

Overview

This standard is for people who commission refrigeration systems.

The person performing this work must be able to comply with the correct procedures and practices for commissioning refrigeration systems. This work must be in accordance with the current versions of the appropriate industry standards and regulations; the specification; industry recognised working practices; the working environment and the natural environment. They must know and understand the types, operation, operating principles and/or application of:

- refrigerants (including their properties e.g. flammable/non-flammable)
- direct and indirect systems
- system components
- RAC and HP systems
- methods, procedures and techniques for commissioning equipment, components and accessories

Performance criteria

- You must be able to:*
1. verify that the job and system information and documentation are current and relevant and that the plant, instruments, access equipment and tools are fit for purpose
 2. confirm before work starts that the work location and work area can be accessed safely
 3. produce a risk assessment and method statement in accordance with organisational procedures for the work to be carried out, including the identification and use of personal protective equipment
 4. interpret system information, diagrams and drawings to identify the location of the equipment, accessories and components that need commissioning
 5. confirm that the equipment, components and accessories installed are:
 - of the right type and size
 - fit for purpose in accordance with the system's design
 - suitable for the working environment in which they are installed
 6. confirm that the site services are compatible with the system's design
 7. complete safe-isolation to ensure the safe commissioning of the system
 8. perform checks to ensure that the equipment, components and accessories have been fixed, fitted, and connected in accordance with:
 - the system's design
 - the working environment
 - manufacturer instructions
 9. confirm, as appropriate, the integrity of the installed system
 10. commission equipment, components and accessories, adjusting the controls to ensure the configuration, safety and effective performance of the system in accordance with:
 - the system's design
 - the working environment
 - manufacturer instructions
 - organisational procedures
 11. confirm with the relevant people:

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- those necessary variations to the planned programme of work
- the actions to be taken to ensure that any variations to the planned programme of work will minimise the potential for hazard and risk

12. obtain customer/client acceptance of the commissioned system and its associated equipment, components and accessories in accordance with organisational procedures

13. complete relevant documentation in accordance with organisational procedures

Knowledge and understanding

You need to know and understand:

1. the operation and operating principles, of different systems and their associated equipment, components and accessories in relation to:
 - the system's design
 - the working environment
 - the applications, advantages and limitations of different refrigerants
2. the appropriate industry standards and regulations relevant to commissioning refrigeration systems
3. the applications, advantages and limitations of different refrigerants their properties and methods for safe usage
4. how to verify that job and system information and documentation is current and relevant and that the plant, instruments, access equipment and tools are fit for purpose
5. how to produce a risk assessment and method statement for the work to be carried out, including the identification and use of personal protective equipment, in accordance with:
 - the system's design
 - the conditions of the working environment
 - organisational procedures
 - activities of other personnel on site
6. the checks required to confirm that the equipment, components and accessories have been fixed, fitted and connected in accordance with:
 - the system's design
 - the conditions of the working environment
 - manufacturer instructions
7. how to interpret system information, diagrams and drawings to identify the location of the equipment, accessories and components that need commissioning
8. safe-isolation procedures to ensure the safe commissioning of the system
9. the methods and techniques for commissioning the system and its associated equipment, components and accessories in accordance with:

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- the system's design
 - the working environment
 - manufacturer instructions
 - organisational procedures
10. the procedures and tests to confirm the system integrity
11. the organisational procedures for:
- confirming with relevant people those necessary variations to the planned programme of work that may have the potential to introduce a hazard and/or impact
 - confirming with relevant people the correct actions to be taken to ensure that any variations to the planned programme of work will not introduce a hazard and have minimum impact on the commissioning work to be undertaken
 - obtaining customer/client acceptance of the commissioned system and its associated equipment, components and accessories
12. how to implement organisational procedures for the safe transport and/or disposal of any waste material, substances and liquids in accordance with suppliers' and manufacturers' instructions
13. how to complete relevant documentation in accordance with organisational procedures

Scope/range related to performance criteria **Working environments (internal and/or external)**

- domestic
- non-domestic
 - commercial
 - industrial
 - agricultural
 - horticultural
 - leisure and entertainment
 - residential medical and care facilities
 - public services establishments
 - pre-1919 traditional/historic buildings

Systems

- vapour compression
- secondary
- multi-temp
- air conditioning and heat pumps
- compound/pumped

Equipment, components and accessories

- compressors
- condensers/evaporators
- heat exchangers
- pressure vessels
- liquid drier/receivers
- valves (line; regulating)
- pipework
- controls for pressure/temperature (including complex/smart)
- sensors and gauges
- internal and external units
- heat pumps
- grills/diffusers/fans/filters
- vacuum/condensate pumps

Organisational Procedures

- information management
- project management
- risk assessment management

- implementing and monitoring health & safety requirements and issues
- implementing and monitoring issues relating to the natural environment
- customer service
- accident reporting
- emergencies
- communication with relevant people

Plant

- transformers for low voltage hand-tools
- lifting equipment
- access equipment
- hot work equipment

Refrigerants

- HC
- HFC (HFO)
- CFC
- natural inorganic (including CO₂ and ammonia)
- secondary refrigerants

Relevant people

- customers/clients
- client representatives
- supervisors
- site/contract manager
- other contractors/trades
- members of the public
- work colleagues

Glossary

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