

Interim Report for Article 9 to the IAG meetings on 1st and 4th March 2004

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Introduction

1. Article 9 of the EPBD requires the introduction of "measures to establish a regular inspection of air conditioning systems of an effective rated output of more than 12kW". The inspection is to include "an assessment of the air conditioning efficiency and the sizing compared to the cooling requirements of the building". Advice is also to be provided to the users on "possible improvement or replacement of the air-conditioning system and on alternative solutions".
2. Article 2 of the EPBD defines an "air conditioning system" as "a combination of all components required to provide a form of air treatment in which temperature is controlled or can be lowered, possibly in combination with the control of ventilation, humidity and air cleanliness."
3. A practical inspection and assessment method is currently being developed by a CIBSE/FETA working group, also including representation from ACRIB, with a view to producing a joint publication, likely to be a jointly badged CIBSE Technical Memorandum. The publication will describe a procedure clearly identifiable as that suggested to meet the requirements of Article 9 of the EPBD. It may also include additional procedures and observations that could be made on a voluntary basis, that would constitute a "best practice" inspection and reporting regime, but these additional aspects would be clearly identified as such. It is proposed that this publication could be referenced by the Approved Document as a way of specifying the required inspection.

Scope of the inspection

4. The interpretation of the Article 9 requirement proposed is that the inspection and assessment should include all types of cooling and air conditioning systems above the specified 12kW rated output intended to provide occupant comfort in building services applications for which the provisions of Approved Document L2 currently apply. The 12kW limit is taken to mean the rated cooling capacity of the included mechanical or absorption refrigeration system. This aligns with common European usage for performance measurement standards within the Eurovent Certification programme, which distinguishes between comfort air conditioning equipment in the ranges "up to 12kW", "12kW to 45kW" and "45kW to 100kW".
5. The term "air conditioning system" is used in the following to represent any of the systems described as above, and includes any associated water and air distribution and exhaust systems that form a necessary part of the system. It also includes the controls that are intended to regulate the use of these systems, which are seen potentially as the most important element influencing achieved energy efficiency. It excludes mechanical ventilation systems that provide no mechanical cooling and components that, although they may be co-located with air conditioning systems, are dedicated to providing heating duty only.
6. The Directive calls for an assessment of air conditioning system efficiency, rather than a measurement or estimate. The distinction drawn in the working group between these terms is that an assessment may give a broad view of the design and operation of the system without putting a numerical value on its likely or actual performance. Such an assessment could be made from a number of relatively simple observations, by a person with general technician skills. Obtaining any numerical value for efficiency would entail very significant effort in terms of measurement and monitoring, and a high level of assessor skill.
7. The strategy suggested in the CIBSE/FETA working group is that the air conditioning system inspection and assessment procedure would comprise five components. These are:
 - a. To examine existing documentation and review any existing maintenance and inspection regime.
 - b. To inspect, at a basic level, the refrigeration system components.
 - c. To inspect the major components of air delivery systems.
 - d. To examine the arrangements made to control the system, and current control settings.
 - e. To form a view of the sizing of the system in relation to the cooling load.In some cases a sixth activity may also be needed:
 - f. To assemble documentation describing the system and any existing inspection and maintenance regime, where this has not been prepared in readiness for the inspection. This would form a separate and supplementary task (see Para 18 below).
8. The rationale for the inspection being developed is that:
 - a. The greatest potential for advising improvement that could be carried out simply and at low cost is likely to come from reviewing the system controls and settings.
 - b. Air movement systems would be examined largely to assess filter maintenance, and the effectiveness of delivery of cooled air, where there could be scope for improvement by adopting common good practice.
 - c. Refrigeration systems themselves would be examined at a basic level for evidence of faults and neglect that would clearly have compromised performance.

- d. Examining system documentation will be necessary to determine the equipment and locations to be inspected, and may provide sufficient information to deduce factors such as the Specific Fan Power of air movement systems, or to help assess the sizing of the system in relation to the cooling load. The control arrangements may also be described. Documentation may also include details of an ongoing good practice maintenance regime that could remove the need for part of the inspection procedure.
9. Issues that arise include that:
 - a. Considerable time would be saved where building owners or managers have assembled relevant documentation describing the installed systems, and maintenance records, ready for the inspection.
 - b. For some systems, part of the inspection will almost certainly need to take place outside normal working hours, as air delivery systems will need to be turned off to allow safe access to inspect components installed inside air handling units.
 10. The working group is also considering the frequency of inspection, the skill levels that would be required, and the provision of information for training purposes. The issue of accreditation or approval of the assessors has also been raised, although this requires wider discussion.
 11. The current intention of the working group is to develop a draft that would be made available for wider review and comment over summer 2004.

Implementing the requirement

12. Article 9 might be implemented by introducing a new continuing requirement to the effect that "owners of air conditioning systems of over 12kW rated output installed to provide comfortable conditions for building occupants should provide reports to their Local Authority assessing the energy efficiency of each such system. The assessment and reports should be provided by, and based on an inspection carried out by, an independent and suitably qualified person". Guidance could then make reference to "a procedure such as is specified in the CIBSE/FETA publication". (Note that the Local Authority may not be the most suitable recipient of these reports. The appropriate recipient may be dependent on the legal means adopted to implement Article 9.)
13. Existing systems will need to be inspected even though there may be no connection to work being carried out that would normally expose the proposer to the requirements of Part L. The new requirement would therefore need to be publicised both within the Part L documentation and more widely to building owners and managers.
14. The process of inspection would be made more effective if the requirement were implemented using a staged approach, as follows:
 15. At 'Stage 1' the owner of a building with any relevant air conditioning systems would be asked to declare, and provide to the local authority a list of, such relevant systems included in the subject building.
 16. At 'Stage 2' the owner would be asked to assemble any available documentation in readiness for the inspection. This would include, for example, catalogue information, installation and commissioning information details that were provided during the installation and commissioning of the equipment. The assembly of this information will help to minimise the time and cost of the subsequent inspection process. A specification for the minimum content of this information is also being developed within the CIBSE/FETA working group.
 17. At 'Stage 3' the owner would be required to provide a report on the energy efficiency of the installed systems to the local authority, prepared by an independent accredited person having carried out an inspection to the standard specified.
18. Where the owner has not made the relevant documentation available at the time of the inspection, then the minimum information set (noted at Para 16) would also need to be prepared as part of the inspection procedure, at additional cost.

Relation to other initiatives

19. It would be helpful to record the basic information describing relevant installed air conditioning systems in such a way as to assist subsequent inspections. This information could also be helpful to the building certification process to be developed for Article 7 of the EPBD. A way of ensuring this continuity could be to recommend, within the new provisions, that the information is included in the Building Log-Book, where one exists, or otherwise to recommend the preparation of a section for a Log-Book having this as its minimum content.
20. The working group is aware that CEN has now mandated a new work item to provide guidelines for the inspection of air conditioning systems, under the responsibility of TC 156. The group will seek to liaise with that work as appropriate.
21. The working group noted that a variety of other inspections or assessments may be needed in relation to air conditioning systems, for example as a result of the F-Gas Directive (which may require regular inspection for refrigerant gas leakage) or the Pressure Systems Regulations (which may require regular inspection of some pressurised refrigeration system components). However it was thought that, while there might be benefits in recommending that inspections are made concurrently, the skills and competencies required for each type of inspection could differ significantly and that the Article 9 inspection should be kept separate.