

# TEVHR-AC



# TEVHR AC UNITS



## ► Function

To increase indoor air quality, stale indoor air must be exhausted and fresh air should be taken instead. Although energy recovery ventilator units are capable of recovering exhaust air's energy, to maintain temperature comfort indoors, final conditioning should be carried out. Teknogen ceiling type DX energy recovery ventilators are used in offices, shops, markets etc. for conditioning fresh air to design air temperatures. With TEVHR AC units the demanded air conditioning capacity of the air conditioning units is also reduced. Thanks to the compact design the unit can be installed in ceiling applications. The unit operates without demand for outdoor unit or additional copper piping.

## ► Models

TEVHR AC units are designed for ceiling installations according to the design fresh air demand in 4 models, TEVHR AC 1000, 1500, 2000, 3000, 4000.



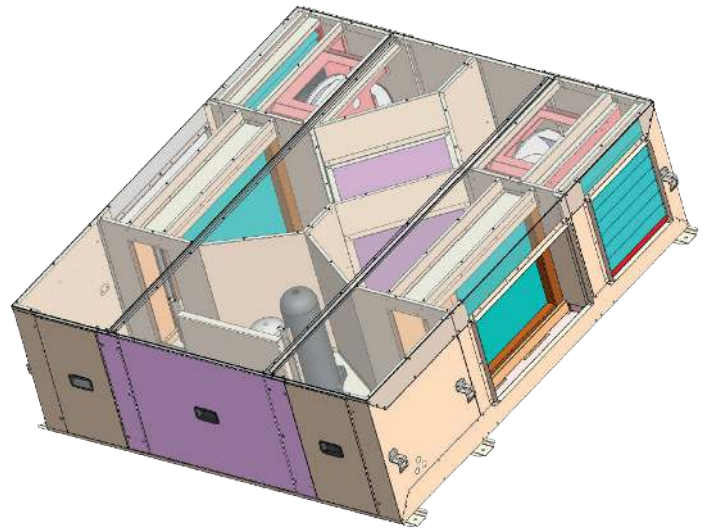
# TEVHR AC UNITS

## ► High Efficient Fresh Air Conditioning

To improve indoor air quality, fresh air shall be introduced to the system and stale indoor air shall be exhausted. For these modern times, one of the biggest success, design and contract engineers should attain is to provide/apply low operational cost high efficient units that will condition fresh air to design demands.

## ► Operational Principle

TEVHR AC units intakes fresh outdoor air and filters against particles with G4 class filters and introduces filtered fresh air to aluminium heat recovery exchanger. In the energy heat recovery exchanger is exchanged between fresh air and exhausted air. After pre-conditioning in the heat recovery exchanger, fresh air is conditioned to design air conditions by the help of the heat pump system. Extract air is filtered with G4 class filters to protect heat recovery exchanger and heat pump system before introducing to the unit. After exchanging its energy in the aluminium heat exchanger with fresh air exhaust air is still attractive temperature wise for the heat pump system. Exhaust air is blown outdoors after exchanging heat with the refrigerant in the heat pump cycle.



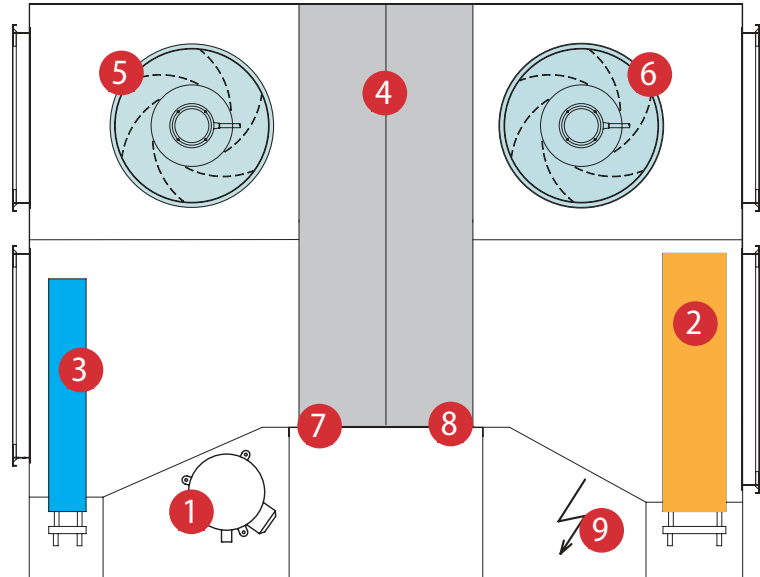
## TECHNICAL SPECIFICATIONS

Model		TEVHR AC 1000	TEVHR AC 1500	TEVHR AC 2000	TEVHR AC 3000	TEVHR AC 4000
Fresh Air Flow	m <sup>3</sup> /h	1000	1500	2000	3000	4000
External Pressure	Pa	180	180	180	110	180
Supply Voltage	v/hz/f	230/50/1	230/50/1	400/50/3	400/50/3	400/50/3
Fan Power	kW	0,69	1,1	1,3	1,43	2,8
Fan Type		AC Plug Fan				
Compressor (max)	kW	1,68	1,99	3,0	4,0	6,75
Heating Capacity	kW	8,62	11,13	17,1	23,31	33,15
Heating COP		6,68	8,01	7,58	7,59	7,19
Cooling Capacity	kW	6	8	13,1	17,31	24,92
Cooling COP		4,65	5,76	5,81	5,64	5,41
Compressor Type		Rotary	Rotary	Scroll	Scroll	Scroll
Electrical Heater	kW	2	4	10	10	10
Electrical Heater Dimension	mm	500x300	500x300	650x400	700x500	800x500
Weight	kg	150	200	280	360	410
Filter Type		EN 779 by G4 class synthetic fiber				
Length	mm	1687	1787	1950	2100	2200
Width	mm	1510	1515	1750	1930	1950
Height	mm	480	530	635	735	735
Return Conn. Dimensions	mm	300x300	300x300	400x400	500x450	500x450
Supply Conn. Dimensions	mm	500x300	500x300	650x400	700x500	800x500

\*Sound pressure levels are measured in 1,5 meters distance to the unit at 250 Hz.

# COMPONENTS

- 01. Compressor
- 02. Condenser
- 03. Evaporator
- 04. Aluminium Exchanger
- 05. Fan
- 06. Fan
- 07. Filter
- 08. Filter
- 09. Control



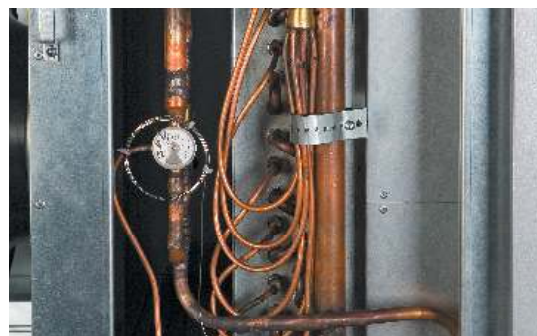
## ► Compressor and Heat Pump Cycle

High efficient hermetic compressors are used in TEVHR AC units with R410A refrigerant. Thermostatic expansion valves are used in the heat pump cycle. To obtain safety of the cycle, pressure switches are used for both liquid line and gas line. The unit operates according to the season selection in Room Control Panel.



## ► Evaporator and Condenser

Copper pipe/Aluminum fin type heat exchangers are used in the cycle. Special design distributors are used in evaporator inlet. Air flow velocities are limited to a maximum of 2,7 m/s to achieve low pressure drops.



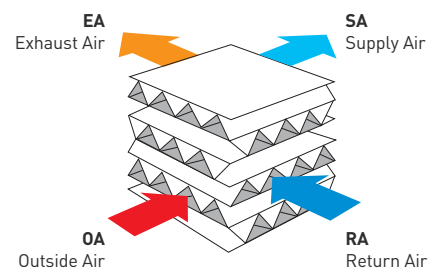
# COMPONENTS

## ► Casing

Unit is designed with externally painted galvanized sheet metals. To ensure insulation against sound pressure and heat loss PU foam material is used internally. Service doors are designed for ease in maintenance.

## Heat Exchanger

Aluminium cross flow plate exchangers are being used in TEVHR AC units.



- EA Stale air exhaust
- SA Fresh air supply to the room
- OA Fresh air induction
- RA Stale air extraction from the room

# CONTROL

## ► Control

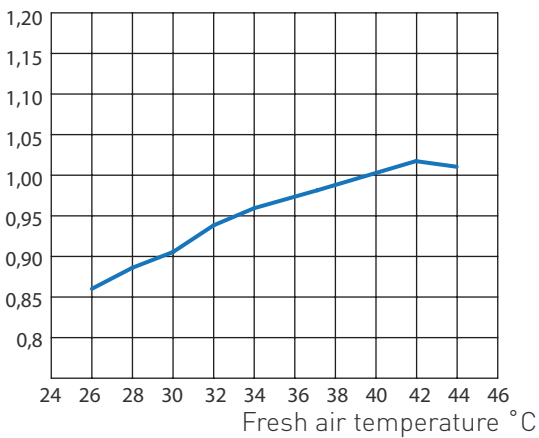
TEVHR AC units are delivered to the site with room control panel and unit control panel. All the electrical and control equipments like sensors, relay, PCB's are installed to unit control panel, no additional equipment is needed. To operate the unit, the user shall connect air duct and power supply only.

Season selection and also demanded indoor air temperature is set via room control panel. While the unit is "on" supply and extract air fans are always operating ensuring ventilation function, heat pump operates according to the set temperature.

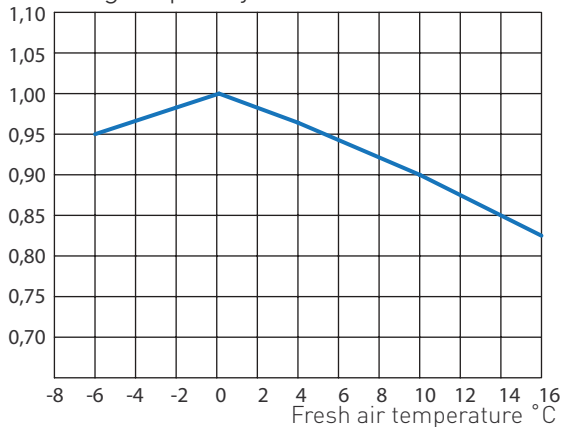
Safety equipments for the heat pump system like thermostats, pressure switches for the cooling cycle are standard for each unit.



Cooling Capacity Correction Factor



Heating Capacity Correction Factor



TEVHR AC units are designed to introduce fresh air to indoors at design temperature. Unit capacities are indicated in Specification tables for 35°C, 30%RH outdoor and 25°C, 40%RH indoor air conditions in summer and outdoor 2°C, 70%RH and 22°C, 40%RH indoor air conditions in winter.

Although indoor air temperature is stable for most applications, outdoor air conditions may differ according to climate characteristics. Capacity correction factor is given in shown Charts to obtain unit capacities in different climate data.

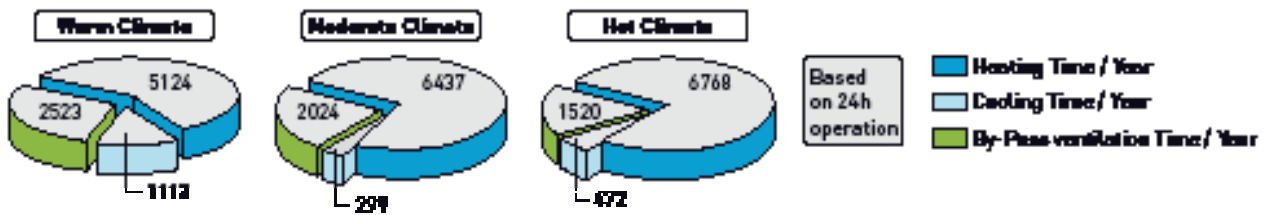
Capacity correction factor is the ratio between actual capacities for different outdoor conditions to the capacity data indicated in Specifications Table.

Against the common idea that outdoor air temperature change will affect the unit capacity significantly as a result of heat recovery ventilator, capacity factor differs between 0,9 and 1,00.

# CONTROL

## By-Pass

By-pass ventilation is done during summer and allows return air to by-pass the heat exchanger introducing fresh air at outdoor air temperature and cools down indoors. TEVHR AC Units are equipped with by-pass ventilation as standard. With the pre-installed temperature sensors IQ Control checks return air temperature, fresh air temperature and user set temperature. According to the evaluation in the PCB, the by-pass clamp is opened automatically.



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