Innovent

DATASHEET

DEPENDABLE VENTILATION

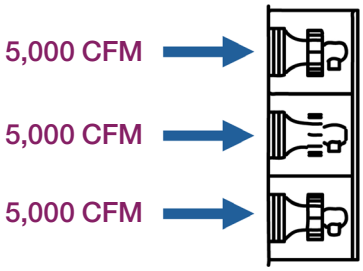
FAN REDUNDANCY ENSURES UPTIME

Built-in fan redundancy supports the ability of custom air handling units to operate continuously even if a fan stops working. Innovent offers three fan redundancy options to meet the needs of many different applications. These require isolation dampers and are available for arrays with at least two fans.

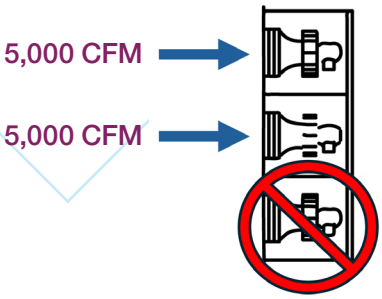
OPTION 1: ISOLATION DAMPER ONLY

With this option, only an isolation damper is used to prevent the air from short cycling through the unavailable fan. Though this is the simplest option, if a fan stops working the system may not maintain full design airflow. Option 1 is typically used in applications where a temporary reduction in airflow volume is acceptable, such as offices and schools.

NORMAL OPERATION



ISOLATION DAMPER ONLY



RESULT

The array may not be able to maintain full airflow during unplanned fan downtime.

OPTION 2: N+1

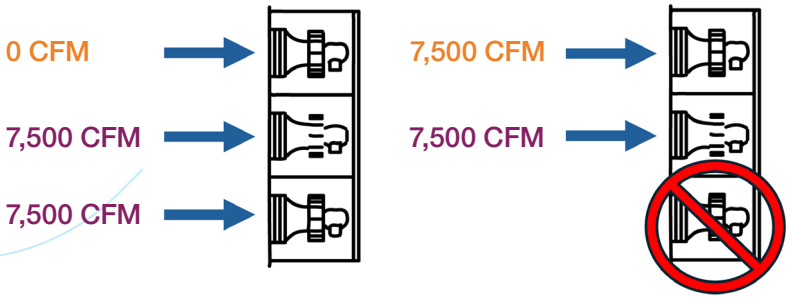
The second option is called N+1, where N stands for "number of fans." The array is designed with a redundant fan, which becomes active to maintain the design CFM during unexpected downtime of a primary fan. Options 2 or 3 are often used in critical applications like labs and hospitals where downtime or partial capacity is unacceptable.

NORMAL OPERATION

0 CFM
7,500 CFM
7,500 CFM

N+1

7,500 CFM
7,500 CFM



RESULT

Backup fan activates to maintain full airflow.

OPTION 3: N-1

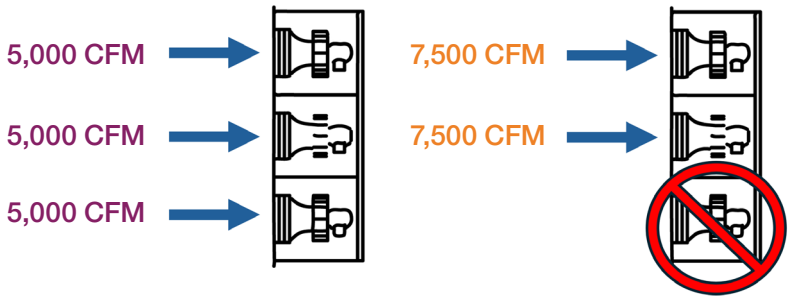
This option means "number of fans - 1." The array maintains the design CFM with one less fan by increasing airflow in the remaining fans. The applications for this are similar to Option 2. Additional factors to consider for all options are listed in the table below.

NORMAL OPERATION

5,000 CFM
5,000 CFM
5,000 CFM

N-1

7,500 CFM
7,500 CFM



RESULT

Fans ramp up to maintain full airflow.

FAN REDUNDANCY FOR CONTINUOUS OPERATION

OPTION	ADVANTAGES	CONSIDERATIONS
Isolation Damper Only	• Lowest first cost • No additional controls	Unit may not be able to maintain full airflow if a fan becomes inoperable.
N+1	• Built-in full redundancy • Tailored controls sequence	• Requires backup fan not used in normal operation • May require larger airflow tunnel
N-1	• Built-in full redundancy • Tailored controls sequence	• Requires larger fan motors and electrical loads • Fewer fan options due to running at two different CFM points • Sound will increase in N-1 mode

Please contact your Innovent Sales Representative with questions about this offering.

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