

Overview

This standard is about locating and inspecting heat rejection equipment. The aim of the inspection is to assess the efficiency and sizing of the system compared to the cooling requirements of the building. In turn, this will enable the production of a report, which advises customers on issues that affect energy efficiency and the use of installed air conditioning systems and suggest potential improvements.

The standard is about reviewing existing information relating to the heat rejection system, and its maintenance and energy consumption. It is also about conducting a thorough inspection of the system including the visual inspection of all relevant aspects in accordance with industry requirements.

This standard also covers the production of records of findings using relevant methods and ensuring that records are kept in accordance with the relevant data protection legislation.

Locate and inspect heat rejection equipment

Performance criteria

You must be able to: **Review and record information relating to the energy performance of heat rejection equipment**

1. review the available information and identify that which is relevant to the energy performance of the heat rejection equipment
2. assess the installed equipment, controls, building fabric and layout
3. identify variations from available drawings, documents and records and evaluate the impact they have on energy performance
4. review the relevant site information and identify significant factors that influence the conduct of the energy assessment
5. locate the heat rejection equipment and assemble a minimum portfolio of relevant documentation, if required
6. maintain records of your inspections in accordance with organisational requirements and the relevant data protection legislation

Locate and inspect heat rejection equipment

1. check that enclosure around heat rejection equipment does not obstruct air flow to and from the equipment and there is free passage of air into and out of the enclosure
2. check that the heat exchanger surfaces are free from debris and are undamaged
3. check for air short-circuiting and leakage on direct expansion heat exchanger surface
4. check the rotation and control of heat rejection fans to confirm that fan operation varies with the heat rejection loads
5. check that water distribution is even across cooling tower or evaporative cooler surfaces and that sprays and nozzles are free flowing
6. check that there is no restriction to water flow from cooling tower bund or enclosure and that outlet pipes and strainers are clear
7. check the route and condition of cooling water systems linking the refrigeration plant with the heat rejection units
8. observe and note indications of elevated Legionella risk within your records and notify the customer

Conduct the inspection

Locate and inspect heat rejection equipment

1. provide evidence of your identity to those present at the property before commencing the inspection
2. confirm the availability of the equipment and resources required for the inspection
3. use test equipment according to manufacturers' instructions
4. identify circumstances when at the property that prevent you from continuing with the inspection and explain the reasons to the customer
5. undertake specific, non-invasive and non-hazardous techniques that have been included within the agreed scope of works
6. observe and take measurements which are necessary to provide data for assessment of the energy performance of the air conditioning system
7. make further investigations where observations are inconsistent with existing evidence and expected findings
8. draw the customer's attention to inadequate maintenance or neglect, particularly where these might have implications for the health and safety of occupants or the public

Locate and inspect heat rejection equipment

Knowledge and understanding

You need to know and understand:

1. the relevant components and controls of heat rejection equipment
2. the design and operation of the installed heat rejection equipment, and the impact of changes in building usage on the air conditioning system installed
3. how to identify the type, features and location of the air conditioning systems present at the property
4. how to check that the system settings are within the limits set by manufacturers' data or design intent
5. how to read and interpret building drawings
6. factors affecting air conditioning systems efficiency
7. how to identify potential risk areas in waterborne cooling systems where Legionella may be present and how to take precautionary action to protect self and customers
8. the range of information available relating to the air conditioning system installed, its maintenance schedule and energy consumption
9. how to review available information to identify that which is relevant to the energy performance of the air conditioning system
10. how to review the available information to identify factors that influence the energy assessment
11. how to identify circumstances that prevent the assessment of the energy performance of the air conditioning system
12. the types of equipment and resources that are required for the inspection
13. how to undertake specific, non-invasive and non-hazardous techniques included within the agreed scope of works
14. how to make further investigations where observations are inconsistent with existing evidence and expected findings
15. the requirements and application of relevant regulations, standards and guidance that apply to the assessment of the energy performance of air conditioning systems
16. how to collate information required to assess the energy performance of air conditioning systems
17. the types of advice that can be provided to customers during inspection
18. the sources of information and advice about energy performance to which customers can be referred

19. how to record the information and evidence in accordance with the relevant data protection legislation

Scope/range

Physical measurements of performance:

- estimate current cooling loads against appropriate optimum cooling loads for a typical building of the type being inspected
- establish the optimum size of the cooling system
- identify special cooling measures for specific areas
- assess cooling capacity using equipment rating plates and performance data available from manufacturers and online databases based on size and likely age of the equipment
- establish the ventilation rate in terms of volume of air being circulated through the building and prescribed ventilation rates in regulatory documentation and professional guidance
- determine airflow rates provided by fans in relation to ventilation requirements of the building and fan duties available from building logbooks, operational and maintenance manuals and rating plates and the total power required by supply and extract fans
- establish the specific fan power of the supply and extract installation from available information compared to recommended levels in guidance documents

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Developed by	Instructus
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Relevant Occupations	Professional Occupations; Engineering; Engineering Professionals; Construction, planning and the built environment; Building and construction; Architects; Town Planners and Surveyors
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