



Australian Government

Assessment Requirements for MEM24006 Perform eddy current testing

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM24006B Perform eddy current testing.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, relative testing and conformance standards for performing eddy current testing
- preparing the area for testing and identifying discontinuities including observed changes in material homogeneity in accordance with procedures
- carrying out eddy current testing using techniques and equipment appropriate for material/s to be tested, checking and confirming basic indicators and identifying and classifying defects in accordance with national and international codes and standards on at least two occasions
- undertaking numerical operations and calculations associated with performing eddy current testing
- reporting test results in accordance with procedures and customer service requirements on at least two occasions

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- cleaning and preparation processes, procedures and work health and safety (WHS) requirements in relation to the preparation process
- established assessment procedures and techniques
- types of discontinuities and their consequences
- procedures, tools, equipment, techniques and system verification checks necessary to carry out eddy current testing
- basic principles of electricity, magnetism, electromagnetism and eddy current testing:
 - reactance – field made by eddy current
 - Biot-Savart law – definition, practical (right hand) rules
 - Amperes law – definition, applications (toroid, infinite coil, flat coil)

- Lenz law – definition, auto-induction factor, mutual induction factor, coupling factor
- induced currents – short circuit coil, metallic mass, skin effect and reactance
- cylindrical bars
- theory of eddy currents
- tubes
- geometric defect characterisation
- multiple defects and defect position and orientation
- characteristics of eddy current probes
- eddy current equipment including transmission, reception and data presentation
- types of equipment and their controls
- physical properties of materials
- electrical conductivity and magnetic permeability
- applications of eddy current testing
- influence of various parameters on eddy current measurement
- compensation
- structure and geometry of test part
- coupling influence and relative speed
- limitations of eddy current testing
- basic maintenance and storage procedures for testing equipment
- methods and/or procedures for reporting test results
- the following defects:
 - corrosion
 - metal fatigue
 - deformation in nonferrous/ferrous alloys steels
 - fatigue cracks
 - stress corrosion cracking
 - heat damage
 - metal properties sorting
 - manufacturing defects
 - coating thickness measurement.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing eddy current testing at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.

- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>