

1. Title	Analysis of non-destructive test (NDT) - magnetic particle testing
2. Code	EMCUMA313A
3. Range	Use magnetic particle testing method, at servicing centres or locations with operating equipment, to analyze and examine surface or sub-surface cracks and weld defects on metal equipment or materials.
4. Level	3
5. Credits	3
6. Competency	<p style="text-align: center;"><u>Performance Requirements</u></p> <p>6.1 Techniques and principles of inspecting metal equipment or materials for cracks</p> <ul style="list-style-type: none"> ◆ Understand the principles of magnetic particle testing used to inspect metal equipment or materials for surface or sub-surface cracks ◆ Understand the relationship between current and magnetic field ◆ Know about magnetic conductivity for various types of ferromagnetic metals ◆ Understand the merits and limitations of magnetic particle testing, especially with reference to those of liquid penetrant testing, ultrasonic testing and x-ray testing <p>6.2 Methods and procedures of analyzing and examining cracks on metal equipment or materials</p> <ul style="list-style-type: none"> ◆ Use magnetic particle testing effectively to examine and analyze surface or sub-surface cracks on metal equipment ◆ Choose suitable amount of current for magnetic particle testing according to different magnetic conductivity for various types of metals ◆ Base on the pros and cons of various types of NDTs to recommend on and conduct magnetic particle testing so as to confirm the positions and degree of work piece damages or structure defects ◆ Mark the positions with cracks effectively <p>6.3 Professionalism in inspecting and examining metal equipment and materials for cracks</p> <ul style="list-style-type: none"> ◆ Have adequate hands-on practice in crack inspection according to professional qualification requirements, and record and analyze cracks ◆ Inspect and analyze surface or sub-surface cracks on metal equipment or materials safely according to guidelines on the use of materials and code of practice ◆ Understand international standards or in-house guidelines, and report the positions and size of surface or sub-surface cracks identified according to requirements

7. Assessment Criteria	The integrated outcome requirement of this unit of competency is: (i) Capable to use magnetic particle testing to examine and analyze surface or sub-surface cracks on metal equipment; and (ii) Capable to point out the pros and cons of magnetic particle testing with reference to liquid penetrant testing, ultrasonic testing and x-ray testing.
8. Remarks	The credit value of this unit of competency is set on the presumption that the person already possesses the competency of EMCUMA201A “Non-destructive test (NDT) - magnetic particle inspection”.