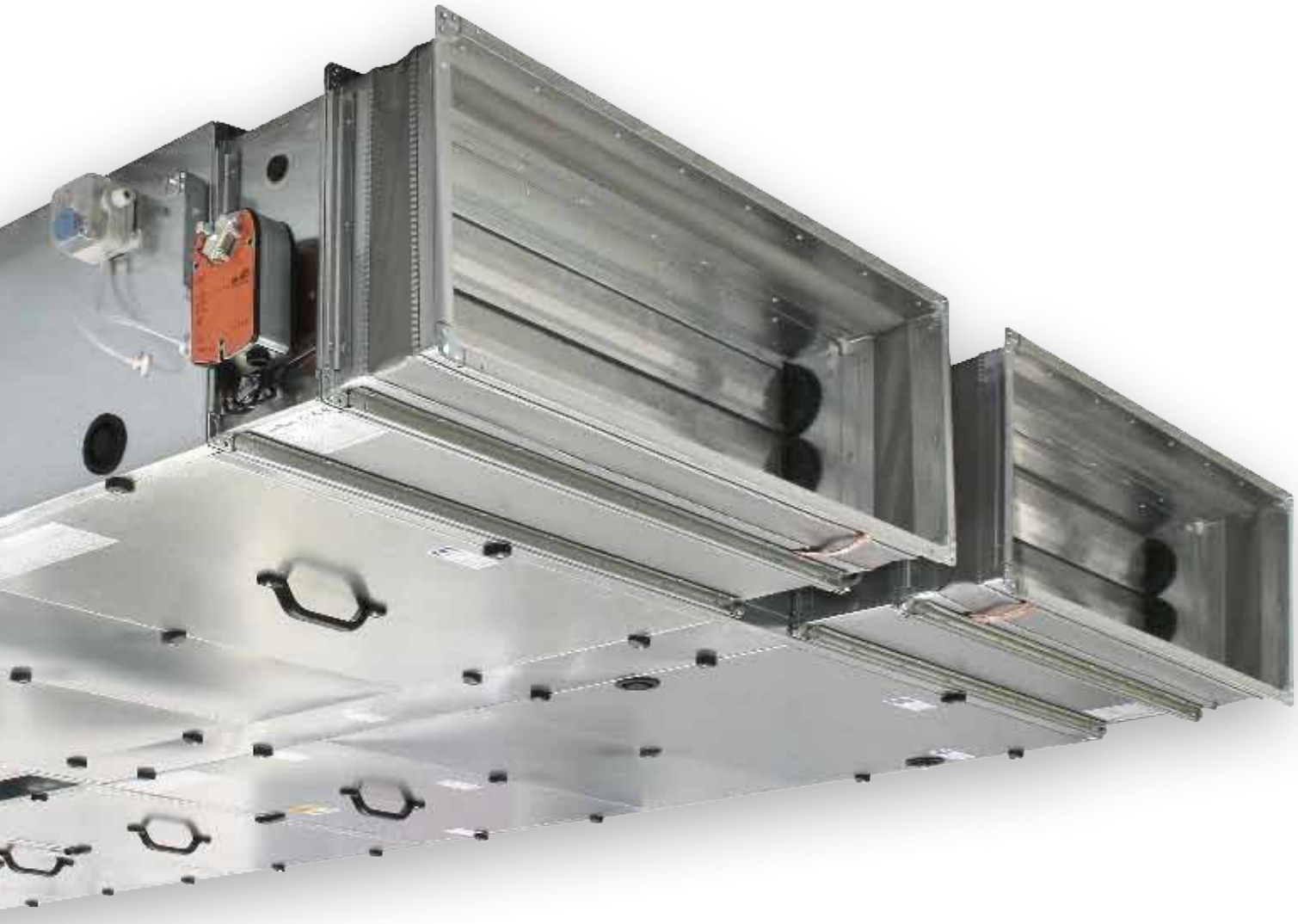
AERO MASTER FP



REMAK

CONTENTS

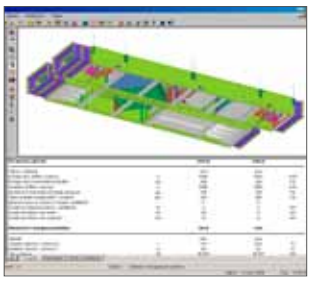
Main features

AERO MASTER FP

SMALL, BUT FULL-BLOODED

AIR-HADLING UNITS

AeroMaster FP units are intended for air handling and air conditioning in smaller rooms, especially with higher demands on the acoustic and thermodynamic parametrs.



EASY SELECTION

- Comprehensive selection in AeroCAD software.
- Read-out of standard versions on the internet.

ALL FUNCTIONS

- Comprehensive units, including heat and recovery.

QUICK DELIVERY

- EXW despatch in 5 days, immediate delivery of basic versions.

Main features

EXCELLENT NOISE PARAMETERS

- Insulation of top and bottom panel: 25 mm
- Insulation of side panel: 40 mm

SMART DESIGN

- Through its design, the unit is predeterminated for use in even demanding places.
- The version with outside plate with colored coating RAL 9002, can be delivered as custom made.

ALTERNATIVE SIDE CONNECTION

- Most of the built-in parts can easily be connected from both sides.

LOW HEIGHT

- Total height is only 360 mm.

Construction

Thanks to their original frameless structure AeroMaster FP units are characterized by top parametres according to the European standard EN1886.

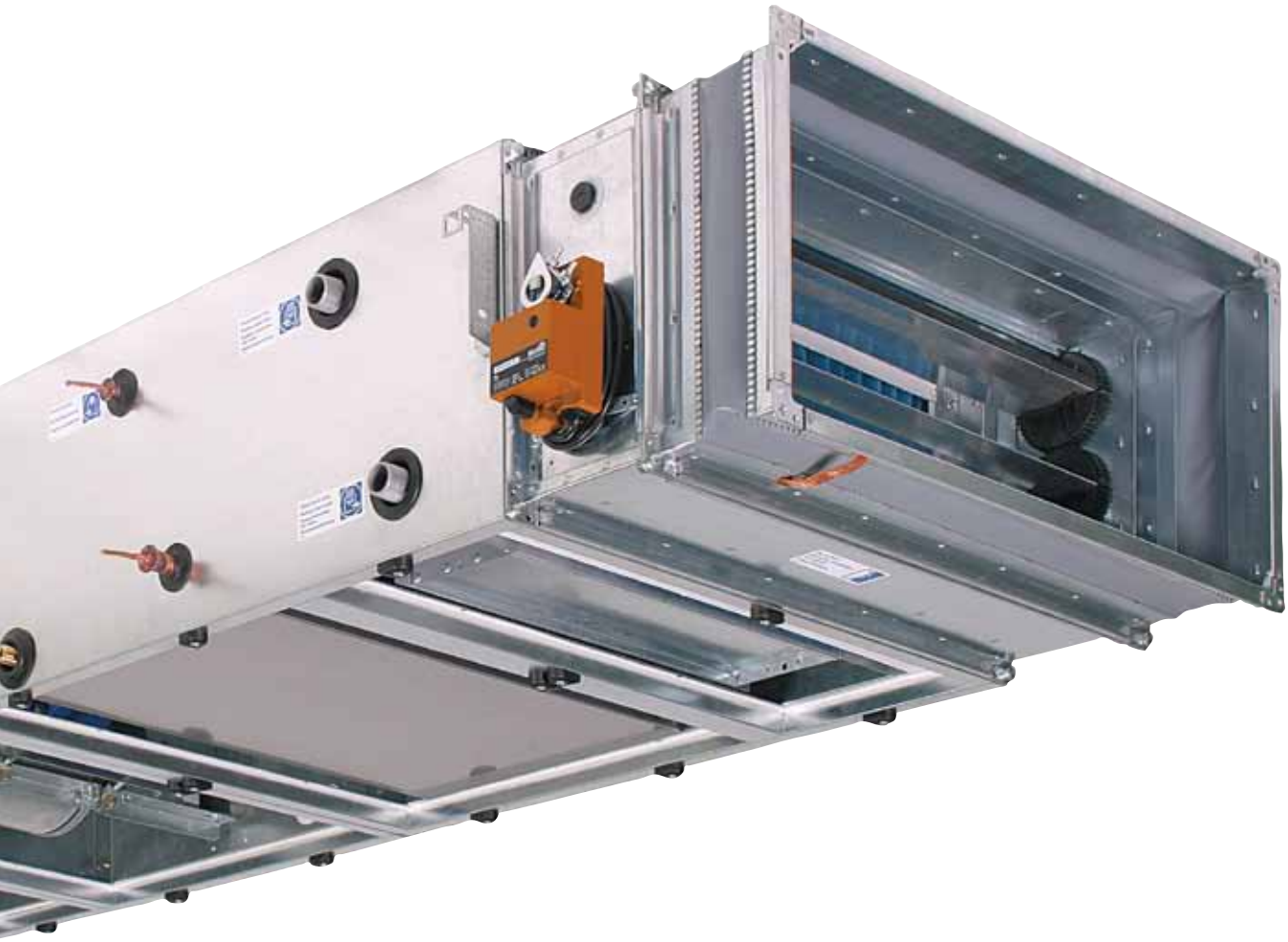
Casing mechanical strength	D2
Casing air leakage	L3
Filter bypass leakage	< 1% (F8)
Thermal insulation	T3
Thermal bridging	TB2
acoustic insulation of casing	Dpr, w= 28 dB
Working temperature	-40 ~ +40°C

MODERN FRAMELESS CONSTRUCTION

TOTALLY SMOOTH SURFACE

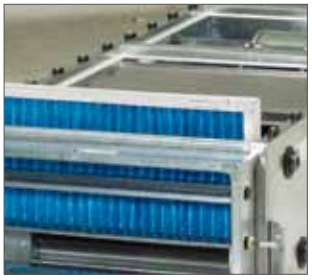
FANS WITH OVERHUNG IMPELLER

Construction



ELECTRIC HEATERS WITH SWITCHED ELECTRONICS

HEAT EXCHANGERS WITH INTEGRATED BYPASS



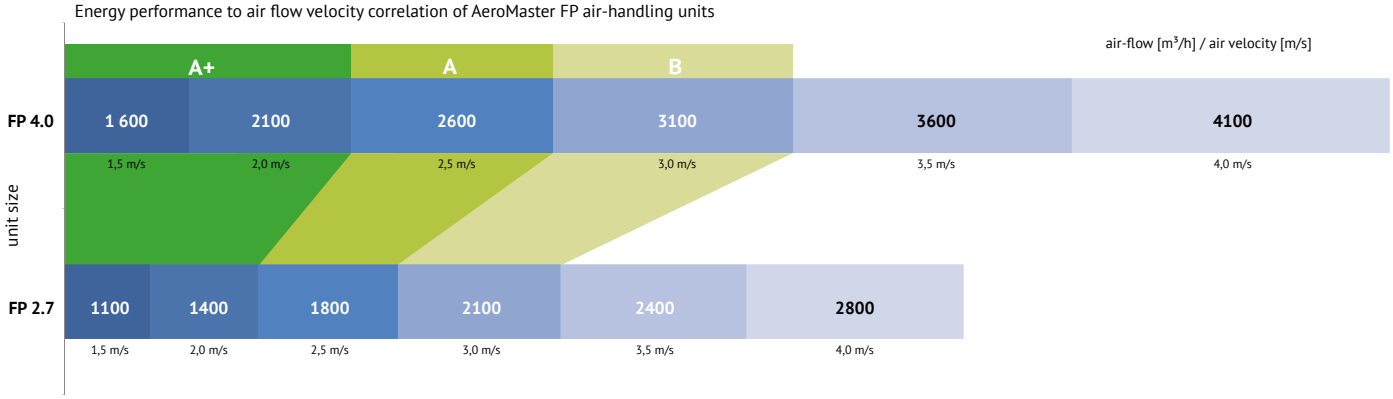
EASILY REMOVABLE FILTERS

SIDE HANGINGS FOR EASY INSTALLATION

Outputs and functions

AEROMASTER FP UNITS OUTPUTS

Energy performance to air flow velocity correlation of AeroMaster FP air-handling units



Pressure difference of fans:

- up to 1000 Pa

Inlet air temeperature:

- -40°C ~ +40°C

FP 4.0 series dimensions:

- Full cross-section 995 x 360
- Inside cross-section 915 x 360

FP 2.7 series dimensions:

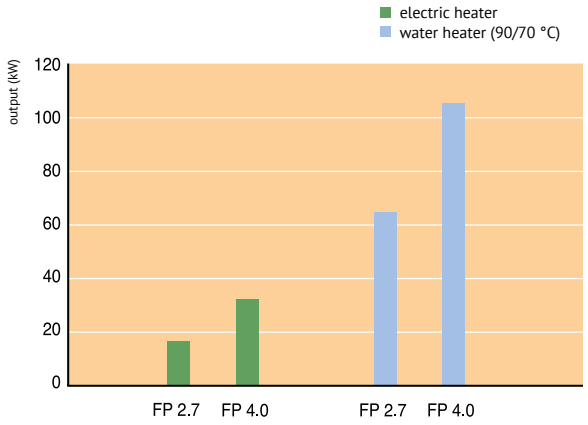
- Full cross-section 690 x 360
- Inside cross-section 610 x 310

FUNCTIONS

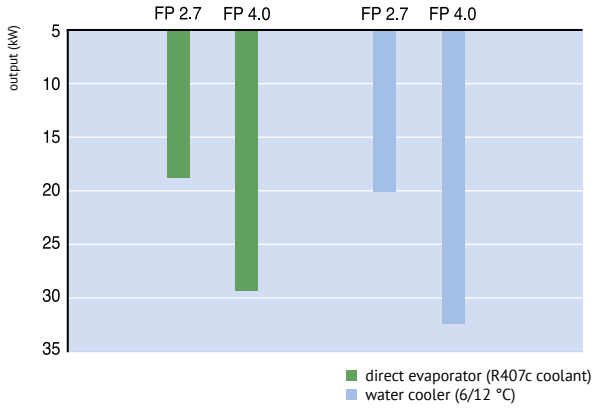
AeroMaster FP units basic functions				
Function		Version 1	Version 2	Version 3
	Fans	with backward curved blades		
	Heating	electric	water	
	Cooling	water	direct	
	Heat recovery	plate exchanger		
	Humidication			
	Mixing			
	Filtration	Coarse 50% (metal filtration cell)	Coarse 50%–ePM1 80% (bag filter)	Coarse 60% (frame filter)
	Noise attenuation	absorption splitter noise attenuators		

Outputs and functions

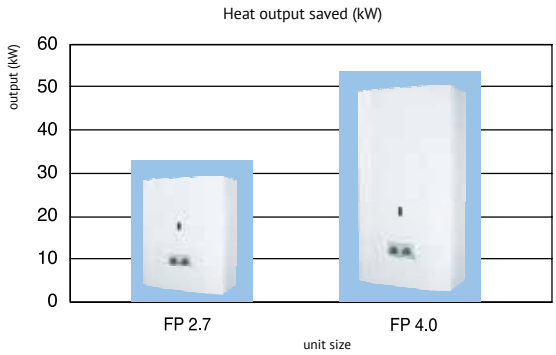
OUTPUT OF HEATERS



OUTPUT OF COOLERS

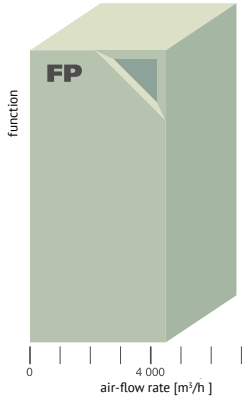


HEAT EXCHANGERS



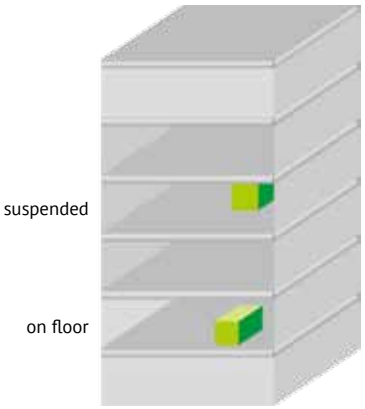
Choce of equipment and composition of units

ACCORDING TO OUTPUT AND FUNCTIONS



- transport of air
- heating (electric, water)
- cooling (direct, water)
- filtration
- elimination of drops
- heat recovery
- mixing

ACCORDING TO LOCATION



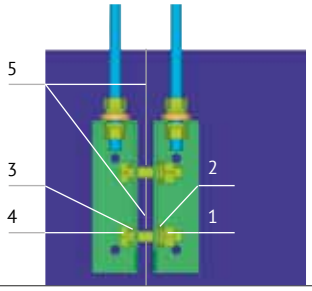
THE COMPOSITION OF THE UNIT SECTIONS IS DONE ACCORDING TO THE POSITIONAL NUMBERS.

These numbers are listed in the printed composition, which is a delivery component, and on the manufacturing plate of each section.

Assembly and connection

ASSEMBLY OF UNITS

HOW TO CONNECT SECTIONS AND SUSPEND UNIT



1 M8 nut
2 8,2 spring washer
3 8,4 ring washer
4 M8x35 screw
5 self-adhesive seal

Bolted connections ensure a firm connecting of the unit's sections. The connecting of a unit that is composed of three sections can be done in 30 minutes.

SUSPENSION

USE OF ATTENUATING ELEMENTS

We recommend suspending the unit by means of attenuating elements (they are not a delivery component).

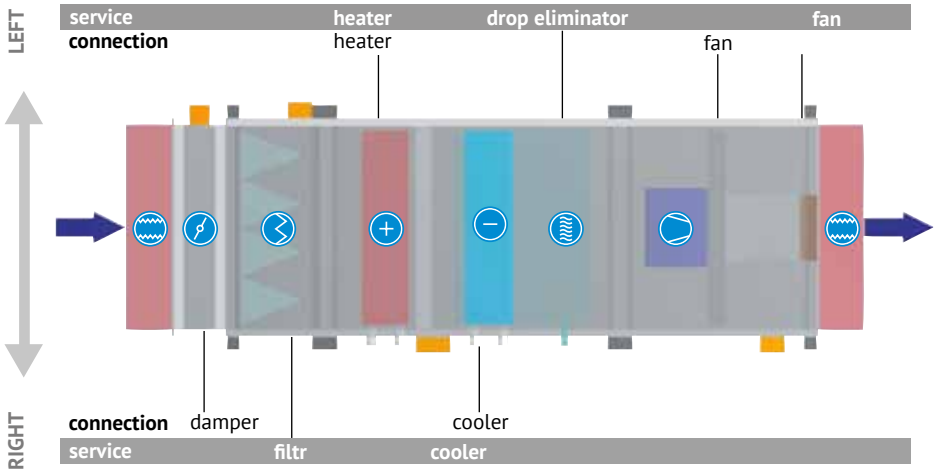
CONNECTING OF THE DUCTWORK

The connecting of the air-handling ductwork must be done with the help of an elastic connection that prevents the transmission of vibration and eliminates an eventual incongruity of the duct canal and the outlet opening from the unit.

MEDIA CONNECTION

During assembly, all connections (water, freon etc.) must be done on the external side of the unit. The internal connection is done during manufacture. The appropriate connecting spots are designated by plates.

UNIQUE SIDE VARIABILITY FOR CONNECTIONS AND ACCESSES



The construction of the units makes it possible to combine the sides for the power connections and service accesses.

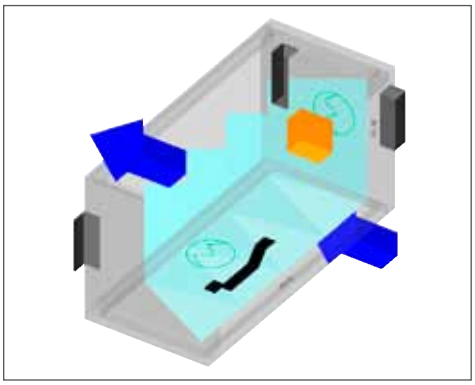
MEANING OF SYMBOLS

- attenuating insert
- air valve
- air filter
- heater
- cooler
- drop eliminator
- fan

Construction of units

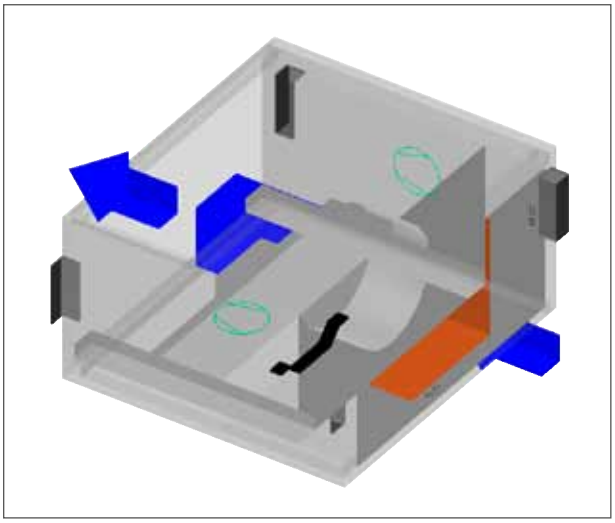
MODULE

The module of the FP unit (310 mm) is a basic length parameter. The length of a section or co-section is always its multiple.



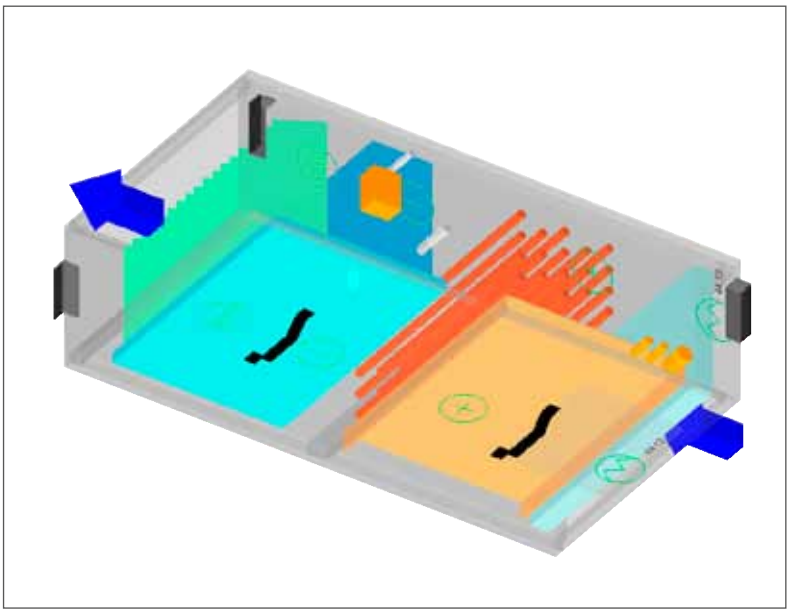
SECTION

A section is the basic constructional element of AeroMaster FP units.
An insert, i.e. an active element (fan, heater, cooler etc.) is located inside a section.



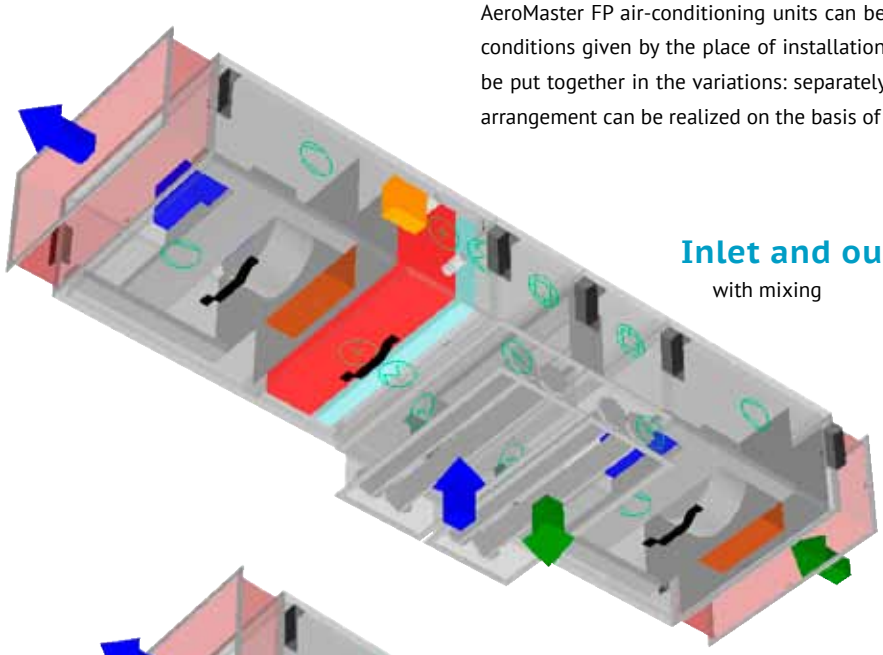
CO-SECTION

A co-section is a multi-functional block with the best possible joining of sections into a whole.



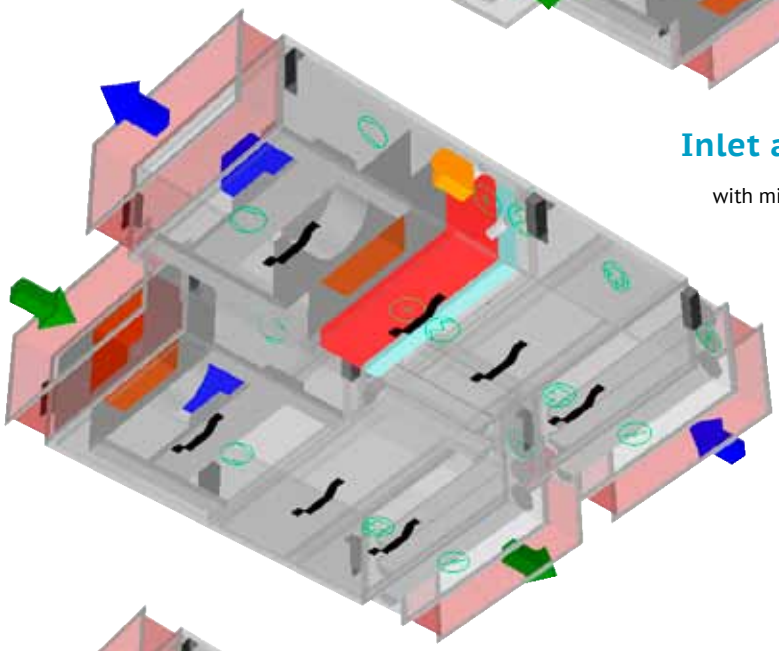
Joint arrangement

AeroMaster FP air-conditioning units can be put together in a variety of ways so that they suit the conditions given by the place of installation. In the standard version, the inlet and outlet part can be put together in the variations: separately, one behind the other, next to each other. An atypical arrangement can be realized on the basis of a suitable specific offer.



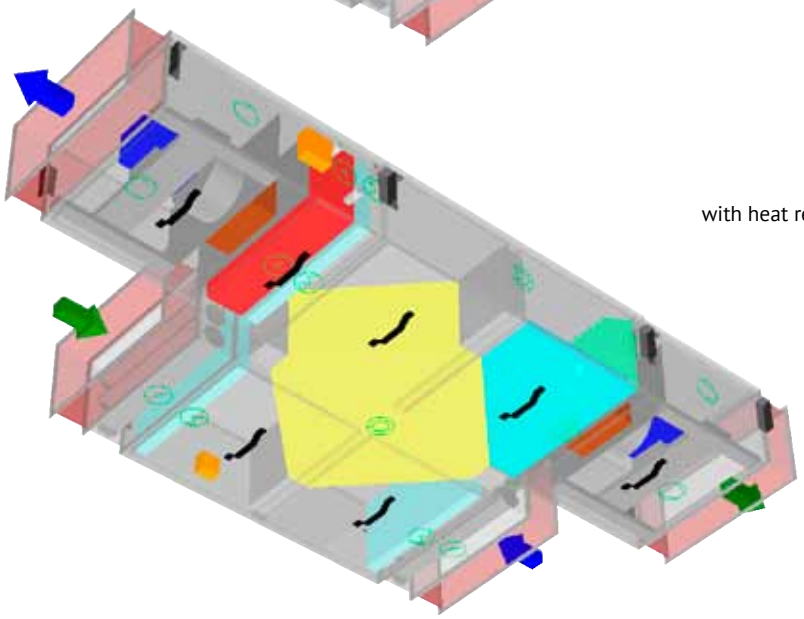
Inlet and outlet, ONE BEHIND THE OTHER

with mixing



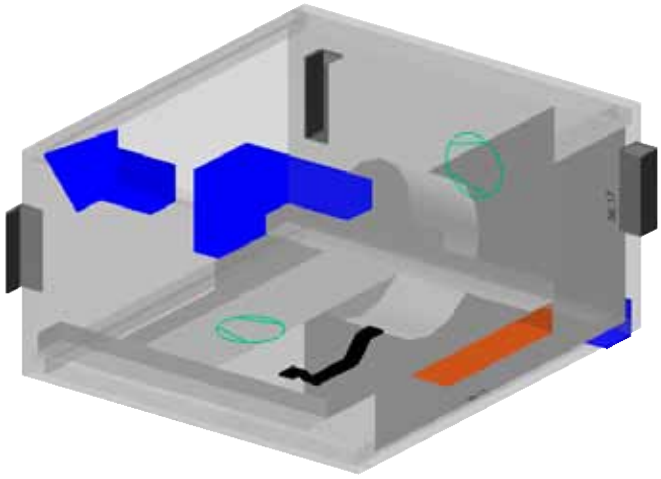
Inlet and outlet, NEXT TO EACH OTHER

with mixing



with heat recovery

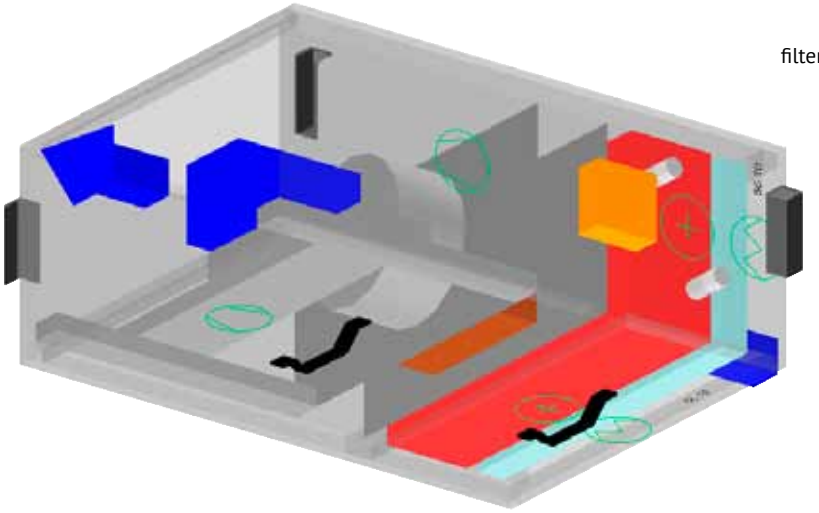
Examples of compositions



COMPOSITION 1

fan section

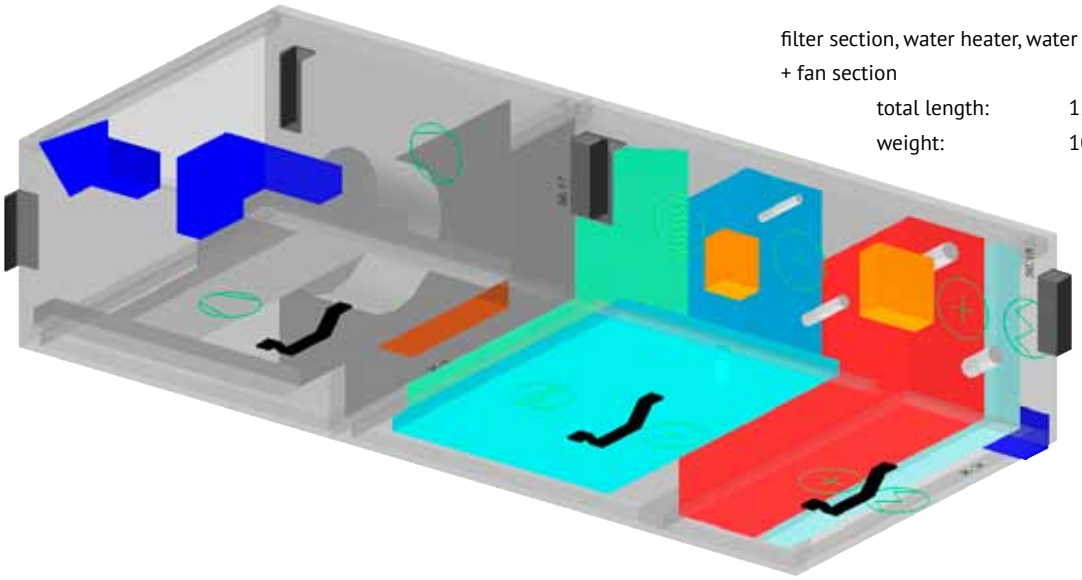
total length:	620	mm
weight:	46	kg



COMPOSITION 2

filter section, water heater, fan

total length:	930	mm
weight:	65	kg

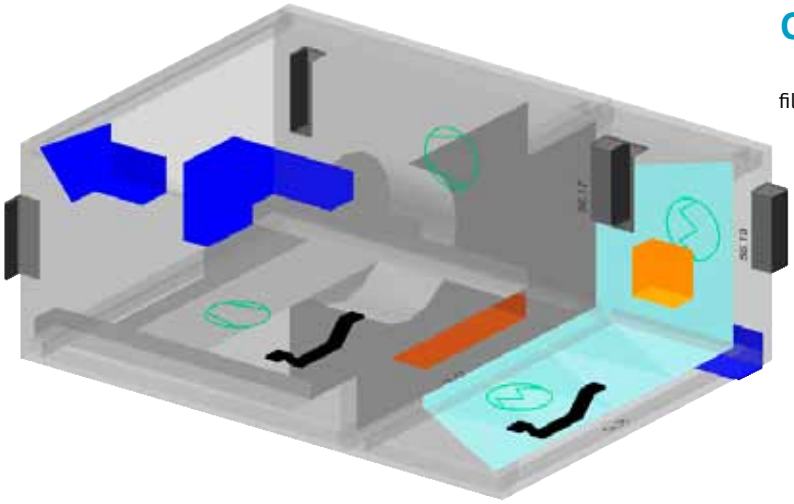


COMPOSITION 3

filter section, water heater, water cooler, drop eliminator + fan section

total length:	1550	mm
weight:	102	kg

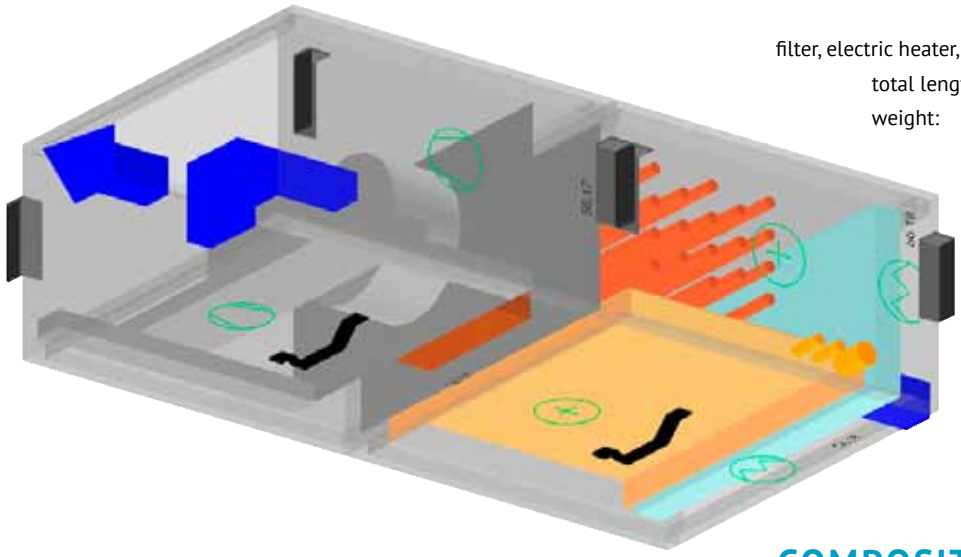
Examples of compositions



COMPOSITION 4

filter section + fan section

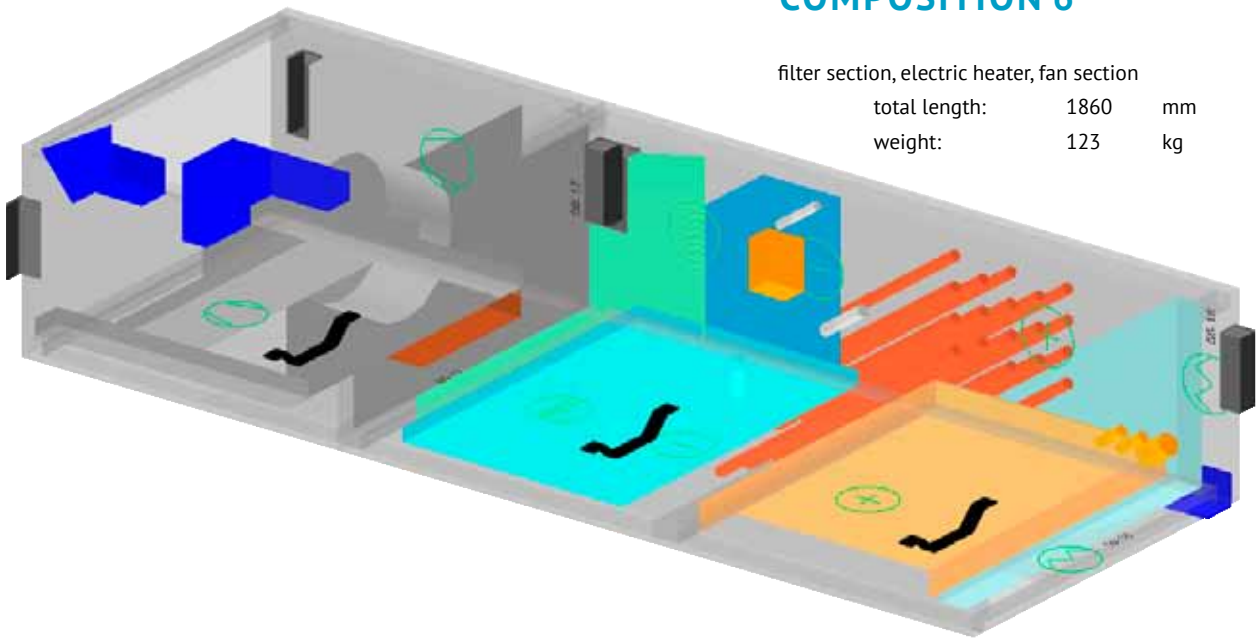
total length:	930	mm
weight:	62	kg



COMPOSITION 5

filter, electric heater, fan section

total length:	1240	mm
weight:	84	kg



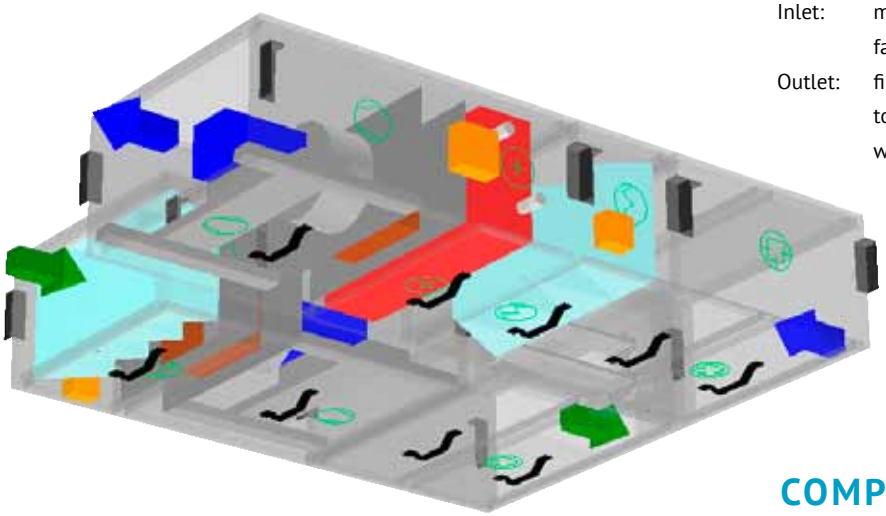
COMPOSITION 6

filter section, electric heater, fan section

total length:	1860	mm
weight:	123	kg

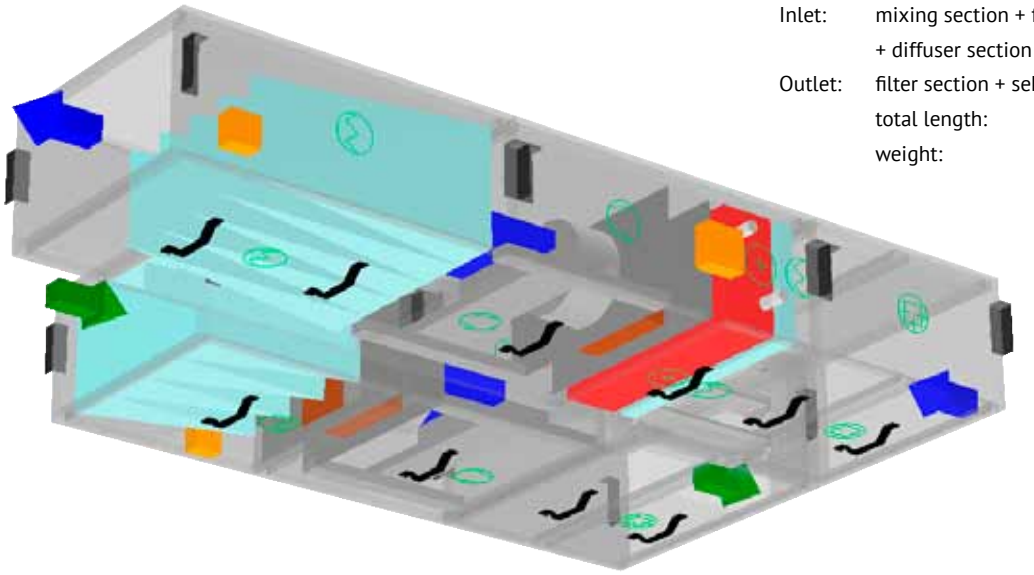
Examples of compositions

COMPOSITION 7



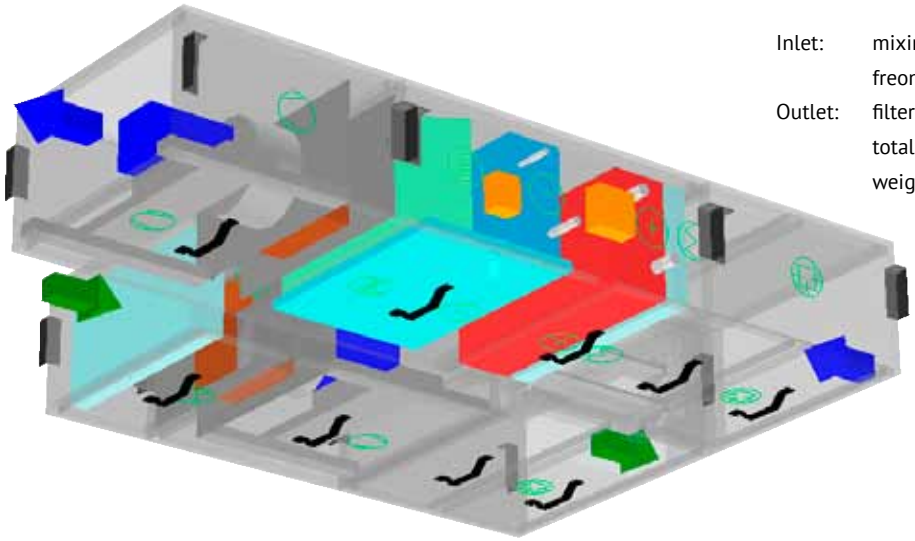
Inlet: mixing section + filter section + water heater, fan sec
Outlet: filter section + fan section + mixing section
total length: 1860 mm
weight: 194 kg

COMPOSITION 8



Inlet: mixing section + filter section, water heater, fan + diffuser section + filter section
Outlet: filter section + sekce fan + mixing section
total length: 2790 mm
weight: 239 kg

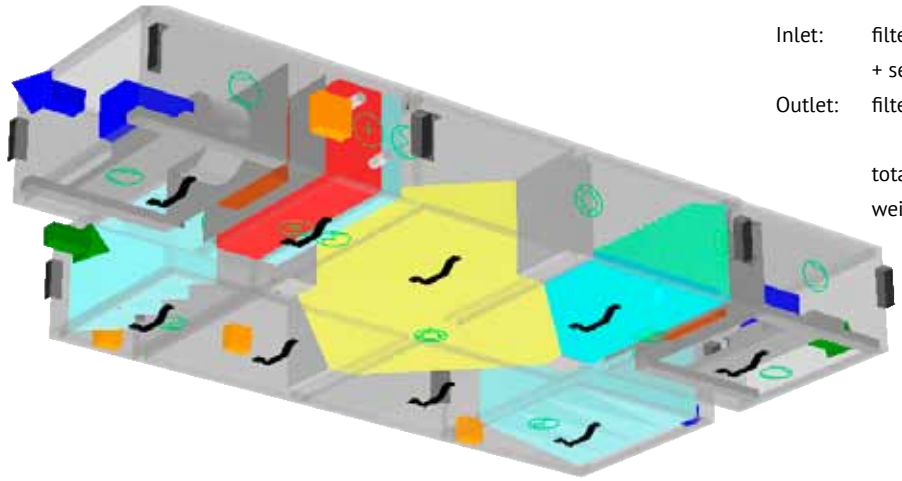
COMPOSITION 9



Inlet: mixing section + filter section, water heater, freon cooler, drop eliminator + sekce fan
Outlet: filter section + fan section + mixing section
total length: 2170 mm
weight: 216 kg

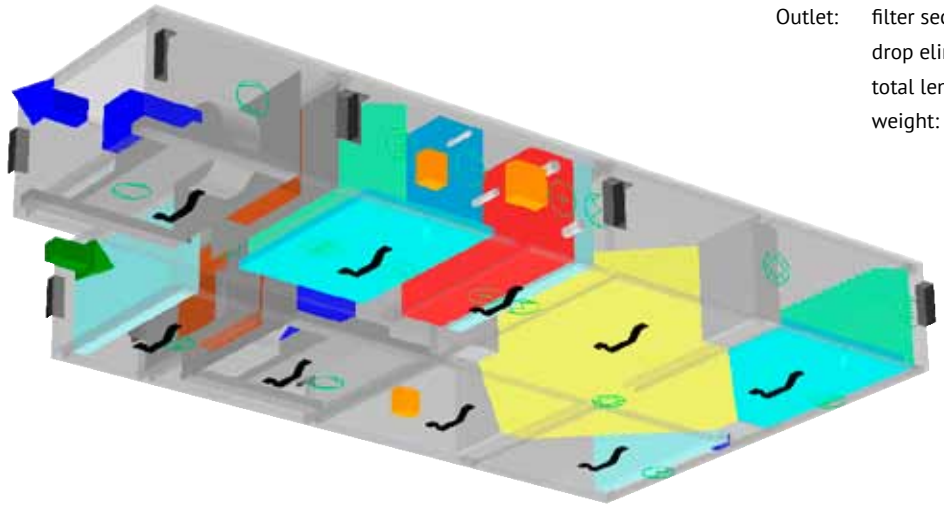
Examples of compositions

COMPOSITION 10



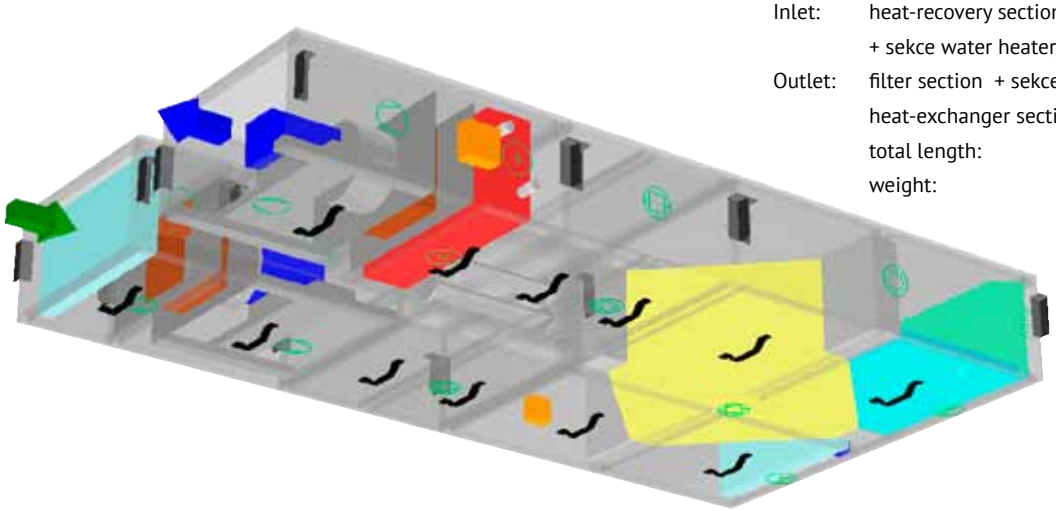
Inlet: filter section + heat-recovery section, bypass + sekce water heater, fan
Outlet: filter section + heat-exchanger section, eliminátor kapek + sekce fan
total length: 2790 mm
weight: 285 kg

COMPOSITION 11



Inlet: heat-recovery section, filtr, bypass + sekce water heater, water cooler + fan section
Outlet: filter section + sekce fan + heat-recovery section, drop eliminator
total length: 2790 mm
weight: 300 kg

COMPOSITION 12



Inlet: heat-recovery section, filtr, bypass + mixing section + sekce water heater, fan
Outlet: filter section + sekce fan + mixing section + heat-exchanger section, drop eliminator
total length: 2790 mm
weight: 315 kg

Fans

FPSA FAN SECTION

CHARACTERISTICS

Fan with overhung impeller.

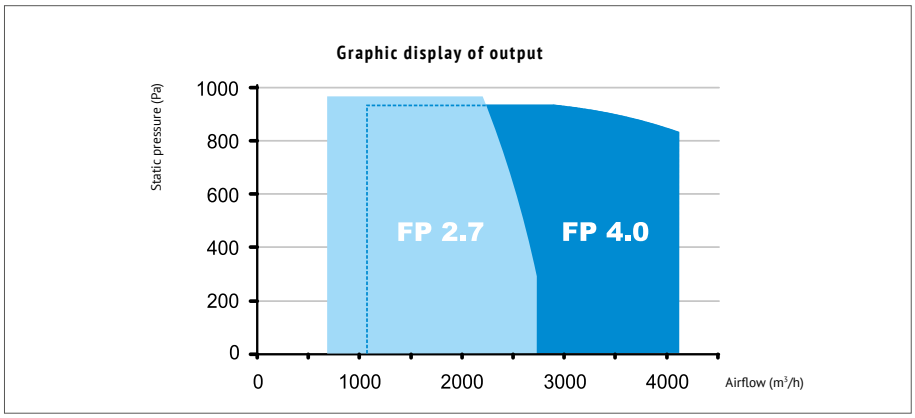
PARAMETERS

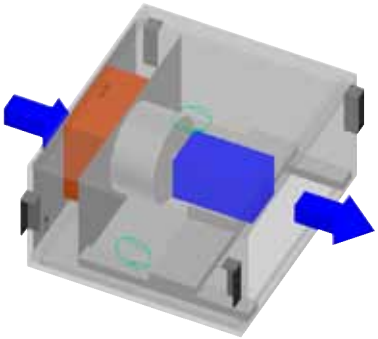
Electric voltage:

- 3 × 400 V / 50 Hz

Wiring:

- up-to 3 kW 230 VD / 400 VY
- above 3 kW 400 VD / 690 VY





CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

Impeller:

- An overhung impeller with backward curved blades made of sheet steel
- A steel diffuser on the inlet side.

Motor:

- Single-speed asynchronous motors with a short-circuit armature.

Transmission mounting:

- The impeller is mounted on the motor's shaft. The motor is mounted on s base which is connected to the casing using anti-vibration silent-blocks.

CONTROL AND PROTECTION

Protective elements:

- As standard, these motors are equipped with thermo-contacts in the winding.

Control:

- The motors must be controlled using frequency inverters to achieve the working point.

FPSG DIFFUSER SECTION

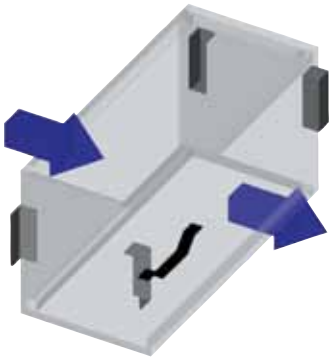
CHARACTERISTICS

The diffuser section is located behind the fan section that has a fan with overhung impeller in those cases where a section requiring an even flow throughout the whole cross-section follows in the composition.

PARAMETERS

Weight including insert (kg):

- FPSG FP 2.7 14,5
- FPSG FP 4.0 19,0



RECOMMENDATION

The diffuser section must be installed behind the FPSA fan section in those cases where, for example, a section with an attenuator, exchanger, filter etc. follows.

Noise-attenuation

FPSP NOISE-ATTENUATOR SECTION

CHARACTERISTICS

The absorption splitter noise attenuators are intended for suppressing the noise that is emitted by the fans on both the intake and exhaust.

Excellent attenuating characteristics, long service life of the splitters.

PARAMETERS

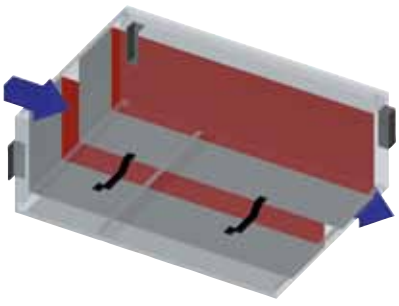
Weight including insert (kg):

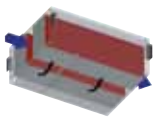
- FPSP FP 2.7/K 49 (short 930 mm)
- FPSP FP 4.0/K 68 (short 930 mm)
- FPSP FP 2.7/S 68 (medium 1240 mm)
- FPSP FP 4.0/S 94 (medium 1240 mm)

Inserted attenuation De (dB) at 250 Hz				
Length of section	930 mm		1240 mm	
Sizes	2,7	4,0	2,7	4,0
Inserted attenuation	16 dB	15 dB	20 dB	20 dB
Number of splitters	2	3	2	3

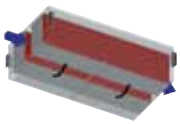
CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

- The sections are equipped with TKU splitters. The splitters consist of a moulded frame made of zinc-coated sheet metal and a filling which forms an insulating panel 200 mm thick and which is covered on the sides with an unwoven spun-glass textile.





930 mm length



1240 mm length

RECOMMENDATION

It is possible to provide the noise attenuation also with external attenuators inside the duct.

FPSH FILTER SECTION – FRAME FILTER

CHARACTERISTICS

They are intended to be used as fore-filters or as single-stage filtration in less demanding applications. Easy replacement of the filtration insert, low price.

PARAMETERS

Filtration class:

- Coarse 60%

Final pressure loss at the nominal flow:

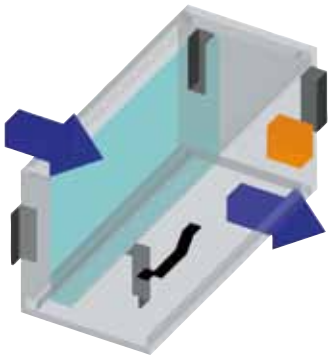
- 250 Pa

Weight including insert (kg):

- FPSH FP 2.7 (frame filter) 14,5
- FPSH FP 4.0 (frame filter) 18,0

CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

- The frame filter is manufactured from folded synthetic filtration material.
- The filtration insert is set into a stiff cardboard frame.



RECOMMENDATION

- If there is a reduced cross-section in front of the filtration section, we recommend inserting an empty chamber to increase the effective filtration surface.
- Filtration inserts cannot be regenerated.
- When there are large fluctuations in moisture, we recommend checking the stability of the cardboard frame.

Filters

FPSH FILTER SECTION – BAG FILTER

CHARACTERISTICS

- Intended for the 1st to 3rd filtration stage depending on the class of filtration textile used.
- Completely tight, large filtration surface, high capacity

PARAMETERS

Temperature resistance: 70 °C

Třída filtrace:

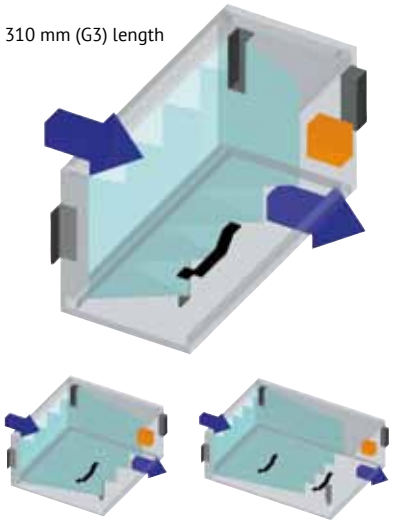
Coarse dust filters	Coarse 50%, Coarse 60%
Medium dust filters	ePM10 60%
Fine dust filters	ePM2.5 65%, ePM1 70%, ePM1 80%

Weight including insert (kg):

FPSH FP 2.7/K	13,8	(bag filter)
FPSH FP 4.0/K	18,6	(bag filter)
FPSH FP 2.7/S	23,8	(bag filter)
FPSH FP 4.0/S	30,1	(bag filter)
FPSH FP 2.7/D	33,8	(bag filter)
FPSH FP 4.0/D	45,1	(bag filter)

CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

The bag filtration insert is manufactured from synthetic filtration material sewn into pockets in the plastic frame.



USE

Bag filters of the Coarse 50% and Coarse 60% class are used as the only filtration stage in less demanding applications or as fore-filters and for the first filtration stage to extract the coarser dust particles.

Bag filters of the ePM10 60%, ePM2.5 65%, ePM1 70% and ePM1 80% class are used as the second filtration stage; the M5 and F7 class is also used as the only (fine) filtration stage. ePM1 70% and ePM1 80% filters are always used as the second or sometimes third filtration stage when there are high requirements on the quality of filtration for atmospheric dust.

MAINTENANCE

Filtration inserts cannot be regenerated.

FPSH FILTER SECTION – METAL FILTRATION CELL

CHARACTERISTICS

These filtration sections are frequently used as fore-filters to catch high concentrations of the coarsest dust particles (foundries, smelting works etc.), but their main usage is to catch grease and oil aerosols at the exhaust from bakeries, kitchens, grills etc.

PARAMETERS

Filtration class:

- Coarse 50%

Final pressure loss at nominal flow**:**

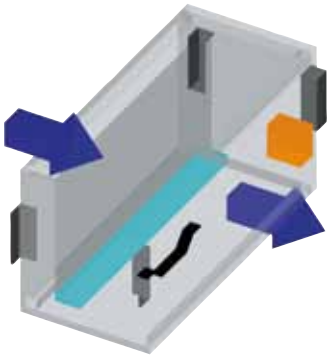
- 120 Pa

Weight including insert (kg):

- **FPSH FP 2.7/K** 13,8 (metal filtration cell)
- **FPSH FP 4.0/K** 18,6 (metal filtration cell)

CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

- The cell is composed of layers of adapted galvanized wires inserted between metal grids. The filter's frame is manufactured from galvanized steel.
- The grease-filter sections are equipped with grease filters of the Coarse 50% filtration class according to ČSN EN ISO 16890; the metal filtration sections form their active part.
- In addition, the grease-filter insert is furnished with a stainless tray to catch the extracted waste particles (greases, oils).
- Easy to clean.



MAINTENANCE

- The maintenance of the filters consists in removing them from the section and washing in hot water (max. 80 °C) and detergent.
- The stainless tray is affixed to the filter, and it can be cleaned.

Mixing

FPSI MIXING SECTION – SHORT

CHARACTERISTICS

- It ensures the joint mixing of the inlet and outlet air in the required proportion.
- The mixing can be set in the range of 0–100%.

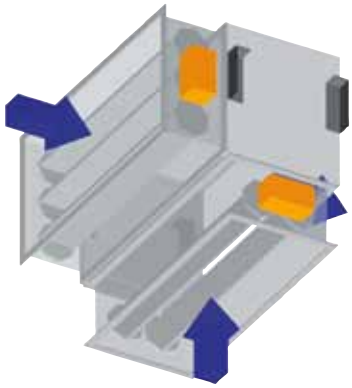
PARAMETERS

Weight including insert (kg):

FFPSI 2.7	8,5	(short 310 mm)
FPSI 4.0	9,7	(short 310 mm)

CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

- The mixing section consists of a chamber equipped with a system of external dampers that ensure the required manner of mixing.
- The mixings sections are manufactured with variable locations for the dampers.
- You can find more detailed information in the AeroCAD graphic design system.
- The short sections are intended for the installation of the external dampers.
- Short constructional length.



RECOMMENDATION

In order to control the dampers, it is expedient to order the LM 24X actuator, which has proportional control.

FPSD MIXING SECTION – LONG

CHARACTERISTICS

- It ensures the joint mixing of the inlet and outlet air in the required proportion.
- The mixing can be set in the range of 0–100%..

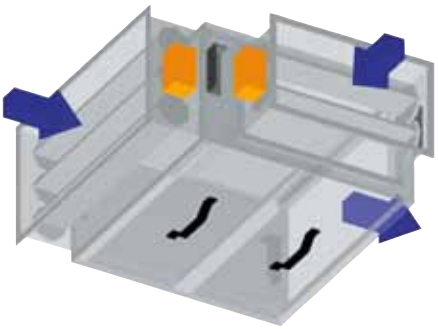
PARAMETERS

Weight including insert (kg):

FFPSD 2.7	8,5	(long 620 mm)
FPSD 4.0	9,7	(long 620 mm)

CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

- The mixing section consists of a chamber equipped with a system of external dampers that ensure the required manner of mixing.
- The mixings sections are manufactured with variable locations for the dampers. You can find more detailed information in AeroCAD.
- The long sections are intended for the installation of the internal and external dampers.
- Easy to clean.



RECOMMENDATION

In order to control the dampers, it is expedient to order the LM 24X actuator, which has proportional control.

Heat Recovery

FPSX PLATE HEAT-EXCHANGER SECTION

CHARACTERISTICS

- The plate heat exchanger ensures the transmission of heat from the outlet air to the inlet air by means of the large surface of the aluminum exchanger.
- Perfect separation of the inlet and outlet air.

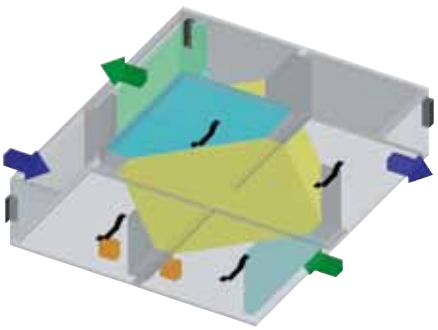
PARAMETERS

- Efficiency up-to 50 %
- Max. airflow velocity 3 m/s

Weight including insert (kg):

- **FPSX 2.7** 129
- **FPSX 4.0** 175

Energy savings in dependence on the efficiency of the heat exchanger



CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

Heat-transmission surface:

- The plate exchanger is made of aluminum vanes.
  The section is delivered in a version with a bypass and is furnished with a bypass damper.
- The section is equipped with a tray for draining off the condensate, the outlet of which ends with a G 1/2“ thread for mounting the siphon.

RECOMMENDATION

It is always expedient to equip the section with removable drop eliminators.
In front of the heat exchanger, it is always necessary to install a filter which protects the heat-transmission insert from contamination.

FPSO DOUBLE SECTION – FILTER (FRAME) + EL. HEATING

CHARACTERISTICS

- The filtration insert is easy to replace.

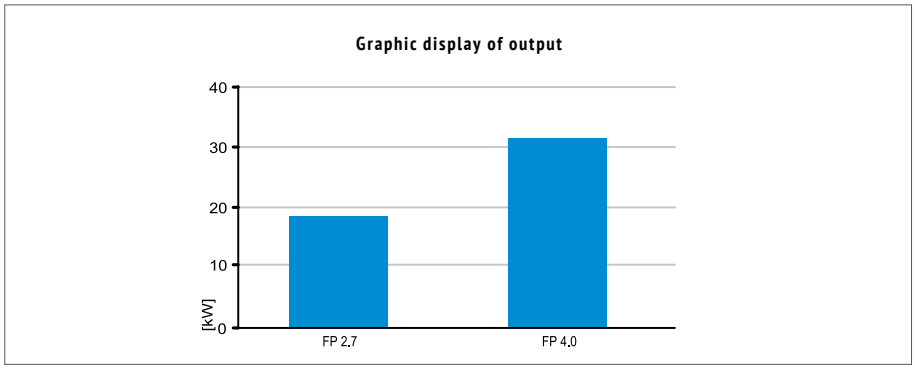
PARAMETERS

Power supply:
- 3 × 400 V / 50 Hz

Electric protection:
- IP 44

Min. airflow velocity:
- 1,5 m/s

Weight including insert (kg):
- **FFPSO 2.7** (12 kW – EOS)
- **FPSO 4.0** (22 kW – EOS)



- Note:
  Weights are listed in the documentation from the AeroCAD design software

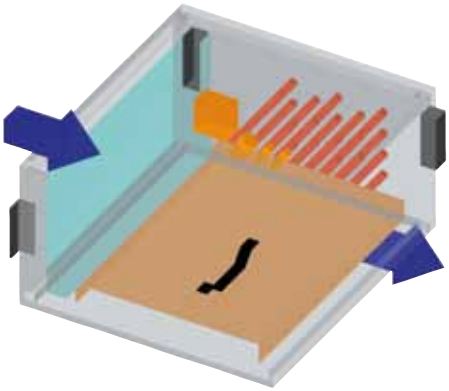
Outputs								
Sizes	**Output of heating rods (kW)**	**Output of inserts EO, EOS (kW)**						
FP 2.7	1	3	5	6	9	12	15	18
FP 4.0	1,5	4,5	7,5	9	13,5	18	22,5	31,5
Sizes	**Output of heating rods (kW)**	**Output of inserts EOSX (kW)**						
FP 2.7	1	6	9	12	15	18	–	–
FP 4.0	1,5	9	13,5	18	22,5	31,5	–	–

CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

Heat-transmission surface:
- Heat transmission is provided by coiled stainless heating rods that have a large heat-transmission surface.

Připojení:
- Connection is made easy by connecting the power-supply cable to the prepared terminals in the wiring box.

Variations:
- EO – contactor switching
- EOS – semiconductor switching
- EOSX – switching by sections



CONTROL AND PROTECTION

Protection elements:
- The heaters are furnished with two-stage protection by means of independent thermostats.
- REMAK control units provide ideal control.

RECOMMENDATION

The heat-transmission surface must be protected from contamination by a filter.

Co-section

FPSY DOUBLE SECTION – WATER COOLER + ELIMINATOR

CHARACTERISTICS

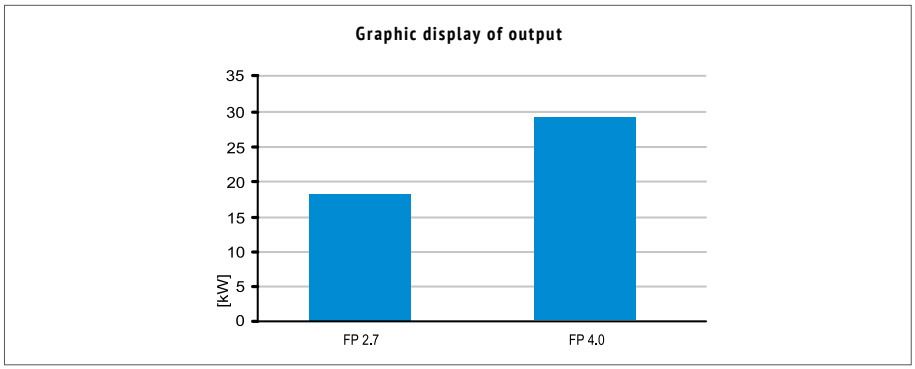
- Stainless tray with G1/2“ condensate outlet

PARAMETERS

- Pressure of cooling water max. 1,6 MPa

Weight including insert (kg):

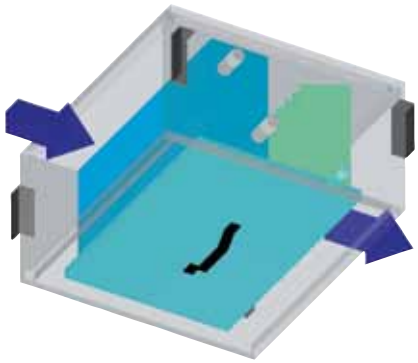
- **FPSY 2.7** 35,2 (3-row. CHV)
- **FPSY 4.0** 46,9 (3-row. CHV)



CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

Heat-transmission surface:

- The water cooler forms the insert. Aluminum vanes, which are put onto copper tubes and overlapped, form the heat-transmission surface.



Connection:

- Connection of the water cooler: G 1“ thread
- The section is equipped with a stainless tray and a condensate outlet.

RECOMMENDATION

The heat-transmission surface must be protected from contamination by a filter.

FPSY DOUBLE SECTION – DIRECT COOLER + ELIMINATOR

CHARACTERISTICS

- Stainless tray with G1/2“ condensate outlet

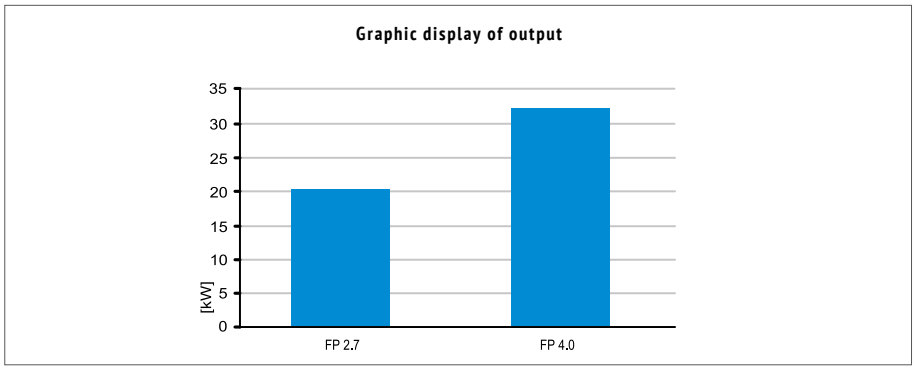
PARAMETERS

Coolant:

- Standard R407
- Upon request R410 etc.

Weight including insert (kg):

- **FPSY 2.7** 35,7 (3-row. CHF)
- **FPSY 4.0** 47,2 (3-row. CHF)



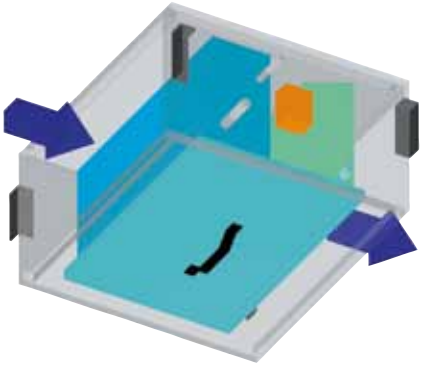
CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

Heat-transmission surface:

- The direct cooler forms the insert. Aluminum vanes, which are put onto copper tubes and overlapped, form the heat-transmission surface.

Connection:

- The direct cooler is filled with a protective nitrogen atmosphere.
- The section is equipped with a stainless tray and a condensate outlet.



RECOMMENDATION

The heat-transmission surface must be protected from contamination by a filter.

Co-section

FPSC CO-SECTION – FILTER (FRAME) + WATER HEATING + FAN

CHARACTERISTICS

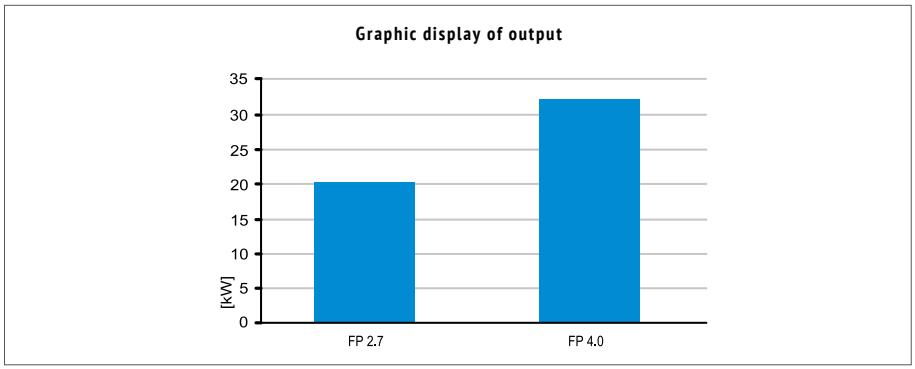
- The multi-functional mono-block makes easy and fast installation possible.

PARAMETERS

- Max. temperature of heating water. 110 °C
- Max. pressure of heating water 1,5 MPa

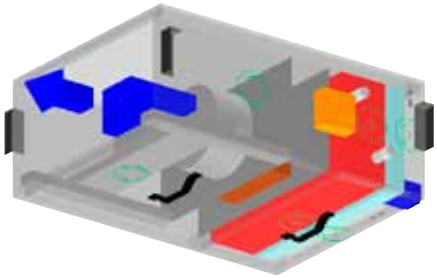
Weight including insert (kg):

- **FPSC 2.7** 76,7 (for a motor with a stroke height of 90mm, 3-row VO)
- **FPSC 4.0** 106,2 (for a motor with a stroke height of 100 mm, 3-row VO)



CONSTRUCTION, TYPE AND MATERIAL VARIATIONS

- The outer casing of the exchangers is manufactured from zinc-coated sheet metal.
- The water heaters are made of Cu tubes with a diameter of 12 mm (geometry) upon which Al vanes are put and overlapped with a spacing of 2.1 mm.
- The collectors and connecting necks are welded from steel pipes.
- All heaters are tested for air-tightness at a pressure of 3.6 Mpa under water at a temperature of 10–30 °C.



CONTROL AND PROTECTION

- As standard equipment, the water heaters have TACO self-de-aeration valves.
- The SUMX mixing set can added.

RECOMMENDATION

- Always install the filter in front of the heater.

RECOMMENDED ACCESSORIES

- NS 130 anti-freeze feeler.
- SUMX mixing set.

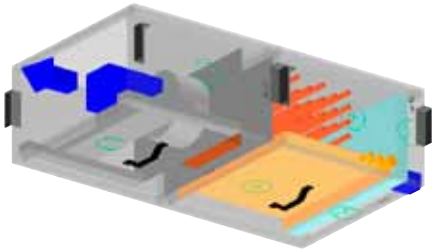
FPSE CO-SECTION – FILTER (FRAME) + EL. HEATING + FAN

CHARACTERISTICS

- The multi-functional mono-block makes easy and fast installation possible.

Weight including insert (kg):

FPSE 2.7	96,5	(for a motor with a stroke height of 90mm, 12 kW EOS)
FPSEC 4.0	132,0	(for a motor with a stroke height of 100mm, 22 kW EOS)



- Note:
  weights for other combinations are given in the documentation from the AeroCAD design software

FPSV CO-SECTION - FILTER (FRAME) + WATER HEATING + COOLER + ELIMINATOR

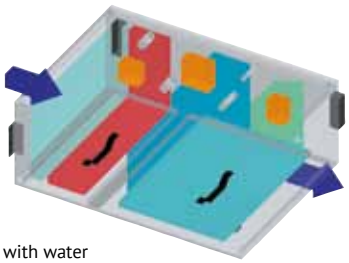
CHARACTERISTICS

- The multi-functional mono-block makes easy and fast installation possible.

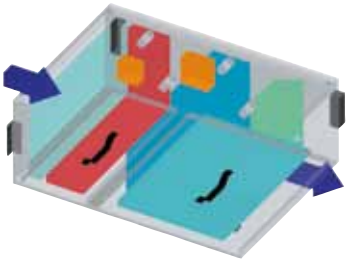
Weight including insert (kg):

FPSV/V 2.7	53,4	(3-row VO, CHV)
FPSV/V 4.0	73,1	(3-row VO, CHV)

Co-section with direct evaporator

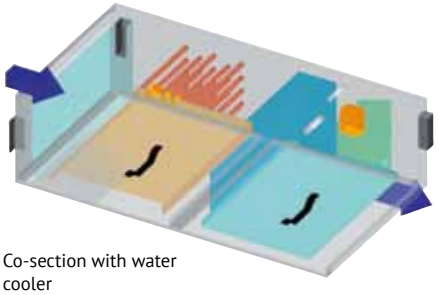


Co-section with water cooler

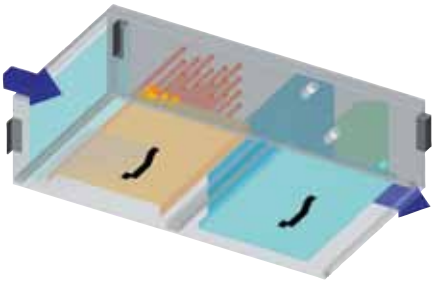


Co-section

Co-section with direct evaporator



Co-section with water cooler



FPSW CO-SECTION – FILTER (FRAME) + ELECTRIC HEATING + COOLER + ELIMINATOR

CHARACTERISTICS

- The multi-functional mono-block makes easy and fast installation possible.

Weight including insert (kg):

FPSV/F 2.7	53,9	(3-row VO, CHF)
FPSV/F 4.0	73,4	(3-row VO, CHF)

- Note:
  weights for other combinations are given in the documentation from the AeroCAD design software

Issued: 7th March 2022

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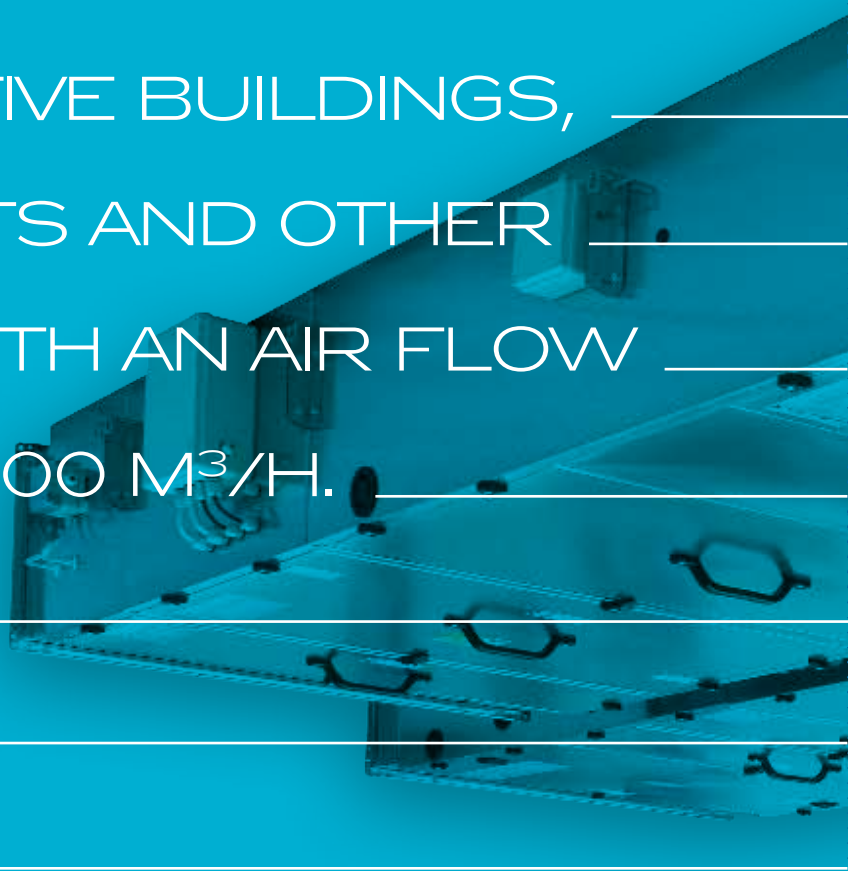

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