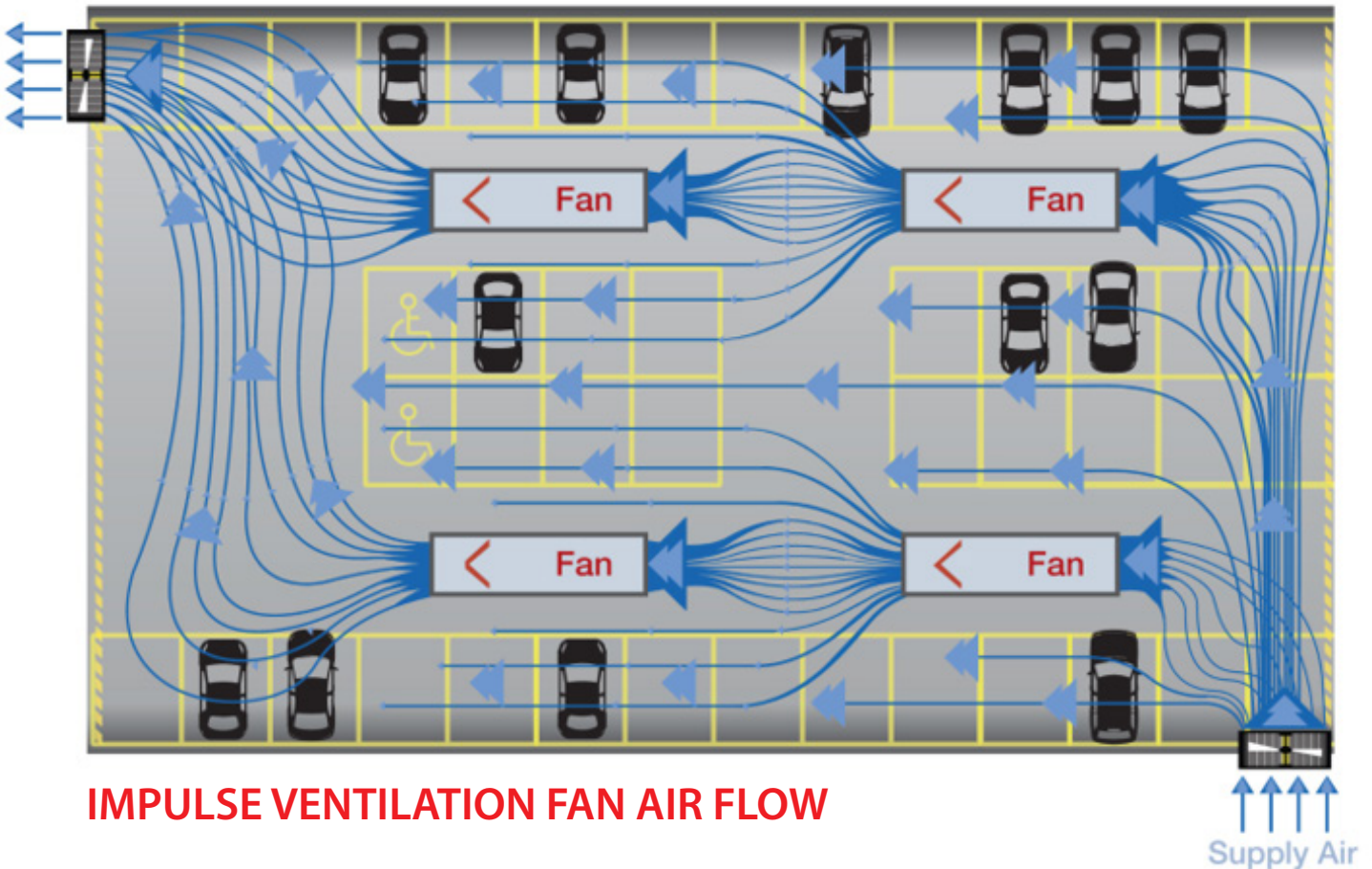


Impulse Ventilation Fan Application Note



Exhaust Air



IMPULSE VENTILATION FAN AIR FLOW

APPLICATION

Impulse Ventilation Fan (IVF) Systems are commonly used to mix and exhaust the air within an entire space such as a carpark.

Pollutants are efficiently diluted throughout the entire volume of space.

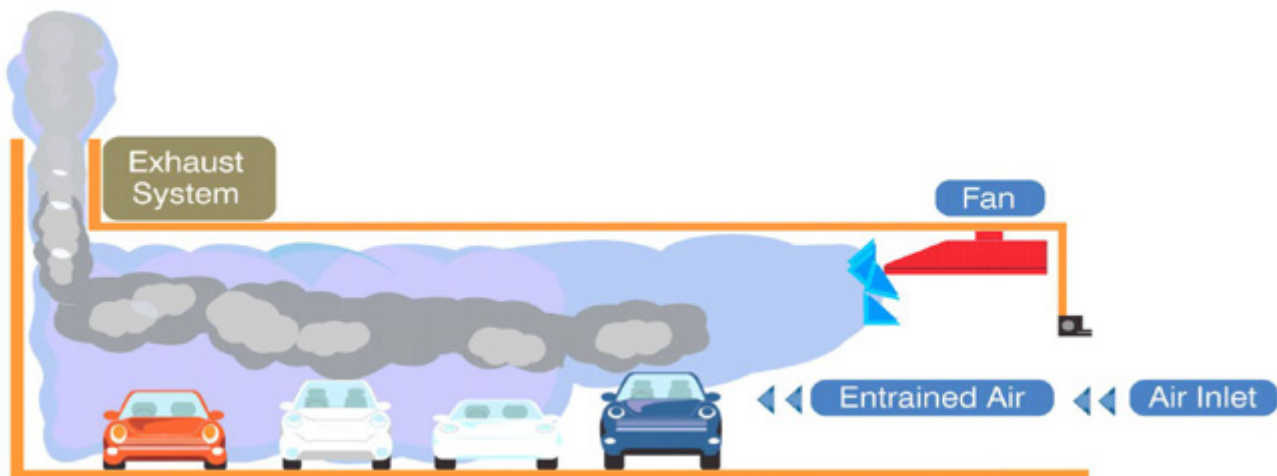
Fresh air is introduced and exhaust air removed for closed car parks via natural or mechanical means.

There is no requirement for Ducting network for supply or exhaust air.

The IVF operates in 2 ways

Normal Mode - Removes pollutants generated by vehicles within the space.
Fan operational speed is determined by traffic volume from day to day.

Smoke Mode - Following a fire event the IVF helps clear space quickly of smoke by forcing it to an exhaust point.



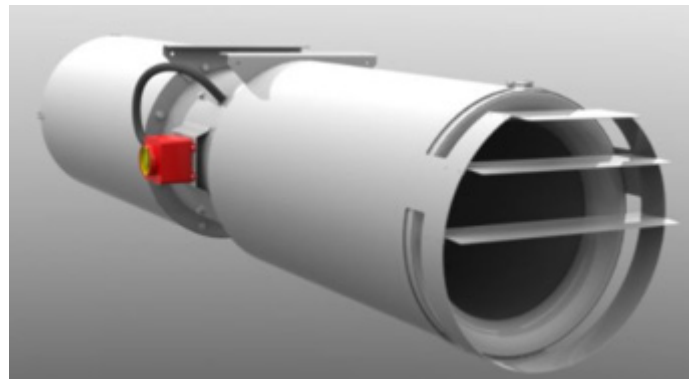
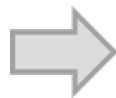
FIRE SAFETY CONCERNS

The IVF System must not impede the correct operation and effectiveness of Sprinklers in controlling a spread of fire.

Excess airflow within space would contribute to the spread of a fire.

Design must ensure smoke and pollutants are directed to an Exhaust point following a fire event to clear space quickly.

To address the above fire Safety concerns there needs to be a mechanism in place that shuts down the IVF in the event of a Fire. The most effective way of doing this is by way of using an Aspirated Smoke Detection system to monitor the air within the space and when a predetermined level of Obscuration is reached it will send a shut off signal to the IVF System.



SECURITON ASD (Aspirating Smoke Detector)



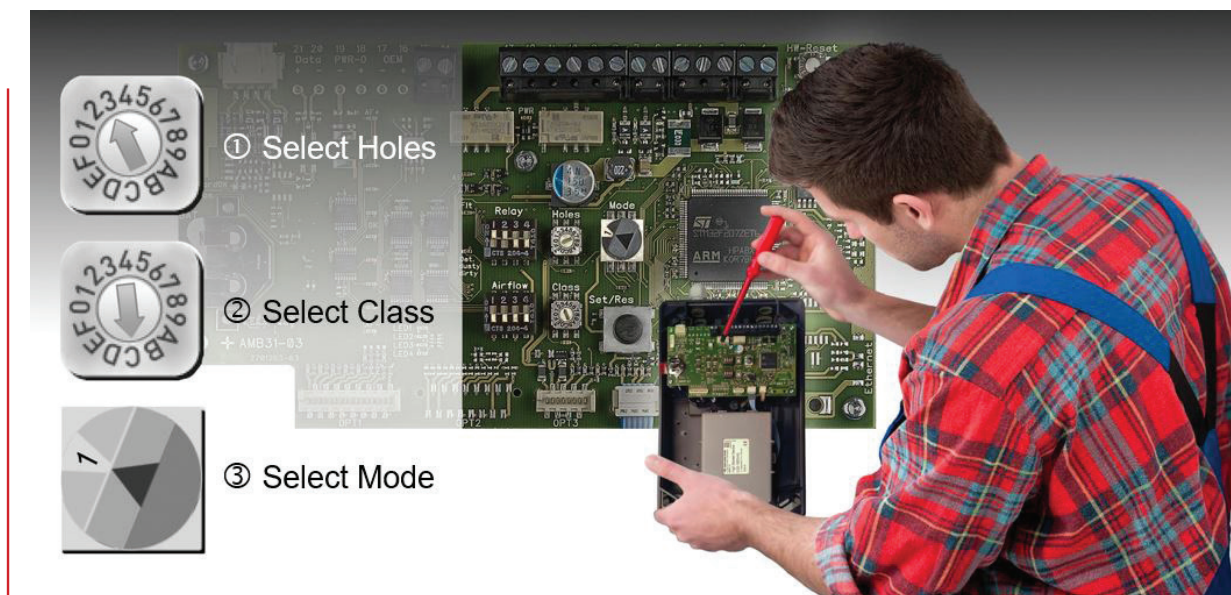
The Securiton SEC-ASD-531 aspirating smoke detector is designed for smaller monitoring areas and is ideal for IVF Applications.

The SEC-ASD-531 is equipped with a highly sensitive smoke sensor SSD 31 using a single sampling pipe network.

Commissioning and configuration is done directly on the device without any software tool. For planning, the ASD PipeFlow software allows an optimized design of any installation.

SEC-ASD-531	AS 7240.20		
	Class A	Class B	Class C
Max. overall length of the sampling pipe tube network	75 m	75 m	75 m
Max. length from ASD to farthest sampling hole	40 m	40 m	40 m
Max. number of sampling holes	6	8	12

Simple 3 Step Set Up



SECURITON DESIGN & CONFIGURATION / COMMISSIONING

The below is an example of a simple ASD design approach for monitoring smoke levels in a carpark and in turn controlling the shut down of an IVF System at a pre determined obscuration level

Mount pipe on ceiling as shown below and use tables in SEC-ASD-531 product guide to determine hole sizes to used.

U/T-shaped sampling pipes						
Number of sampling holes per sampling branch	Hole diameter in mm for the sampling hole number from the ASD					
	1	2	3	4	5	6
1	7.0					
2	5.0	6.5				
3	4.5	5.0	7.0			
4	3.5	4.0	4.0	6.5		
5	3.0	3.0	3.0	3.0	5.5	
6	3.0	3.0	3.0	3.0	3.0	5.5

DETECTOR CONFIGURATION



- Select number of Holes - (6) using "Hole" rotary switch



- Select Sensitivity as per AS7240-20 - (A class) using "Class Switch".



- Initialise airflow using "Mode switch"

- Configuration \ Commissioning complete

