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Preamble

Discussion on the implications of not following guidance etc..

Executive summary

"Main recommendations
- 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."

General words such as “should” – Need to be more heavily weighted. This should be consistent throughout the entire series.

Chapter 1 Introduction 1

Fire regulations

Fire damper assessments. – should reference British standards for in-situ inspection. Should also contain more detailed information on undertaking this task.

BS 9999 requires clarification. – Maybe an ideal opportunity to address this.

System information

"1.22 In many existing systems, original design and commissioning information will not be available. It will therefore be necessary to determine a suitable level of system performance based on the function, purpose and age of the installation."

Comment 1.22 should link back to 1.21 – if the information doesn’t exist needs to be created by a competent designer/team.

Authorising Engineer (Ventilation) (AE(V))

Standardisation of AE instruction is required. – Code of conduct also needs to be discussed.
“For example companies offering AE services and validation services combined?"
Authorised Person (Ventilation) (AP(V))

Competency needs to be further discussed/assessed in more detail other than a single qualification. Seems to be heavily weighted towards training and not experience (should be a combination of both) also other factors come into play such as CTCB-I for example.

Competent Person (Ventilation) (CP(V))

Competency needs to be further discussed and assessed in more detail other than a qualification which seems to be the default position for the industry.

Chapter 3 Ventilation systems – minimum requirements

The Chapter 3 section should be documented more clearly as a mandatory part on all annual verification’s for critical ventilation equipment. The default position for most verifiers is Appendix 1 & 2, yet these cannot answer whether the system meets the minimum requirements in Chapter 3.

There is also a possible opportunity for cost savings to be applied if an initial verification is undertaken of a more detailed inspection and then content reduced if re-verification company is consistent – this is considering that some of the findings are unlikely to have changed since the previous verification.

During the annual re-verification some clauses detailed are not possible for a verifier to accurately comment upon without detailed further investigation. Guidance should be included as to how these are to be accurately assessed.

Such as: (This list is not exhaustive)

3.11 The plant must not contain any material or substance that could support the growth of microorganisms.
3.12 The plant must not contain any material or substance that could cause or support combustion.

AHU intakes and discharges

Air protection screens are becoming more common and need to be discussed in this section.

Filtration

“3.50 All filters should be of the dry type. Panel filters are generally used as prefilters and should be positioned on the inlet side of the supply fan, downstream of the frost coil. Where required, secondary filters (these will be bags or pleated paper) should be on the positive-pressure side of the fan.”
Contradiction “pleated paper” with combustible comments previously mentioned in Part A & B.

“3.52 All filters should be provided with a means of checking the differential pressure across them. Direct-reading dial-type gauges marked with clean and dirty sectors are preferred.”

Enforce – Magnahelic gauges and an accuracy within a certain tolerance for different types of application. Operating theatres and the like should be accurate. Calibration should be considered for specialist ventilation systems.

The HTM also needs to include increased guidance for air filtration systems on:

- Incorrect filters and/or Incorrectly fitted filters
- Damaged filters
- Use of non-compliant filters
- Filters incorrectly specified
- Filters replaced by time not differential pressure
- Wet / damp filters
- Lack of filter maintenance records
- Lack of procedures covering filtration
- Poor level of understand on air filtration systems
- Poor training and competence courses available for air filtration
- Poor and inadequate labelling, identifying and marking.
- Air filter alarm controls.

High-efficiency filters – HEPA and ULPA

Further guidance is also needed on:

- Handling and installation; Minimum cleanliness standards and PPE.
- Suitability of the housings;
  - Condition and ability to test in-situ HEPA-filters,
- Incorrect filters and/or Incorrectly fitted filters
- Damaged filters
- Precautions with filters, such as blood splatters and cleaning of.
- Use of non-compliant filters – (Wood cased filters in clinical spaces as an example).
- Filters incorrectly specified, H13 to achieve 0.001% penetration etc..
- Filters replaced by time not differential pressure
- Lack of accurate monitoring on HEPA-filters.
- Wet / damp filters
- Lack of filter maintenance records
- Lack of procedures covering filtration
- Poor level of understand on air filtration systems
- Poor training and competence courses available for air filtration
- Poor and inadequate labelling, identifying and marking.
- Air filter alarm controls.
- Life span
• Disposal of contaminated filters.
• Gel systems
• BIBO units – Specialist area. – Change out procedure.
• Containment precautions.
• Fumigation of products – procedures prior to undertaking and risk’s associated.
• Managing blood splashes on HEPA & Diffuser screens. – Escalation policy.
• Aid on what to do in this situation.

Energy recovery

3.57 Whichever type of energy recovery device is fitted, the extract side should be protected by a G3 filter and provided with a drainage system to remove condensate.

G3 Comment – needs to be withdrawn due to new standards.

Pressure stabilisers

Setting up maintenance, commissioning of pressure stabilisers should be documented in more detail.

Chapter 4 Annual inspection and verification requirements

Ventilation systems inspection

4.2 The purpose of the inspection is to establish that:
  a. the system is still required;
  b. the AHU conforms to the minimum standard (see Chapter 3);
  c. the fire containment has not been breached;

It is unlikely that one person and/or company will possess all the attributes to verify the system in full therefore depending on any increase in level of re-verification protocol’s the need to operate a shutdown period maybe warranted. I.E if the fire dampers need inspecting, the internal cleanliness needs inspection, the controls system etc.. etc.. to undertake this fully a team may be needed not just one individual.

It is not always possible to provide one company/representative to undertake the full verification process model. The results need to be coordinated and combined for each plant. There should be more guidance within regarding this process.
Critical ventilation systems

4.5 The quarterly inspection should be as detailed in paragraphs 4.1–4.3. This includes “the fire containment has not been breached”; – Contradictory as this would suggest fire containment is inspected quarterly.

Definition of a critical system

Requires changes to the way special/critical systems are defined. – See other comments on this subject. – Should be defined not in list format.
What to do if only half the system serves critical areas? – Is it critical or not?

Annual verification

Escalation procedures / Standard operating procedure in the event of critical vent failure during inspection would be a good addition.

Inclusive but not limited to;

- Action plan for none compliance’s. inclusion of a “Risk register”.
- Description of escalation policy in the event of failure. Often the question is put onto the validation organisation whether or not we “should be operating or not”. – “Can I use the area Mr validator?”

Standardisation of the verification procedures – I.E what minimum level of information should be included within a re-verification report.

Air filter assessments. – Should be considered as part of the annual verification. See IHEEM. Copy & Paste. Verification of filtration, panel, bags, HEPAs etc.. etc.. major component within the system. Very rarely inspected.

Fabric of the area served

More detailed building fabric checks to be incorporated into annual verification inspections., Annual appendix 2 for example broaden scope to incorporate fabric checks for other clinical spaces. (Only for “theatres” at present).

Critical ventilation systems – verification standards

75% rule – requires complete re-structuring. The tolerance needs assessing in greater detail and the clause completely re-writing.
How any tolerances impact on other HBN’s. I.E any air change rate given in any other HBN – does this fall under the same tolerance?

The relationship with the +10% - 0% at commissioning also needs further clarification, as this would permit a 35% drift from original design performance specification and/or Appendix A?

Operational and financial impact of things that have already been installed and operated within 75% etc.. will have a huge impact on businesses overnight many systems will become none complaint and many contracts unfulfilled.

**Table 1 – Operational management and routine verification process model**

Should be expanded to include detailed SOPs.
Example: “Is the air distribution system satisfactory; (Cleanliness)”
How? ], Visually? How can this be documented as “fit for purpose” if not cleanliness is not measured inline with TR19 for example.
Process model is potentially not possible to be executed by one company/individual such as; Fire Dampers & Control’s sequence logic. – Maybe a suggestion that this should be undertaken during a shut down and/or that the information should be gathered and then an assessment undertaken at that point.

**Table 2 – Maximum sound levels (service noise only)**

Clarification required on failing of noise levels and the relationship with velocity.
As an example, UCV system is commissioned and handed over within 55dbA. The year after it may be increased in speed to maintain sufficient velocity profiles. This will be a year old and none-compliant on noise levels. Ageing of plant. – Should we include a tolerance on noise levels for the ageing of ventilation plant?
Clear description on the difference between “operational noise levels” and noise level created from ventilation equipment should be provided.

**Critical system verification failure**

“4.29 Should a critical system be unable to achieve the standard set out above, it should be taken out of service. If healthcare provision needs prevent the system being taken out of service, the senior manager of the user department should be informed in writing that the system performance is suboptimal. A copy of the notice should be sent to the infection control committee.”

Escalation procedure – considered?
Minor/Major rating etc.. etc..
Chapter 5 Inspection and maintenance

Filter changing

“Safe change” should be reworded as BIBO. Section needs revising – refer to filtration section.

Changing extract filters containing hazardous substances - As above.

Ventilation system cleaning

To refer to current British and industry methods of best practice such as TR19 etc..

Appendix 1 Annual inspection of critical ventilation systems – AHU and plantroom equipment

Definition of terms used on survey form

The grading/scoring in the survey forms is being used in a manner not as initially intended. Organisations are being targeted and penalised on this scoring scheme. In some cases for the unit to be average or poor due to some of the questions being “no” does not always paint an accurate picture. Should consider a new strategy than “scoring system” approach.

Example one answer as negative and the result shift to “average”.

The use of the Appendix 1 needs further definition as it does not satisfy the AHU minimum requirements as per Part 3.

Poor/average/good grading schemes on AHU inspections needs re-visiting. – Is it viable? Also applicable to appendix 2.

“6 Are motorised dampers fitted to the intake and discharge?”
Answer depends on the plant layout. – Should note “of the supply & extract respectfully”.

Does not note anything on standard/condition of air filtration other than air bypass. I.E could be incorrect efficiency, damaged etc..

“38 Is AHU and its associated main ductwork clean internally?”

Difficult to answer this without measurement to current BS / ISO standards and TR19 etc. Should specify if this is intended to be a visual inspection only.
Appendix 2 Operating suite annual verification

Definition of terms used on survey form - as above with Appendix 1. Theatre suite information only. Survey should be revised and broadened to incorporate other clinical spaces. 75% rule requires clarifying throughout series.

UCV and verification need to be considered as a whole system. Not as separate entities. This is linked to shared spaces. Many separate contracts exist whereby the UCV speed is independently increased without performing full checks on the effect on the rest of the system. This can result in the UCV taking air from peripheral rooms when in Operational speed. – Full system needs to be verified in full. UCV PPM should also be undertaken at the same time. When any increase in UCV fan speeds is undertaken a full system performance inspection is required. This is especially the case for UCV systems in excess of 2.8m clean zones.

Test points for existing plant. – Document procedure when unable to access. This is a regular occurrence. Not possible to remove ceiling tiles and light fittings etc.. – Escalation policy for this situation.