ENERGY & UTILITIES INDEPENDENT ASSESSMENT SERVICE

End-Point Assessment
Gas Network Craftsperson Electrical and Instrumentation

Practical Tasks

Fault Diagnosis on Electrical and Instrumentation Equipment

Level 3

Assessment Specification

This assessment specification has been developed as part of the gas network craftsperson - electrical and instrumentation standard. The specification details the apprentice's required skills, knowledge and behaviour on all the key aspects of the gas network craftsperson - electrical & instrumentation activity.

This end-point assessment should allow the apprentice to demonstrate the competence required to follow work instructions and specifications in order to diagnose faults and test electrical and instrumentation systems.

The assessment specification is the minimum core technical standard of these requirements, but this does not preclude employers from enhancing the skills and knowledge of the learner through additional or company specific assessment.

Successful completion of this unit should provide evidence that the apprentice has the required knowledge, understanding and performance skills.

What does this specification look like?
To achieve this unit the apprentice must demonstrate their achievement of all assessment outcomes. This unit will be evidenced through practical assessment, these being delivered in the workplace under simulated conditions or alternatively in a realistic workplace environment. Evidence of the apprentice's achievement must be included in their work log or their portfolio.

What does the assessment include?
Gas network craftsperson - electrical and instrumentation apprentices will be expected to:

- Work safely at all times
- Use company and / or manufacturers' drawings and maintenance documentation
- Adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment (PPE) and other relevant safety regulations
- Where appropriate, ensure the insertion, or program override, of any relevant system trip defeats (such as fire extinguishant, emergency shutdown)
- Provide and maintain safe access and working arrangements for the fault finding / maintenance area
- Where appropriate, use electrostatic discharge (ESD) precautions
- Carry out the fault diagnostic activities, using appropriate procedures
- Collect equipment fault diagnostic evidence from 'live' and isolated circuits
- Disconnect or isolate components to confirm the diagnosis
- Identify the fault and complete the appropriate corrective action

- Dispose of waste items in a safe and environmentally acceptable manner and leave the work area in a safe condition

Realistic Working Environments (RWE) Centre Requirements

Centres are responsible for ensuring that the RWE assessment is suitably controlled to ensure that assessment decisions are valid and reliable, and that work submitted for assessment by the apprentice is prepared and produced by them independently, without assistance from others, and free of plagiarism.

The practical tasks must be designed following the guidance and requirements given in this document. The assessor checklist must be adhered to and cannot be altered without prior written consent from EUIAS.

The combined E&I option requires the performance and knowledge criteria of each unit assessment to be satisfied and the respective assessor checklists must be completed.

The necessary operational procedures should be made available to the apprentice throughout the assessment process.

Practical Assessment Centre Requirements

The assessment requirements are in the following areas:

TTIEPA1	Fault diagnosis on instrumentation equipment
TTEEPA1	Fault diagnosis on electrical equipment

A technically competent assessor who is independent of the apprentice and approved by the EUIAS must assess the assessments. Please refer to the gas network craftsperson scheme handbook for further details.

The assessment area must be designed to allow the apprentice to demonstrate the skills as prescribed in the performance criteria. Evidence for the practical aspects should be observed in the realistic working environment. The equipment used must be connected to the electrical supply and must include controls and cabling that is non-serviceable, allowing the apprentice to diagnose the faults and make repairs. A technical drawing of the proposed task must be made available to the apprentice.

The assessment area must allow or be designed to provide variability and must include a fault that can be rectified by adjustment or maintenance and another fault, which will require a component or cabling to be changed. On the assessor checklist, the assessor must describe the fault set that required adjustment or maintenance and the fault set that required

a component or cable to be replaced. The practical assessment rig must therefore be capable of accommodating a number of differing faults to be set by the assessor. The faults set must be recorded on the assessor checklist to demonstrate variability of the task from apprentice to apprentice.

Centres may create workbooks that will allow the apprentice to demonstrate their underpinning knowledge.

The equipment used for this assessment must be for assessment purposes only and the apprentice must not have had prior access to this.

Apprentice Requirements

To achieve a pass in the Practical Tasks the apprentice must complete all of the following:

- Ensure all health and safety requirements are observed throughout the assessment
- Complete a site specific risk assessment
- Select method statements appropriate for the activity
- Use company specific procedures
- Complete any documentation regarding, isolation, testing, commissioning and decommissioning of the apparatus
- Remove and replace a faulty component or cabling
- Complete all testing and commissioning requirements following the repair
- Reinstate the repaired system back to operational condition

Assessor Requirements

Apprentices carrying out the practical tasks will be observed by an EUIAS approved technical expert.

Each practical task must consist of three assessment components for fault diagnosis on instrumentation equipment and three assessment components for fault diagnosis on electrical equipment. Each assessment component being drawn from three different equipment categories as detailed in the “scope” section of the assessment document.

Due to the diverse nature of the tasks undertaken all performance criteria may not be captured in each assessment component, however the performance criteria as stated in the assessment documentation must be satisfied across the three components of each practical task.

The technical expert may question the candidate as they are carrying out the practical task. Questions asked should be included in the feedback section of each assessment document

and may cover the following areas:

- Practical experience and knowledge gained through work experience
- Technical questioning related to the isolation, installation, testing, commissioning and maintenance of operational equipment.
- A variety of “what if” scenarios to determine problem solving skills
- Comprehension of basic operations or electrical principles related to plant and equipment
- Ability of candidate to elaborate in their field of expertise
- General attitude and enthusiasm of the candidate

Candidates should be able to demonstrate a depth of understanding of the practical principles of the systems they are working on.

Permissible allowances and reasons for immediate failure

- Apprentices do not have to carry out the task in a prescribed sequence but must cover all of the assessment criteria required, provided health and safety is not compromised
- Apprentices should ensure that the tasks are completed safely. It is permissible not to have identified all tools and safety equipment prior to the task starting but the additional requirements must be identified and acted upon appropriately as the task progresses
- Apprentices may not be able to return the equipment to service or check its operation at the end of the task due to other issues identified during the course of the work. If this occurs an assessment of the candidates competence in those areas can be made via technical questioning and professional discussion
- Apprentices will fail immediately if they do not select and wear the correct PPE for the task
- Apprentices will fail immediately if they do not follow safe control measures as set out in the risk assessment
- Apprentices will fail immediately if they put themselves or anyone else at danger – i.e. by failing to safely isolate plant and equipment
- Where an apprentice fails a component of the practical task this will not necessarily invalidate any other practical task or assessment components successfully completed

Grading

This assessment is graded as Pass or Fail. The assessor will determine successful completion of the practical tasks using the assessor checklist. This will determine Pass or Fail. Where an apprentice fails a practical task or a component thereof this must be recorded on the assessment checklist. A suitable action plan should be agreed between the apprentice and their Trainer or Line Manager or Mentor. The apprentice must retake the assessment component and practical task within the end-point assessment window. A new assessment checklist must be used for each subsequent attempt and a record of which attempt is being undertaken must be recorded on the checklist.

Apprentice Feedback

On successful completion of the practical tasks the assessor may provide feedback to the apprentice to inform them of the assessment outcome. If an apprentice fails a practical task or a component thereof; the assessor can only inform the apprentice of the performance criteria not satisfied. The assessor **must not** provide detailed feedback, with or without corrective actions to be taken, to the apprentice. The assessor should provide detailed feedback to the apprentice's Trainer or Line Manager or Mentor. Should an assessor provide detailed feedback to the apprentice, this would be considered a conflict of interest and the whole practical task may have to be re-assessed by a different assessor.

Assessment documentation

Assessment Duration

The following are indicative durations for the completion of each assessment area:

TTIEPA1	Fault diagnosis on instrumentation equipment	4.5 hours
TTEEPA1	Fault diagnosis on electrical equipment	4.5 hours