



INDOOR AIR QUALITY - VERIFICATION & VALIDATION OF SPECIALISED VENTILATION SYSTEMS

Modern systems must be designed and operated to achieve a proper balance between air quality, thermal comfort and energy consumption. In healthcare premises, ventilation is used extensively in all types of facilities to provide a safe and comfortable environment for patients and staff. Specialised ventilation is provided in primary patient treatment areas such as operating departments, critical care units and in sterile services departments and pharmacies to ensure compliance with quality assurance.

If ventilation systems do not achieve and maintain the required standards there is an increased health risk to patients. Indeed the link between surgical site infection and theatre air quality has been well established. UCV systems are designed to provide a zone around the patient that is effectively free of bacteria-carrying airborne particles during an operation.

Ventilation systems in healthcare premises are becoming increasingly sophisticated. Patients and employees have a right to expect that these systems will be designed, installed, operated and maintained to standards to ensure it will adequately and satisfactorily fulfil its desired functions.

Health Technical Memorandum 03-01

The Health Technical Memorandum (HTM) 03-01 - "Specialised ventilation in healthcare premises" has been produced to supersede **ALL** previous versions of HTM 2025 - "Ventilation in healthcare premises". Key issues HTM 03-01 addresses include:

- The verification testing of Critical Ventilation Systems, including pre 2007/8 theatres.
- The Validation testing of **New Build** conventional and ultra-clean ventilation (UCV) systems.
- The prevention and control of healthcare related infections.

- Layout of minimum requirements for the design of air handling units (AHU) with regard to safe access for routine inspection and maintenance and the control of Legionella.
- Controlling exposure to harmful organisms, toxic and anaesthetic substances.

Verification

The objective of the Verification processes is to establish that the critical ventilation systems, as defined by HTM 03-01, remain fit for purpose and are achieving an adequate operating capacity by satisfying the following criteria:

- (1) The AHU conforms to minimum standards;
- (2) The fire containment has not been breached;
- (3) The general condition of the ventilation system is adequate;
- (4) The fabric of the area served is satisfactory;
- (5) The system performance is adequate with respect of the functional requirement:
 - (a) The measurement of room temperatures and relative humidity;
 - (b) A full measure of the supply and extract air flow rates;
 - (c) The calculation of room air-change rates if applicable;
 - (d) The measurement of room differential pressures if applicable;
 - (e) The measurement of room noise levels;
 - (f) Air-quality checks if appropriate;
 - (g) A check on control functions.

Legionella Control

Asbestos Management

Indoor Air Quality

Water Hygiene

Water Management

Fire Risk Assessment

Health & Safety

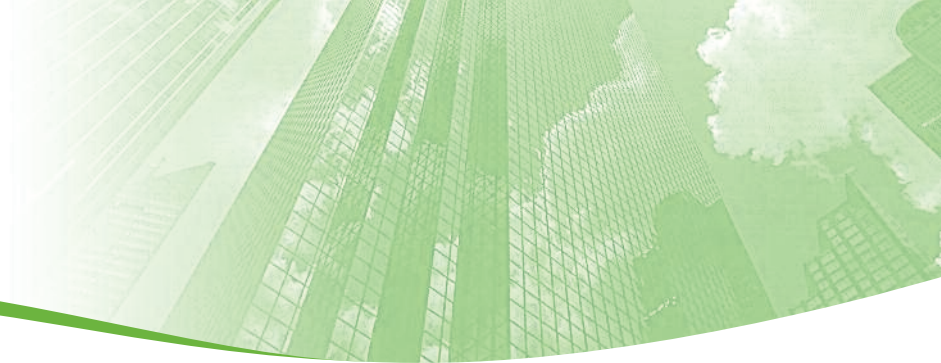
Disabled Access

Workplace Noise Assessments

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Training

(continued overleaf)



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New Build Conventional & Ultra Clean Ventilation (UCV) Unit Validation

In order to ensure the complete system operates correctly and achieves design requirements, it will be necessary to validate the system as a whole from the air intake through to the extract discharge. Healthy Buildings International (HBI) can offer the following services to ensure compliance with HTM 03-01 and hence validate the suitability and performance of an UCV suite.

(1) Conventional Theatre Standards

- Supply AHU will have achieved the minimum standard;
- Operation of Fire Dampers will have been proved;
- Supply & Extract Flow rates will have achieved their design values;
- Room temperature, humidity & differential pressures will be correct.

(2) Challenge tests

- The UCV terminal is correctly assembled and sealed;
- The terminal filters are correctly sealed in their housings;
- The terminal filters are of the same grade, of uniform quality and undamaged.

(3) Air velocity measurements

- A sufficient quantity of air is being delivered to the terminal;
- The terminal quadrants are in balance;
- The air flow has sufficient velocity to reach the working plane.

(4) An entrainment test

- Outside contaminants are not drawn into the UCV terminal.

(5) Visualisation techniques

- Establish an understanding of overall system performance.

(6) Noise measurement

- Working conditions are satisfactory.

(7) Control systems checks

- The system operates as specified.

(8) Biological monitoring

- Determine the effectiveness of the system in use.

Our Services

- HTM 03 Verification testing of Critical Ventilation Systems;
- HTM 03 Validation testing of New Build Conventional & UCV;
- Assessment of Category 3 & 4 Laboratories - as required by the HSE and the Advisory Committee on Dangerous Pathogens;
- Pharmacy Aseptic Suites - should conform to the European Guide to Good Manufacturing Practice;
- Sterile Services Dept; Inspection & Packing Rooms - ISO 14644 and Building Note 13.

Data at your Fingertips

We understand how important it is to have access to up-to-date information. With HBI, you will have immediate on-line access, via www.recordsForBuildings.com to a report detailing the findings of all tests conducted. This report will conclude with a clear statement as to whether the ventilation system achieved or did not achieve the desired standard and highlight any actions that need to be taken.

For more information about verification and validation of your ventilation systems call Healthy Buildings International, email or visit www.hbi.co.uk.

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