
Overview

This standard is about managing the installation, commissioning and handover of retrofit work in accordance with organisational requirements which are equal to or exceed current statutory and legislative requirements.

This standard is for people working in the occupational area of construction site management which is defined as the management of multiple construction trades and disciplines and can be used by operatives, supervisors and managers

Performance criteria

You must be able to:

- P1 observe and apply organisational requirements appropriate for the protection of the workforce, sub-contractors, suppliers, consultants, occupants, visitors, the general public, and the environment by the application of information relating to:
 - 1.1 methods of work
 - 1.2 risk assessments
 - 1.3 safe use and storage of tools
 - 1.4 safe use and storage of materials and components
 - 1.5 traffic management
 - 1.6 emergency plans
 - 1.7 fire safety
 - 1.8 acoustic and sound insulation
 - 1.9 thermal insulation
 - 1.10 workforce competency
 - 1.11 site constraints

- P2 manage the implementation of the retrofit plan ensuring effective and efficient working practices compliant with design and quality standards, for a given occupational area

- P3 review and record on works progress against the project programme, resources and planned sequencing of works, and recommend and take corrective action when required

- P4 recognise and report defects in installation, with specific reference to six of the following:
 - 4.1 gaps in installation
 - 4.2 missing and inappropriate fixings
 - 4.3 detailing at corners, edges, junctions and openings
 - 4.4 interaction with building services
 - 4.5 combustion appliances, flues and ventilation
 - 4.6 fire safety
 - 4.7 acoustic and sound insulation
 - 4.8 thermal bypass and thermal bridges
 - 4.9 loading

- P5 record and report that ventilation is not compromised and complies with all relevant standards for the following:
 - 5.1 gas and other combustion appliances
 - 5.2 flues
 - 5.3 general ventilation

- P6 check and record that the retrofit works conform to quality, standards and compliance with the retrofit design and manufacturers' instructions, throughout the installation process, for at least fourteen of the following:
- 6.1 alterations to the structure
 - 6.2 loadings
 - 6.3 fixings
 - 6.4 corners, junctions and edges of building elements
 - 6.5 interfaces between the building fabric, services and the occupants
 - 6.6 windows and doors including reveals, sills and soffits
 - 6.7 thermal bypass
 - 6.8 thermal bridges
 - 6.9 air tightness
 - 6.10 vapour barriers
 - 6.11 moisture movement
 - 6.12 moisture ingress
 - 6.13 condensation risks
 - 6.14 rainwater goods
 - 6.15 mechanical, electrical and plumbing (MEP)
 - 6.16 fire safety
 - 6.17 acoustic and sound insulation
- P7 recommend, record and implement corrective actions when required for at least fourteen of the following:
- 7.1 alterations to the structure
 - 7.2 loadings
 - 7.3 fixings
 - 7.4 corners, junctions and edges of building elements
 - 7.5 interfaces between the building fabric, services and the occupants
 - 7.6 windows and doors including reveals, sills and soffits
 - 7.7 thermal bypass
 - 7.8 thermal bridges
 - 7.9 air tightness
 - 7.10 vapour barriers
 - 7.11 moisture movement
 - 7.12 moisture ingress
 - 7.13 condensation risks
 - 7.14 rainwater goods
 - 7.15 mechanical, electrical and plumbing (MEP)
 - 7.16 combustion appliances, flues and ventilation
 - 7.17 fire safety
 - 7.18 acoustic and sound insulation
- P8 manage the scheduling and coordination of the inspection, testing, and commissioning and record the outcomes for

retrofit works

- P9 recommend, record and implement any required corrective actions for retrofit works following commissioning including but not limited to two of the following:
- 9.1 ventilation
 - 9.2 combustion appliances
 - 9.3 heat recovery devices
 - 9.4 heating systems
 - 9.5 hot water systems
 - 9.6 lighting fittings
 - 9.7 systems and controls
 - 9.8 insulation
 - 9.9 draught proofing
 - 9.10 windows and doors
 - 9.11 solar blinds, shutter and shading devices
 - 9.12 renewable energy installations
 - 9.13 fire safety
 - 9.14 acoustic and sound insulation
- P10 manage the project handover on completion of the installation of retrofit works

Knowledge and understanding

You need to know and understand:

Performance Criteria 1

Observe and apply organisational requirements

- K1 what organisational requirements apply to the protection of the workforce, sub-contractors, suppliers, consultants, occupants, visitors, the general public, and the environment in relation to the following:
 - K1.1 methods of work
 - K1.2 risk assessment
 - K1.3 safe use and storage of tools
 - K1.4 safe use and storage of materials and components
 - K1.5 traffic management
 - K1.6 emergency plans
 - K1.7 fire safety
 - K1.8 acoustic and sound insulation
 - K1.9 thermal insulation
 - K1.10 workforce competency
 - K1.11 site constraints

Performance Criteria 2

Manage implementation of the retrofit plan

- K2 why it is important to manage the implementation of the retrofit plan ensuring effective and efficient working practices compliant with design and quality standards for a given occupational area, and how to do this
- K3 why it is required, and how to ensure operatives undertaking the installation, commissioning and handover are qualified to do so for a given occupational area

Performance Criteria 3

Review and record on works progress

- K4 why reviewing and recording on works progress against the project programme, resources and planned sequencing of works is required
- K5 how to review, record and report on works progress against the project programme, resources and planned sequencing of work

- K6 when and how to recommend and take corrective action
- K7 how to identify potential risks of failure and mitigate through planning, accuracy, dimensional control and sequencing of work, including but not limited to:
 - K7.1 technical and performance risks:
 - a thermal bridges
 - b heating
 - c ventilation
 - d thermal bypass
 - e condensation and interstitial condensation
 - f alterations in structure
 - g moisture movement
 - h fire safety
 - i acoustic and sound insulation
 - K7.2 inefficiencies
 - K7.3 additional costs
 - K7.4 delays to programme
 - K7.5 abortive works
 - K7.6 duplication
 - K7.7 damage
 - K7.8 latent defects

Performance Criteria 4

Recognise defects in installation

- K8 how to recognise defects in installation with specific reference to:
 - K8.1 gaps in installation
 - K8.2 missing and inappropriate fixings
 - K8.3 detailing at corners, edges, junctions and openings
 - K8.4 interaction with building services
 - K8.5 combustion appliances, flues and ventilation
 - K8.6 fire safety
 - K8.7 acoustic and sound insulation
 - K8.8 thermal bypass and thermal bridges
 - K8.9 loading
- K9 how and when to propose suitable corrective action for any defects in installation

Performance Criteria 5**Check, record and report that ventilation is not compromised**

K10 why it is important to check, record and report that ventilation is not compromised and complies with all relevant standards, and how to do this, for the following:

- K10.1 gas and other combustion appliances
- K10.2 flues
- K10.3 general ventilation

Performance Criteria 6**Check and record installation of works**

K11 why it is required to carry out specified checks of the retrofit works during installation and record the works conform to:

- K11.1 quality
- K11.2 standards
- K11.3 manufacturers' instructions, technical information and product data sheets
- K11.4 retrofit design

K12 how to check and record installation of works for quality, standards and compliance with the retrofit design, and manufacturers' instructions for the following:

- K12.1 alterations to the structure
- K12.2 loadings
- K12.3 fixings
- K12.4 corners, junctions and edges of building elements
- K12.5 interfaces between the building fabric, services and the occupants
- K12.6 windows and doors including reveals, sills and soffits
- K12.7 thermal bypass
- K12.8 thermal bridges
- K12.9 air tightness
- K12.10 vapour barriers
- K12.11 moisture movement
- K12.12 moisture ingress
- K12.13 condensation and interstitial condensation risks
- K12.14 rainwater goods
- K12.15 mechanical, electrical and plumbing (MEP)
- K12.16 fire safety
- K12.17 acoustic and sound insulation

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- K13 the potential risks and implications of non-compliance and poor quality installations over time for active and passive fire safety measures
- K14 the principles of a building as a system and its component parts and the importance of identifying standards and the consequences of failure to follow organisational requirements
- K15 the potential risks and implications of non-compliance and poor quality installations over time including but not limited to:
- K15.1 occupant health and safety
 - K15.2 indoor air quality
 - K15.3 mould
 - K15.4 performance gaps
 - K15.5 rot
 - K15.6 building fabric decay
 - K15.7 overheating
- K16 the importance of maintaining ventilation
- K17 how to recognise ventilation and air movement pathways through buildings and ensure that these are maintained, whilst balancing the need for airtightness
- K18 how to recognise the different properties of insulation materials and how these relate to thermal, moisture, condensation, acoustic and sound and fire safety
- K19 the different types of air and vapour control layers and breather membranes, where and how they should be used, and why it is important to install them correctly
- K20 the importance of ensuring the integrity of air and vapour control layers and breather membranes following installation and the need to ensure continuity
- K21 how condensation forms in buildings, how this relates to moisture and moisture movement and what steps can be taken to mitigate potential risks
- K22 why a whole building approach is taken to retrofit works and how this relates to building performance and building use

Performance Criteria 7

Recommend, record and implement corrective actions

K23 how and when to recommend, record and implement corrective actions for the following:

- K23.1 alterations to the structure
- K23.2 loadings
- K23.3 fixings
- K23.4 corners, junctions and edges of building elements
- K23.5 interfaces between the building fabric, services and the occupants
- K23.6 windows and doors including reveals, sills and soffits
- K23.7 thermal bypass
- K23.8 thermal bridges
- K23.9 air tightness
- K23.10 vapour barriers
- K23.11 moisture movement
- K23.12 moisture ingress
- K23.13 condensation and interstitial condensation risks
- K23.14 rainwater goods
- K23.15 mechanical, electrical and plumbing (MEP)
- K23.16 combustion appliances, flues and ventilation
- K23.17 fire safety
- K23.18 acoustic and sound insulation

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Performance Criteria 8**

Manage the scheduling and coordination of the inspection testing and commissioning

- K24 why managing the scheduling and coordination of the inspection testing and commissioning for retrofit works is required
- K25 how to manage the scheduling and coordination of the inspection testing and commissioning for retrofit works
- K26 why it is required and how to record outcomes for retrofit works, services and fabric
- K27 the range of non-destructive testing and investigation methods including but not limited to:
 - K27.1 thermal imaging

- K27.2 moisture content of building fabric
- K27.3 air tightness for building envelope and identifying air filtration and air leakage points
- K27.4 energy use of buildings from meters and sub-meters for individual systems
- K27.5 sound insulation testing
- K27.6 borescope testing

- K28 the stages of commissioning including but not limited to:
 - K28.1 setting-to-work
 - K28.2 regulation
 - K28.3 performance optimisation
 - K28.4 recording
 - K28.5 post-commissioning checks
 - K28.6 fine tuning during occupancy

- K29 why the final commissioning of all building services is done together, rather than separately

Performance Criteria 9

Recommend, record and implement corrective actions for retrofit works following commissioning

- K30 why recommending, recording and implementing corrective actions is required following commissioning

- K31 how to recommend, record and implement corrective actions following commissioning

Performance Criteria 10*

Manage, monitor and evaluate the project handover

- K32 why it is important to manage the project handover on completion of the installation, and how to do this

- K33 why monitoring and evaluation of the project handover is required

- K34 how to manage the project handover in accordance with the handover strategy and requirements of relevant certification schemes

- K35 how to gather, record, analyse and interpret information

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- K36 how to convey the following information about the installed measures:
- K36.1 physical inspection and explanation of function and operation
 - K36.2 demonstrate the safe operation of any components, devices and controls
 - K36.3 visual checks to ensure the recipient is able to operate the components, devices and controls
 - K36.4 care needed to avoid detrimental effects
 - K36.5 maintenance, including requirements to comply with guarantees and warranties
 - K36.6 efficient operation to facilitate the delivery of intended reduction in energy use
 - K36.7 importance of ventilation
 - K36.8 post completion services
 - K36.9 provision of documentation including end-user advice information
- K37 how to present information and recommendations for any remedial actions or changes to the retrofit process required, to relevant stakeholders including, but not limited to:
- K37.1 clients
 - K37.2 designers and contract administrators
 - K37.3 installers and contractors
 - K37.4 end-users
 - K37.5 external enforcement and quality assurance bodies
 - K37.6 funding organisations
 - K37.7 guarantee or warranty providers
- K38 how to ensure operatives undertaking the handover are vocationally competent to do so and have access to adequate knowledge of the measures and the behaviours required for their safe, efficient and effective operation and maintenance
- K39 when to undertake the handover procedure, including a phased handover
- K40 when basic, intermediate and advanced levels of monitoring and evaluation are required and what information is required for each
- K41 timescales for completing and reporting different levels of monitoring and evaluation
- K42 who are the recipients of the handover process

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- K43 which stakeholders require copies of the following documentation:
- K43.1 test certificates and commissioning records
 - K43.2 operation and maintenance instructions and manuals
 - K43.3 warranty and guarantee certificates
 - K43.4 as constructed plans

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