ASTOR3
Conduct Inspections of Buildings for Energy Assessment for Operational Rating and associated Advisory Reports

Overview

This standard covers the activities required to conduct the inspection of buildings for the purpose of energy assessment for Operational Ratings and their associated Display Energy Certificates (DECs) and Advisory Reports.

Note that the term 'assessment' is used throughout the standards when referring to the overall process of determining the Asset Rating of a property, or its Operational Rating, whereas 'inspection' is used only when referring to on-site inspection of the property and its features

This inspection includes the safe use of equipment and the analysis of the building's construction, systems and controls and operational performance. Operational Ratings are required for defined categories of public buildings, but this Standard is equally relevant to the provision of Display Energy Certificates and/or Advisory Reports on a voluntary basis, where the skills, knowledge and outputs will be identical.

The references to clients throughout the standard refer both to internal clients, such as line managers, as well as external clients; for example individuals who have contracted your services or representatives of external client organisations.

The skills and knowledge described are intended to embrace the inspection required to collect the data needed to produce a Display Energy Certificate and Advisory Report. You are required to understand and use safely the equipment, resources and techniques needed to undertake building inspections. You are required to identify, record and analyse building environmental information, building construction information, building services and controls information, energy supplies and metering information and systems of building occupation, management, maintenance and operation; you are also required to identify opportunities for installation of Low and Zero Carbon (LZC) technologies

The actual production of the Display Energy Certificate and Advisory Report is covered in other standards.

ASTOR3

Conduct Inspections of Buildings for Energy Assessment for Operational Ratings and associated Advisory Reports

Performance criteria

You must be able to:

Understand and use safely the equipment, resources and techniques needed to undertake building inspections

P1 ensure that you have the equipment and resources needed for the inspection

P2 identify, from drawings, observations of building structures and other sources, the various types of building construction, materials, fuel supplies and services

P3 use test and measuring equipment safely and in line with manufacturer's instructions

P4 using the Royal Institute of Chartered Surveyors (RICS) code of measuring practice, amended where appropriate by Scheme Operating Requirements, make accurate observations and measurements to provide sufficient data for the energy assessment of the building, including determining the floor area

P5 undertake and record a risk assessment based on the hazards observed around and in the building, taking mitigating actions as necessary to ensure the safety of the inspector(s) and that of others in and around the building

P6 obtain all additional information that is needed about the property and ensure that defaults are not used except where justified

P7 make further investigations where observations are inconsistent with existing evidence and expected findings, record and, if appropriate, address such inconsistencies

P8 produce, maintain and retain accurate and legible records of your findings, which are clear, complete and conform to accepted professional and statutory requirements. These will include investigations carried out, values recorded and options considered, to the level of detail required to:

- P8.1 produce a complete and comprehensive Display Energy Certificate and Advisory Report
- P8.2 justify your decisions on values recorded and energy efficiency measures considered

P9 collate **relevant information** as evidence to support the specific decisions made on values chosen and energy efficiency measures considered, including the assumptions made during the inspection

P10 identify **circumstances** when at the property that prevent you continuing with the inspection and explain the reasons to the **client**(s)

Identify, record and analyse building environmental information, building construction information and building services and controls information

You must be able to:

P11 use all available sources of existing information to identify environmental factors, and to identify and characterise building construction, building services and controls

P12 analyse **environmental features** that could impact on the building's energy performance
P13 identify **environmental factors** that could be used to benefit the building's energy performance
P14 use all available sources of existing information to identify and characterise the age, geometry, fabric and materials, building elements, construction techniques and building services used in the building
P15 where appropriate, identify from on-site observation whether the air-tightness and ventilation of the building is amenable to cost-effective improvement
P16 use all available sources of existing information to identify and characterise the building services and controls used in the building and the type and state of maintenance
P17 notify the **client** of any instances of inadequate maintenance or neglect which may have implications for energy efficiency or health and safety, giving your reasons
P18 carry out a methodical, visual, non-invasive, on-site inspection of the fixed building services and controls in order to establish their existence, location, power consumption, capacity, state of operation and maintenance
P19 identify any bivalent systems of heating or cooling
P20 carry out a methodical, visual, non-invasive, on-site inspection of the building to establish all other sources of energy consumption
P21 analyse the interaction of the installed building services and controls with the building fabric to establish a holistic view of the building's energy performance

Identify, record and analyse energy supplies and metering information

You must be able to:

P22 use all available sources of existing information to identify and locate the energy sources used in the building and the energy metering/measuring devices used
P23 compare all aspects of the building's energy sources and metering with the requirements of industry best practice guidance
P24 carry out a methodical, visual, non-invasive, on-site inspection of the building's energy sources in order to establish or confirm their type, location, storage and energy capacity, distribution systems, installed safety and protection systems, state of operation and maintenance
P25 locate and identify how energy consumption is recorded or metered and determine whether any sub-metering is installed

Identify, record and analyse systems of building occupation, management, maintenance and operation

You must be able to:

P26 use all available sources of existing information to identify and locate how the building is occupied, managed, maintained and operated

P27 compare all aspects of the building's occupation, management and operation with the requirements of industry best practice guidance

P28 carry out a methodical, visual, non-invasive, on-site inspection of the building's energy use in order to determine how the building is occupied, managed, maintained and operated in practice

P29 where the inspection is carried out to provide a Display Energy Certificate for a subsequent year, observe that a Display Energy Certificate is displayed on-site and record its reference number to allow it to be verified on the Central Register

Identify opportunities for installation of Low and Zero Carbon (LZC) technologies

P30 identify suitable locations for the installation of LZC technologies taking into account whether the building is listed or in a conservation area

ASTOR3

Conduct Inspections of Buildings for Energy Assessment for Operational Ratings and associated Advisory Reports

Knowledge and understanding

Understand and use safely the equipment, resources and technologies needed to undertake building inspections

You need to know and understand:

K1 what equipment and resources are needed to undertake the inspection
K2 the detailed inspection requirements that apply to a specific building as described in the relevant guidance documents and conventions
K3 the different sources of information that may be used, including existing drawings, calculations and energy assessment reports from previous inspections
K4 how to recognise different types of building construction, materials, services and fuel supplies from drawings as well as building structures
K5 how to undertake a risk assessment
K6 the requirements of the RICS Code of Measuring Practice
K7 how to use test and measuring equipment accurately and safely
K8 the level of detail within your records required to produce a complete and comprehensive Display Energy Certificate and justify your decisions on the values recorded and energy efficiency measures selected
K9 the importance of making and maintaining records that are complete, accurate and legible
K10 the reasons why it is necessary and important to record where and why accurate inspection has not been possible
K11 the limited circumstances when a Display Energy Certificate may be produced without undertaking a site visit to the building it covers
K12 the circumstances in which records can include the fact that information is ‘unknown’ and the evidence required to support this choice
K13 the importance for storing records securely allowing for future access and the purposes for which your records may be used

Identify, record and analyse building environmental information, building construction information and building services and controls information

You need to know and understand:

K14 the types of information sources relating to environmental factors
K15 how to analyse **environmental features** that could impact building energy performance
K16 how to identify **environmental factors** that could be used to benefit the building’s energy performance by the use of Low and Zero Carbon (LZC) technologies
K17 the types of information sources that would assist in identifying and characterising the age, geometry, fabric and materials, building elements, construction techniques and building services
K18 the principles of building structure, elements, materials and services
K19 how to recognise building structure, elements, materials and services from drawings, specifications and on-site inspections and test results
K20 the problems that can affect the energy performance of the building

fabric

K21 the implications of hazardous building fabric for the energy assessment and reporting

K22 any special inspection considerations e.g. presence, condition and thickness of insulation that apply to particular forms of building, e.g. traditional, modular, light industrial, commercial, office, public buildings etc.

K23 how to identify possibilities for improving the air-tightness and/or ventilation of buildings

K24 the types of information sources that would assist in identifying and characterising the building services and controls and the type and state of maintenance

K25 the principles of building services and controls

K26 how to recognise building services and controls from drawings, specifications and on-site inspections, commissioning records and test results and building logbooks

K27 the principles of building maintenance strategies and defect repair

K28 how to recognise inadequate maintenance or neglect which may have implications for energy efficiency or health and safety

K29 any special considerations that apply to particular forms of building, e.g. traditional, modular, light industrial, commercial, office, public buildings etc. with respect to their building services, controls and maintenance

K30 how to carry out a methodical, visual, non-invasive, on-site inspection of the fixed building services and controls to establish or confirm their existence, location, power consumption, capacity, state of operation and maintenance

K31 how to identify any bivalent system of heating or cooling such as radiators and heat pump, comfort cooling and natural ventilation

K32 how to carry out a methodical, visual, non-invasive, on-site inspection of the building to establish all other sources of energy consumption such as industrial processes, lifts, elevators, PCs and printers, vending machines and other non-legislated energy demands

K33 how installed building services and controls interact with building fabric

Identify, record and analyse energy supplies and metering information

You need to know and understand:

K34 the types of information sources relating to energy supplies and metering

K35 the types of fuels and energy sources and their units and conversion factors, likely to be encountered during a building inspection

K36 any special inspection considerations that apply to particular forms of building e.g. traditional, modular, light industrial, commercial, office, public buildings etc. with respect to their energy sources and metering

K37 the requirements of industry best practice guidance on energy sources and metering

K38 how to carry out a methodical, visual, non-invasive, on-site inspection of the building's energy sources to establish or confirm their type, location, storage and energy capacity, distribution systems, installed safety and protection systems, state of operation and maintenance
K39 how to identify different types metering and energy recording systems including systems for sub-metering

Identify, record and analyse systems of building occupation, management, maintenance and operation

You need to know and understand:

K40 the types of information sources relating to how the building is occupied, managed, maintained and operated
K41 any special inspection considerations that apply to particular forms of building e.g. traditional, modular, light industrial, commercial, office, public buildings etc. with respect to their occupation, management and operation
K42 the requirements of industry best practice guidance on the occupation, management and maintenance of buildings
K43 how to carry out a methodical, visual, non-invasive, on-site inspection of the building's energy uses to determine how the building is occupied, managed, maintained and operated in practice

Identify opportunities for installation of Low and Zero Carbon (LZC) technologies

You need to know and understand:

K44 the recognised Low and Zero Carbon (LZC) technologies that can be used to improve the energy performance of non-dwellings, and their **characteristics**
K45 the appropriate circumstances in which LZC technologies may reasonably be installed
K46 the energy benefits to buildings of installing LZC technologies
K47 how to assess location and site for suitability for LZC technologies
K48 the implications of Listed Building Status and Conservation areas for the preparation of Advisory Report

ASTOR3

Conduct Inspections of Buildings for Energy Assessment for Operational Ratings and associated Advisory Reports

Additional Information

Scope/range

1 **relevant Information**
- 1.1 legible site notes
- 1.2 clear site sketches (plan, elevation) to give an adequate record of the inspection for audit purposes
- 1.3 clear photographs containing mandated data (e.g. time and date) appropriately staged and annotated where necessary
- 1.4 legibly completed survey forms
- 1.5 records of web searches or other research
- 1.6 any other information you consider necessary to support your decisions
- 1.7 any other information required by the OR methodology, OR conventions and the Scheme Operating Requirements

2 **circumstances**
- 2.1 the discovery of unexpected or hazardous conditions or materials
- 2.2 other potential threats to health and safety
- 2.3 properties beyond your current level of competence

3 **client(s)**
- 3.1 internal
- 3.2 external

4 **environmental features**
- 4.1 geographical location
- 4.2 exposure
- 4.3 building orientation
- 4.4 the building’s thermal mass
- 4.5 solar heating effects and shading

5 **environmental factors**
- 5.1 orientation
- 5.2 roof design
- 5.3 shading
- 5.4 location

6 **characteristics**
- 6.1 location and site requirements
- 6.2 installation requirements
- 6.3 efficiencies and other technical data relating to their energy performance

ASTOR3

Conduct Inspections of Buildings for Energy Assessment for Operational Ratings and associated Advisory Reports

Developed by	Asset Skills
Version number	2
Date approved	February 2012
Indicative review date	February 2017
Validity	Current
Status	Original
Originating organisation	Asset Skills
Original URN	OR3
Relevant occupations	Professional Occupations; Construction, Planning and the Built Env; Building and Construction; Architects, Town Planners and Surveyors
Suite	NOS for the production of ORS, DECs and ARs
Key words	energy performance of buildings directive; EPBD; energy performance certificate; EPC; display energy certificate; DEC; operational rating; OR; advisory report; AR