

Air Conditioning Conventions Issue 1

1st August 2011 (v1.0)

The conventions in the following pages have been agreed, and approved, by the Air Conditioning Technical Steering and Conventions Group. Membership of the group is open to all approved air conditioning accreditation schemes as part of the on-going work to standardise the assessment process, and to ensure a uniformity of approach, that will assist accreditation schemes and air conditioning energy assessors. The Group has been set up with the approval of DCLG.

These conventions (issue 1.0) have been sent to you by your Accreditation Scheme and must be applied by all accredited energy assessors. This also applies to those assessors currently in training. To enable schemes, training providers and assessors to manage the implementation process successfully please note that for audit and management purposes, the conventions must be applied on the date shown in the 'Implementation Date' column on the right-hand side of the table. These conventions will be included as part of future quality assurance checks of the assessments you have undertaken, and the air conditioning inspection reports you have produced, thereafter.

The conventions are designed to improve the quality and accuracy of air conditioning inspection reports. The conventions will, therefore, supersede any previous assessment process and any previously issued guidance. With this in mind, further conventions are being discussed and developed by the Conventions Group and these will be released to you in stages.

If you have any questions about the conventions, you must feed them back to your Accreditation Scheme so the issue you have raised, where appropriate, can be discussed at a future meeting of the Conventions Group. The conventions must be applied as issued, even if you believe there may be a convention that requires further clarification, until such time as the Conventions Group have had the opportunity to discuss the issue you have raised in more detail. Any subsequent changes to the conventions will then be circulated to all air conditioning assessors.

No.	Convention Title	Version	Agreed Convention	Implementation Date
1. General Information				
AC CL 1.3	Refrigeration Temperature Measurement	1.0	<p>NOS level: 3 & 4</p> <p>Scope: England & Wales and Northern Ireland</p> <p>Issue:</p> <p>Circumstances under which Energy Assessors should measure the refrigeration temperature (Cooling Plant Detailed Inspection Notes within Air Conditioning Inspection Report)</p> <p>Convention:</p> <p>CIBSE TM44 Inspection items PS2.3 (Table 2.3) and CS2.3 (Table 3.3) state; 'Check that refrigeration plant is capable of providing cooling by assessing the temperature difference, and observing the refrigeration sight glass, and/or refrigerant temperature or pressure gauges (where readily visible).'</p> <p>The temperature difference may be assessed by practical observation of whether the system is delivering cooling indoors or rejecting heat outside. Additional information may also be obtained by observing the refrigerant sight glass or the temperature and pressure gauges (where readily visible). Whenever they are available, the pre and post compressor temperatures should be entered in Air Conditioning Inspection Report. The evidence to support the conclusion that the system is or is not delivering cooling must always be entered in the Notes and Recommendations section within the report.</p>	1 st September 2011
AC CL 1.5	Sub System Hierarchy	1.0	<p>NOS level: 3 & 4</p> <p>Scope: England & Wales and Northern Ireland</p> <p>Issue:</p> <p>Clarification of an air conditioning sub system and the air conditioning sub system hierarchy to all parties. Any existing asset register id or existing client numbering can be included for each component within an air conditioning sub system.</p> <p>An air conditioning sub system is a group of components whose combined performance delivers cooling and/or ventilation to a space. For example, a chiller(s), air handling unit(s) and the terminal units delivering the cooling (via whatever medium) and the ventilation air (where provided) comprise a sub system.</p> <p>An understanding of all the sub systems on a site will aid the Energy Assessor (EA) to give relevant and specific advice to the client.</p>	1 st September 2011

		<p>A clear description of the sub systems on a site will assist Accreditation schemes to quality assure reports.</p> <p>Convention:</p> <p>The following methodology is to define an identification reference of an air conditioning system that is standard, consistent, and easily recognisable for all inspections.</p> <p><u>VOL</u></p> <p>The client is often not technical and identifies departments by function. This is replicated in the Volume Identifier (VOL ID). For example, in many old hospitals the Outpatients department is spread over a number of areas in a number of buildings. An office block may have different departments on different floors.</p> <p>The VOL ID enables Energy Assessors (EAs) to replicate this logical group of air conditioning equipment, by function, or location within a building, or a group of equipment spread across multiple buildings.</p> <p>Each volume will be assigned a VOL ID in the form VOL001, VOL002, ...VOLnnn</p> <p>Examples:</p> <p>VOL001 = Outpatients VOL002 = Dermatology VOL003 = Optics</p> <p>VOL001 = Gresham Building VOL002 = Turner Building VOL003 = Eastern Building</p> <p><u>SYS</u></p> <p>The System Identifier (SYS ID) identifies an air conditioning sub system This SYS id will contain all the components that are within the air conditioning sub system. This will assists the EA to identify components that may be affected by suggested changes to components within a sub system.</p> <p>For example if two packaged split units are serving the same room, the performance of one will affect the performance of the other in that if one was switched off, the remaining unit would have to serve a higher load. In this case the two independent split systems would be described as being in the same air conditioning sub system and would both have the same SYS ID, even if their controls are not linked.</p> <p>If the same two packaged split units are serving two separate rooms, the performance of one will not affect the performance of the other. In this case the two independent split units would be described as being in different air conditioning sub systems and would</p>	
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			<p>have a different SYS ID.</p> <p>A common arrangement is to have a selection of packaged split units and a centralised air conditioning system. The splits could be grouped as one system or itemised individually and the centralised system would be one system – the EA can decide what an appropriate representation would be.</p> <p>Each System will be assigned a SYS ID in the form SYS001, SYS002, ...SYSn</p> <p>Examples:</p> <p>SYS001 = Two Split Packaged Units in Canteen – openable windows (no AHU)</p> <p>SYS002 = One Split Packaged Unit in the Ground Floor Reception + air supply from AHU1</p> <p>SYS003 = 24 VRF Packaged Units serving 200 bedrooms + air supply from AHU2 (heating only)</p> <p><u>COMPONENT</u></p> <p>The components of an air conditioning system are those items on which there is a series of questions in the Air Conditioning Inspection Report.</p> <table border="1" data-bbox="862 746 1733 943"> <tr> <td>Cooling Plant</td> <td>Cooling Plant</td> </tr> <tr> <td>Air Handling Plant</td> <td>Air handling units</td> </tr> <tr> <td>Terminal units</td> <td>Grilles, Diffusers, Fan-Coils, VAV Boxes etc.</td> </tr> <tr> <td>Controls</td> <td>Control for Chillers, AHUs and Terminal Units</td> </tr> </table> <p>If there are 3 air handling units in system 1 (SYS001) they can be referenced as AHU1, AHU2 and AHU3. If there is a second system with air handling units they can be referenced as AHU4, AHU5 and AHU6 - the EA can decide. Each air conditioning component has a unique reference by a combination of the VOL/SYS/Component id.</p> <p>Example:</p> <p>VOL002/SYS121/AHU14</p> <p>See further examples in Appendix 1: AC CL 1.5 Appendix 01</p>	Cooling Plant	Cooling Plant	Air Handling Plant	Air handling units	Terminal units	Grilles, Diffusers, Fan-Coils, VAV Boxes etc.	Controls	Control for Chillers, AHUs and Terminal Units	
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AC CL 1.7	Sampling Rules	1.0	<p>NOS level: 3 & 4</p> <p>Scope: England & Wales and Northern Ireland</p> <p>Issue:</p>	1 st September 2011								

		<p>Air Conditioning Inspections Sampling Rules</p> <p>With regard to onsite sampling, the minimum number of units sampled on site needs a more detailed clarification to both Energy Assessors (EA) and auditors. On consideration the key requirement is to clearly define a minimum sample depending on what type of system components are present.</p> <p>Convention:</p> <p>To revise the text of CIBSE TM44 section 1.7.2 on sampling. The following text replaces the text in the printed edition of TM44.</p> <p>Revised text for TM44 section on sampling.</p> <p>1.7.2 Sampling</p> <p>The primary purpose of the air conditioning inspection is to assess the relative energy efficiency of the installation, and to identify where there may be scope for energy savings. For larger installations it is not cost effective to inspect every component, and so in these cases it may be appropriate to inspect a sample number of components of certain types.</p> <p>The following rules apply to the preparation of any sampling programme for any air conditioning installation.</p> <p><i>Central Plant</i></p> <p>All central chiller plant must be inspected.</p> <p>For central air handling plant a minimum of ten units or 30%, whichever number is the greater, must be inspected. The requirement also applies to any central air handling plant which does not directly deliver cooling but which is a part of a system which is capable of delivering cooling.</p> <p>Wherever possible, the air volume and set points should be determined for all air handling units, and sampling is not permitted.</p> <p><i>Packaged systems</i></p> <p>Where an installed system consists of a series of packaged cooling plant components (including 'Versatemp' type units), then a 10% sample of the total number of outdoor units must be inspected, with a minimum of 3 units being sampled. In addition an equal number of indoor units must be inspected.</p> <p>Indoor units for packaged systems may include fan coil units and cassettes.</p> <p><i>Terminal Units for Centralised Systems</i></p> <p>A 2% sample of the total number of terminal units must be inspected, with a minimum of 5. For very large systems where consistent conditions are found a maximum of 20 units</p>	
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		<p>may be applied.</p> <p>Terminal units for centralised systems may include VAV terminals, fan coil units or chilled beams, local heat recovery and ventilation units.</p> <p>An air conditioning EA must take a representative sample of the installation on site, having regard to the age and size/capacity of the components. While the minimum number of components must always be inspected, an EA may choose to include a larger sample to improve the quality of the Air Conditioning Inspection Report being provided.</p> <p>If different makes of units are present on site then at least one of each make must be inspected.</p> <p>If observations of any unit type are found to be inconclusive (where the inspection has identified a problem or area of concern) then further units must be sampled where more units of that type are available.</p> <p>These sampling rules should ensure that a reasonable minimum number of plant items are inspected. The sampling required for larger items of plant is more stringent, reflecting the fact that these items of plant will demand a greater proportion of the energy used and are also more likely to contain more refrigerant, depending upon the nature of the equipment.</p> <p>The EA must confirm the sampling size chosen, the reasons for selecting that sample size and that a representative inspection has been carried out. A clear record of the sampling applied and the justification for any selections should be prepared by the EA and will be used in an audit of their work. Where a sample inspection has been carried out this must be recorded in the Air Conditioning Inspection Report Certificate.</p>	
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Appendix 1

Convention No.	Convention Title	Appendix
AC CL 1.5	Sub System Hierarchy	AC CL 1.5 Appendix 01