

**FAN**  **MAK**<sup>®</sup>  
*Air Handling Units*

[www.fanmak.com.tr](http://www.fanmak.com.tr)



## ▶ ABOUT US

Fanmak family is engaged in production in Atasehir / Istanbul. Following the changing world technology and aiming to use the technology at the best level, Fanmak aims to increase production and service quality based on international standards. Fanmak ventilation equipment, heating and cooling systems with its expert staff with many years of experience in the sector has succeeded to become one of the most sought after companies in the market with its superior service quality. customers in numerous regions in Turkey, offering all kinds of efficiency, proving the quality conscious and experienced personnel with many small to large sized companies serve quality product and after.

FLEXIBILITY in design, QUALITY in production, SAVING in energy, CUSTOMER HAPPINESS in service is the general policy of Fanmak.

### OUR VISION

- We make good quality production with reasonable price.
- Enter the world market.
- Continuously R & D work with innovative technology to continue.
- Maintain customers at all times in competitive market conditions.
- To progress towards becoming a brand by giving importance to customer satisfaction.

### OUR MISSION

- To be behind all conditions of the product we sell.
- To give importance to customer satisfaction by acting in line with customer suggestions and complaints.
- To ensure that our company, employees, customers and suppliers are happy.
- To produce without damaging the environment and human health.

### OUR QUALITY POLICY

In our facilities where quality standards are produced, all products are carefully controlled at the input and post-production stages. In line with customer demand, Turkey and according to world standards, following the developing technology, continuously improving the quality of products and systems to provide quality products to our customers with team spirit and understanding.

## REFERANSLAR



\*Detaylı referans bilgisi için websitemizi ziyaret edebilir,  
+90 216 471 2470 numarasından bizlere ulaşabilirsiniz.

## OUR PRODUCTS

### CELL ASPIRATOR

Fanmak Cells Aspirators are produced as standard in 18 different sizes between 500 m<sup>3</sup> / h and 100.000 m<sup>3</sup> / h flow rates and if desired, they can do more production in higher capacities. The cell panels are coated with 25 mm or 50 mm thick rock wool, glass wool and polyurethane. The fans used are imported brand funds with backward or forward slopes. In order to prevent vibration and noise, the fan and the motor assembly are in contact with the cell via the connector. The pulley assembly is a clamping bush and can be inserted and installed easily.

Usage Areas are used to meet the ventilation needs of workplaces, offices, cafeterias, markets, dining halls, meeting halls.

### AIR CONDITIONING UNITS

Fanmak Air Handling Units are manufactured as standard in 18 different sizes between 1,500 m<sup>3</sup> / h and 100,000 m<sup>3</sup> / h. Heating, cooling, ventilation, humidity becoming, humidification, air quality upgrade. It is produced for hygienic, comfort and industrial areas in order to provide heat gene recovery. It can also be produced in higher capacities if required.

Usage areas; Shopping mall, hospital, factory, cinema, hotel, school, university, pharmaceutical, warehouse, warehouse, printing house, restaurant, office, cafe, industry etc. plants are used for ventilation, heating, cooling and moisture impregnation purposes.

### HYGIENIC AIR CONDITIONING UNIT

Fanmak Hygienic Air Handling Units are designed to improve air quality, balance temperature accurately, control humidity and create micro-climate climate conditions in areas where septic and aseptic air circulation is required.

Usage areas; operating rooms, intensive care units, infection rooms, medical laboratories, nano technological research and development centers, space, aerospace and food industry is used in sensitive points.

## POOL TYPE DEHUMIDIFICATION UNIT

Fanmak Pool Dehumidification Plants are specially designed to create more healthy living spaces.

## AXIAL FAN

It can be used in the duct produced at the desired air flow and pressure. It is produced between 350 mm - 1250 mm diameter.

Fans produced at desired air flow and pressure can be mounted on the wall or on the machine. It is produced between 350 mm and 1250 mm diameter.

Roof Type Axial Fan: The fans produced at the desired air flow rate and pressure are manufactured to meet the need for suction or fresh air in a structure that can be mounted on a full cassette type roof.

**Fire Smoke Exhaust Fans:** Fire smoke fans »are manufactured as F200 and F300 fire resistant with aluminum blades.

## HEAT RECOVERY DEVICE

Fanmak Heat Recovery Units are produced with the aim of saving energy in the areas where fresh air is needed and they are produced in the air flow range of 500 m<sup>3</sup> / h to 4000 m<sup>3</sup> / h.

## ROOF TOP AIR CONDITIONERS

Fanmak roof-top air conditioners are manufactured as standard in 8 different models ranging from 60,000 BTU / h to 400,000 BTU / h.

## WATERY SYSTEM FILTER

It is used as odor trap in meatballs, fish, grill and cooking suction hoods. In addition, it can be used in many areas due to its dust holding feature.

## RADIOACTIVE FILTER SHELTER VENTILATION

As a result of the technology developed in our age, developments in the hanging area have become widespread with the use of NUCLEAR, BIOLOGICAL and CHEMICAL bombs, making it inevitable to find specific solutions.

## SOLE SUCTION ASPIRATOR

It is designed to meet your needs of all kinds of industrial fans in 16 different position positions with a capacity to provide Total Pressure Loss.

## DUCT AND ROOF TYPE ASPIRATOR

Duct Type Aspirator: Fanmak Channel Type Aspirators can be easily mounted to the air duct with their rectangular design.

Roof Type Aspirators: Roof type Aspirators, wc, warehouse, hangar, factories and the places where top ventilation is needed is also easily used.

## HOT AIR APPARATUS

Hot Air Apparatus: They are connected to hot water, boiling water and steam heating installations. 90/70 ° C hot water operating conditions 5,000- 71,000 Kcal / h capacity are produced as standard.



# CELLULAR ASPIRATOR

[www.fanmak.com.tr](http://www.fanmak.com.tr)

## ▶ CELLULAR ASPIRATOR

- Fanmak Cellular Aspirators are produced as standard in 18 different sizes between 500 m<sup>3</sup> / h and 100.000 m<sup>3</sup> / h. If desired, production can be made in higher capacities.
- The cell panels are coated with stone wool, glass wool and polyurethane with a thickness of 30 mm or 50 mm.
- The fans used are imported brand fans with backward or forward slope. In order to prevent vibration and noise, the contact of the fan and motor assembly with the cell is provided by the connector. The pulley assembly has a clamping bush and can be easily removed and installed.

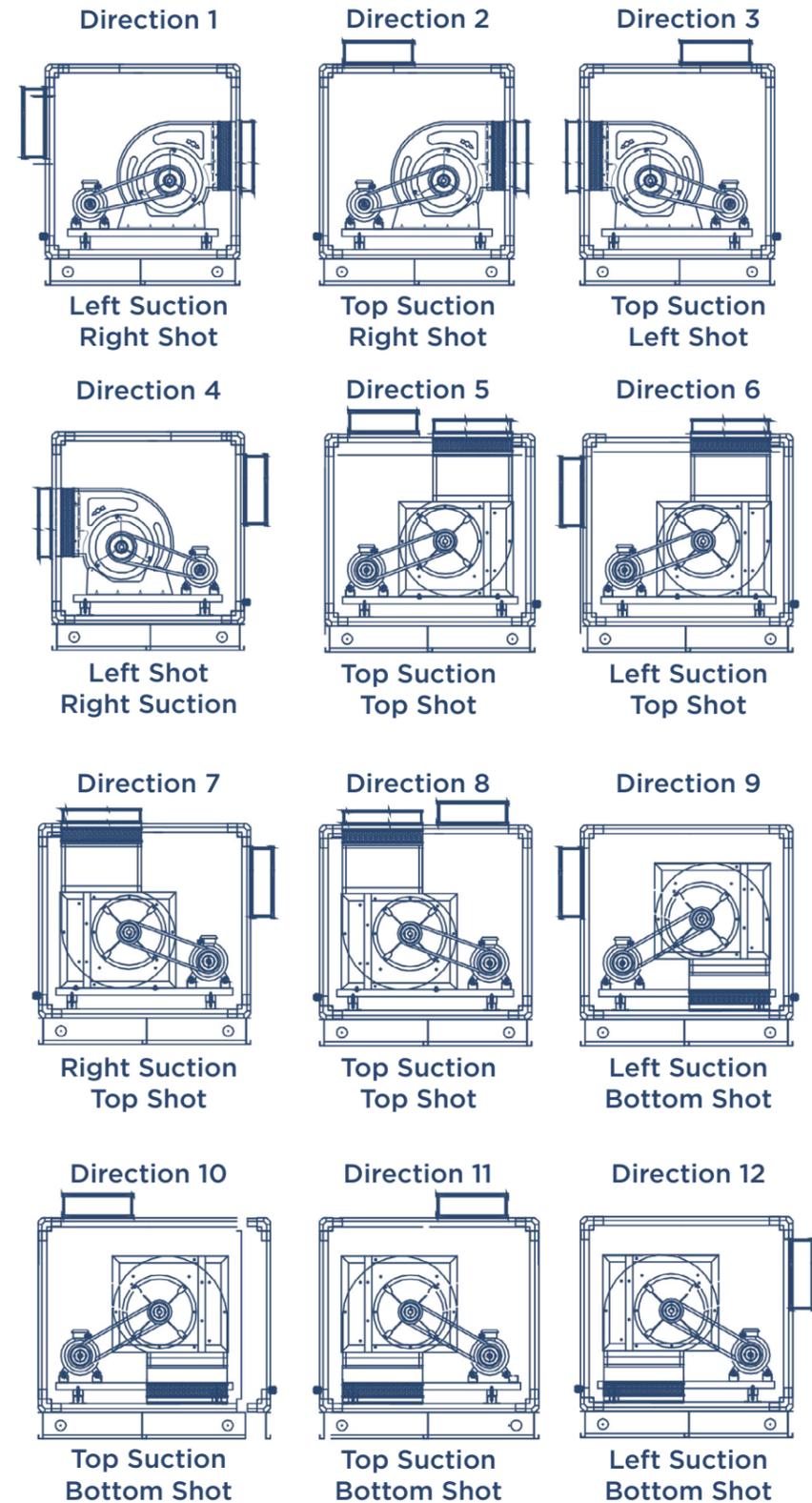
\*You can contact our company to get information about offer and capacity.



TECHNICAL TABLE OF CELLULAR ASPIRATOR WITH CLOSE BLADE																
MODEL	FHS-2	FHS-4	FHS-6	FHS-8	FHS-10	FHS-12	FHS-14	FHS-16	FHS-18	FHS-20	FHS-22	FHS-24	FHS-26	FHS-28	FHS-30	FHS-32
AirFlow (m3/h)	2.500	4000	5.500	8.000	10.000	12.000	16.000	18.000	20.000	25.000	30.000	35.000	40.000	50.000	60.000	75.000
Motor power	0,75 Kw	1,1 Kw	1,5 Kw	2,2 Kw	3 Kw	4 Kw	5,5 Kw	7,5 Kw	7,5 kW	11 Kw	11 kw	15 kw	18,5 kw	22 kw	30 kW	37 kW
Static Pressure (External of Device)	300 PA	400 PA	400 PA	400 PA	500 PA	500 PA	500 Pa	500 PA	500 PA	500 PA	600 PA	600 PA	600 PA	600 PA	600 PA	600 PA
Fan Model	7 - 7	9 - 9	10 - 10	12 - 12	15 - 15	15-15	18 - 18	18 - 18	450R	500R	560R	630R	710R	800K	900K	1000K
Inlet Port (mm)	200 X 520	250 X 520	250 X 720	300 X 720	450 X 920	450 X 920	500 X 1120	550 X 1120	600 X 1120	700 X 1320	800 X 1420	800 X 1700	900 X 900	900 X 2100	900 X 2100	900 X 2100
Outlet (mm)	230 X 260	260 X 290	290 X 330	340 X 400	400 X 470	400 X 470	480 X 560	480 X 560	570 X 570	638 X 638	715 X 715	800 X 800	900 X 900	1010 X 1010	1010 X 1010	1010 X 1010
Height	600 mm	600 mm	700 mm	800 mm	900 mm	900 mm	1000 mm	1000 mm	1200 mm	1400 mm	1500 mm	1600 mm	1800 mm	2000 mm	2000 mm	2000 mm
Width	600 mm	600 mm	700 mm	800 mm	1000 mm	1000 mm	1200 mm	1200 mm	1200 mm	1400 mm	1500 mm	1800 mm	2000 mm	2200 mm	2200 mm	2200 mm
Length	700 mm	800 mm	900 mm	1000 mm	1100 mm	1200 mm	1200 mm	1300 mm	1400 mm	1600 mm	1700 mm	1800 mm	2000 mm	2200 mm	2200 mm	2200 mm
Supply	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F						

TECHNICAL TABLE OF CELLULAR ASPIRATOR WITH SPARSE BLADE														
MODEL	FHS-1	FHS-3	FHS-5	FHS-7	FHS-9	FHS-11	FHS-13	FHS-15	FHS-17	FHS-19	FHS-21	FHS-23	FHS-25	FHS-27
Air Flow (m3/h)	3.000	4500	6.000	7.500	10.000	12.000	16.000	20.000	25.000	30.000	40.000	50.000	60.000	70.000
Motor Power	1,1 KW	1,5 KW	2,2 KW	3 KW	4 KW	4 Kw	5,5 KW	7,5 KW	11 KW	11 Kw	15 KW	18,5 KW	22 KW	30 KW
Static Pressure (External of Device)	400 PA	400 PA	400 PA	400 PA	500 PA	500 PA	500 Pa	500 PA	500 PA	500 PA	600 PA	600 PA	600 PA	650 PA
Fan Model	225R	250R	280R	315R	355R	400R	450R	500R	560R	630R	710R	800K	900K	1000K
Inlet Port (mm)	250 X 620	250 X 670	300 X 720	300 X 820	400 X 920	450 X 1020	500 X 1120	700 X 1320	700 X 1420	800 X 1700	800 X 1900	900 X 2100	1000 X 2100	1000 X 2400
Outlet (mm)	298 X 298	322 X 322	361 X 361	404 X 404	453 X 453	507 X 507	569 X 569	638 X 638	715 X 715	801 X 801	898 X 898	1007 X 1007	1130 X 1130	1267 X 1267
Height	700 mm	800 mm	800 mm	1000 mm	1000 mm	1200 mm	1200 mm	1400 mm	1500 mm	1600 mm	1800 mm	2000 mm	2100 mm	2200 mm
Width	700 mm	800 mm	800 mm	900 mm	1100 mm	1100 mm	1200 mm	1400 mm	1500 mm	1800 mm	2000 mm	2200 mm	2200 mm	2500 mm
Length	800 mm	900 mm	1000 mm	1100 mm	1100 mm	1200 mm	1400 mm	1600 mm	1600 mm	1600 mm	2000 mm	2200 mm	2300 mm	2500 mm
Supply	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F	380V 3F					

## CELL ASPIRATOR DIRECTION CHART



# AIR CONDITIONING UNIT

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## ► AIR CONDITIONING UNIT

FANMAK Air Conditioning Units are manufactured as standard in 18 different sizes with flow rates between 1,500 m<sup>3</sup> / h and 100,000 m<sup>3</sup>h upon request. Shopping mall, hospital, factory, cinema, hotel, school, pharmaceutical, warehouse, printing house, restaurant, office, cafe, industry etc. plants are used for ventilation, heating, cooling and humidification.

### **BODY STRUCTURE**

As standard; 50 mm panel thickness, 52 kg / m<sup>3</sup> or 72 kg / m<sup>3</sup> density Air Conditioner power plant module structure edge profiles, reinforcement profiles and corner elements of the skeletal structure used to cover the 6 sides of the cover panels are manufactured from galvanized sheet sandwich structure. Stone wool material is in the middle part. Total panel thickness is 30 mm or 50 mm.

### **REINFORCEMENT PROFILES**

In the module structure of air handling units, reinforcement profiles used to reinforce the connections between the edge profiles and the covers of different cells of the device are obtained from aluminum material. In order to minimize the pressure losses in the plant, all internal profile surfaces are closed.

### **EDGE PROFILE**

The edge profiles that form the outer frame in the module structure of the air handling units are made of aluminum material. In order to minimize the pressure losses in the plant or to prevent any accumulation of dirt, the profile inner surfaces are completely closed. Its manufacturing is compatible with corner elements.

### **CORNER ELEMENTS**

The corner elements used to provide edge profiles corner joints in the module structure of air handling units are made of aluminum material by injection. Thanks to the compatibility of the edge profiles in the design of the corner elements, possible air leaks and image defects are prevented.

## SEALING GASKET

The sealing gaskets are made of EPDM material with air cushion. It does not deform and provides contact with all surfaces thanks to airbags.

## DOOR HANDLES AND LOCK MECHANISM

It is made of hard PVC material in order to keep the service covers mentioned in the outer panels section closed or to open them easily.

## HINGES

The hinges used for the movable mounting of the service covers mentioned in the outer panels section are made of rigid PVC material. Hinges are used as 2, 3 or 4 pieces per service cover depending on the height of the device.

## AIR DAMPER

It consists of air dampers used for air adjustment and air circulation in air handling units, damper wing profiles made of aluminum material, gear and bearing evening made of rigid PVC material and outer body made of aluminum. Gear and bearing mechanisms are assembled and mounted in such a way that they do not allow any stripping or pinching.

## INTERNAL STRUCTURE VENTILATOR AND ASPIRATOR UNITS

Ventilator / aspirator units in air handling units are manufactured in standard cell structure with static and dynamic balancing. Fans and aspirators are high efficiency, radial double suction fans with forward curved blades, statically and dynamically balanced.

## MOTORS

Electric motors are three-phase, optionally single-phase. 380V, 50 Hz). The motors are rated IP 54 or 55.

## HEATER AND COOLER BATTERY UNITS

Air handling unit heater and cooler units are manufactured as aluminum wing / copper pipe or steel wing / steel pipe depending on fluid properties and user requests. Copper pipes are available in 3/8", 1/2" or 5/8" diameters depending on capacity and fluid properties; Steel tube heater / cooler coils are manufactured by using patent or welded black pipe with 16 x 0.5 mm steel tape depending on fluid and capacity characteristics.

## HEAT RECOVERY UNITS

These are the units used to save energy by heating or cooling the exhaust air and fresh air in the air handling units.

## BAG FILTER UNIT

Depending on need, bag filters are used in EUROVENT 4/5 standards in EU 5,6,7,9 classes. Bag filters are assembled using gaskets made of EPDM material for ease of removal and installation.

## FRONT FILTERING UNIT

In air handling units, front filtering unit is manufactured in standard cell structure. Pre-filters are used in EUROVENT 4/5 standards, EU 3-4 class, specially designed zigzag structure. Thanks to its zigzag structure, air velocity of 1.5 m / s on the filter surface is not exceeded.

## HUMIDIFICATION UNIT

**Humidification Unit:** The humidification unit of the air handling unit is made of 2 mm galvanized sheet. The cell consists of 2 mm DKP sheet bottom pool, water distribution pipes designed according to capacity, sprinklers made of rigid PVC material, main distribution pipe, discharge, overflow and feeding connection openings and sight glass made of rigid PVC material.

**Steam Humidification Unit: Steam humidification unit of the air handling unit is manufactured in standard cell structure. The device is mounted inside the cell with special designed drop holders made of PVC material.**

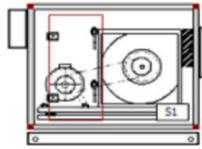
## SILENCER UNIT

Silencer unit is manufactured in standard cell structure in air handling units. The silencer backdrops are manufactured in 20 cm width by using glass or wool. The two sides of the backstage which come into contact with air are coated with Fibrocama material.

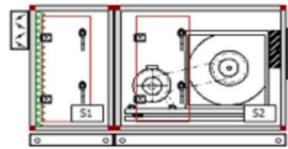
## SAFETY SWITCH

It has been installed so that the unit cannot be switched on via the control panel during maintenance of the Air Handling Unit by authorized personnel.

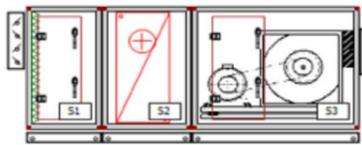
**KS1 FAN CELL**  
Aspirator - Ventilator Cell



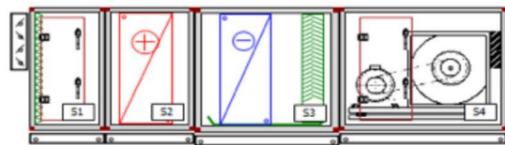
**KS2 FRESH AIR POWER PLANT**  
Fan Cell - Filter Cell



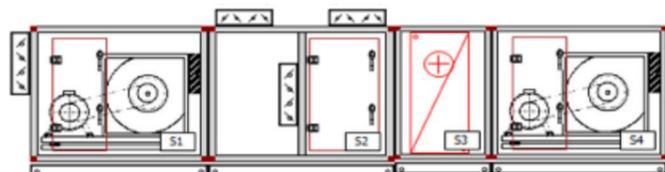
**KS3 FRESH AIR POWER PLANT**  
Fan Cell - Heating Cell



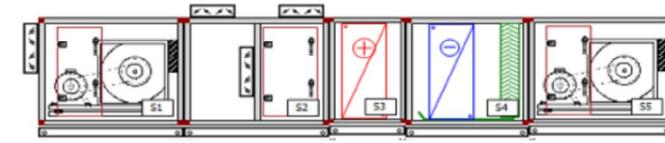
**KS4 FRESH AIR POWER PLANT**  
Fan Cell - Heating Cell - Cooling Cell



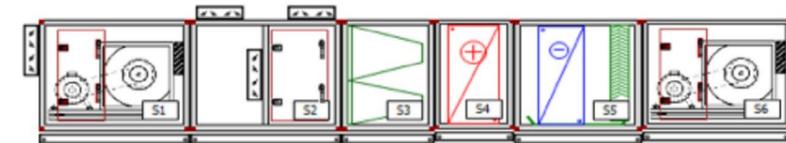
**KS5 MIXED AIR AIR CONDITIONING PLANT**  
Aspirator Cell - Ventilator Cell  
Heating Cell - Mixing Cell



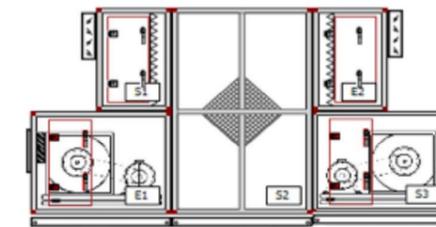
**KS6- MIXED AIR AIR CONDITIONING PLANT**  
Aspirator Cell - Ventilator Cell - Heating Cell  
Cooling Cell - Mixing Cell



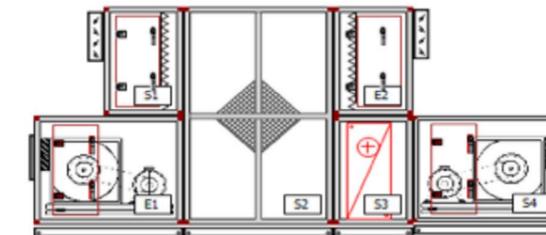
**KS7- MIXED AIR AIR CONDITIONING PLANT**  
Aspirator Cell - Ventilator Cell - Heating Cell - Cooling Cell  
Bag Filter Cell - Mixing Cell



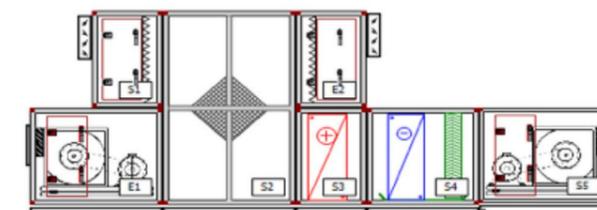
**KS8- HEAT RECOVERY AIR CONDITIONING PLANT**  
Aspirator Cell - Ventilator Cell - Heat Recovery Cell



**KS9- HEAT RECOVERY AIR CONDITIONING PLANT**  
Aspirator Cell - Ventilator Cell - Heating Cell  
Heat Recovery Cell



**KS10- HEAT RECOVERY AIR CONDITIONING PLANT**  
Aspirator Cell - Ventilator Cell - Heating Cell  
Cooling Cell - Heat Recovery Cell



# Hygienic Air Handling Unit

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## ► HYGIENIC AIR CONDITIONING PLANT

These are hygienic air handling units designed to improve air quality, balance temperature accurately, control humidity and create microclimate conditions in neighborhoods requiring septic and aseptic air circulation.

Fanmak hygienic air handling units are specially designed to prevent dust and dirt formation thanks to the profile structure and structure. It provides easy maintenance with sight glass and lighting installation as standard. The safety switch, which is supplied as a standard, is designed to de-energize the hygienic air conditioner located outside the building.

According to EN 1886, filter leakage class F9 and body sealing class B conforms. Concentration is prevented due to the heat-bridging profile system which cuts the contact between the outer and inner walls. It is produced in modular structure between 1000 m<sup>3</sup> / h and 100.000 m<sup>3</sup> / h flow rate. Produced using recyclable materials that do not harm the environment. Due to its hygienic properties, it is equipped with closed cell, anti-bacterial sealing gaskets.

**Usage areas; operating theaters, intensive care units, infection rooms, medical laboratories, nano technological research and development centers, space, aviation and food industry is used in sensitive points.**

### **BODY STRUCTURE:**

Fanmak Hygienic Air Handling Units are specially designed devices using black coated or natural anodized aluminum profiles. 50 mm panel thickness as standard, 52 kg / m<sup>3</sup> or 72 kg / m<sup>3</sup> density is produced as rock wool. In the interior of the plants, materials which will not rust are used.

It is painted with epoxy paint in radial and plug fans. Sight glass and lighting lamp are used as standard in fan and filter sections. Modular panels are installed with internal fixing screws in pool moisture plants. No screws are used on the panel surface. Screw holes are closed with special plastic stopper. Thanks to its special profile structure, there are no sharp edges, dust and dirt holding parts. The panels are sealed using special silicone and gasket.

## SEALING:

It is produced in a structure that does not allow microbiological reproduction. Chemical and physical cleanable.

## DOOR HANDLES AND LOCK MECHANISM:

It is made of hard PVC material in order to keep the service covers mentioned in the outer panels section closed or to open them easily. The door handles are locked and keyed to prevent the service doors from being opened by other persons. Depending on the height of the device, it is used as 1,2 or 3 pieces per service cover.

**Hinges** The hinges used for the movable mounting of the service covers mentioned in the outer panels section are made of rigid PVC material. Hinges are used as 2, 3 or 4 pieces per service cover depending on the height of the device.

## AIR DAMPER:

Air dampers which are used in air handling units for air adjustment and if necessary to stop air circulation are composed of three main elements. These elements are damper blade profiles obtained from aluminum material, gear and bearing parts made of rigid PVC material and outer body made of aluminum. Damper blade profiles have slides opened for leak proof gasket with air cushion. Damper dimensions are determined with tolerances to minimize air leak at the edges by considering blade and gear widths depending on air flow and device dimensions. The gear and bearing mechanisms are assembled in such a way that they do not allow any gear slipping or pinching. After mounting of damper blade profiles and gear mechanism on the body, it is mounted in a way not to allow air leak in edge profiles.

## RADIAL AND PLUG FANS

Front-curved or back-curved high-efficiency imported fans that can be cleaned are used. The selection of the fans is done in computer environment. Fans used with belt pulley adjustment works at desired flow and pressure. The pulleys are bushing type and easy to install. Plug fans are backward-curved spindle-free free throw fans with high pressure and flow efficiency. They are preferred in hygienic devices due to their frequency control and easy cleaning features. Since the direct driven fans are free throwing, air can be easily provided by any of the cells to which it is connected.



## MOTOS

Electric motors are three-phase (380V, 50 Hz). Optional monophase is available. The motors are rated IP 54 or 55. In the electric motor power system, the selection is made by taking 35% of the fan shaft power. This tolerance provides the advantage that the existing engine can be used even when a 10% flow increase is made.

## FILTERS

The pressure loss calculation is made by taking the average of clean and dirty air pressure in the selection of the filters. Specially designed filter casing and clips are used to prevent filter leaks. Does not allow microbiological reproduction. Filter sealing is provided with special bags.

## BAG FILTER UNIT

Bag filter unit is manufactured in standard cell structure in air handling units. Bag filters can be used in EU classes 5,6,7,9 according to EUROVENT 4/5 standards. Bag filters are mounted on special design fixed cassettes which provide ease of disassembly and installation by using gaskets made of EPDM material. The filters are tightly sealed with special latches after they are assembled.

## FRONT FILTERING UNIT

In air handling units, front filtering unit is manufactured in standard cell structure. Pre-filters are used in specially designed zigzag structure in EU3-4 class according to EUROVENT 4/5 standards. Thanks to its zigzag structure, air velocity of 1.5 m / s on the filter surface is not exceeded. The filter cassettes are easily removable and cleanable.

## HEATING AND COOLING BATTERIES

Copper pipe is manufactured as aluminum finned to meet the need. All the batteries used in Hygienic Air Handling Units are made of stainless steel. Thanks to the specially written program, the batteries used are selected according to the demand and capacity. All batteries are detachable from the side for easy insertion during maintenance and repair.

### HEAT RECOVERY UNITS

These units are used to save energy by heating or cooling the exhaust air and fresh air in devices operating with 100% fresh air in air handling units. The system works according to the principle of comparing the exhaust air and the fresh air in the heat recovery unit called Recuperator. The recuperator consists of aluminum plates designed to allow air passage in different directions. Heat transfer from the exhaust air to fresh air (or vice versa) is from these aluminum plate surfaces. As can be seen in the schematic drawing below, the device is designed in two levels. Exhaust Cell is installed on the upper floor, fresh air and other equipment on the lower level.

### SILENCER UNIT

Muffler unit is manufactured in standard cell structure in air handling units. Silencer backdrops are manufactured in 20 cm width Glass wool or stone wool is used in the backdrop. The two sides of the backstools in contact with air are covered with fibrocam material. Backstages are used in different quantities according to the capacity and size characteristics in the cell.

### STEAM HUMIDIFICATION UNIT

Air handling unit steam humidification unit is manufactured in standard cell structure. In order to prevent water droplets from condensation during the humidification in the cell with the air and other parts of the device or the neighborhood, it is made of PVC material. designed drop holders are mounted inside the cell. Depending on the capacity on the cell size and quantity of the designated diameter connection ports are prepared for steam distributors.

# POOL TYPE DEHUMIDIFICATION

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## ► POOL TYPE DEHUMIDIFICATION PLANT USAGE AREAS

### INDOOR SWIMMING POOLS

High evaporation occurs in indoor swimming pools. The amount of moisture in the air reaches a high level. Due to the high humidity density, perspiration occurs everywhere that does not come into contact with the outside environment. This has various consequences such as mold, fungus formation and rusting over time. This results in severe damage to the structure of the building. In addition to the damage it causes to construction sites, high humidity causes a decrease in blood circulation, shortness of breath and weakness, and a decrease in sports activities.

It is necessary to adjust the temperature of the water in the pool and the temperature of the air in the air so that minimum evaporation occurs. If the humidity continues to rise, the humidity must be reduced. Air speeds should be kept low while doing this. The pool air temperature should be 2 to 4 ° C higher than the pool water temperature.

Depending on the intended use of the water temperature in indoor swimming pools should be as follows;

**In Free Pools, 27 - 28 °C**

**In Sport Pools, 24 - 25 °C**

**In Children's Pools, 31 - 31 °C**



### BODY STRUCTURE

Fanmak Pool Dehumidification Plants are specially designed devices using black coated aluminum profiles. It is produced as 50 mm panel thickness and 52 Kg / m<sup>2</sup> density rock wool as standard. The outer sheet of the panels is made of 1 mm painted sheet and the inner surfaces are made of 0-8-1 mm 303 AISI stainless steel sheet.

### FILTER

In Fanmak Dehumidification Plants, G4 cassette type filter is used as pre-filter and EU7 bag type filter is used as bag filter.

### RADIAL FANS AND PLUG FANS

Forward-curved or backward-curved high-efficiency imported fans are used. The selection of the fans is done in computer environment. Fans used with belt and pulley adjustment works at desired flow and pressure. The pulleys are bushing type and easy to install.

Plug fans are free-throwing fans without case which is backward-curved sparsely blade with high pressure and flow efficiency. They are preferred in hygienic devices due to their frequency control and easy cleaning features. The direct driven fans provide free air flow from any side of the connected cells because they are free throwing.



## COMPRESSORS

In Fanmak Dehumidification Plants, hermetic scroll or hermetic piston compressors are used as single or double. Harmless feron gases such as R 407 C or 134 / a are preferred as refrigerant.

## ELECTRIC HEATERS

In the absence of hot water, electric heaters are used in dehumidification plants to heat the air. Automatic circuit breakers and over-heat thermals are used as standard with special winding serpentine.

With the help of HEAT RECOVERY SYSTEM, the high conductivity transfer fluid in the system is circulated from the aspirator to the ventilator. The heat load reflected to the liquid by the battery in the aspirator section is transferred to the air again by the other heat recovery battery located in the ventilator section. The efficiency is 50-55%. In case of heat recovery, aspirator and ventilation air are never mixed together.

## DEHUMIDIFICATION CIRCUIT (DX)

Standard cooling cycle operating by condensing and evaporating feron based gases used in Fanmak Dehumidification Plants is used. It is compressed by means of compressor with feron gas which has low evaporation and converted into superheated steam. In this case, the temperature of the refrigerant is about 110 ° C. It is sent to the condenser in order to cooling, condensind and turned into a high pressure and low temperature liquid with the help of a fan. It reaches the evaporator through the expansion valve which acts as a pressure reducer. Since the evaporator occurs by turning the refrigerant from the liquid state into a gaseous state, it carries the heat of everything it touches to the condenser. This process is repeated as long as the system is running.

## AUTOMATION SYSTEM

Fanmak Dehumidification Plants are equipped with a functional automation system. LCD panel control system is used. Microprocessor controls the inlet and outlet humidity and ambient temperature precisely, and the fans increase the automatic flow and pressure according to the contamination rate of the filters. Depending on the selected operating mode, the quantity of fresh air, mixing and exhaust dampers are proportionally controlled by service engines.

## WORKING METHOD

### Dehumidification

The need for dehumidification usually occurs in winter. The device works with around 10% fresh. The compressor and heating device are activated. The heat recovery system is switched off.

### Air Conditioning

It is used in transition periods. No dehumidification is required. The compressor operates in closed heating and heat recovery in open position.

### Heating

It is used for heating only when dehumidification is not required. It works with 100% indoor air or 100% outdoor air. It works also as mixture air. The compressor is always in off mode.

### Auto mode

In this mode, Fanmak Dehumidification Plants operate automatically. It controls the exhaust air sucked in from the inside with a carbon dioxide (CO2) sensor. The quality of the room air is adjusted precisely.



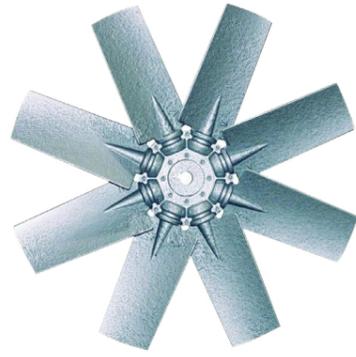
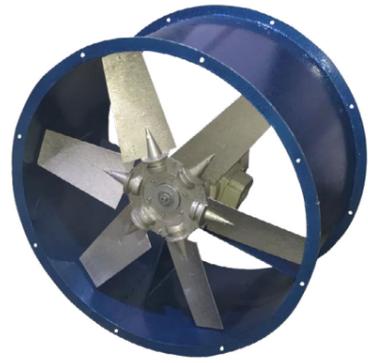
### TECHNICAL SPECIFICATIONS TABLE

Type		FHNA-30	FHNA-40	FHNA-60	FHNA-80	FHNA-100	FHNA-150	FHNA-250
Pool Surface	m2	50	80	120	175	230	320	500
Dehumidification capacity	kg/h	15	25	35	48	60	90	110
Air Flow	m3/h	2500	4000	6000	8000	10.000	15.000	23.000
Cooling Capacity	kcal/h	15.100	24.200	34.500	46.800	56.100	87.500	128.200
Water heating capacity	kcal/h	22.200	33.900	52.900	62.700	98.400	143.600	172.000
Electric heater	kW	15	18	30	45	60	60	75
Heat Recovery	kcal/h	6500	11.100	15.800	21.500	28.200	42.100	64.600
Condenser capacity	kcal/h	19.100	28.600	42.200	53.500	67.050	105.800	166.600
Suction Pressure Loss	PA	200	400	400	400	400	400	450
Blowing Pressure Loss	PA	300	400	500	500	500	500	550
Aspirator Motor Power	kW	1,5	3	3	4	4	7,5	11
Ventilator Motor Power	kW	2,2	3	4	4	5,5	7,5	11
Total power (Except resistance)	kW	8,7	13	16,7	23	24,9	37,9	68

\*If required, we manufacture larger capacities.

# TUBEAXCIAL FAN

[www.fanmak.com.tr](http://www.fanmak.com.tr)



## ▶ TUBEAXIAL FANS AND JET FANS

Fans produced with desired air flow and pressure can be mounted on the wall or on the machine. It is produced between 350 mm - 250 mm diameter. If required, it can be produced in higher diameters. The electric motor is located outside the body. It is manufactured from 37.2 steel sheet as epoxy painted as standard.

**Areas of Usage:** It is used in all kinds of commercial enterprises and many places with ventilation installations. In addition, tubeaxial fans are used as smoke evacuation fans in parking lots. The motors of the fans that makes smoke evacuation motors are used to withstand high temperatures for a certain period of time. Smoke motors are manufactured to withstand 300 C temperature for at least 3 hours. Flow and pressure adjustment is made by adjusting angle and pressure in propellers used in tubeaxial blade fans. Angle adjustable fins are made of bakelite and aluminum material.

### FAN CASSETTE

It is manufactured from St 37.2 steel sheet as RAI 7036 (Gray) color in various thicknesses as standard. Optionally, hot dip galvanic, oven paint and epoxy paint can be made.

### PROPELLER

Blade hubs are manufactured from alloyed aluminum and optional steel. If desired, the blades may be polypropylene, steel or stainless steel. Adjustable, aerodynamic blades can be used easily under external factors such as corrosion, dust.

### ELECTRIC MOTORS

Selected electric motors are used as Gamak or Volt or equivalent. The body of the electric motors are injection-type aluminum. The motors are manufactured in compliance with IEC and DIN norms in terms of long life and reliability.

## ▶ FIRE SMOKE EXHAUST FANS

Fire smoke fans are manufactured with aluminum blades as fire resistance in the form of F200 and F300. The fans produced in two cycles are selected to operate in normal times and during fire. The smoke extraction fans are selected to withstand 200 ° 2 hours, 300 ° 2 hours or 400 ° 1 hours. The fan and motor are located in the cassette. The terminal box for electrical connection is outside the cassette. It is produced between 250 mm - 1250 mm diameter. If required, it can be produced in higher diameters. It is manufactured from st 37,2 steel sheet as epoxy painted as standard.

**Areas of Usage:** It can be used in all kinds of commercial enterprises, subways, high-rise buildings, residences, parking lots and many other sectors.



# HEAT RECOVERY

[www.fanmak.com.tr](http://www.fanmak.com.tr)



## ► HEAT RECOVERY DEVICE

Heat recovery units are produced in order to save energy in the neighborhoods where fresh air is needed. It is produced in the air flow range of 500 m<sup>3</sup> / h to 5000 m<sup>3</sup> / h. It is designed in such a way that it can be easily installed and maintained at a height that can be placed in the suspended ceiling. High efficiency recuperator with centrifugal fans, silent direct coupled motor, is a compact device with maximum sound insulation and full sealing cell with heat isolation. In today's conditions, buildings are constructed as highly insulated in order to prevent energy loss. The construction techniques developed in recent years have led to the construction of buildings in a more rigid and sealed structure.

### TECHNICAL SPECIFICATIONS

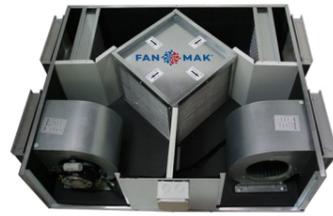
- It meets the fresh air requirement of the environment in the areas it is used and prevents condensation in winter.
- Heat recovery ventilation system helps in the treatment of asthma and allergy by removing dust and microscopic dust insects from the environment.
- It provides the fresh air requirement of crowded environments such as classrooms and dormitories with energy saving up to 72%.

### BODY STRUCTURE

The whole body is made of 1 millimeter galvanized sheet painted with electrostatic RAL 7035 color code. 25 mm thick glass wool insulation material is used for sound and heat insulation.

### FANS

Directly driven forward-missing bladed radial fans with dynamic and static balances are used. Radial fans are designed to be eaten 200 Pa outside pressure according to the project conditions. The fans are manufactured as single speed 2 speed or 3 speed according to order conditions. The speed control is suitable motor and has low noise level. The sound levels of the fans were chosen considering the flexible channel. Carriage heat exchanger In the fresh air device with carriage heat recovery heat exchangers with high and low pressure losses are used.



#### FILTER

G4 class synthetic fiber based filters are used which are easily accessible and cleanable. Both fresh air and exhaust effort inlets are equipped with filters. In this way, both the particles in the air are retained and the plate heat exchanger is protected.

#### ELECTRICAL HEATERS AND HEAT CONTROL

Different sizes and capacities of electric heaters are produced for each model in order to connect to the fresh air flows of heat recovery devices depending on the place of use and need. The outer body of the resistors is made of stainless steel pipe. Thus, corrosion resistance is high

Electric heaters are manufactured with rectangular cross section in accordance with fresh air outlets from heat recovery units and suitable for flanged connection.

#### SPEED CONTROL

In accordance with the changing needs, the fan speed can be adjusted with speed control to save energy.

WITHOUT HEATER HEAT RECOVERY DEVICE TECHNICAL TABLE							
Model	FIK-50	FIK-100	FIK- 150	FIK-200	FIK-300	FIK-400	FIK- 500
Capacity (m3/h)	500	1000	1500-2000	2500	3000	4000	5000
Pressure(Pa)	200	200	200	200	200	200	200
Power (Watt)	92	150	300	370	550	750	750
Sound Level (Db)	43	43	44	44	47	47	50
Filter	G4	G4	G4	G4	G4	G4	G4
Lenght - L(mm)	1000	1200	1250	1400	1500	1700	1900
Width - W(mm)	800	900	1000	1050	1050	1200	1200
Height H(mm)	300	360	410	410	520	620	620
Weight (KG)	65	80	99	125	140	175	200

\*You can contact us for 5.000 m3 and above.  
\*Electrical heater can be added to our devices.

# ROOFTOP

[www.fanmak.com.tr](http://www.fanmak.com.tr)

## ▶ ROOF TOP

Fanmak roof-top air conditioners are manufactured as standard in 8 different models, with a capacity range of 50 000 btu / h to 400,000 Btu / h. R / 410 A and R / 407 C gas are used which do not harm the environment. Heating is done with heat- pump system. In very cold areas the electric heater is reinforced. Hot-water battery is used in devices without heat-pump. Since it is one piece, it provides ease of installation. Insulation material with 20 mm rubber is used in the inner parts. G4 quality panel filter is used as standard in the evaporator air inlet. The fans used are selected as belt pulleys, forward curved or back curved sparse blades. Condenser fans are of axial type and are chosen as quiet high efficiency. Condenser and evaporator coils are specially designed and feature as copper tube aluminum fin. Scroll and semihermetic compressors are used in single and tandem connection according to the capacity requirement in the cooling cycle. Roof-top air conditioners are used in hypermarkets, shopping malls, cinemas, show centers, educational institutions and factories with many industrial facilities.



## COOLING AND HEATING

In the roof-top air conditioners where standard cooling and heat-pump cycle is used, draer set with exchangeable gland, liquid glass, four-way valve, expansion pressure reducing valve, liquid holder, oil separator, gas tank, mechanical check. The use of various elements, such as the valve element and the combined automatic, improves performance as well as the use of more diverse elements increases performance, as well as more durable and economical bit operation. Due to the speed adjustment of the condenser fans, it provides the possibility of cooling at low and high outdoor temperatures by producing as much flow as the system needs. Maintaining the condenser pressure above a certain level is vital for the healthy operation of the compressors. Thanks to the automatic reset pressure regulator placed at the condenser outlet, a hor fan can control the capacity in itself.

## FANS

Imported fans with curved front blades or sparse blades with backward curves are used. Pressure losses are calculated in order to overcome the suction and fresh air resistances. Used electric motors are used as Gamak or equivalent. Suction and discharge surfaces of Fanmak roof-top air conditioners can be made on the sides or at the bottom of the device.

## ECONOMIC MODE

In places where cooling is required at low outdoor temperatures, the compressor is deactivated in order to reduce consumption when the outdoor temperature is below 180 ° C. The force cooling damper opens with the signal received from the electronic board and allows cold air to blow into the room. This mode is generally preferred in winter or spring votes where processing rooms and electronic devices emit excessive heat.

## COMPRESSORS

In Fanmak rooftop air conditioners, hermetic scroll or semi hermetic piston compressors are used in single or tandem connection.

Harmless feon gases such as R40 / c or R 410 / A are used as refrigerants. The compressors are protected by overheating thermistors and overcurrent thermals. Special rubber absorbers are mounted to the central body. Special vibration pipes are used to prevent transmission of vibrations from the pistons and scroll mechanism to the body. Sap-cooling or power control system is used for capacity control.

**ROOF-FANMAK ROOF-TOPAIR CONDITIONER TECHNICAL TABLE**

MODEL		FROOF - 19	FROOF - 27	FROOF - 34	FROOF - 43	FROOF - 55	FROOF - 70	FROOF - 88	FROOF - 110
Cooling capacity	kW	17	27	34	43,5	55	70	88	110
Cooling capacity	BTU	60.000	88.000	116.000	150.000	200.000	240.000	300.000	400.000
Heating capacity	kW	19	29	35	45	58	72	88	105
Heating capacity	BTU	64.000	96.000	120.000	155.000	210.000	244.000	300.000	385.000
Air Flow	m3/h	3000	5500	7200	9.200	12.800	15.800	17.800	21.800
Compressor Type		scroll	scroll	scroll	scroll	scroll	semihermetik	semihermetik	semihermetik
Number of compressor	Adet	1	1	1	2	2	1	1	1
Compressor power	HP	7	10,00	12	15	20	25	30	40
Ventilator power	kW	1,1	1,5	2.2	3	4	5,5	5,5	7,5
Condenser Air flow	m3/h	9000	13.000	15.000	18.000	30.000	36.000	40.000	50000
Water battery capacity	kW	25	40	50	90	110	130	145	198
Working Current	A	14	19	21	25	28	35	45	75
Power consumption	kW	7	9,5	10,50	12,50	14,00	17,50	22,50	37,5
C.O.P Value		3,8	3,81	3,62	3,65	3,4	3,4	3,45	3,36
E.E.R Value		11,91	11,93	11,8	11,84	11,3	11,3	11,33	11,2
Power Input	V/HZ	380/50	380/50	380/50	380/50	380/50	380/50	380/50	380/50
Dehumidification capacity	kg/h	10	15	18	21	25	33	40	53
Refrigerant type	R	R407/c	R407/c	R407/c	R407/c	R407/c	R407/c	R407/c	R407/c
External pressure loss	PA	250	250	250	300	330	400	400	450
Cooling	kG	6,5	9,6	11	15	19,2	24	31	45
Sound level	dBA	64	65	67	68	69	71	73	75
Free Cooling		var	var	var	var	var	var	var	var

\*Our products are package type and automation system is standard.  
(Can be revised upon request.)

\*You can contact our company for natural gas models.

**CHILLER**

[www.fanmak.com.tr](http://www.fanmak.com.tr)

## ► CHILLER

The chiller which is called as English chiller and translated into Turkish as cooling systems; heat transfer from one source to another source, so-called injection cooling system. Chiller cooling systems consisting of compressor, condenser, expansion valve and evaporator operate by cooling the compressed and heated gas in the compressor in the condenser. Chillers work in two different ways. Air cooled and Water cooled.



### AIR COOLED CHILLER

Chiller cooling systems are grouped according to different specifications. The biggest distinction is what the heat source is. If heat is thrown into the air, it is called an air-cooled chiller, and if it is thrown into the water, it is called a water-cooled chiller. Air-cooled chiller systems operate in the form of the energy that the refrigerant gas in the chiller generates via the evaporator and compressor on air-cooled batteries. The compressed and high temperature gaseous refrigerant in the compressor is sent to the condenser. Heat transfer takes place by providing air flow on the battery surface with the help of fans. Cooling is completed by passing the heat on the gas to the air.

### WATER COOLED CHILLER

Water-cooled chiller cooling systems, unlike the air-cooled chiller operating logic of the condenser circuit with water to cool the hot gas. In order to cool the gas, shell & tube or plate type heat exchangers using water are used instead of air-cooled coils.







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