

**alp** AIR HANDLING<sup>®</sup>  
U N I T S

“for the comfort of your air”



**alperen**<sup>®</sup>  
ENGINEERING

alperen.com.tr



## About Us

### Alperen Engineering Heating and Cooling Systems Industry&Trade Ltd.

Our company serves in the field of air conditioning of ventilation of spaces deemed as clean rooms such as operating rooms, intensive care units, laboratories and spaces in the electronics and food industry as well as meeting the requirements as to industrial air conditioning of ventilation of all indoor areas such as shopping malls, factories, hotels, offices, educational institutions and manufacturing plants.

Our company, for the first time in Turkey, has realized the production of custom-designed concrete cooling groups based on spot cooling the concrete as a result of the R & D activities conducted thereby. Our company carries out meticulously all steps germane to cost assessment, providing information, projecting, offering price quotes, manufacturing, installation, commissioning and service.

Our company, having launched the commercial operations thereof in January 2000, produces standard and hygienic air handling units, water chillers, concrete cooling groups, clean room air conditioning equipments, rooftop air conditioning systems air cleaning devices and realizes production of special orders.

Furthermore, our company, with the experienced staff thereof in its field, furnishes services such as sales, after sales service, project and contracting for air-conditioning products such as hygienic air conditioning systems, precision-controlled air-conditioning systems, package type air conditioning systems, central air conditioning systems, chiller systems, VRV air conditioning systems, split air conditioning systems, ventilation equipments, textile air ducts, polyurethane air ducts, galvanized & stainless steel air ducts, air cleaning equipments, hepa filters, coil filters, bag filters, carbon filters, fan coils, convectors, heat recovery equipments, dehumidifiers, air curtains and infrared and radiant heaters.

We aim to be closer and provide a better service by virtue of our meticulously prepared websites that are updated every moment. You can have information incident to our products, brands and models, perform computations of online capacity, can receive offer, place orders, purchase and request a delivery service thanks to sharing of information provided through our company via internet.

Our services and works are based on aesthetic appearance, high performance, affordable usage, robustness, durability, prompt service and your esteemed satisfaction.

We are constantly working with our technical services aiming at efficiency with minimum cost in our products in addition to our expert engineers closely following the latest innovations in the rapidly evolving fields of heating, cooling, ventilation and air-conditioning sectors and delivering same to you.

### Our Products

- Standard Air Handling Units
- Hygienic Air Handling Units
- Package Type Hygienic Air Handling Units
- Dehumidification Units
- Precision-Controlled Air Conditioning Systems
- Laminar Air Flow Units
- VRV - VRF - VRS Air Conditioning Systems
- Rooftop Air Conditioning Systems
- Split Air Conditioning Systems
- Mono Block Air Conditioning Systems
- Water Cooling Systems
- Concrete Cooling Systems
- Fan Coil Systems
- Convector Systems
- Automatic Control Systems
- Ventilation Equipments
- Air Ducts
- Air filters



## Alp Central-Station Air Handling Units

### Alp Central-Station Air Handling Units

Alp central-station air handling units are industrial air conditioners produced for providing comfort to the air by heating, cooling, humidification, dehumidification, ventilation, filtration and ventilation processes in living places such as schools, hotels, plazas, offices, shopping arcades, shopping centers, administrative buildings, hospitals, dining halls, cafeterias, kitchens, laundries, cinemas, meeting rooms, multi-purpose halls, swimming pools, libraries, shops, garages, warehouses, laboratories, factories, ateliers, workshops, restaurants, residents etc.

Alp central-station air handling units have been designed by considering the requirements of the places, where high interior air comfort is desired. They can easily carry out all interior air conditioning processes under any kinds of working conditions.

Air central-station air handling units consist of leak-proof and washable interior surfaces. Installation and operating costs of our high efficiency central-station air handling units are very low. Alp central-station air handling units are produced with capacities varying depending on the required values.

### Radial Fans

EUROVENT and AMCA certified radial fans used in Alp central-station air handling units are used with optionally forward or backward curved blades depending on the required capacity. Double suction radial fans are used with additional filtering elements.

Radial fans are produced as belt-pulley driven devices with galvanized metal sheet body in spiral form. The fan rotor is statically and dynamically balanced. The electric motor is mounted on a specially designed belt tensioning mechanisms.

Pulleys are equipped with conical clamping bush. The connection between fan discharge outlet and cell panel is provided by means of a connector. Fan, motor and belt tensioning mechanism are fixed on a reinforced C profile chassis. In addition, whole the moving system is mounted on spring or rubber insulators. Radial fans used in Alp central-station air handling units can be taken out from the side. In Alp central-station air handling units, frequency converters suitable or radial fan motors can be applied separately if desired. Illumination of the fan cell is provided by controlled hermetic luminaires.

### Plug Fans

In our Alp central-station air handling units, optionally plug fans are preferred because of the fact that they are easy to clean and prevent accumulation of dust on the surfaces. Depending on the characteristics of air flow rate-pressure, plug fans are applied as directly coupled or belt-pulley driven. Plug fans used in Alp central-station air handling units are fans with backward curved blades. Rotor is mounted directly on the motor shaft. Whole the moving system is mounted on spring or rubber insulators. Plug fans used in Alp central-station air handling units can be taken out from the side. In Alp central-station air handling units, frequency converters suitable or plug fan motors can be applied separately if desired. Illumination of the fan cell is provided by controlled hermetic luminaires.



## Alp Central-Station Air Handling Units

### Panels

Specially extruded aluminum profiles and double-walled 45-60 mm thick panels with polyurethane filling or rock wool insulation are used in the cabin construction of Alp central-station air handling units. Exterior surfaces of the panels are produced of galvanized metal sheet coated with PVC or anti-static paint. Panels are connected to profiles with special screws; and neoprene seals are placed between the panel and profile. A smooth surface is provided, by applying liquid silicone to the joints.



### Cell

Cells used in Alp central-station air handling units are produced of specially extruded aluminum profiles and double-walled 45-60 mm thick panels with polyurethane filling or rock wool insulation. On the cells, there are coarse filter, bag filter, fan, aspirator, heater, cooler, humidifier, heat recovery device, sight glass intended for control and maintenance of some elements such as fans, hinged, handled and security-controlled doors. In addition, internal lighting fixtures are used. Cells are produced as with a structure that can be connected to each other from their insides by means of high strength fittings, with suitable bolts and nuts.

## Alp Central-Station Air Handling Units

### Intervention Doors

Intervention doors of Alp central-station air handling units are produced of specially extruded aluminum profiles and double-walled 45-60 mm thick panels with polyurethane filling or rock wool insulation. In intervention doors of all our central-station air handling unit models are equipped with strength and durable door handles and hinges with the feature of compression that provides leak-tightness. And in intervention doors of some element such as coarse filter, bag filter, fan, aspirator, heater, cooler, humidifier, heat recovery device, and fan, there is a sight glass allowing for their control and maintenance.

### Filters

In our central-station air handling units, G3 and G4 class filters that can be classified as roughing filter are placed at the suction side of the fan, immediately after the assembly of the air inlet. F7 and F9 class precision bag filters and compact filters are placed at the pushing side of the fan, after a cell with deflector.

And U.V disinfection filter is placed after the bag and compact filters. Filters have compression equipment and frame structure that is easy to remove and assemble. Filter housings, where filter frames are placed, are equipped with sealant gaskets. Filter frames are placed in such a way as to be mounted on the gaskets.

### Pre-Filter Cell

Cassette panel filters used as controlled and renewable pre-filters in Alp central-station air handling units are made of a special blend of crude fibers. Cassette filters have an extremely durable structure. Its surrounding protection cage is placed in order to protect its filtration feature from strokes. Cassette panel filters are the filters in class G2 (EU2) - G3 (EU3) - G4(EU4) - F5 (EU5). Cassette filters used in Alp central-station air handling units are produced as cellulose-based and fiberglass-based.

### Precision Filter Cell

Bag and compact filters used as a precision filter in Alp central-station air handling units are made of synthetic fiber material, and show a superior performance with their high dust collection capacity. Bag filters usually produced with a depth of 500 and 600 mm are also produced in specific sizes. Bag filters made of synthetic fiber are used in ventilation systems. And in hygienic air-conditioning system, they are mounted inside of the central-station air handling unit, with intent to protect the HEPA filters. Synthetic fiber bag filters make filtration in the classes G3 (EU3) - G4 (EU4) - F5 (EU5) - F6 (EU6) - F7(EU7) - F8 (EU8)- F9(EU9) class.



## Alp Central-Station Air Handling Units

### Active Carbon Filter Cell

Active carbon filters used in Alp central-station air handling units have the feature of capturing gas molecules. A surface of the active carbon filters consist of millions of micro pores. Many odor-emitting toxic gases are captured thanks to these pores. Active carbon filters must be changed depending on the ambient air pollution and frequency of their use. Active granular carbon filters are used as odor eliminator filters in the places where heavy odors emanate. In active granular carbon filters, only granular carbons are replaced when the filter becomes dirty. There is no need to replace the filter cells.

### Particulate Arresting Filters

HEPA that is also known as particulate arresting filter stands for High Efficiency Particulate Arresting. HEPA filters are the filters that can separate 85% of the particles with the sizes up to 0.3 micron from the air. Filters, which are more precise than HEPA filters with their precision percentage of % 99,999, are called ULPA filters. HEPA and ULPA filters have a paper-like maintenance-free structure consisting of special fibers. These filters must be replaced with new ones in a certain period of time. Because of their filtration performances, reliabilities and maintenance-free structures, today HEPA and ULPA filters are used in operating theaters, hospitals and clean room applications. MDF, plastic, or metal-framed HEPA and ULPA filter models are available.

### U.V Disinfection Filter Cell

The rays, which are shorter than the visible rays but longer than X-rays, are called ultraviolet rays. It is because human eye can see the range between red and violet lights.

In the ultraviolet filter systems used in Alp central-station air handling units are equipped with ultraviolet lamps providing UV rays. Quartz tubes allow for the best UV rays passage is used in order to prevent ultraviolet lamp from contacting the water. UV lamp has a life of 9000 hours. After the completion of this period that is about one year, you can reactivate the system by just replacing the lamp. This special light utilized as a disinfectant is also called short-wavelength light or UV-C light. This light length is between the UV-C band of 200 nm (nanometers) and 280 nm. The wavelength required for disinfection is 253.4 nm (0.0002534 mm). These lamps are used as sterilizers, with the applications made in different ways depending on the environments, where they are intended to be utilized.

UV rays with a wavelength of 253.4 nanometers immediately neutralize microorganisms, bacteria, viruses, molds and fungus spores at the rate of 99.99%, by disrupting their DNA structures. They prevent replication between thymine molecules in the DNA structure.

The filter types used in Alp central-station air handling units are determined depending on the filter types used, structure of the central-station, manufacturing criteria and requirements.

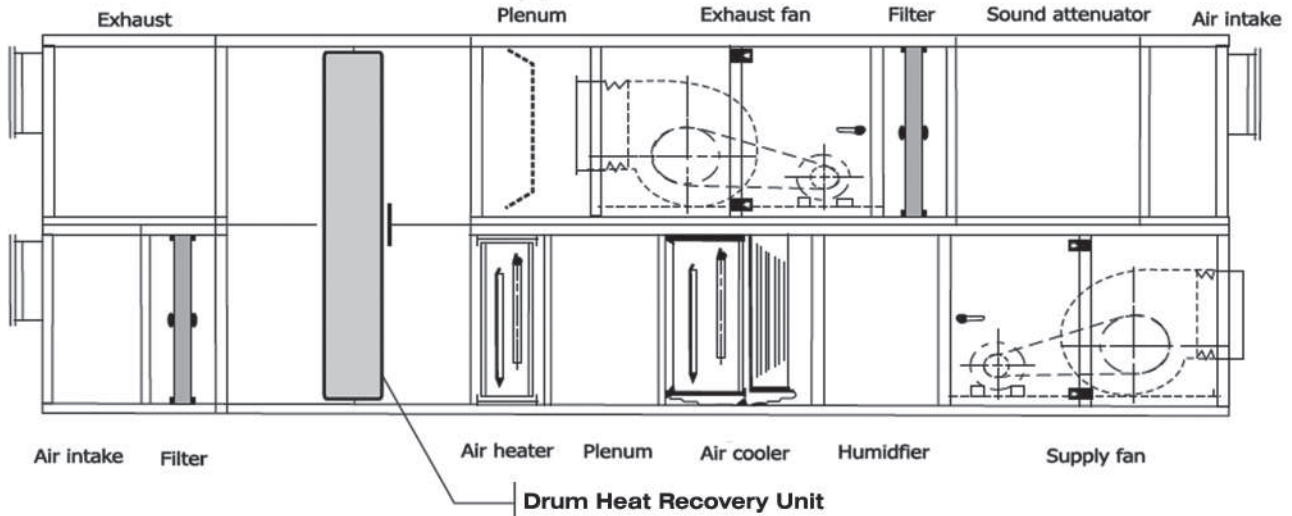
## Alp Central-Station Air Handling Units

### Heating and Cooling Coils

In Alp central-station air handling units, coils with copper pipe and aluminum fin or steel pipe and steel fin are used, depending on the requirement. Heating and cooling coils are subjected to 20 bar leakage test after their production. The frames of the coils are made of stainless Cr-Ni or galvanized metal sheet. The coils can be easily intervened by removal of the side cover. Cooling coils of our central-station air handling units are equipped with condensation tray and drift eliminator.

Drainage trays used in all our central-station air handling units are produced of stainless Cr-Ni. As a standard when the steam pressure is under 4 bar, steam heating coils are produced as with thick-wall copper pipes and aluminum fins. And systems with a pressure under 4 bar are produced as dip galvanized and with steel spiral. They are also made of stainless metal sheet for special applications.

In central-station units, which will be used in the places with no risk, the heating and cooling coils are placed in a single cell. However, a plenum cell with a width of 600 mm must be placed in areas with the risk of freezing. That plenum cell will also facilitate the assembly of the plenum cell freezing thermostat.



### Silencers

Silencers used in Alp central-station air handling units are placed after the fan and before the bag filter. And aspirator silencers are placed immediately before the aspirator. Aspirator silencers can be directly connected to the aspirator cabinet. However, in applications with radial fan, a plenum cell with the length of 600 m equipped with deflector must be placed between the fan and silencer, for an appropriate air distribution. In the cases where plug fans are used, there is no need for additional plenum. Deflector be placed into the fan cabinet. Interior surfaces of the silencer are produced of stainless metal sheet, in such a way as to ensure homogeneity with the other parts of the cabinet. Silencers are produced as with a 900mm, 1200mm, 1500mm, 1700mm and 2000mm.



## Alp Central-Station Air Handling Units

### Drift Eliminator

Cooling coils of our central-station air handling units are equipped with condensation tray and drift eliminator.

In cooling exchanger, drift eliminators with PVC or aluminum fins are used, depending on the air flow speed. Drift eliminator fins are designed in such a way as to keep the maximum amount of water, and can be taken out with skid. Condensation trays are made of 1.5 mm thick stainless steel plates, with a size that can contain the heat exchanger and drift eliminator.

### Mat Type Humidifiers

In mat-type humidifiers used in Alp central-station air handling units, the process is carried out by evaporation. Since droplet is not carried, situations dangerous for the health are not created. The lengths of mat-type humidifiers are between 600 and 900 mm. Depending on your desire, plenums with the length of 600 mm can be placed at the outlet sides of the humidifiers for ease of maintenance and service.

### Steam Type Humidifiers

Steam humidifiers used in Alp central-station air handling units are classified in two types, as the ones producing the steam by themselves and the ones using the existing steam. If there is a sufficient amount of steam in the place to be acclimatized is available, the condensed water in the steam is separated and sprayed in the form of dry steam to the acclimatized air, and thus, the humidification process is carried out. With a 2-way motorized valve mounted on the steam injection nozzle, the desired humidity level is controlled proportionally or in two positions. The lengths of steam humidifiers vary between 600 mm and 1200 mm, depending on the desired efficiency and weather conditions. And in the places where steam is not available, humidifiers that can produce their own steam by evaporating the water through the electrodes can be used.

### Double-Coil Type Heat Recovery

Double-coil heat recovery systems used in Alp central-station air handling units are made by placing one of the two heat exchangers with finned pipe into the exhaust unit, and placing the other on the inlet of the fresh air unit. By means of a heat pump, the heat-conveying fluid is circulated through the coils. With the heat gained by heating the fluid passing through the exhaust unit is used to heat the fresh air by the heat exchanger. In the places where the outside air temperature is higher than 0 °C, water can be used as the heat-conveying liquid. However, when the places where the outside air temperature is lower than 0 °C, ethylene-glycol mixtures in certain proportions up to 40% are used to eliminate the risk of freezing. In the cases where the temperature at the fresh air outlet of the heat recovery coil is lower than 0 °C, the heat-conveying liquid is used with an automatic defrost system, in order to prevent freezing on the surfaces of the heat-conveying coil in contact with the air. If there is a risk of surface condensation in the heat recovery coil at the exhaust side, condensing vessel is used. In addition, drift eliminator is used for the air velocities higher than 2.5 m/sec.



## Alp Central-Station Air Handling Units

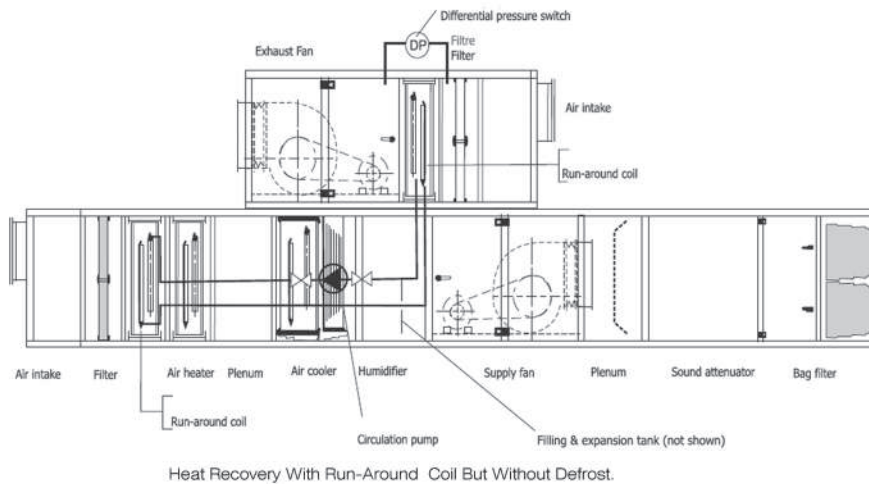
### Plate-Type Heat Recovery

With their efficiencies up to 70%, plate-type heat recovery systems used in Alp central-station air handling units provide more heat recovery in comparison with the double-coil systems. However, single or two-storey central-station air handling units are used instead of classical central-station units, in order to implement plate heat recovery systems to air handling units. Plated heat exchangers with butt and by-pass dampers are used in heat recovery systems when the outside air temperature is lower than 0 °C, due to the risk of clogging caused by frost on the surfaces at the exhaust air side. In such a case, a two-position servo-motor is used to drive the dampers. When a pressure loss increase signal is given by the differential pressure switches due to clogging, the butt damper is closed and by-pass damper is opened to melt the ice. When the pressure loss returns to normal, the dampers are turned to their previous positions by means of the servomotor.

### Rotary Drum Type Heat Recovery

Rotary drum type heat recovery devices used in Alp central-station air handling units are produced of rotary type heat recovery rotor that rotates in the cell. The rotor is rotated by a motor and belt-pulley mechanism. Its specially designed carcass cell is made of aluminum that is protected against sea water. It is also manufactured from galvanized steel. The rotor is made of alternating flat and corrugated aluminum fins.

The heat recovery devices used in Alp central-station air handling units are determined depending on the structure of the central-station unit, manufacturing criteria and requirements.



### Dampers

Air dampers used in Alp central-station air handling units are produced of specially extruded aluminum profile cases and fins having an aerodynamic structure. Structure of damper fin and cassette are made of aluminum. Air leaks are minimized by using gaskets at the fin edges. Damper fins are connected to fiber glass reinforced plastic gears. Dampers work sensitively and without space. They are controlled manually or by servomotor.

Damper gears used in Alp central-station air handling units have been designed in such a way as not to contact the air and hidden with special aluminum profiles, for protection against the external factors such as dust, contamination etc.



## Alp Central-Station Air Handling Units

### Electric Motors

Three-phase asynchronous squirrel cage electric motors with the protection class IP55 are used in Alp central-station air handling units. Generally the motors used are single-speed motors but two-speed motors can be used as well, upon special demands. Electric motors are placed on special motor bases with tension mechanism.

### Electric Heaters

Electric heaters used in Alp central-station air handling units are used for support purpose or for low heating loads. Electric heaters are preferred particularly in the places where it is difficult to heat the air by known methods or where the filters and serpentines are required to be protected against freezing. Electric heater elements used in Alp central-station air handling units are made of stainless steel sheet, and their frame is made of galvanized steel sheets. As a standard, electric heaters are equipped with automatic-reset limit thermostat and manual-reset safety thermostat. Their protection class is IP43. Electric heater is energized only when the fan runs. The required measures have been taken to cut energy when the fan does not run. In our electric heaters with a capacity higher than 30 kW, the fan runs for 2-3 minutes after any power failure, and reduces the heat remained on the electric heater, in order to eliminate the risk of any possible fire.

### Selection Program for Alp Central-Station Air Handling Units

As the software intended for the selection of Alp central-station air handling units, ALPAIRCOMFORT allows for selecting the central-station air handling units and designing their all kinds of applications in a Windows-based process. With the software ALPAIRCOMFORT intended for the selection of central-station air handling units, it is extremely easy and fast to select the central-station air handling that has the desired features.

### Manufacturing Process of Alp Central-Station Air Handling Units

After selected by the software ALPAIRCOMFORT, Alp central-station air handling units are designed in the projects in line with the customer's demands, principles of the specifications, technical data and standards, with the collaboration of the R & D and production departments, for starting the production. Alp central-station air handling units are completely produced on computer-aided precision and speed CNC benches. During the production and assembly stages, Alp central-station air handling units are controlled and tested in accordance with the quality plan of the related product. In this way, performances of the central-station air handling units can be continuously monitored, and their conformity with the related standards is ensured. Central-station air handling units, productions of which have been completed in the factory, and which have been subjected to the required inspections and tests are transferred to the assembly area, by taking all the safe transport criteria as a basis. For your all kinds of technical inquiries related to our central-station air handling units, you all need to contact our technical service department.



## Alp Central-Station Air Handling Units

### Alp Automatic Control Systems

Alp automatic systems is offering Engineering services in hospitals, shopping centers, educational establishments, sport complexes, factories, warehouses, energy installations and every place which needs air comforts in addition to software and hardware solutions including programming.

It is possible to provide comfortable and safe atmosphere with less energy and work power by handling an automation technology. With Alp automation systems temperature, flow, pressure, humidity and air quality can be easily controlled and the required reports tables or graphics could be supplied.

Alp automatic control systems comprises software and hardware solutions in order to run all HVAC equipment's automatically that needed in cooling heating, air ventilations and air conditionings and all related systems.

The goal of Alp automatic control systems is to carry out the services of automatic observing, operating, control and reporting, energy productivity works with energy saving in connection with air-conditioning equipment's inside the building. Additionally handling the integration of the available systems via the protocols in the automatic systems.

Taking the using of energy saving as a fundamental in Alp automatic systems a data input and output can be obtained. To reach the required comfortable level the system integration is brought to the needed cycle. Our automatic systems provide the maximum level in energy saving in cooling and heating centrals, cooling groups, boilers, pumps and similar all HVAC systems in summer and winter conditions. In the meantime it provides the easy handling to the operator. When the system is handled the adjustment of temperature and time programming to the real using time and when it was not handled putting the system off will save a large scale of energy.

Alp control systems has control units and a large scale of production of a modular designs which are in compliance with applications of all HVAC that shows diversities according to the need of the comfortable atmosphere. Alp automation systems plans the control systems of HVAC of multi direction, low cost and that provides energy saving and also provides to put these systems in a quick cycle. The sensitive controls in our automation systems will provide an ideal temperature atmosphere and will remove the unnecessary processing adjustment for the set values. It should be kept in mind a decrease of only 1 °C in set value will save energy in the percentage of 5% - 6% .

In the result of long experience and comprehensive research our automatic systems are showing a great evolution. Alp automation systems have a long lasting using infrastructure. If necessary unlimited joints can be added to our automation systems or can be integrated with different technologies. Alp automation systems is in a characteristics that carry your requirements for long lasting years.

Alp air conditioning centrals are applicable in automatic control systems of all models.



# Alp Central-Station Air Handling Units

## ALP AIR HANDLING UNITS TECHNICAL SPECIFICATIONS

AHU modeli AHU Type	Model & dimensions							Air Flow Rate (m <sup>3</sup> /h)							
	W (mm)	H (mm)	A (mm)	B (mm)	L1 (mm)	L2 (mm)	L3 (mm)	F (*) m <sup>2</sup>	Face velocity (m/s)						
	2	2,5	3	3,5	4	4,5	5								
ALPKS 20S	650	680	300	600	340	340	640	0,140	1008	1260	1512	1764	2016	2268	2520
ALPKS 35S	680	680	300	600	340	340	640	0,212	1526	1908	2290	2671	3053	3434	3816
ALPKS 40S	720	680	300	600	340	340	640	0,228	1645	2056	2467	2878	3290	3701	4112
ALPKS 50S	850	680	300	600	340	340	640	0,293	2106	2633	3159	3686	4212	4739	5265
ALPKS 60S	980	680	300	900	340	340	640	0,355	2556	3195	3834	4473	5112	5751	6390
ALPKS 75S	980	980	600	900	640	640	1240	0,421	3029	3786	4543	5300	6058	6815	7572
ALPKS 90S	980	980	600	900	640	640	1240	0,520	3746	4683	5619	6556	7492	8429	9365
ALPKS 100S	980	980	600	900	640	640	1240	0,577	4154	5193	6232	7270	8309	9347	10386
ALPKS 120S	1280	980	600	1200	640	640	1240	0,676	4866	6083	7300	8516	9733	10949	12166
ALPKS 150S	1280	980	600	1200	640	640	1240	0,799	5753	7191	8629	10067	11506	12944	14382
ALPKS 175S	1280	1280	600	1280	640	640	1240	0,974	7014	8768	10522	12275	14029	15782	17536
ALPKS 200S	1280	1280	600	1280	640	640	1240	1,102	7934	9918	11902	13885	15869	17852	19836
ALPKS 250S	1620	1280	600	1850	640	640	1240	1,426	10267	12834	15401	17968	20534	23101	25668
ALPKS 275S	1620	1280	600	1580	640	640	1240	1,531	11024	13781	16537	19293	22049	24805	27561
ALPKS 300S	1620	1620	900	1880	640	940	1840	1,822	13118	16398	19678	22957	26237	29516	32796
ALPKS 350S	1920	1620	900	1880	940	940	1840	1,951	14044	17555	21065	24576	28087	31598	35109
ALPKS 400S	1920	1620	900	1880	940	940	1840	2,236	16099	20124	24149	28174	32198	36223	40248
ALPKS 450S	1920	1920	900	1880	940	940	1840	2,722	19598	24498	29398	34297	39197	44096	48996
ALPKS 500S	2220	1620	900	2180	940	940	1840	2,74	19728	24660	29592	34524	39456	44388	49320
ALPKS 600S	2220	1920	1240	2180	1210	1210	2520	3,290	23688	29610	35532	41454	47376	53298	59220
ALPKS 700S	2220	2220	1240	2180	1210	1210	2520	3,840	27648	34560	41472	48384	55296	62208	69120
ALPKS 800S	2520	2220	1240	2180	1210	1210	2520	4,380	31536	39420	47304	55188	63072	70956	78840
ALPKS 900S	2520	2520	1240	2180	1210	1210	2520	5,010	36072	45090	54108	63126	72144	81162	90180

The values gives in the table may show variations in the stage of production.  
An information data could be demanded from our compan for the equipments of definite values or in different capacity.

\*F: Face area in sq meters

Heating, cooling & air washer

Heating only

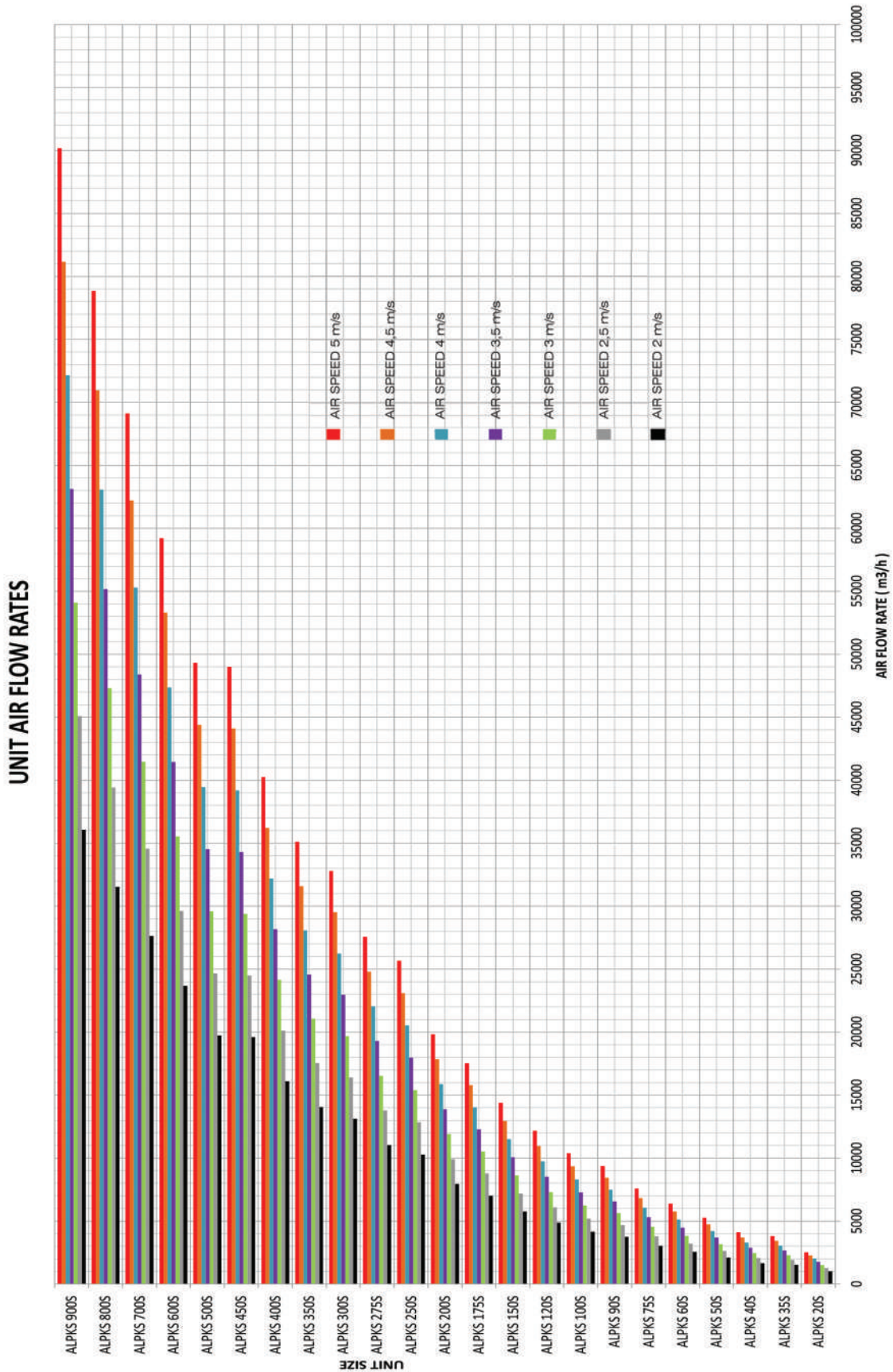
Fan only





**Alp Central-Station Air Handling Units**

“for the comfort of your air”





## Alp Central-Station Air Handling Units

TABLE OF CHANNEL DAIMETERS

OTHER SIDE (b) mm	100	125	150	175	200	225	250	275	300	350	400	450	500	550	44	650	700	750	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	
100	109																													
125	122	137																												
150	133	150	164																											
175	143	161	177	191																										
200	152	172	189	204	219																									
225	161	181	200	216	232	246																								
250	169	190	210	228	244	259	271																							
275	176	199	220	238	256	272	285	301																						
300	183	207	229	248	265	283	299	314	328																					
350	195	222	245	267	285	305	322	339	354	383																				
400	207	235	260	283	305	325	343	361	378	408	437																			
450	213	247	274	299	321	343	363	382	400	433	464	492																		
500	223	258	287	313	337	360	383	401	420	455	488	518	543																	
550	236	269	299	326	352	375	394	419	439	473	511	543	571	601																
600	245	279	310	339	365	390	414	436	457	496	533	567	598	628	656															
650	253	289	321	351	378	404	429	452	474	515	553	589	622	653	781	711														
700	261	298	331	362	391	418	441	468	490	533	573	610	644	677	708	737	765													
750	268	306	341	373	402	430	457	482	506	550	592	630	666	700	732	761	792	820												
800	279	314	350	383	414	442	470	496	520	567	609	649	687	722	755	783	818	847	873											
900	289	330	367	402	435	465	494	522	548	597	643	686	726	761	799	833	856	897	923	984										
1000	301	344	384	420	454	486	517	546	574	626	674	719	762	802	840	876	911	944	976	1037	1091									
1100	313	358	399	438	473	506	538	569	598	652	703	751	793	838	878	916	953	988	1022	1086	1146	1202								
1200	324	370	413	455	490	525	558	590	620	677	730	780	827	872	914	954	993	1030	1066	1131	1196	1256	1312							
1300	334	382	426	468	506	543	577	610	642	71	757	808	857	904	948	990	1031	1069	1107	1177	1244	1306	1363	1421						
1400	344	394	439	482	522	559	595	629	662	724	781	835	886	934	980	1024	1066	1107	1146	1220	1289	1354	1416	1473	1530					
1500	353	404	452	495	536	575	612	648	681	743	805	860	913	963	1011	1057	1100	1143	1183	1260	1330	1400	1464	1526	1584	1640				
1600	362	415	463	508	551	591	629	665	700	766	827	885	939	991	1041	1088	1133	1177	1219	1298	1371	1444	1511	1574	1635	1693	1749			
1700	371	425	474	521	564	606	644	682	718	785	849	908	964	1018	1069	1118	1164	1209	1253	1335	1413	1486	1555	1621	1684	1745	1803	1858		
1800	379	434	485	533	577	619	660	698	735	804	869	930	988	1043	1096	1146	1193	1241	1286	1371	1451	1523	1598	1667	1732	1794	1854	1912	1968	
1900	385	444	496	544	590	632	674	713	752	823	889	952	1012	1068	1122	1174	1224	1271	1318	1405	1488	1566	1640	1710	1778	1842	1904	1964	2021	
2000	393	453	506	555	602	646	688	728	767	840	908	973	1034	1092	1147	1200	1252	1301	1348	1438	1523	1604	1680	1753	1822	1889	1952	2014	2073	

1) The initial pressure losses are the average values calculated based on the input rate of 2.5m/sec.

### LOSS OF FILTERS PRESSURE

Filter class	Loss of starting	Maximum loss
G-2	25 Pa	150 Pa
G-3	40 Pa	150 Pa
G-4	50 Pa	150 Pa

### BAG OF FILTERS PRESSURE

Filter class	Loss of starting	Maximum loss
G-4	65 Pa	150 Pa
F-5	55 Pa	250 Pa
F-6	60 Pa	250 Pa
F-7	115 Pa	250 Pa
F-8	165 Pa	350 Pa
F-9	165 Pa	350 Pa



## Alp Central-Station Air Handling Units

### ALP FILTERS TABLE

	Product code	Particulate size	EN 779		EU 4 / 5		Performance	
			G1	G2	EU1	EU2		
Prefilters	CBT, SER, PFY, FCF, PMF, PKF	>10 µm	G1	G2	EU1	EU2	Am<65	
	CBT, SER, PFY, FCF, PKF, STF	3-10 µm	G3	G4	EU3	EU4	65 ≤ Am < 80 80 ≤ Am < 90	
	SER, PKF, STF	1 - 3 µm	F5	F6	EU5	EU6	90 ≤ Am	
	SER, MTF600, HTF	0,3 - 1 µm	F7	F8	EU7	EU8	40 ≤ Em < 60 60 ≤ Em < 80 80 ≤ Em < 90 90 ≤ Em < 95	
Precision Filters	HTF, KVF, KDF, ASF		F9		EU9		95 ≤ Em	
	HTF, KVF, KPF, ASF, AKF							
	HTF, KVF, KDF, ASF							
	HTF, KVF, KDF, ASF							
Hepa Filters	KVF, PHF, HVF	0,3 - 1 µm	E % @ 0.3 µm		EN 1822		EU 4 / 4	Performance
	PHF, HVF		≤ 95	≤ 98	H10	H11	EU 10	E % @ MPPS
	PHF, HVF, HDF	< 0,3 µm	≤ 99,99	≤ 99,997	H12	H13	EU 11	≤ 85 ≤ 95
	PHF, HVF, HDF		≤ 99,999		H14		EU 12	≤ 99,5
Ulpa Filters	PHF, HVF, HDF	0,2 - 0,1 µm	E % @ 0.12 µm		U15		EU 13	≤ 99,95
			≤ 99,9995	≤ 99,99995	U16		EU 14	≤ 99,995
			≤ 99,999995		U17		EU 15	≤ 99,9995

Am% : Average dust capture ratio for the prefilters in the “G1 - G4” class.

Em% : Average yield for precision filters in the “F5 - F9” class.

E% : Average yield for hepa and ulpa filters in the “H10 - U17” class.

MPPS : Most penetrating particle size of the filter.



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