



Australian Government

Department of Education, Employment and Workplace Relations

MSACMT280A Undertake root cause analysis

Revision Number: 1

MSACMT280A Undertake root cause analysis

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the knowledge and skills needed to undertake root cause analysis (RCA) by any person. This will often be done by people working in a team. This unit also covers the competencies needed by operators to contribute to an advanced maintenance strategy using RCA coupled with diagrams and charts.
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Application of the Unit

Application of the unit	In a typical scenario, the employee works in an organisation which is applying competitive manufacturing strategies. This involves the operator 'owning' their process, taking responsibility for it, undertaking root cause analysis of problems and generally contributing to increasing the <i>uptime</i> and general <i>Overall Equipment Efficiency (OEE)</i> . This unit requires an ability to seek and apply information from a variety of sources in order to inform problem solving analyses. Initiative and enterprise is also required to identify quick fix and permanent solutions to problems.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	
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Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance Criteria describe the performance needed to demonstrate achievement of the Element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the Range Statement. Assessment of performance is to be consistent with the Evidence Guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Recognise problems	1.1. Identify equipment/plant characteristics indicative of a problem 1.2. Identify process conditions/product characteristics indicative of a problem 1.3. Use appropriate techniques/charts to define the problem
2. Implement quick fix	2.1. Recommend/implement a quick fix within the scope of competency and authority 2.2. Use technology or processes relevant to the problem to implement quick fix
3. Determine root cause	3.1. Identify a range of possible causes 3.2. Gather information to eliminate/confirm causes 3.3. Construct a cause and effect diagram from available data 3.4. Seek assistance as required 3.5. Identify root cause
4. Develop permanent solution	4.1. Identify a range of methods of eliminating the root cause/ breaking the <i>cause tree</i> 4.2. Select the most appropriate solution 4.3. Liaise with relevant people 4.4. Recommend or implement solution within the limits of competency and authority 4.5. Monitor impact of solution and make further recommendations as required

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analysis
- problem solving
- communication
- documenting

Required knowledge

- root cause analysis methodology
- indicators of a problem
- principles of the process sufficient to undertake a RCA and propose solutions
- use of relevant analysis tools (eg cause/effect diagrams, Pareto charts, 4W)

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence. It is essential for assessment and must be read in conjunction with the performance criteria, the range statement and the assessment guidelines of the relevant training package

Overview of assessment requirements	The competent operator will be able to recognise problems in their process and undertake a root cause analysis, either alone or with assistance and propose permanent solutions.
What are the specific resource requirements for this unit?	Access to an organisation using root cause analysis.
What critical aspects of evidence are required to demonstrate competency in this unit?	Evidence of root cause analyses undertaken should be available.
In what context should assessment occur?	Assessment will need to occur in an organisation implementing root cause analysis or by simulation or project.
Are there any other units which could or should be assessed with this unit or which relate directly to this unit?	<p>This unit could be assessed concurrently with other units dealing with the improvement of the process.</p> <p>This unit could be co-assessed (and delivered) with:</p> <ul style="list-style-type: none"> • <i>MSAPMSUP390A Use structured problem solving tools</i> • <i>MEM15001B Perform basic statistical quality control.</i> <p>This unit is related to <i>MSACMT281A Implement a predictive maintenance strategy</i> as root cause analysis is one tool used in predictive maintenance.</p>
What method of assessment should apply?	<p>Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria, skills and knowledge. A holistic approach should be taken to the assessment.</p> <p>Assessors should gather sufficient, fair, valid, reliable, authentic and current evidence from a range of sources. Sources of evidence may include</p>

EVIDENCE GUIDE	
	<p>direct observation, reports from supervisors, peers and colleagues, project work, samples, organisation records and questioning. Assessment should not require language, literacy or numeracy skills beyond those required for the unit.</p> <p>The assessee will have access to all techniques, procedures, information, resources and aids which would normally be available in the workplace.</p> <p>The method of assessment should be discussed and agreed with the assessee prior to the commencement of the assessment.</p>
What evidence is required for demonstration of consistent performance?	Generally a range of root cause analysis activities will be required in order to generate sufficient evidence.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Root cause	<p>There are many possible causes of any problem. Eliminating some will have no impact, others will ameliorate the problem. However, elimination of the root cause will eliminate the problem. There should only be one root cause for any problem and so the analysis should continue until this one cause is found. Elimination of the root cause permanently eliminates the problem.</p>
Cause tree	<p>The series of causes is referred to as the cause tree. Not all root causes are accessible and able to be eliminated. Breaking the cause tree in such a way that the problem cannot recur is an acceptable alternative.</p> <p>Not all situations can wait for the <i>root cause analysis</i> and eventual elimination of the root cause as there are serious current impacts. The <i>quick fix</i> will control these immediate impacts, but does not eliminate the root cause.</p>
Uptime	<p>Uptime refers to the overall availability of the plant - it is the inverse of downtime - or the unavailability of the plant. Ideal uptime is 100%.</p>
Appropriate techniques/charts	<p>Appropriate techniques/charts may include the following:</p> <ul style="list-style-type: none"> • control charts • Pareto charts • run charts • flow charts • cause and effect diagrams • tree diagrams • 4W analysis.
Overall Equipment Efficiency (OEE)	<p>Overall Equipment Efficiency (OEE) is the combination of the main factors causing loss of productive capacity from equipment/plant and is:</p>

RANGE STATEMENT

	<p><i>OEE = availability x performance x quality rate</i></p> <p>where:</p> <ul style="list-style-type: none"> • availability takes into account losses due to breakdown, set up and adjustments • performance takes into account losses due to minor stoppages, reduced speed and idling • quality rate takes into account t losses due to rejects, re-works and start up waste.
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Unit Sector(s)

Unit Sector	CM Tools
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Co-requisite units

Co-requisite units	
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Functional area

Functional Area	
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