

Registered Fire Engineer Scheme

Fire Safety Requirements for Ventilation / Air-conditioning Control Systems for Licensed Premises

1. Objective

The objective of this requirement is, in the event of fire, to reduce air movement within the affected fire compartment, i.e. to allow smoke to rise and form a layer at ceiling level which will not be disturbed by the introduction of air into that smoke layer.

2. Applications

- 2.1 A “ventilation / air-conditioning control system” shall be provided to a mechanical ventilating system having air handling capacity exceeding 1 cubic metre per second or serving more than one fire compartment, i.e. all the air distribution ductwork systems are not contained within the same compartment;
- 2.2 For the purpose of this requirement, a mechanical ventilating system means any air moving system, with the exceptions as listed in para. 2.3, utilizing both a fan and duct, to mechanically force air into, around, or out of, any building or part thereof and includes systems which contain devices for reducing or increasing the temperature and / or humidity of the air inside any building, or part thereof, below or above the temperature and / or humidity of the external air for the purpose of environmental control.
- 2.3 The following mechanical ventilating systems shall be exempted from these requirements:
 - (a) Any mechanical ventilating system forming part of the Fire Service Installations and installed solely for fire protection or fire fighting purposes, i.e. Staircase Pressurization System and Smoke Extraction System.
 - (b) Individual, self-contained or split-type, direct expansion room cooling units not connected to ductwork systems.
 - (c) Mechanical ventilating systems solely for handling toxic gas, flammable gas or grease / air mixtures, e.g. ventilating system for fume cupboard, exhaust system for cooking range, etc.
 - (d) Mechanical ventilating systems where all air is supplied at low level and / or extracted (not recirculated) at high level.

- (e) Individual plant rooms, and individual toilets which are mechanically ventilated directly (i.e. ventilating system not serving other areas) to outside.

3. Control and Installation

3.1 Any one of the following methods of override control shall be used:-

- (a) Method “A” – If the fire compartment / unit is provided with a smoke detector automatic fire alarm system or automatic sprinkler system, on activation of that system all fans serving the fire compartment shall be shut down.
- (b) Method “B” - Smoke detectors of a type suitable for use in air ducts (duct type smoke detector), shall be installed in the exhaust and / or recirculation ductwork serving the fire compartment / unit, which on sensing smoke, will automatically shut down all fans in the mechanical ventilating system serving the fire compartment / unit.
- (c) Method “C” - The override control can be arranged to completely shut down all the fans in the building instead of isolated compartments/units. The actuation shall be provided by the building fire alarm system.
- (d) Method “D” – Shut down all the fans in the affected compartment by the actuation of smoke detector(s) installed in suitable position under false ceiling at space of 250m² of net floor area for each detector. (Please refer to Part IV Clause 1.10 of FSD Circular Letter No. 4/96 for details regarding the provision of smoke detectors)

3.2 For buildings where central mechanical fresh air supply and / or exhaust systems are installed, either:

- (a) the central fresh air supply and / or exhaust system shall be shut down;
or
- (b) the central fresh air supply and / or exhaust system shall not require to be shut down but the fresh air and / or exhaust to the affected compartment / unit shall be closed off from the central system by actuation of a local motorised smoke damper.

3.3 Shut down of the mechanical ventilating systems by utilizing a multiplex automatic fire alarm or Building Automation System shall be permitted so long as the multiplex system is on the Fire Services Department list for this type of equipment / system.

3.4 In addition to either one of the control methods mentioned in paragraph

3.1, manual override switch(es) shall be provided at the central fire control panel to allow the engineering staff of the Building Operator, or the Fire Services Department personnel, to switch off the fans for all the mechanical ventilating systems serving the building in the event of an emergency.

- 3.5 If the mechanical ventilating system of a “licensed premises” is connected to the central exhaust / supply systems of the building, it may be accepted as an independent system provided that a fire and smoke damper (F&SD) or a smoke damper (SD) as appropriate is installed at the interconnection to the central exhaust / supply system(s). In the event of a fire inside the “licensed premises”, the central exhaust / supply fan(s) are not required to be shut down but the F&SD / SD shall be closed by a fire signal from the “licensed premises”. Under such circumstance, the provision of a separate manual override switch at a location agreeable to the Director of Fire Services may be accepted as an alternative to the manual override switch installed at the central fire control panel for the “licensed premises”.
- 3.6 If the “licensed premises” have their own mechanical ventilating system, the provision of a manual override switch at a location agreeable to the Director of Fire Services may be accepted as an alternative to the one installed at the central fire control panel of the building, provided that there are specific reasons for such provision or difficulties to install a manual override switch at the central fire control panel as accepted by the Director of Fire Services.
- 3.7 The manual override control switch shall be affixed with an identification plate engraved with English and Chinese characters ‘**VAC Manual Override Control Switch** (通風/空氣調節 手動關止掣)’ conspicuously of at least 10mm character height.

4. FSD Circular Letters Related to V/AC Systems

This copy of Fire Safety Requirements is to be read in conjunction with FSD Circular Letter No. 1/2019 Ventilation/Air Conditioning (V/AC) Control System.