

# Antway

Specialists in HVAC engineering



# STRUCTURE FOR FITTING HIGH-EFFICIENCY FILTERS

## NBP Non By Passable

Industry - Pharmaceuticals - Agro-foodstuffs - Tertiary sector

# New structure for fitting high-efficiency filters for unidirectional flows and for turbulent flows:

## THE PRINCIPLE

The principle of NBP (= Non-ByPassable) tightening combines the advantages of both box-type filters (i.e. with no communication with technical premises) and sandwich-type filters (i.e. non-bypassable).

## SECURITY

NBP (Non By-Passable) assembly is inviolable, eradicating the risk of a peripheral integrity failure.

## APPLICATION

- The patented principle is used with a special structure in heavy section anodised aluminium.
- It is used for unidirectional flows and for isolated filters in turbulent flows.
- The mechanical tightening of the filter does not rest on mounting pegs, but on the entire frame.
- The filter frame does not have to be rigid, which means that non-metal frames can be used.
- The principle can be adapted to all commercially available panel filters regardless of dimensions and thickness.

## ANTWAY'S NBP SYSTEM

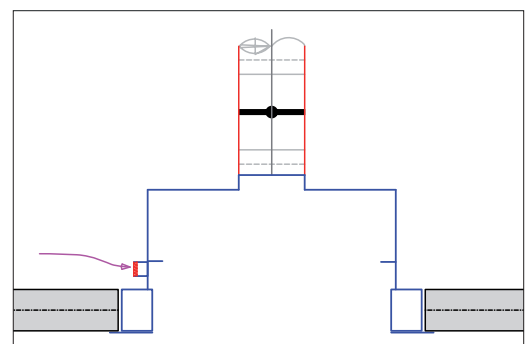
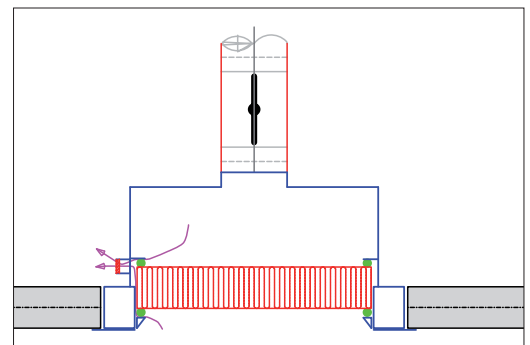
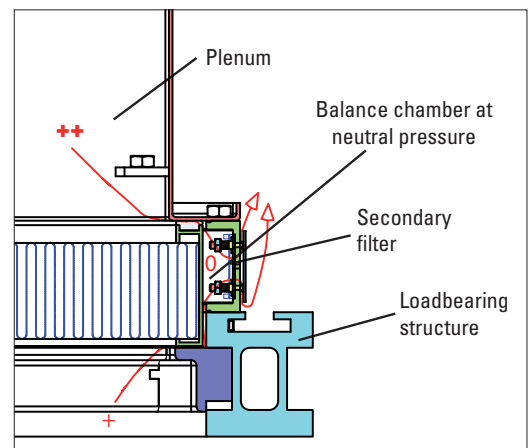
The filter has a joint on either side and is tightened between flanges (sandwich) but inside the specific box which ensures pressure communication via a balance chamber, with the technical space having no polluting communication (secondary filter cartridge on the side).

### Advantages:

- Design combining the advantages of the two systems above.
- The small HEPA cartridge prevents any contamination on the inside of the plenum and the room.
- The filter is removed from the underside, the plenum stays in place, and there is no polluting communication with the black area of the technical space.

### Disadvantages:

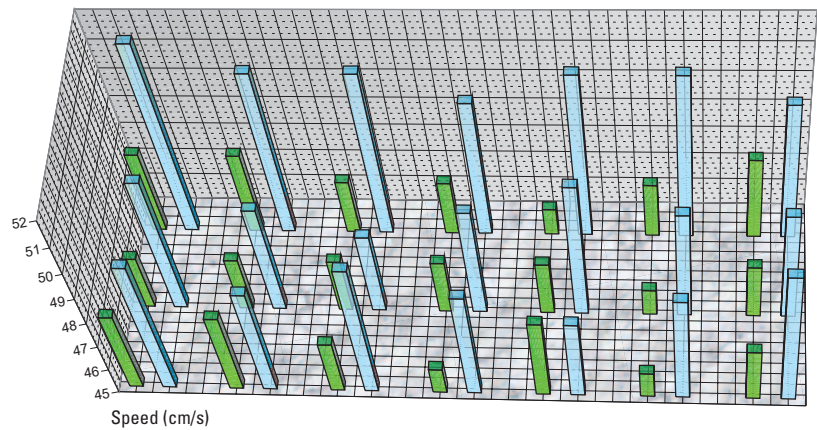
- Cost slightly higher, by about 25%, depending on the project.



## DISTRIBUTION PLENUM

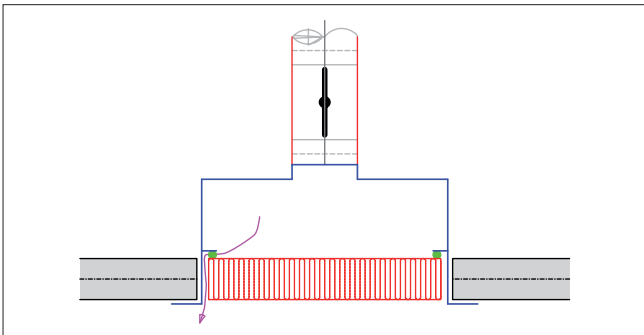
Antway offers a plenum suited to the structure in an optimised version with two air inlet ferrules, starting from the size 1220 x 610. With this plenum, the speed field is at its most uniform and the speed range [b 2.5% w 0.45 m/s] twice as good as with a single ferrule [b 5%].  
See diagram showing tests alongside.

Measurement of speed fields on a HEPA 1220x610 filter



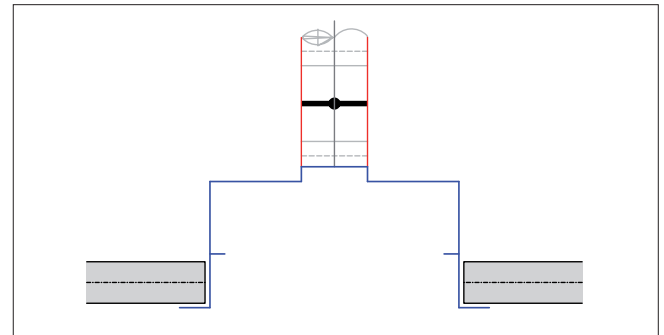
## OVERVIEW OF DESIGN POSSIBILITIES FOR STRUCTURES AND BOXES WITH HEPA FILTERS:

**Basic system: the filter is inside a box tightened onto a joint face.**



### Advantages:

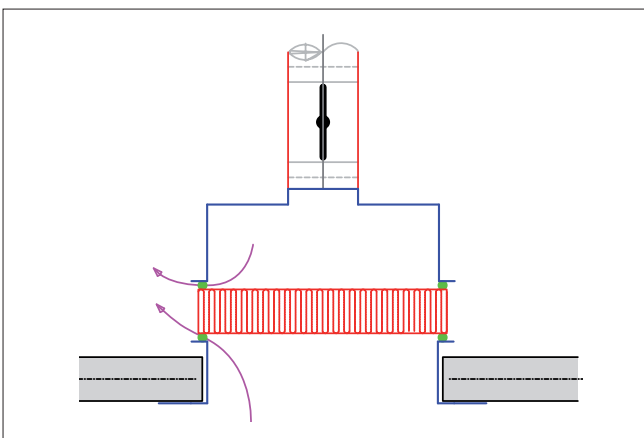
- Cost
- When removing the filter, there is no direct communication with the black area of the technical space.



### Disadvantages:

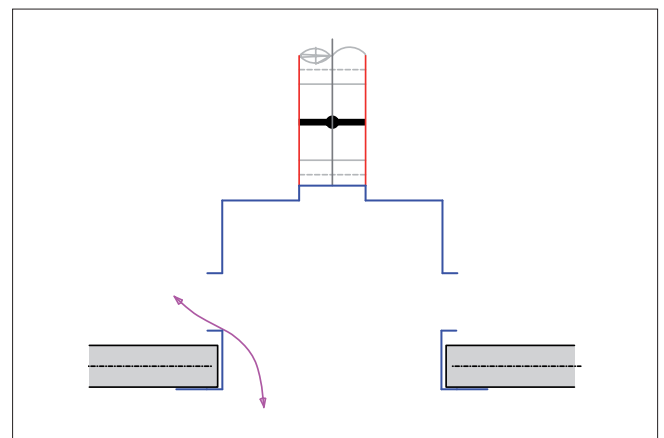
- In the event of an integrity failure across the joint, the filter is bypassed, which could have serious consequences.
- Integrity is unreliable, since mechanical stress applied to either box or ceiling may result in a failure: tests can be good one day and bad the next. The risk is maximal, and achieving satisfactory testing is often laborious and even then not reliable.

**Sandwich filter system : The filter has a joint on each side and is tightened between the flanges (sandwich).**



### Advantages:

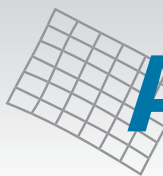
- Totally eradicates the risk of an integrity failure across the joint. Tests are good from the start unless there is a defect on paper (which is rare).
- Reliability is maximal since the filter cannot be bypassed either during tests or afterwards under operational conditions.



### Disadvantages:

- When removing the filter, there is a polluting communication with the black area of the technical space. See diagram above.
- Assembly intended for filter to be removed upwards, making it necessary to raise the plenum.
- When removing the filter, there is polluting communication with the black area of the technical space. See diagram above.





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# HVAC ENGINEERING MEANS LEAVING NOTHING TO CHANCE.

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Antway  
Zone Artisanale du Ried  
3, rue Mathis - 67840 Kilstett

Tel. : 03 90 29 03 10  
Fax : 03 90 29 03 11  
[contact@antway.fr](mailto:contact@antway.fr)