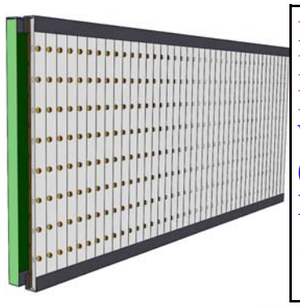
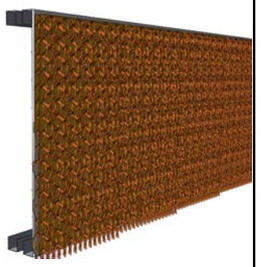


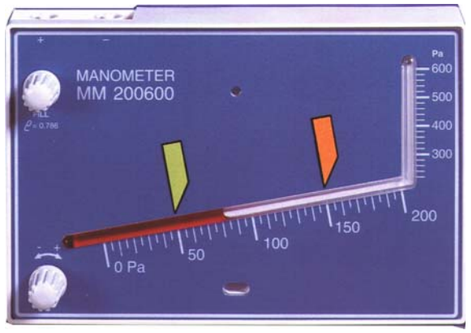
FILTER PACKS
INERTIAL
PLEATED
Width: 9,24 m
(pitch: 12,5 mm)
Heights: 500, 900, 1000

FIBREGLASS ROLLS
Thickness: 50-70 mm
Length: 20m
Heights: on request (max 2 m)



MULTI-LAYER FILTERS IN STRETCHED FIRE RETARDANT PAPER
Length: 10m
(12 m STD type)
Height: 1,14 m
10 models with Effcy. From 50% to 99.99%

CONVERSION GRID
Width: 500 mm
Height: 890 mm
20 -piece packages



DIFFERENTIAL PRESSURE GAUGE
Suitable for all types of booths.
Indicates the degree of obstruction of the filters.
Type MM 600: scale 0-600 Pa
Type MM1500: scale 0-1500Pa

PRODUCTS DISTRIBUTED BY

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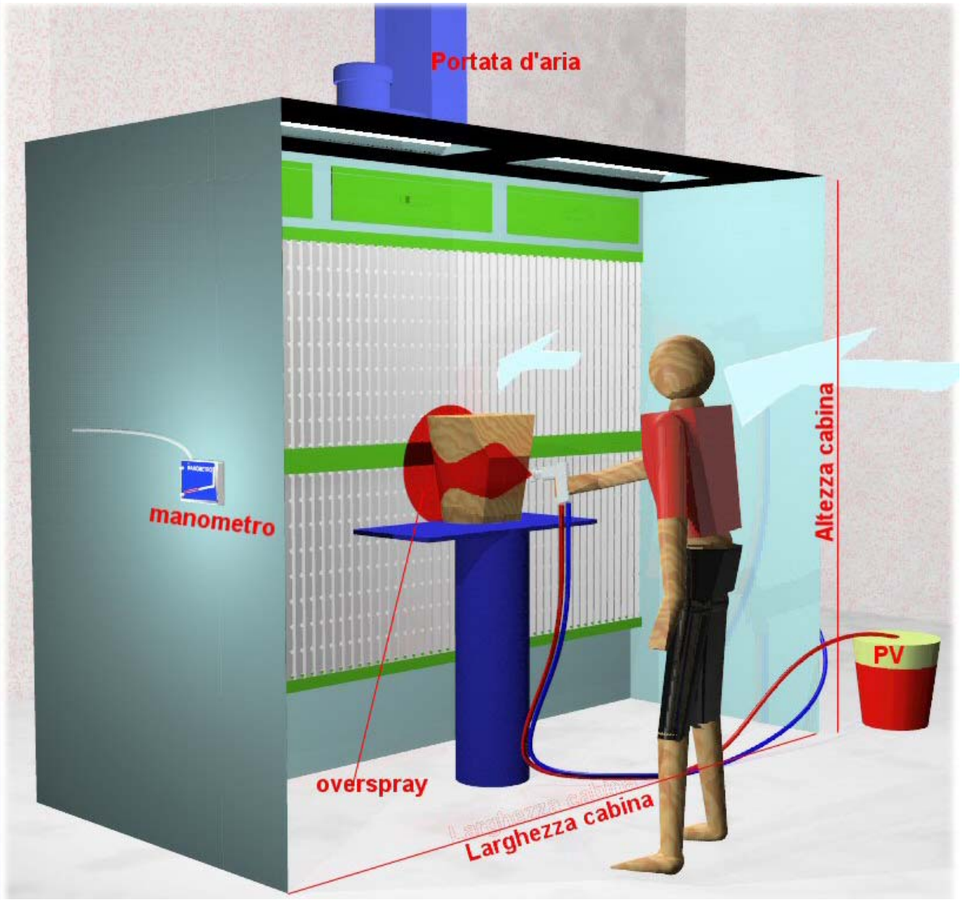
ALL ABOUT PAINTING BOOTHS

A BRIEF GUIDE ON CALCULATING AND SELECTING FILTERS FOR RETAINING PARTICLES



Economic and environmental friendly management of spray painting booths is achieved by verifying some essential parameters.
Every booth has its own characteristic value, which differs from all other booths:
The minimum efficiency of the filtering system required for complying with emission regulations.
On the next pages, we shall describe step-by-step the simple procedure for calculating this value.

First of all, the essential parameters must be measured.

Some are easy to measure, while others can be obtained from the booth manual.

The width and height of the booth are known geometric values, and are used for calculating the work zone's transverse area.
Air flow rate (in m^3 /hour or in m^3 /second) is the quantity of air ejected to the outside.
If it is not shown on the manual, it can be measured.
The quantity of Paint sprayed (PP) must be measured in the most demanding average conditions.
The percentage of dry matter in the PP can be obtained from the technical data-sheets supplied by the paint producer.
The Overspray Percentage is the quantity of PP not deposited on the object being painted. (It is difficult to calculate exactly; however, an approximate value must be established according to experience or calculations, e.g. of the deposited thickness and of the area covered).

The Height and Width dimensions of the filters are easy to measure.

The pressure drop of the filters indicates the pressure value required to ensure that the air flow passes through the filter.
This is measured in (Pa). Pascal is a tiny measurement unit, it is equal to about $1/10^{th}$ of the mm of the water column, and is 100,000 times smaller than a bar.
Every booth should have a pressure gauge.
In fact, pressure drop increases as the filter becomes obstructed.
When a value, which depends on the fan's characteristics, is reached, the flow rate drops under the values that guarantee the healthiness of the workplace.
At this point the filter must be replaced.

The following table shows the calculation formulas and a numeric example.

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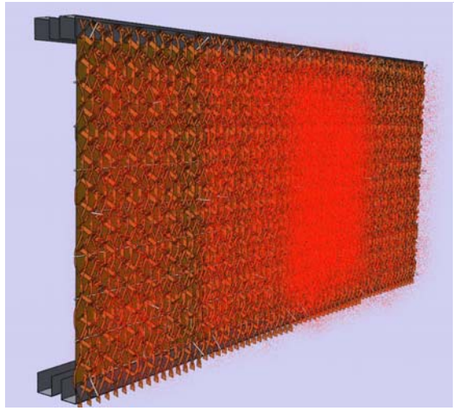
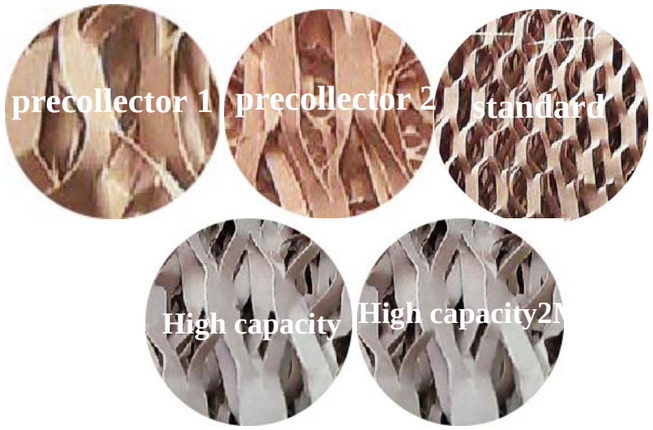
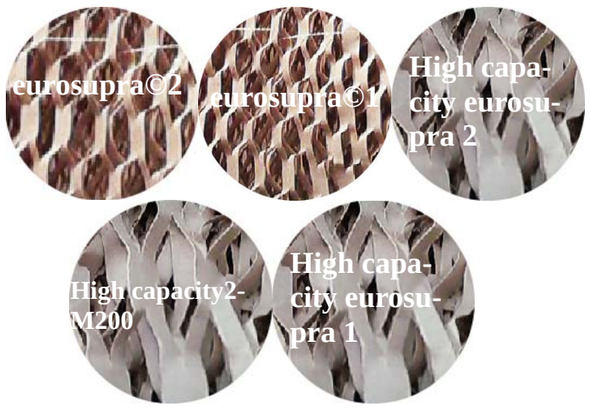


The multi-layer fire retardant filter can be fitted on the grids - this filter satisfies minimum necessary efficiency.
(See page 3).
The multi-layer filter can be applied to side-by-side panels.
This makes maintenance easier, especially if soiling is not uniform.

THE RANGE OF MULTI-LAYER FILTERS IN FIRE RETARDANT PAPER



5 models in paper only, with final mini-mesh.
Efficiency from 50% to 98%.



5 models with synthetic post-filter with fine fibres (20 µm).
Efficiency from 95 to 99,99%.

PLEATED INERTIAL FILTERS

ADVANTAGES	DISADVANTAGES
- being free-standing, it simplifies booth construction - long working life	-almost always requires a post-filter -one model only

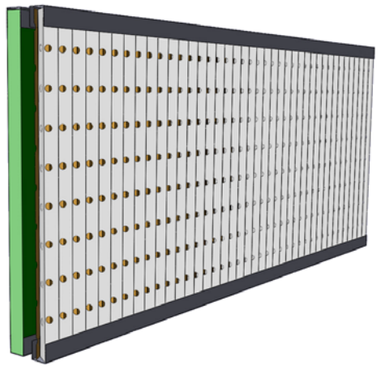
FILTERS IN MINERAL WOOLS

ADVANTAGES	DISADVANTAGES
-gradual accumulation -range of models	-shorter life, requires a pre-filter -requires a support structure -classified in R38-40 -precautions: S36-37

MULTI-LAYER FILTERS IN FIRE RETARDANT PAPER

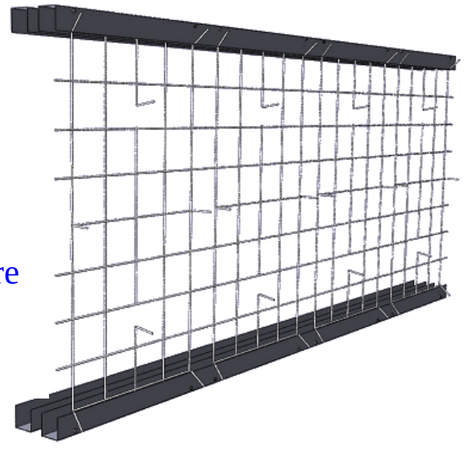
ADVANTAGES	DISADVANTAGES
-a very wide range with weighted efficiency values, using painting products, from 50 to 99.99%. -gradual efficiency -high accumulation -easy maintenance	-requires a support grid

CHANGEOVER BETWEEN SYSTEMS



Existing booths with pleated inertial filter and post-filter in fibreglass, can be easily converted to using modern multi-layer filters.

The modular support grids are easy to apply to existing guides.



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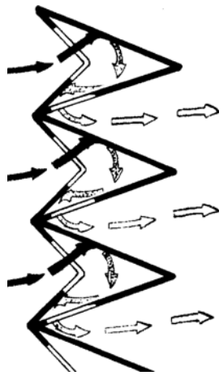
S [m^2] = L [m] x A [m] Front Area [m^2] = Width [m] x Height [m]	V [m/s] = Q [m^3/s] : S [m^2] Width :3 m Height : 2.5 m Area: 3x2.5= **7.5 m^2**
V [m/s] = Q [m^3/s] : S [m^2] In-booth speed [m/s] = Air flow rate [m^3/s]: S [m^2]	Flow rate: 13,500 m3/h = 3.75 m3/s Area: 7.5 m^2 In-booth speed: 3.75:7.5=**0.5 m/s**
Sf [m^2] = Lf [m] x Af [m] Filtering area [m^2] = Filter width [m] x Filter height [m]	Filter width: 3 m Filter height: 2x0.9 = 1.8 Filtering area = 3x1.8=**5.4m^2**
Vf [m/s] = Q [m^3/s] : Sf [m^2] Filtering speed [m/s]= Air flow rate [m^3/s]: Sf [m^2]	Vf [m/s] = Q [m^3/s] : Sf [m^2] Flow rate: 13.500 m3/h = 3.75 m3/s Filtering area 5.4 m^2 Filtering speed: 3.75:5.4=**0.69 m/s**
S [kg/h] = PP [kg/h] x s% Dry matter sprayed [kg/h] = Sprayed PP [kg/h] x % of dry matter	PP = 6 kg/h—%of dry matter: 50% Sprayed dry matter = 6x50% = **3 kg/h**
Sf [kg/h] = S [kg/h] x o% In-filter dry matter [kg/h]= Sprayed dry matter [kg/h] x % of overspray	Sprayed dry matter = 3kg/h % of overspray: 50% In-filter dry matter=3x50%=**1.5 kg/h**
Ci [mg/h] = Sf [mg/m3] : Q [m3/h] Initial concentration of particles [mg/m^3]= In-filter dry matter [mg/h] : Air flow rate [m^3/h]	In-filter dry matter = 1.5 kh/h = 1,500,000 mg/h Initial concentration [mg/m^3]= 1,500,000 : 13,500 = **111 mg/cu.m**
Em [%]=Minimum necessary filter efficiency **Ca [mg/m3] = authorised concentration in flue**. **Em [%]** **=** **((Ci—Ca):Ci)) x 100**	Permitted concentration = 3 mg/m^3 Em[%] = ((111 - 3) : 111) x 100 = **97.29 %**

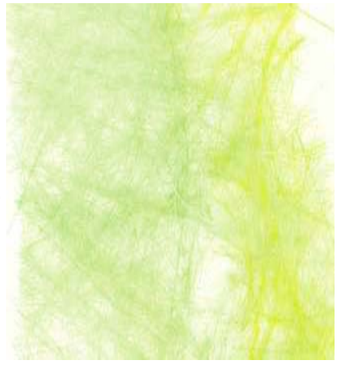
VARIOUS FILTERING SYSTEMS

FILTRI INERZIALI PIEGHETTATI



In pleated inertial filters, the solid particles conveyed by the air flow are separated by two directional changes imposed on the air.
Efficiency is good for particles with an aerodynamic diameter of over 10µm.
This type of filter is available in only one geometry.

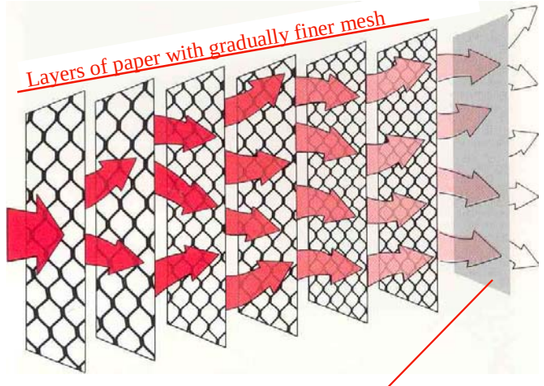
FILTERS IN MINERAL WOOLS



In mineral fibre filters, the separation is much finer, in terms of both inertial effect and the effect of the electrostatic attraction forces between the particles and the external surface of the fibres.
Larger particles are restrained by the sieve effect.
Filters in mineral wool are the normal post-filter for pleated inertial filters.
They should be handled, observing the instructions on the labels (Use suitable gloves and clothes).

MULTI-LAYER FILTERS IN FIRE RETARDANT PAPER

Two phenomena occur in multi-layer filters in fire retardant paper: inertial separation (for larger particles) and, in models with a synthetic post-filter, fine separation (by sieving, collision, inertia and diffusion).
Multi-layer filters are available in many different combinations, suitable for various types of PP and for different painting parameters.



Synthetic post-filter in fine fibres.

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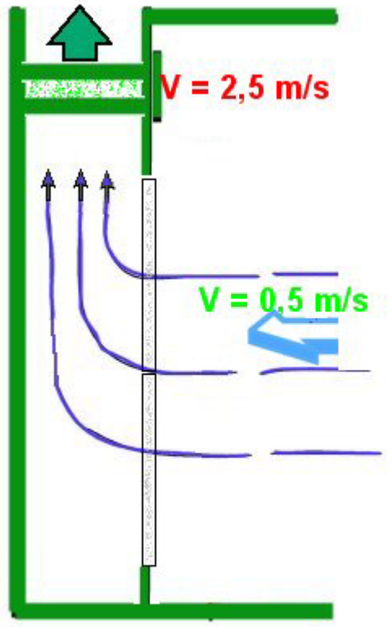
TWO-STAGE FILTERING

Quando vengono utilizzati filtri pieghettati è spesso necessario prevedere un secondo stadio di filtrazione.



When using pleated filters, a second filtering stage is often necessary.
In some booths the pre-filter is placed in special drawers.
In this case, the post-filter's filtering speed is much higher than that of the main filter.

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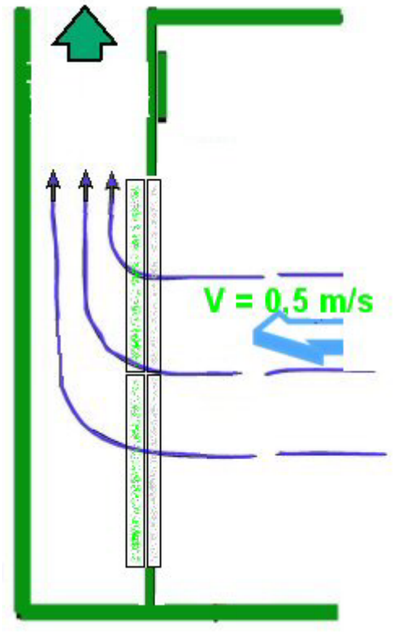

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