

COGPEM55 - SQA Unit Code FP4P 04

Remove components from electrical plant and equipment



Overview

This unit is about your competence in removing components from electrical equipment using manufacturer's procedures. You will be required to ensure suitable precautions are taken to prevent the escape of liquids or gases. Following removal, the components should be labelled and stored according to organisational procedures. You will be following your organisation's safe working practices and working within the work permit procedures.

This unit deals with the following:

1. Remove components from electrical plant and equipment

During this work you must take account of the relevant worksite operational requirements, procedures and safe working practices AS THEY APPLY TO YOU.

Previous Version:

Adapted from Unit E3.7 of Process Engineering Maintenance NOS – version February 2004. This unit has been tailored from an electrical unit produced by the ECITB from the OSC Eng Engineering Competence Standards (ECS 5.03) which was originally designated MPS Elec 5.

Performance criteria

- You must be able to:*
- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
 - P2 establish, and where appropriate, mark component orientation for re-assembly
 - P3 ensure that any stored energy or substances are released safely and correctly
 - P4 remove the required components using approved tools and techniques
 - P5 take suitable precautions to prevent damage to components, tools and equipment during removal
 - P6 check the condition of the removed components and record those that will require replacing
 - P7 label and store the removed components in an appropriate location
 - P8 store or discard the removed components in accordance with approved procedures
 - P9 maintain documentation in accordance with organisational requirements

Knowledge and understanding

You need to know and understand:

- K1 you must have a working knowledge and understanding of what your responsibilities are in respect of Health, Safety and Environment. This should include the limits of your personal responsibility, your legal responsibility for your own health and safety and the health and safety of others
- K2 you must have a working knowledge of the relevant regulations and the safe working practices and procedures required within your work area
- K3 you must have a working knowledge and understanding of the engineering drawings and related specifications to which you will be expected to work, including technical drawings (component, assembly, general arrangements, isometrics, 1st and 3rd angle projections), method statements and product worksheets, tolerances
- K4 you must have a working knowledge and understanding of component removal methods and techniques including what the types of isolations and connections are that have to be made, and which tools, equipment and methods can be used to remove specific components from specific plant and equipment
- K5 you must have a working knowledge and understanding of the identification of component defects that have been removed
- K6 you must have a working knowledge and understanding of the labelling and storage of components for re-use and what the available marking systems are for specific components and connections
- K7 you must have a working knowledge and understanding of the disposal of unwanted components and substances; this should include what substances could be released during the removal of components, which risks are associated with the release of substances, and where to access information on the environmental standards, including an appreciation on coshh, sepa and company procedures
- K8 you must have a working knowledge and understanding of the tool and equipment care and control procedures including what your responsibilities are for ensuring the security of tools and equipment that you use
- K9 you must have a working knowledge and understanding of your responsibilities with regard to the reporting lines and procedures in your working environment

Additional Information

Scope/range related to performance criteria

- 1 The level and extent of responsibility will involve you being responsible for ensuring the equipment and work site is safe for others or yourself to work in by following defined procedures. You will be accountable for the integrity of the work site and ensuring the work is recorded in a formal manner. Authorisation for proceeding with the work will be given by authorized signatories within the PTW system

- 2 The equipment to be worked on includes:
 - 2.1 Rotating equipment and tools
 - 2.2 Protection methods
 - 2.3 Electrical distribution systems

- 3 The type of components to be removed may be robust or fragile. Robust components are those which are resistant to most forms of damage or disruption during their working lives. Fragile components are those which are easily disrupted or damaged. Damage or disruption could be due to physical, chemical or other forces (e.g. Electro-magnetic).

Typical robust components could be:

 - 3.1 Components of power/lighting transmission
 - 3.2 Motors/Components of motors
 - 3.3 Components of process control systems
 - 3.4 Heat Exchangers
 - 3.5 Components of electrical back-up systems

Typical fragile components could be:

 - 3.6 Components of electrical circuit protectors
 - 3.7 Electrical metering devices
 - 3.8 Circuit boards
 - 3.9 Safety/protection devices
 - 3.10 Components of electrical panels

- 4 The removal techniques or procedures to be followed should involve components to be removed that may require a sequential series of steps to complete the removal. The component may be difficult to access and may be surrounded by other fragile/valued components and may need specialised tooling requirements. Removal may involve more than 1 differing technologies and/or involve a significant number of fragile components.

The specifications to which a candidate would be expected to work to could include:

 - 4.1 Product worksheets

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- 4.2 Technical drawings (components, assembly, general arrangement, isometrics).
 - 4.3 Method statements
 - 4.4 Maintenance schedules.
- 5 The removal operations may be simple or complex. Simple removal of components refers to situations where the component is quickly and easily removed from its position. Typical examples could include lifting out of plug-in components and undoing threaded fasteners to release the component. Complex removal refers to situations where the components can only be removed by disrupting the surrounding areas e.g. by cutting or de-soldering and/or where removal of one component necessitates removal of other interacting components.

Scope/range related to knowledge and understanding

The Knowledge and Understanding levels expressed indicate the minimum level of knowledge and understanding sufficient to perform your role in a manner that would normally be associated with the minimum acceptable performance of a competent person undertaking your role.

The expression "working knowledge and understanding" indicates you are able to:

- 1 Identify and apply relevant information, procedures and practices to your usual role in your expected working environments needing only occasional recourse to reference materials
- 2 Describe, in your own words, the principles underlying your working methods. This does not mean the ability to quote "Chapter and verse". Rather you must know what supporting information is available, how and where to find it and from whom to seek further guidance and information confirm any additional required detail
- 3 Interpret and apply the information obtained to your role, your working practice and in your expected working environment

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