

**Briefing Notes:  
Automatic Opening Vents  
and Windows  
Control Systems**

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## **1. Introduction**

- 1.1. Experience has shown that Automatic Opening Vents and Windows create a substantial maintenance cost, particularly where they are used in large numbers. For this reason, they shall only be installed in exceptional circumstances where there is no practicable alternative.
- 1.2. The preferred alternative is windows that can be easily opened and closed manually and which are designed with suitable rain and security protection to allow them to be left open overnight to allow pre-cooling during hot Summer weather.
- 1.3. This standard shall be read in conjunction with all other Estates and Facilities Standard Specifications in particular:
  - 1.3.1. ES/005 Briefing notes for electrical services
  - 1.3.2. ES/012 CAD Protocol
  - 1.3.3. ES/013 AS Built Documentation
  - 1.3.4. ES/014 Designer Risk Assessments
  - 1.3.5. ES/022 Asset Labelling
- 1.4. Where Automatic Opening Vents and Windows are required, then the Designer and Installer shall adhere to the following:

## **2. Purpose of Automatic Opening Vents and Windows**

- 2.1. The purpose of the automatic opening vents and windows shall be clearly defined as either:
  - 2.1.1. Heat dissipation/general ventilation only
  - 2.1.2. Smoke Clearance only
  - 2.1.3. Smoke Clearance AND Heat dissipation/general ventilation.
- 2.2. The purpose shall be marked on each controller, switch and actuator and shall be clearly identified in all record documentation

## **3. Design to Allow Competition in Future Maintenance and Repair**

- 3.1. The specification of Automatic Opening Vents and Windows and their controls shall be such that they can be fully maintained and repaired by any contractor competent in this sort of work. This will mean that:
  - 3.1.1. All components of the system are readily available on a competitive price basis.
  - 3.1.2. Software is fully open protocol or is made freely available, including instruction in its use, to competent contractors at a reasonable price.

## **4. Stand Alone Controls System**

- 4.1. Automatic Opening Vent and Window systems, including all associated controls and repeater stations, shall be stand-alone other than receipt of fire alarm signal as a volt free contact from the building's addressable fire alarm system (where the Automatic Opening Windows or Vents are used for smoke ventilation purposes).
- 4.2. As a minimum controls shall include, but not be limited to,:

- 4.2.1. A time close signal, adjustable and set to operate at 20:00 each to close all open vents and windows.
- 4.2.2. A suitably labelled key switch operated signal to allow the building manager to open or close all windows and vents as and when required.
- 4.3. Additional controls, as required to meet the design, might include:
  - 4.3.1. Rain sensor to close windows and vents during rain
  - 4.3.2. Wind direction and speed sensors to close windows and vents facing strong prevailing winds.
  - 4.3.3. Internal and/or external temperature sensors to open and close vents and windows to assist in maintaining comfortable temperature.
  - 4.3.4. CO2 sensors to open and close vents in order to assist in maintaining good air quality.

## **5. Location of Switches**

- 5.1. Key operated open and close switches shall be located in a position be agreed with the Liaison Engineer but shall generally be in a position where each is:
  - 5.1.1. Readily accessible to the Building Manager
  - 5.1.2. Not readily accessible to others.
    - 5.1.2.1. In a position where it is possible to view the opening vents and windows that the key switches control.
- 5.2. Where necessary a separate 'fireman's switch' shall be located in a position to be agreed with the University's fire safety officer.

## **6. Accessibility for Maintenance**

- 6.1. The design of opening vents and windows shall be such that all actuators and associated mechanisms wiring etc. can be readily and safely accessed for replacement, maintenance or repair, whether they are in the fully closed or the fully open position (this is because actuators may fail in either position).
  - 6.1.1. All components that form part of the Automatic Opening Vents and Window systems shall be readily accessible at any time without:
    - 6.1.1.1. Specialist access platforms, safety harness or other specialist access provision etc.
    - 6.1.1.2. Risk of dropping tools or components onto or causing disruption to anyone going about their normal business in the building.

## **7. Labelling of Controls**

- 7.1. Adjacent to the controls there shall be a clear and understandable in laymen's terms description of the way in which the automatic opening vent and window controls work. This shall include (as applicable) advice that:
  - 7.1.1. After being opened the windows and vents will be automatically closed at a set time each evening.
  - 7.1.2. The vents must be manually closed by the person who opens the vents or windows, should changing weather conditions make this necessary.

- 7.1.3. Which window or bank of windows is operated by each key switch (this may require a schematic diagram and/or suitable legend).
- 7.1.4. How any rain, wind direction and speed, temperature and/or CO2 sensors affect the control of the opening vents and windows.
- 7.1.5. That the windows will override open upon operation of the fire alarm or the fireman's switch.
- 7.2. In the case of fireman's switch, which windows and/or vents the switch will open and where each of these are located (this may require a suitable floor plan with the windows and vents shown on it).
- 7.3. Each Automatic Opening Vent and Window controls panel, including each fireman's control switch, shall be Asset Labelled and Grouped as specified in Estates and Facilities Standard Specification ES/022.

## **8. Actuators**

- 8.1. Actuator drives shall be 50VAC or below (Extra Low Voltage)
- 8.2. Actuator control signals shall be either 0-10V or 4-20mA. Raise/lower timed type of actuators shall not be used.
- 8.3. Actuators and the windows or vents that they operate shall be sized so that a single actuator operating at no greater than 80% of its maximum design operating force is capable of opening and closing the window or vent concerned. Multiple actuators on any single opening vent or window will not be acceptable. This is because experience has shown that this results in a significantly greater frequency of failures.
- 8.4. Actuators shall be capable of fully opening and of fully closing the window in a maximum period of 180s.