

# APPLICATION NOTE



*PO Box 531, Cambridge, NZ*

*Telephone + 64 7 827 4142*

*Facsimile + 64 7 827 8435*

*[www.aircaretechnology.co.nz](http://www.aircaretechnology.co.nz)*

*Ph 0800 774 100*

*Fax 0800 774 101*

## **Rapid-construction Isolation Room using MAC10 Fan-Filter Modules**

**The SARS outbreak has highlighted the risk of worldwide spread of infectious diseases.**

**One of the precautions used to contain an outbreak is to isolate confirmed and suspected carriers of the disease. In hospitals, negative pressure isolation rooms are utilised for infectious patients.**

**This application note describes a low-cost scheme for rapidly modifying an existing room to function as a patient isolation room.**

### **Isolation Rooms**

The requirements for an isolation room are as follows:

- (1) Negative pressurisation to contain harmful micro-organisms in the room.
- (2) Discharge of air from the room via HEPA (High Efficiency Particulate Air) filters.
- (3) Dilution of micro-organisms in the room.
- (4) The facility must be testable and certifiable.
- (5) Contaminated air-system components must be able to be de-contaminated in-situ or removed and rendered safe.
- (6) Ideally, for better containment, there should be an airlock at the entrance to the room.

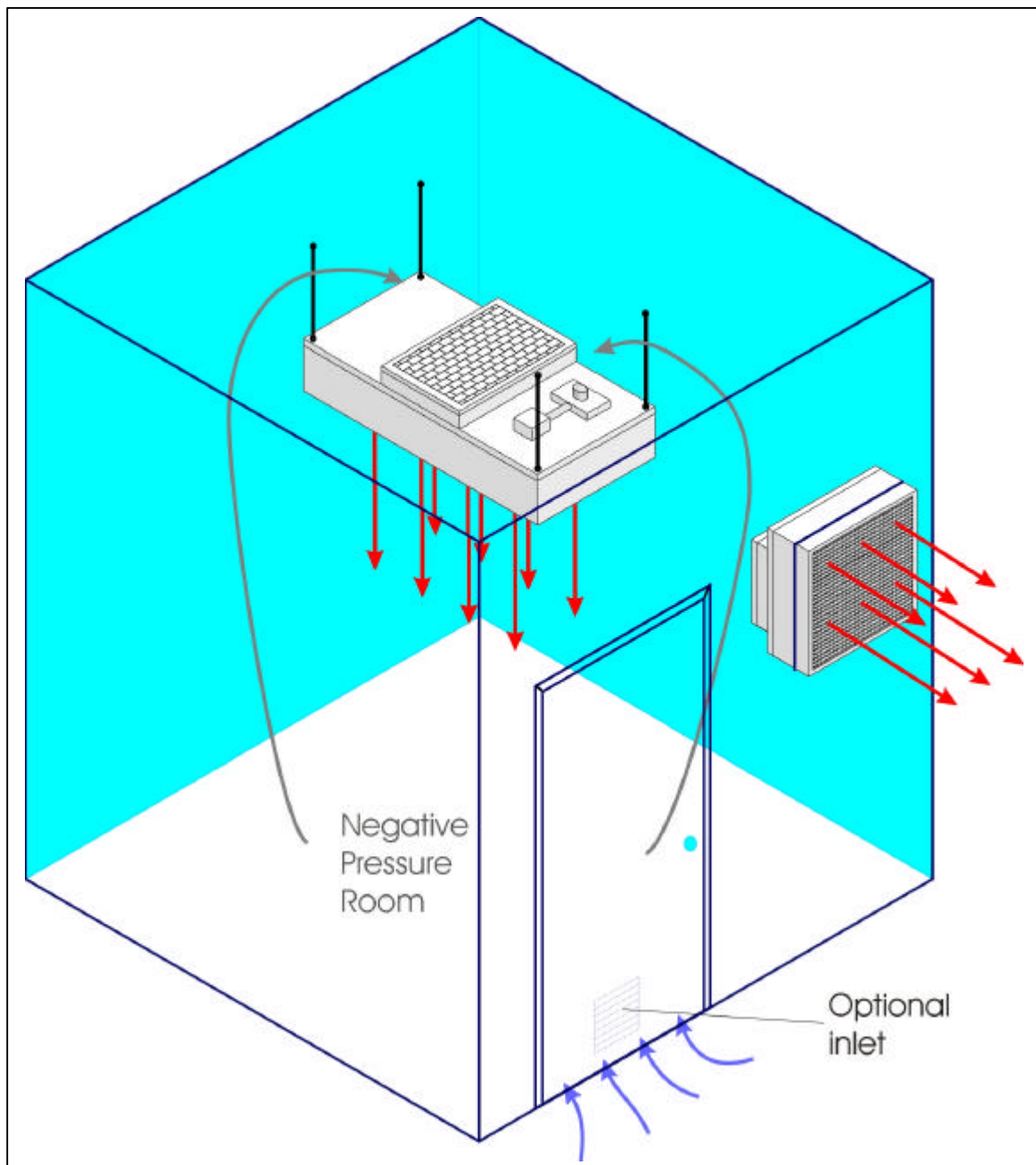
The ideal room would have only one entrance, be relatively "tight" (i.e. hard ceiling and walls with few gaps/cracks) and have smooth, cleanable surfaces.

In an emergency, it may be desirable to convert a room to an isolation room very quickly. The system described could be delivered, installed and commissioned in 24 hours!

### **System Description & Installation**

The isolation room air system is comprised of the following main components:

- (1) One or more MAC10 2x4 Fan-HEPA filter modules – depending on room size.
- (2) One MAC10 2x2 Fan-HEPA filter module complete with a fan-speed controller.
- (3) An optional airlock made from perspex and an Aluminium frame.



*Simplest System – Without Airlock*

Installation of the MAC10 2x4 units is simply a matter of suspending them from the ceiling and connecting power via a standard 3-pin plug. (Power requirement is 305W per unit.) We recommend one MAC10 2x4 unit per 55 cubic metres to provide an air change rate of at least 20 air changes per hour for good dilution.

Installation of the MAC10 2x2 unit involves cutting a hole in a wall and mounting and sealing the module in place. It will entrain air from the room and discharge it outside via the HEPA filter. 180W power must be supplied to the unit via a standard 3-pin plug.