Australian Government

Department of Education, Employment and Workplace Relations

MEM26018A Organise composite trials

Release: 1

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Modification History

Release 1 New unit

Unit Descriptor

This unit of competency covers the skills and knowledge required to trial new materials and processes and make prototypes. The source of these trials may arise from internal improvements or new products/processes from external sources. Regardless, trials need to be conducted to 'prove' it in an industrial environment, to translate research and development into practical processes and to provide appropriate records and metrics.

Application of the Unit

This unit does not cover the selection of materials or processes but does cover the organising and analysing of trials to prove proposed new materials or processes in the production environment.
Trials may be undertaken by others, with this unit applying to the person organising the trials, or the same person may organise and undertake the trial. Organising the trial may typically be undertaken by an individual in liaison with relevant stakeholders or it may undertaken by a team. Organising of trials may be undertaken partially in an office environment or at the worksite. The trial itself may be undertaken by an individual or a team. It may be undertaken in a workshop or factory environment or in the field and may be used to manufacture new products, prototypes and samples, or to make repairs.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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.

Elements and Performance Criteria

1	Determine expected outcomes from new/revised product/process	1.1	Identify risks to be controlled
		1.2	Identify novel parts of process/materials/properties
		1.3	Compare data from past work/trials
		1.4	Obtain data for novel part of process/material
		1.5	Develop procedures which should produce the required result
2	Determine required metrics from trials	2.1	Determine required process properties
		2.2	Determine required business measures
		2.3	Determine required sustainability measures
3	Compare proposed process with existing and predict problem areas	3.1	Compare proposed process with existing similar processes
		3.2	Identify points of difference
		3.3	Identify weaknesses with existing process
		3.4	Predict possible problems with trial process/materials
4	Organise appropriate trials	4.1	Determine scale of trial
		4.2	Ensure availability of adequate resources
		4.3	Organise for the preparation of equipment/materials
		4.4	Conduct trial

		4.5	Monitor trial and record key observations and metrics
5	Select appropriate manufacturing procedure	5.1	Compare outcome with requirements
		5.2	Modify procedure and repeat trial, as required
		5.3	Determine procedure which will yield desired results
		5.4	Record procedure in appropriate form
		5.5	Complete all required reporting and recording

Required Skills and Knowledge

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

Required skills

Required skills include:

- writing
- communicating
- interpreting computer-aided design (CAD) model
- interpreting data
- interpreting design brief
- analysing trial results
- preparing reports

Required knowledge

Required knowledge includes:

- intended outcome of product
- design of documents for the floor
- design of trials
- design test requirements for trial

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential that the process and equipment be understood and that the importance of critical material properties, settings and readings is known. Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. Consistent performance should be demonstrated. In particular look to see that:

	• appropriate metrics are determined before commencement of trial • trial procedure has a sound basis • trial procedures, metrics and outcomes are suitably recorded. Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.
Context of and specific resources for assessment	Assessment will require the organising of composite trials and analysing and reporting of trial results. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation.
Method of assessment	A single assessment event is not appropriate. On-the-job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit. Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways, including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

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.

Procedures	Procedures may be written, verbal, computer-based or in some other form, and may include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant • good operating practice as may be defined by industry codes of practice (e.g. Responsible Care) and government regulations
Novel part	The novel part is that portion of the process, or the materials or product properties which are new or different to standard and could be: • new resin system on standard reinforcing • new reinforcing with standard resin system • new process using standard materials • standard process and materials producing product with different properties
Process properties	Process properties include: • gel time • viscosity • temperature (e.g. mould, resin and ambient) • infusion time • peak exotherm (e.g. using a laser thermometer)
Scale of trial	Scale of trial may be: • full scale prototype • scaled down prototype • laminate samples only • portion of laminate
Trial resources	Trial resources may include: • equipment • tools • materials • personnel • time

Logs and reports	Logs and reports may include: • paper or electronic based • verbal reports • items found which require action
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Business measures	Business measures include: • costs • time analysis • quality reliability
Sustainability	Sustainability incorporates the three aspects of: • survival of the ecology/physical environment – which means that an enterprise needs to manage the impact of the business to ensure the survival of the physical environment • economic viability – efficiency, cost and waste reduction and competitiveness to support survival of the business • social sustainability – an enterprise needs to manage the impact of the business to ensure its continued survival within the community and the survival of the community, including occupational health and safety (OHS)
Modifying procedure	Modifying procedure may include: • changing resin inlets • changing resin chemistry • changing other materials • modifications to process • modifications to tooling
Typical problems	Typical problems may include: • trial procedures not workable • trial product does not meet specification • trial procedures do not meet sustainability

	requirements
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence

Unit Sector(s)

Composites

Custom Content Section

Not applicable.