event that a change is done in the values needed in the environment, the system interprets the information that it has received from the sensors after taking action in accordance with the set values and continues regime change until reaching the set value.

Condenser:

Condenser has a horizontal placement and the equipment of lifting and transporting by its own body. Condenser has double circuit within itself and each circuit is connected to a separate compressor. Condenser body was manufactured as galvanized electrostatic powder paint coated. There are valves in suitable diameters with the aim of making gas connection in condenser entrances.





AHU SIZES AND WEIGHTS												
Model			**HML-25Y**	**HML-35D**	**HML-35Y**	**HML-45D**	**HML-45Y**	**HML-55D**	**HML-55Y**	**HML-75D**	**HML-75Y**	**HML-95D**	**HML-95Y**
Width (L)		mm	2040	2040	2040	2160	2160	2160	2160	2250	2250	2410	2410
Depth (B)		mm	1018	1118	1118	1264	1264	1350	1350	1550	1550	1550	1550
Height (H)		mm	2080	2130	2130	2240	2240	2315	2315	2430	2430	2710	2710
Net Weight		kg	885	1015	1015	1125	1125	1255	1255	1320	1320	1400	1400
			950	1100	1100	1220	1220	1470	1470	1545	1545	1630	1630

Inlet and outlet dampers are not included in the heights.

TECHNICAL SPECIFICATIONS												
Model			**HML-25Y**	**HML-35D**	**HML-35Y**	**HML-45D**	**HML-45Y**	**HML-55D**	**HML-55Y**	**HML-75D**	**HML-75Y**	**HML-95D**	**HML-95Y**
Total Cooling Capacity		kW	26,4	27,7	36,5	38	46,5	48,4	56,8	54,7	67,7	80,1	96,4
		kW	23,4	25,2	32,3	34,1	41	43,4	50,2	48,4	60,4	71,4	85
		kW	19,7	21,2	27,4	28,7	34,7	36,7	42,6	41	51,1	60,6	72,2
Total Heating Capacity		kW	26,2	31,9	39,6	40	46,7	54,1	61,4	67,6	82,2	101	106
		kW	30,9	37,5	46,6	46,8	54,7	63,6	72,5	79,5	96,8	106,5	127,5
		kW	35,6	43,1	53,6	54	62,7	73	83	91	111	122	141
Air Flow		m^3/h	2500	2500	3500	3500	4500	4500	5500	5500	7500	7500	9500
Sound Pressure Level		dB(A)	55	56	57	59	59	59	59	59,4	60	60	60

The sound pressure values apply for a distance of 2 m at open areas.

TECHNICAL SPECIFICATIONS												
Model			**HML-25Y**	**HML-35D**	**HML-35Y**	**HML-45D**	**HML-45Y**	**HML-55D**	**HML-55Y**	**HML-75D**	**HML-75Y**	**HML-95D**	**HML-95Y**
Total Cooling		kW	20,6	21,7	26,9	30	35,1	37	42	48,8	59,3	66	76,4
Total Heating		kW	30,9	37,5	46,6	46,8	54,7	63,6	72,5	79,5	96,8	106,5	127,5
Air Flow		m^3/h	2500	2500	3500	3500	4500	4500	5500	5500	7500	7500	9500
Sound Pressure Level		dB(A)	55	56	57	59	59	59	59	59,4	60	60	60

The values in the table are given according to 32 °C external air temperature and 40% relative humidity.
Sound pressure values are valid for 2 m distance in the open field.

TECHNICAL SPECIFICATIONS						
Model		**HML-35D**	**HML-45D**	**HML-55D**	**HML-75D**	**HML-95D**
Total Cooling	kW	29,4	40,6	50,2	66,2	89,4
Total Heating	kW	37,5	46,8	63,6	79,5	106,5
Air Flow	m3/h	2500	3500	4500	5500	7500
Sound Pressure Level	dB(A)	56	59	59	59,4	60

The values in the table are given according to 34 °C external air temperature and 50% relative humidity. Sound pressure values are valid for 2 m distance in the open field.

TECHNICAL SPECIFICATIONS						
Model		**HML-35D**	**HML-45D**	**HML-55D**	**HML-75D**	**HML-95D**
Total Cooling	kW	31,2	43,1	53,3	70,1	94,8
Total Heating	kW	37,5	46,8	63,6	79,5	106,5
Air Flow	m3/h	2500	3500	4500	5500	7500
Sound Pressure Level	dB(A)	56	59	59	59,4	60

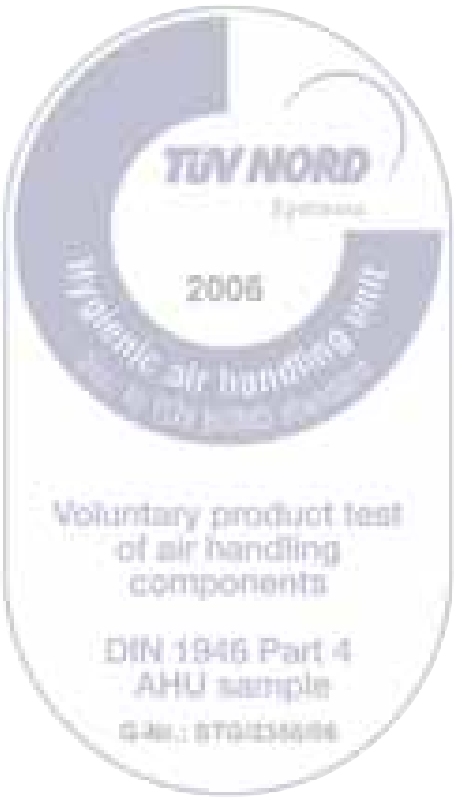
The values in the table are given according to 35 °C external air temperature and 50% relative humidity.
Sound pressure values are valid for 2 m distance in the open field.

TECHNICAL SPECIFICATIONS					
Model		**HML-45DD**	**HML-55DD**	**HML-75DD**	**HML-95DD**
Total Cooling	W	36,4	47,9	65,2	81,6
Total Heating	kW	46,8	63,6	79,5	106,5
Air Flow	m3/h	2500	3500	4500	5500
Sound Pressure Level	dB(A)	56	59	59	59,4

The values in the table are given according to 36 °C external air temperature and 50% relative humidity. Sound pressure values are valid for 2 m distance in the open field.

TECHNICAL SPECIFICATIONS					
Model		**HML-45DD**	**HML-55DD**	**HML-75DD**	**HML-95DD**
Total Cooling	kW	41	54,1	73,3	91,8
Total Heating	kW	46,8	63,6	79,5	106,5
Air Flow	m^3/h	2500	3500	4500	5500
Sound Pressure Level	dB(A)	56	59	59	59,4

The values in the table are given according to 38 °C external air temperature and 50% relative humidity. Sound pressure values are valid for 2 m distance in the open field.



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