Unipak
Air Filter Containment Systems

CLEAN AIR

POWER GENERATION

CLEAN ROOM

INDUSTRIAL

Unipak is a safe-change containment system developed for the installation of high efficiency (HEPA) air filters in air intake and extract applications. Particularly suited for extract systems handling contaminated air, Unipak helps to protect maintenance staff and the surrounding environment for contamination when the filters are changed.

The Unipak system is a modular design based on standard pre-filter and final filter housings. They are available as canisters for installation in ductwork systems, or as containment systems manufactured by linking a number of housings together with inlet and outlet headers. Systems can be designed to customers specifications or supplied as individual housings for installation in a customers existing system if required.

Unipak systems have been proven to meet stringent requirements on the quality of air being supplied to, or extracted from, process areas in environmentally critical applications over many years. These include nuclear power generation, nuclear fuel re-processing, biotechnology and pharmaceutical manufacturing.

KEY FACTS

- Modular design allows flexible system configuration and air flow capacity
- Integrated filter sealing faces to ensure high degree of flatness
- All units pressure or vacuum tested upon request
- All connecting flanges pre-drilled ready for installation into ductwork systems
- Unique cam locking mechanism prevents access door(s) from being closed unless the filters are sealed
- Twin stainless steel cam bars accurately position filters and provide even gasket compression
- Circular containment systems available for use with circular absolute filters

Unipak

UNIPAK HOUSING

The Unipak Safe-Change Containment System is based upon a modular design consisting of pre and final filter housings. Individual housings are manufactured from 2 mm carbon steel with a durable paint finish suitable for decontamination. Alternatively, housings can be manufactured from self-finish Austenitic Stainless Steel.

Unipak housings are all welded constructions and fabricated using CNC equipment. All filter sealing faces are formed as an integral part of the housing to provide a high degree of flatness. The filters are locked in position by two stainless steel cam bars, to accurately locate the filter in the housing and provide an even leak-free compression of the sealing gasket. The cam bar mechanism incorporates a positive locking mechanism to prevent the access door from being closed unless the filter is correctly positioned and sealed.

All Unipak housings are fitted with tapping points on both the inlet and outlet for testing the differential pressure across the filter. Unipak pre-filter and final filter housings are capable of handling air volumes up to 4000 m^3/h, depending on the filter selected.

All Unipak housings are manufactured with a welded spigot for the attachment of safe-change bags as standard. This allows the filters to be changed without risking the contamination of maintenance staff or the surrounding external environment.

UNIPAK CANISTER HOUSINGS

Unipak canister assemblies consist of a pre and/or final filter housing, along with transformation sections on the air inlet and outlet. The transformation sections are fitted with pre-drilled flanges, ready for connection into circular ductwork systems.

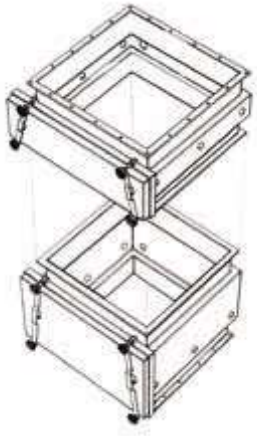
To allow the filters to be changed while the system is in operation, cell isolating dampers can be fitted either side of the filter housings. Alternatively, circular dampers can be fitted between the inlet/outlet transformation sections and the ductwork, to isolate a canister containment housing from the rest of the system.

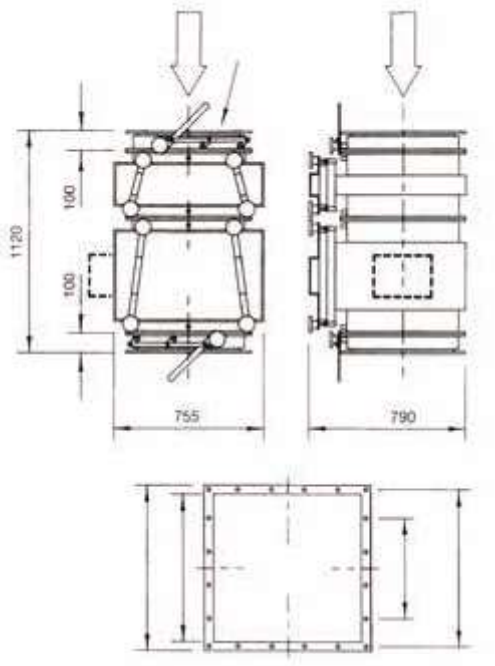
PROBLEM SOLVING DESIGNS

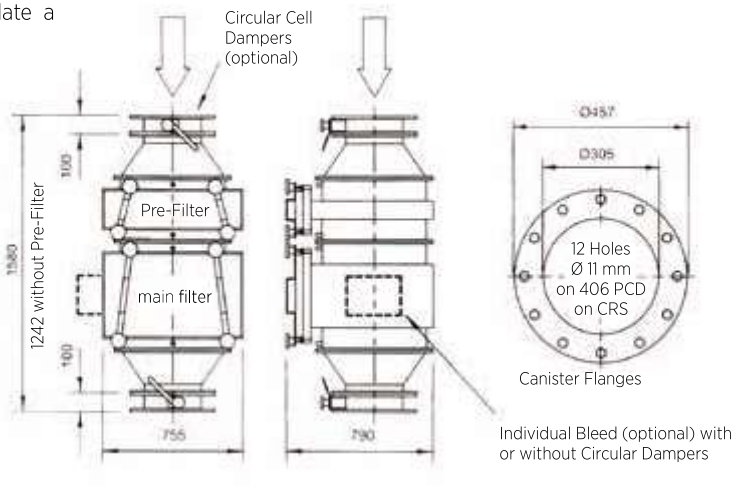
Due to the modular flexibility of the Unipak system and the considerable experience we possess in the design of critical air handling installations, the Unipak system can be adapted to meet a wide range of application requirements.

Typical of this problem solving capability is a space saving installation designed specifically to meet the requirements of the nuclear industry.

DIMENSIONS (mm)







Unipak Containment Systems

Unipak Containment Systems are modular assemblies consisting of a combination of pre and final filter housings, connected top and bottom with a common header. The air flow capacity of a Unipak system is determined by the number of filter sections which make up a complete assembly. Normally each system consists of between one to six sections, though larger systems can be supplied. Where higher air flow capacities are required, two or more Unipak systems of the required number of sections can be installed in parallel. All header flanges are pre-drilled, ready for connection into rectangular ductwork systems.

Each section consists of a pre-filter and final filter housing in series, however systems can be supplied with or without pre-filter housings, or with two or more final filter housings. When multiple final filter housings are fitted, this is usually to accommodate either higher grade filters or activated carbon filters. To allow the filters to be changed while the system is in operation, system dampers can be installed across the air inlet and outlet ducts to isolate a Unipak system. Alternatively, individual cell isolating dampers can be fitted to isolate each filter housing.

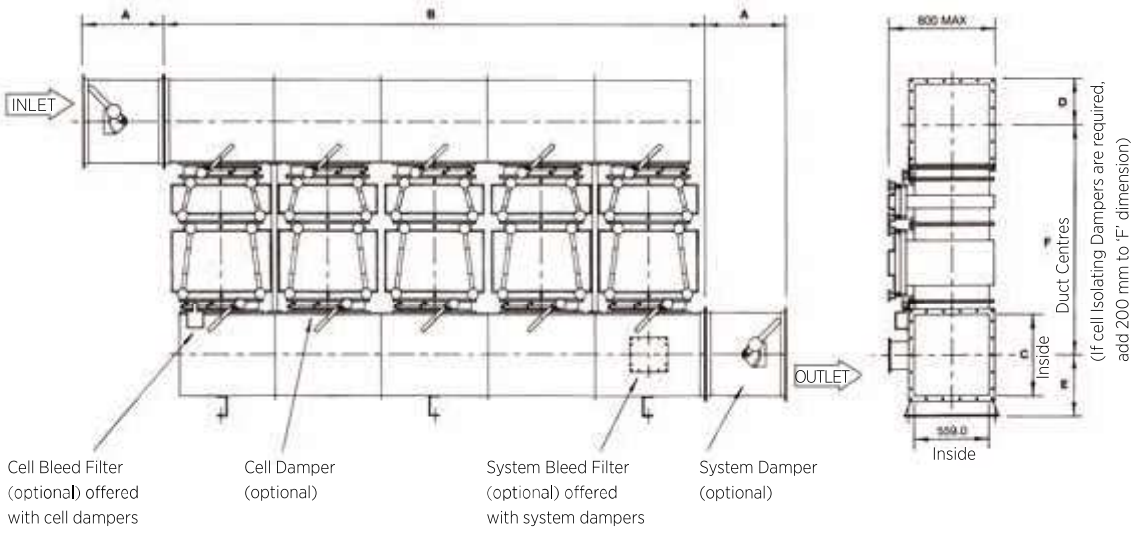
SYSTEM SELECTION

The following parameters should be considered when selecting a Unipak system:

- Filter housing design and type of system, including the number of sections necessary to handle the required air volume
- Required arrangement of pre and final filter housings
- Required position of the air inlet and outlet flanges as viewed from the filter change side
- Air flow direction through the system
- Requirement of seal test frames for the final filter housings
- Type and position of dampers and bleed filters
- Material of manufacture
- Required type of filters and filtration efficiency
- Desired nominal system pressure drop
- Overall dimensions of the system(s), allowing adequate space for the replacement of the filters
- Other optional extras required

Unipak Technical Data

DIMENSIONS (mm)



No. Sections Long*	A System Damper (optional)	B	C	D	E	F Final Filter Housing only	F Pre & Final Filter Housings	F Pre & 2 Final Filter Housings	Weight (Kg) Pre & Final Filter Housings with ducts**
						Add 200 mm if Isolation Dampers fitted			
1	406	857	267	176	288	853	1,192	1,772	206
2	406	1,664	267	176	288	853	1,192	1,772	350
3	406	2,470	381	233	345	967	1,306	1,886	509
4	610	3,277	495	290	402	1,081	1,420	2,000	686
5	610	4,083	610	347	460	1,196	1,535	2,115	892
6	610	4,890	610	347	460	1,196	1,535	2,115	940

* Unipak Systems are based on a modular design, alternative configurations available upon request.
** All weights include filters and dampers. All dimensions approximate (mm)

PERFORMANCE

Volume Flow Rate

Each Unipak housing can handle up to 1,700 m^3/h when fitted with standard capacity HEPA filters or up to 4,000 m^3/h with high capacity filters. Unipak systems are normally manufactured with up to six sections, suitable for flow rates of up to 10,200 m^3/h or 20400 m^3/h depending on the filters selected. Higher capacity systems can be supplied upon request.

System Pressure Drop

Typical initial differential pressure drops for Unipak Systems one to six sections in size including filters:

System Arrangement	Differential Pressure Drop	
	Standard Filters 1,700 m^3/h	High Capacity Filters 3,400 m^3/h
Final Filter Housing Only	270	370
Pre and Final Filter Housings	320	440
Pre and Double Final Filter Housings	On Application	On Application