

# COGPEM73

## Determine the feasibility of repair of components from instrument and control systems



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### Overview

This unit is about your competence in establishing and deviation from the required tolerances and what action has to be taken to bring the component back into service. You will be following your organisation's safe working practices and working within the work permit procedures.

This unit deals with the following:

1. Determine the feasibility of repair of components from instrument and control systems

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 I3.9 of Process Engineering Maintenance NOS – version February 2004. This unit is a tailored version of an Electrical unit produced by the ECITB from the OSC Eng Engineering Competence Standards (ECS 5.05) which was originally designated MPS Inst 16.

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#### 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 follow the relevant specifications for the component to be repaired
- P3 assess the amount and level of wear or damage to the component and determine what work is required to bring the component back to the specified condition
- P4 report on findings and conclusions on the feasibility and cost-effectiveness of repairs

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### 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 specifications to which you will be expected to work. This could be expected to include product worksheets, method statements, manufacturers' data sheets, maintenance schedules, and technical drawings (components, assembly, general arrangement, isometrics)
- K4 you must have a working knowledge and understanding of assessing the conditions of components for re-use. This could be expected to include electrical integrity
- K5 you must have a working knowledge and understanding of determining the feasibility and viability of repairs. This could be expected to include Instrument and control integrity
- K6 you must have a working knowledge and understanding of component replacement methods and techniques. This could be expected to include manufacturers' data, and sources of information
- K7 you must have a working knowledge and understanding of your responsibilities with regard to the reporting lines and procedures in your working environment

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### 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 authorised signatories within the PTW system
  
- 2 The type of components to be repaired 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:
  - 2.1 Metering devices
  - 2.2 Control panels
  - 2.3 Mechanical linkages
  - 2.4 Components of back-up systems
  - 2.5 Motors
  - 2.6 Control valves/governors
  - 2.7 Components of process control systemsTypical fragile components could be:
  - 2.8 Components of gauges
  - 2.9 Components of metering devices
  - 2.10 Components of motors
  - 2.11 Components of analysing devices
  - 2.12 Actuators
  - 2.13 Seatings
  - 2.14 Components of circuit/environmental protectors
  - 2.15 Safety limit protection devices
  - 2.16 Seals
  - 2.17 Components of control panels
  - 2.18 Springs
  - 2.19 Diaphragms
  - 2.20 Components of impulse systems
  - 2.21 Electronic components
  
- 3 The type of repair to be made requires one or more techniques to be applied depending upon its complexity. The techniques are standard within the sector but may require some modification to achieve the required result. The techniques may relate to one or more technologies depending upon the complexity of the repair.
  - 3.1 Re-aligning

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- 3.2 Bonding
- 3.3 Re-soldering
- 3.4 Re-sealing
- 3.5 Re-shaping by material removal

- 4 The nature of repairs to be carried out may be simple or complex. Simple repairs are those which can be easily achieved using tools and techniques generally available and/or for which clearly defined procedures exist and/or where the repair site is easily accessed. Complex repairs are those which can only be achieved using tools and techniques which have been specially modified in some way to achieve the repair and/or where no pre-defined procedures exist for effecting repair and/or where the repair site is difficult to access.
- 5 The quality standards and accuracy to be achieved are as set down in the work specifications.

#### 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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**Relevant occupations** Engineering Professionals; Engineering and manufacturing technologies; Manufacturing technologies

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**Suite** Process Engineering Maintenance

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