

European Performance of Building Directive
Article 9. Inspection of Air Conditioning Systems

In April 2007 became English & Welsh Law

European Standard EN 15420

Methodology for an Inspection BRE BSE TM44

TM44: 2007



Air Conditioning Compliance
An Overhead or an Opportunity?

Article 9 Inspection of Air Conditioning Systems



“Inspection of all air conditioning systems with rated output greater than 12kW of cooling at intervals no greater than 5 years”

EPBD Definition of An Air Conditioning System

“a combination of all components required to provide a form of air treatment in which the temperature is controlled or can be lowered, and includes systems which combine such air treatment with the control of ventilation, humidity and air cleanliness”

Excludes Mechanical ventilation only systems & heating only equipment

Article 9 Inspection of Air Conditioning Systems Deadlines & Penalties



Stage 1

By 4th January 2009 the first inspection of all Air Conditioning Systems with an effective rated output greater than 250 kW must have occurred!

Typically large buildings greater than 2000 m² with complex Centralised Systems

Stage 2

By 4th January 2011 the first inspection of all Air Conditioning Systems with an effective rated output greater than 12 kW must have occurred!

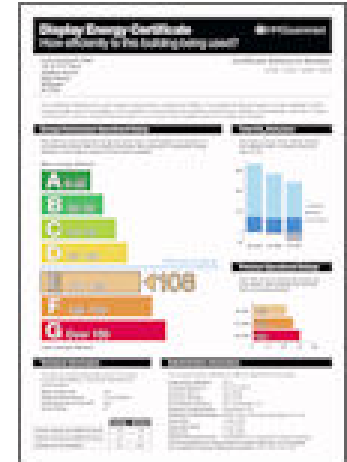
All remaining buildings with Centralised & Packaged Cooling Systems

Building owners failing to meet deadlines face fines from £300 to £5,000 dependent on building size.

Enforcement by Trading Standards Officers

The Aim of the Inspection

- To give building owners and operators information about the performance of their building and plant.
- To identify opportunities to save energy and cut operational costs.



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- Explanation of the basic requirements of TM44
- Compliance (Non Invasive Inspections)
- Opportunities Beyond Compliance
(Invasive Inspections)

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Areas covered by TM44.

- Non Invasive inspection of packaged and centralised cooling systems.
- Assessing equipment sizing in relation to the cooling load.
- Advice and alternative solutions.

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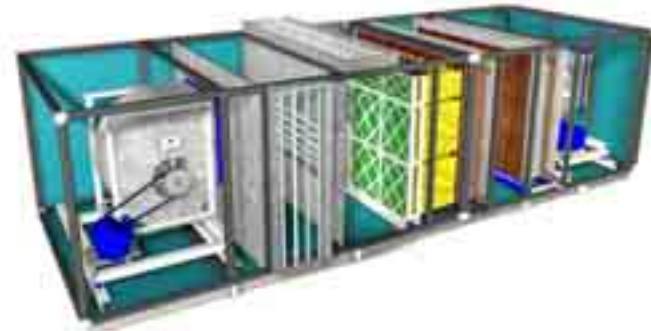


What type of Air Conditioning System Inspection do you need?

Packaged
Cooling System



Centralised Cooling System



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Preparation for the Inspection.

- Essential Information.
- Desirable Information.
- Optional Information

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Inspection Process.

1. Obtain Pre Inspection Information.
2. Determine Inspection/Assessment Type.
3. Determine Inspection Cost.
4. Site Inspection Process
 - 4.1) System Documentation
 - 4.2) Locate Refrigeration Equipment
 - 4.3) Outdoor Heat Rejection
 - 4.4) Indoor Heat Exchangers
 - 4.5) Indoor air delivery systems (Centralised Only)
 - 4.6) Air Handling distribution systems (Centralised Only)
 - 4.7) Outdoor air delivery systems (Centralised Only)
 - 4.8) System Controls
5. Assessment of System Size to Cooling Load
6. Reporting
7. Advice & Alternative Solutions

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Article 9. Pilot Air Conditioning Inspection CIBSE HQ Balham



Delta House
8kW Packaged System



Building Services Engineering Centre
130 kW Centralised System

Article 9. Pilot Air Conditioning Inspection CIBSE HQ Balham

Low cost or no cost opportunities

Investigate and optimise fresh air / re-circulated air dampers to use outside cooler air when available minimising need for mechanical cooling.

Interlock perimeter heating with cooling circuit to prevent simultaneous heating and cooling.

Limit control panel to low speed operation only.

Clean coil face on outside condenser unit.

Capital investment opportunities

Due to low running hours of the Council Chambers paybacks on capital investments are longer than 5 years.

Consider variable speed drives for low speed fresh air control against room CO² sensors

Replace old leaky reciprocating compressors for new technology as refrigerant is R22



Air Conditioning Energy Assessors.

- Regulated by ‘Occupational National Standard for Competences’.
- Who should be an Energy Assessor?
- CIBSE are accreditation and training body for Complex systems
- Other accreditation and training body for Packaged systems.

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Air Conditioning Compliance An Overhead or an Opportunity?

Typically only 1/3rd of HVAC load is
Air Conditioning in Northern Europe
Even more savings can be found when
investigating the Heating and Ventilation.

WHY JUST COMPLY?

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Of the total building energy load Heating, Ventilation and Air Conditioning consumes between

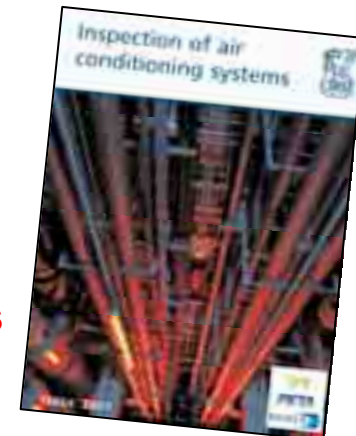


40% for Offices



80% for Research &
Development Establishments

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Our Invasive HVAC Approach

- Over Supply / Extraction of Air
- Optimum Use of Outside Air
- Excessive System Resistances
- Change in Area Usage
- Zoning and Time Schedules
- Fan Motor & Drive Efficiency
- Heating & Cooling Efficiency
- Heating Recovery
- Control sensor Drift



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Inspection of air conditioning systems



Air Conditioning Compliance
AN OPPORTUNITY!