

Emmveo™

## Metal viscous oil filter

### Applications

AES Environmental Emmveo is a low maintenance self cleaning viscous impingement filter suitable for use in areas where high concentrations of large airborne particles are encountered.

### Principle of operation

The AES Environmental Emmveo consists of three major parts - the filter cells, the drive unit and the oil bath. Air passes through the honeycomb filter medium which is mounted in steel-framed cells. The cells form a curtain which is rotated by the drive unit. The filter cells leave the oil bath at the foot of the filter, move up the dirty air entering side and then down the clean or air-leaving side of the filter.

**Ferris wheel action:** at the top, the cells do not flop over when moving from the front to the rear curtain, but remain vertical and are transported across on a 'ferris wheel' action ensuring that each cell always presents the same face to the airflow.

With airflow always passing through the cell in the same direction, the possibility of built-up dirt being blown off into the clean air stream is eliminated. At the bottom of the downstream side the cells re-enter the oil bath where they are cleaned. At both top and bottom ends the seal between cells is remade before the cell again enters the air stream.

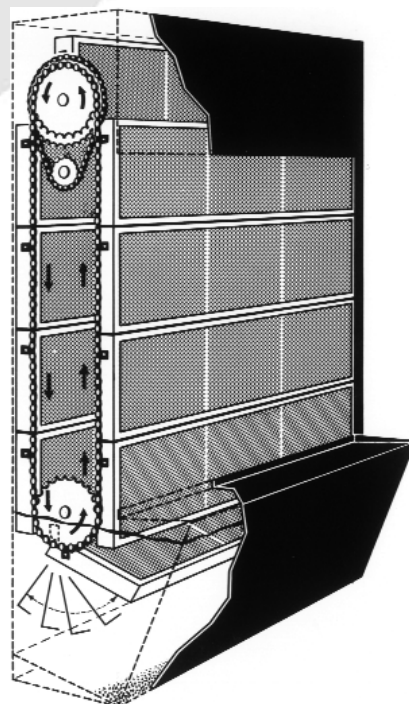
**Cell cleaning process:** On entering the oil bath the cells are held horizontally for a sufficient period to loosen foreign matter caught by the media. After soaking, the cells suddenly revert to a vertical position while still in the oil. This action causes a flow oil through the media, counter to airflow, giving a positive reverse cleaning action.

### Description

**Drive unit:** The filter curtain is rotated by a gear motor acting through a chain drive.

**Control system:** a solid-state timer controls the drive motor.

**Media:** The filter media is an aluminium honeycomb 50mm thick. The aluminium strip is formed into a system of double compound curves so that when folded back on itself it forms a non-nesting system of smooth-walled honeycombs.



### Emmveo: standard model types

Model No.	Capacity m3/s	Capacity cfm	Size mm		No. of sections	Oil capacity	Installed weight kg
			H	W			
3/60	1.68	3,560	1524	933	3	127	363
3/75	2.629	5,570	1905	933	3	127	386
3/80	2.945	6,240	2032	933	3	127	394
4/65	2.737	5,800	1651	1238	4	168	440
4/75	3.606	7,640	1905	1238	4	168	460
4/80	4.04	8,560	2032	1238	4	168	469
5/75	4.583	9,712	1905	1543	5	209	522
6/70	4.889	10,362	1778	1848	6	250	597
6/75	5.56	11,780	1905	1848	6	250	612
10/60	5.852	12,400	1524	3086	5+5	418	916

**Note** system design and model arrangements available to suit airflow requirements between 6.107 m3/s (12,940cfm) to 78.532 m3/s (166,400) contact your local AES sales office for more details.

This special media design splits the incoming air into approximately 27,000 separate airstreams per square metre of filter surface.

Air entering each honeycomb opening is immediately split into two streams travelling in divergent directions. Before leaving the media each air stream crosses a similar air stream four times at right angles, creating turbulence. Combined with changes in direction of airflow this brings entrained dust particles in contact with the oil-coated surfaces of the media where they adhere. All air passes back through the front and back curtain of the filter.

Since the media passages are large and smooth walled, they are relatively free from clogging and are readily and thoroughly cleaned. The full thickness of the filter media is effectively used for extracting airborne particles. This results in exceptionally low resistance together with extremely large dust-holding capacity.

### Performance

The normal initial operating resistance of an Emmveo filter is 80Pa. at rated capacity. Units are available in size from 1680 L/s up to 79,000 L/s capacity. ASHRAE tests give an efficiency of 90% at rated capacity.

### Selection

In laying out a filter system it is recommended that there is a 1metre space both before and after the filter for maintenance purposes. Contact your local AES Environmental office for an engineered solution.

### Maintenance/Service

AES Environmental provides full air filter maintenance, replacement parts and servicing facilities. The sludge which settles at the bottom of the oil tank should be removed at regular intervals. Local dust conditions will determine the frequency of service required.

Units should be inspected monthly to ensure that excessive dust build-up does not occur.

### How to specify

Air filters shall be Emmveo filters as manufactured by AES Environmental, in sizes and capacities as listed on the plans and/or specifications. The filters shall be of the oil-coated movable curtain type. The individual cells of the curtain shall be attached to chains and shall form two filter areas, through which the air shall be so constructed that each filter cell moves from the curtain on the air-entering side to the curtain on the air-leaving side while maintaining the same relative direction to airflow. The lower end of the curtain shall run in a bath of oil.

The curtain shall be moved at pre-determined intervals by an electric gear motor controlled by a timer. Each filter shall be provided with a rigid sheet steel enclosure, heavily braced with flanges for connection to adjoining ductwork, etc. Oil reservoirs shall be of ample size, constructed of heavy sheet steel and rigidly braced. Joints shall be oil-tight and shall be welded.

Each filter shall be fitted with a sludge pan and scraper for removal of sludge. The filter shall be provided with sufficient amount of adhesive oil to fill the reservoirs to the proper level.

Each filter, when operated at manufacturers' rated capacity, shall have an efficiency not less than 96% on No.3 dust and 80% on No.2 dust when tested to AS1132 and a resistance to airflow not more than 80 Pa.



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