



JOHNDEC®

AIRCONSERVER



FUME CUPBOARD SASH SYSTEM

The ultimate variable volume control system which solves the design and operational problems associated with fume cupboards in air conditioned spaces.

The Airconserver sash system achieves energy cost savings far beyond initial capital cost, due to a marked reduction in extracted conditioned air.

All available extraction air passes through the sash opening and across the working area. This is a substantial improvement on existing systems.

The volume of air is infinitely variable and proportional to the sash opening while maintaining a constant face velocity regardless of

the sash position. This is the ultimate in proportional systems.

The boost facility instantly provides the maximum air quantity obtainable from the extraction fan, irrespective of the sash position. This safety feature is far above those stipulated in the Australian Standards.

The system dispenses with the need for maintenance prone systems as moveable dampers, by-pass systems or auxiliary air supply systems.

Only a single phase 240 volt supply is required while still retaining three phase motor characteristics.

The Airconserver sash allows more efficient air conditioning with in the laboratory and improved working conditions for operators.

DESCRIPTION

The Airconserver sash systems overcomes many disadvantages by maintaining a constant velocity across the fume cupboard sash of 0.5 m/s at all opening positions. This results in an improvement above the Standards, since all extracted air will be passing through the sash opening.

The performance of the Airconserver system is achieved by mechanical and electrical means. No moveable dampers are involved.

Although the fan is fitted with a normal 3 phase motor, only a 240 volt single phase power supply is required. This is an advantage in many cases, where a 3 phase supply is not adjacent to the position of the fume cupboard on site.

The Airconserver system has a minimum extraction rate below which the cupboard will not fall, regardless of the position of the sash. This minimum point is easily adjustable and can be decided after consultations with the user. Five air changes per minute are normally sufficient for the fume cupboard with the sash at its lowest level, which is the requirement of AS2243-8. For example, this air change rate on the Safetyflow 1500 Fume Cupboard would ensure a dilution factor of 18,700,000:1 for a digestion of 50ml over a 4 hour period.

The Airconserver system immediately responds to any sash movement and synchronises the volume flow of the exhaust fan to the corresponding sash opening.

As an additional feature a 'Boost' function is incorporated in the fume cupboard control panel. Should excessive fumes be generated within the fume cupboard by such things as spillages, exotherms or overheating, the operator by activating this 'Boost' function will bypass the automatic mode and instantly provide the maximum air quantity available from the extraction fan, regardless of the sash position. The extraction rate thus achieved, rapidly clears the fume cupboard of excessive fumes or heat.

REMEMBER

In this day and age, it is the duty of us all to conserve energy where possible.

Energy is a limited and costly resource, and much time and effort has been expended on systems to effect its conservation.

Where the capital cost of energy minimisation can be quickly covered by operating costs, omission of these means verges on irresponsibility.

ADVANTAGES & SAVINGS

1. The cost of installing the Airconserver sash is less than any auxiliary air supply system.
2. The cost savings in energy by the use of this system will far outweigh any initial capital cost, which could be recovered within the first year of use.
3. The velocity across the sash is controlled automatically at all sash positions. This is an improvement on the Standards as all extraction air will be passing through the sash opening and across the working area.
4. High dilution factor is maintained with low fan energy consumption.
5. Working conditions are far better for the operator and the air conditioning within the laboratory is also far more efficient.
6. The provision of the boost function allows maximum performance from the extraction fan to be available at any time and represents a safety feature above that set out in the Standards.
7. Only a single phase 240 Volt supply is required, while still retaining the advantages of the 3 phase motor fitted with the extraction fan.

8. As the Airconserver sash does not require the use of a By-pass system, it disposes of all By-pass associated problems.
9. Maintenance prone moveable dampers are not required.
10. Noise problems associated with high velocity will be reduced. The operator has complete control over the total volume of extracted air by merely raising or lowering the sash or activating the 'Boost' function.

Sash at full height

The sash is usually only raised to its full height to either clean the fume cupboard or to install or remove equipment from the chamber. In most cases, the extraction fan would not be turned on for this operation. Should the fan be turned on for any reason, then the fume cupboard fitted with the Airconserver sash would behave exactly as a standard fume cupboard. There would be no saving of conditioned air.

Sash at working height (approx 260mm)

At working height, the sash is in a position to give full protection to an operator's face whilst working at the fume cupboard.

The savings in conditioned air at this height would be 263 l/s (557 cfm) or 947m³ per hour.

Sash at lower level (50mm)

As a fume cupboard sash spends the majority of its working life in this position, the savings of the cost of energy over one year are considerable.

If we assume that our minimum speed control on the Airconserver sash was set to give an extraction rate of the chamber of approximately one complete air change every 12 seconds, say 90 l/s on our average sized fume cupboard, then the saving in needlessly extracted conditioned air would be 398 l/s (843 cfm) or 1433m³ per hour!

AIR QUANTITY

| | Closed 50mm | Working Opening 250mm | Full Opening 600mm |
|----------------|----------------|--------------------------|-----------------------|
| Safetyflow 1.2 | 50 l/s | 130 l/s | 365 l/s |
| Safetyflow 1.5 | 65 l/s | 170 l/s | 470 l/s |
| Safetyflow 1.8 | 80 l/s | 210 l/s | 580 l/s |
| Safetyflow 2.0 | 90 l/s | 230 l/s | 650 l/s |
| Safetyflow 2.4 | 100 l/s | 280 l/s | 795 l/s |
| Safetyflow 3.0 | 120 l/s | 360 l/s | 1008 l/s |

Optional Attendance Sensor

The Airconserver fume cupboard sash system can be integrated with an attendance sensor, so if the fume cupboard is unattended for a period of 2 minutes the sensor will command the sash to close automatically, therefore achieving full savings of the Airconserver System.

Variable Frequency Drive, FE2000 & Air Flow Controller Interconnection Diagram

