

SUMMES32 (SQA Unit Code - F9H7 04)

Establish electrical control (and supply) of mechanical building services systems



Overview

This unit is for people who are required to install, maintain and service electrical systems which are designed to control;

1. Refrigeration
2. Air Conditioning
3. Heating
4. Ventilation
5. Hot and Cold water

This unit is about following the correct procedures for the installation, maintenance and servicing of mechanical building services systems and complying with the relevant regulations, codes of practice and industry approved standards.

They need to show an understanding of safe isolation procedures and risk assessment, wiring/cable systems, fault finding techniques, types and limitations of earthing and overcurrent protection systems and equipment, electrical supply systems, methods and limitations of functional testing and have the technical competence to interpret diagrams, drawings and specifications as appropriate.

By the very nature of the hazardous working environment and working conditions it is important to remember that the activities undertaken by the operative shall:

1. be approved in accordance with accepted industrial practice and standards
2. be to an appropriate specification as issued by the person responsible for the completion of the installation
3. not involve testing and commissioning of the complete installation and its constituent parts
4. have the authority to take decisions about the work they undertake such as the selection of suitable and safe access equipment, tools and equipment needed to complete the work they undertake
5. have the responsibility for ensuring the work they undertake when completed, is as specified and in accordance with approved industrial practices and standards
6. work on their own and have the responsibility for identifying, communicating and co-operating with, as necessary, technical and non-technical persons when appropriate

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Performance criteria

- You must be able to:*
- P1 confirm the existing electrical supply is compatible with the electrical control system and in accordance with relevant regulations, specifications and organisational procedures
 - P2 follow agreed procedures to ensure the co-ordination of site services and the activities of other trades
 - P3 identify and carry out isolation procedures to ensure a safe installation in accordance with electrical regulations and approved procedures as and when required
 - P4 undertake relevant risk assessments and record the outcome in keeping with organisational procedures
 - P5 install, terminate and connect identified cables and wiring systems in accordance with industry approved methods and practices
 - P6 install and connect identified electrical control system components in accordance with industry approved methods and practices
 - P7 identify and rectify faults in accordance with industry approved methods and practices and organisational procedures
 - P8 identify and confirm fit for purpose instruments and equipment to undertake functional testing
 - P9 undertake functional testing in accordance with industry approved methods and practices and organisational procedures
 - P10 interpret diagrams, drawings, technical data and specifications as appropriate
 - P11 provide technical and functional information to relevant people in accordance with organisational procedures

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Knowledge and understanding

You need to know and understand:

- K1 IEE Wiring Regulations; Electricity at Work Regulations; Building Regulations, as relevant
- K2 procedures of safe isolation in accordance with current standards and regulations
- K3 the types, application, strengths and limitations of wiring systems and cables
- K4 the types, application, strengths and limitations of cable termination and connection methods
- K5 the types, application, strengths and limitations of circuits and electrical supply for identified electrical control systems
- K6 the types, application, strengths and limitations of earthing and overcurrent protection systems and components
- K7 methods and techniques of fault finding and rectification in accordance with industry approved standards and practices
- K8 the types, application, strengths and limitations of equipment and instruments used for functional testing
- K9 methods and techniques of functional testing in accordance with industry regulations, procedures and practices
- K10 the types and application of electrical drawings, diagrams and specifications
- K11 the purpose and significance of relevant documentation in accordance with industry
- K12 the purpose and significance of following organisational and industry procedures when interpreting and providing relevant technical and functional information

Health and Safety

You need to know and understand:

- K13 the correct procedures for a safe isolation with regard to an assessment of safe working practice, the correct identification of circuits to be isolated, the correct test and proving instruments selected, the use of correct testing methods, and correct selection of devices for securing isolation
- K14 the implications for relevant parties of carrying out an isolation
- K15 the importance of using personal protective equipment and safe, appropriate tools for specific jobs
- K16 the hazards associated with using electrical equipment and plant including their lifting, handling and fixing

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Principles and theory

You need to know and understand:

- K17 IEE wiring regulations as specified in the latest British Standard for Electrical Installations relevant to types and uses of wiring systems, wiring enclosures and equipment
- K18 where to find out about the principles of electrical theory which allow for the safe installation of electrical wiring systems, wiring enclosures and equipment

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