Building the right team for *Ventilation maintenance*

Andrew Steel, Managing Director of Airmec (H2O) provides guidance on the daily business of operating a ventilation system.

No matter how well designed a system is it will not perform effectively or safely without good operational management. This focus is also well reflected in the structure of British and European Standards and Health Technical Memoranda, which separate out the operational guidance from the minutiae of original design specification.

Health Technical Memorandum (HTM) 03-01: Specialised ventilation for healthcare premises, which covers far more than the cleanliness requirement of the ventilation systems, defines some very clear principles for the effective and safe operation of ventilation systems. These are that:

- All ventilation plant should meet a minimum requirement in terms of the control of Legionella and safe access for inspection and maintenance.
- All ventilation plant should be inspected annually.
- The performance of all critical ventilation systems (such as those servicing operating suites) should be verified annually.
- Compliance with the quality assurance requirements of items processed in pharmacies and sterile services departments is achieved.
- Staff, patients and the public are protected from harmful organisms and toxic substances.

It's a big job and it requires a good team. HTM 03-01 Part B, which addresses operational management and performance verification and only runs to 36 pages, (compared to 134 for Part A, which covers Design and Validation), is the key document for ongoing health estates management. The system is only designed and built once, but it is operated every day. The essential team for operating the ventilation systems will include:

A Designated Person (DP) - the link between organisation and professional support (normally from the Trust board).

An accredited Authorising Engineer [AE(V)] - to provide independent auditing, advice and witness validations. Typically an independent consultant, the AE will review reports produced by the AP.

An Authorised Person [AP(V)] - a key role, responsible for the working procedures for engineering aspects of critical ventilation systems in healthcare premises. Appointed by the DP, who is required by HTM-03 to seek the advice of the AE. Depending on the size and complexity of the buildings, Trusts may appoint an external AP.

Competent Person(s) [CP(V)] - designated by the management to carry out maintenance, inspection, validation and periodic testing as appropriate. Many Trusts train their own people to CP level, to work alongside a third party AE and AP, but would still normally have the airflows and pressure regimes independently tested.

> *"The solution is to have robust processes tailored for your premises, unambiguous audit trails, with well-trained staff, each of whom has a clear understanding of their role."*

Whichever route you choose, building the right team and getting the team dynamics right is essential.

The workload

There are no short cuts: while any HTM is 'only' guidance and not law, the distinction is meaningless in practice, as any healthcare estates manager knows. HTMs do, after all, refer to legislation such as the Health and Safety at Work Act, Control of Substances Hazardous to Health Regulations, building regulations and so on. The only way to achieve savings and efficiencies is through effective management, which mainly comes down to the AP developing tailored processes and forms for the premises and asset register.

HTM 03-01 Part B (operational management and ongoing verification) may run to 'only' 36 pages, but the requirements of ongoing maintenance and verification can still be daunting and it is not surprising how many errors and potential 'failures' can be picked up by Authorising Engineers in organisations running without the support of a top-class, experienced Authorised Person.

Actually, you don't even need to do anything wrong, just failing to keep the right inspection and maintenance records can set alarm bells ringing and trigger emergency measures and closures - costing as much as £50,000 a day for an operating theatre, I'm told.

The solution is to have robust processes tailored for your premises, unambiguous audit trails, with well-trained staff, each of whom has a clear understanding of their role.

Part B - what's involved?

All ventilation systems should be subject to, at least, a simple visual inspection annually. Critical care ventilation systems should be inspected quarterly (simple visual check) and their performance measured and verified annually. LEV (local exhaust ventilation of dust and fumes) is covered under COSHH and thorough testing should be carried out by a competent person at least every 14 months. The AP should ensure that it all happens and is recorded.

A critical system is defined as one in any area where the loss of service from such a system would seriously degrade the ability of the premises to deliver optimal healthcare. Obvious examples would be operating theatres, (including rooms used for interventional investigations), patient isolation facilities, intensive care or high dependency units. Behind the scenes, critical care testing applies in any system classified as an LEV system, laboratories, pharmacy and aseptic packing suites, and MRI, CAT and other imaging departments that require particularly stable environmental conditions to remain within calibration.

Fire and smoke dampers are another consideration: out of sight, out of mind and maybe forgotten? The remedy here is an asset register and to treat them as part and parcel of the overall ventilation system.

What is your team looking for?

Commissioning will have been carried out on any new system as this is the reference point against which future validation data is compared. Thereafter planned preventative maintenance is required to ensure systems remain fit for purpose and do not put patients and staff at a higher and unnecessary risk.

A visual inspection will check, for instance, the location of the plant and that it is secure, and all areas are easy to access and maintain, with all viewing points and differential pressure gauges easy to see. It will also routinely involve washing down chillers and humidifiers, vacuuming and cleaning as necessary, inspecting and cleaning condensate traps, and ensuring that the intake and discharge points are clear with vermin guards intact.

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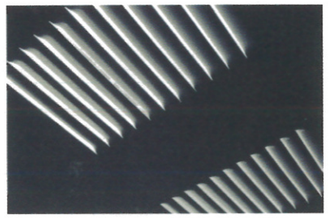

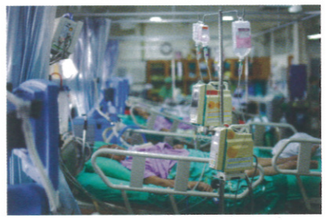

Verification of a system is of course related to its function, and thresholds and intervals will be agreed by the AE. Tests can go beyond simple visual and mechanical inspection and may include specialist skills for ensuring sufficient air changes per hour take place, checking that air pressure differences between the areas are correctly set and held, checking HEPA (High Efficiency Particulate Air) filters, and measuring the volume of particles and biological contaminants.

It is clear that a wide range of skills and expertise are involved in verification and, even where routine cleaning and inspection can be carried out by salaried staff, it is common practice to outsource the measurement and analysis work to a third party AP, who brings a broader perspective to the table and whose working life is focused on ventilation and air systems full time.