Australian Government

Department of Education, Employment and Workplace Relations

PMASMELT269A Operate cell tending equipment

Revision Number: 1

PMASMELT269A Operate cell tending equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This competency applies to plant technicians who operate cell tending equipment used to adjust and support the operation of reduction cells for the aluminium smelting process.

Application of the Unit

Application of the unit	Typically cell tending equipment comprises a gantry crane with purpose built attachments for reduction beam raising, anode changing, transport and operation of cell tapping crucibles, and feed-hopper delivery of feed and bath materials. Note that the operation of cell tending equipment may require: • *PMASUP237B Undertake crane, dogging and load transfer operations* • a licence to operate the equipment, depending on State and Federal requirements. In a typical situation, the plant technician would operate cell tending equipment in conjunction with other technicians to support and adjust the operation of the reduction cells, including cell maintenance, beam raising, cell feed and cell tapping activities. This competency unit typically covers items of equipment, such as: • reduction cell (pot) • carbon anodes and beams • cell tending equipment The plant technician would operate cell tending equipment to: • change anodes as required • conduct beam raising • conduct metal tapping • conduct bath tapping • cell feed replenishment • other cell maintenance and crane operations • recognise and respond to 'out-of-parameter' issues • respond to emergency situations • identify and control hazards in the workplace. Generally the operator would be part of a team during start up and shut down procedures and would be expected to be capable of demonstrating competence in all parts of this unit. At all times they would be liaising and cooperating with other members of the team.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	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

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations.	1.1. Interpret and confirm work requirements before proceeding 1.2. Identify and control hazards 1.3. Ensure appropriate authorisations have been obtained/issued 1.4. Identify work flow path (interruptions or bottlenecks) blockage.
2. Conduct pre-start requirements to procedures.	2.1. Conduct routine pre-start equipment checks 2.2. Conduct isolation as appropriate for pre-start inspections 2.3. Prepare equipment for operation 2.4. Complete routine equipment checklists 2.5. Complete reports as required for equipment inspections.
3. Operate cell tending equipment to procedures.	3.1. Start up cell tending equipment and perform start up checks as required 3.2. Conduct beam raising and anode changing as required 3.3. Conduct cell replenishment as required 3.4. Conduct metal tapping as required 3.5. Transfer metal crucibles as required 3.6. Conduct bath tapping as required 3.7. Communicate with others in the reduction cell area
4. Shutdown cell tending equipment	4.1. Manoeuvre equipment to suitable parking position 4.2. Shutdown equipment 4.3. Conduct shutdown checks of equipment 4.4. Complete reports as required

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This describes the essential skills and knowledge and their level, required for this unit.
Required skills
Competence includes being able to demonstrate the following: • efficient and effective operation of plant/equipment • hazard analysis • completing plant records • communication • problem solving. Competence also includes responding to emergency situations such as: • tap outs • evacuation due to fire • loss of power and excessive emissions of fumes or particulate • equipment failure • recognising hazards associated with electromagnetic effects, moisture, wet bath and wet soda ash. Troubleshooting a range of problems which could include or be related to: • equipment faults • electrical faults • interpreting information from process control system • equipment failure • cell instability • feeder problems • anode effect poles • metal tapping • bath tapping • beam height • anodes • materials handling systems • loading anodes and anode effect.
Required knowledge
Competence includes a comprehensive understanding of the reduction line process and equipment principles and typical problems to a level needed to support the operation of the reduction cells. Additionally an operational knowledge of the cell tending equipment will be required. In particular it includes: • awareness of hazardous materials, recognition of spills or escapes, personal protective

REQUIRED SKILLS AND KNOWLEDGE
equipment required, isolation and clean up requirements and knowledge of: • all items on a schematic of the reduction cell process and the function of each • basic principles of operation of reduction cell equipment items, including cathode bed, anodes and adjusters, feeders, bath conditions, current distribution • basic understanding of the product specifications, including depth of cover and uniformity of aluminium layer • basic principles of operation of the cell tending equipment, including the crane and all attachments • methods of resolving problems.

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for theTraining Package.	
Overview of assessment	Assessment for this unit of competency will be on an operating plant. The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this competency unit (eg Elements 2, 5). Simulation should be based on the actual plant and will include walk-throughs of the relevant competency components. Simulations may also include the use of case studies/scenarios and role plays.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. The emphasis should be on the ability to stay out of trouble rather than on recovery from a disaster. Consistent performance should be demonstrated. In particular look to see that: • emergency responses are known. • hazards are recognised and all site requirements to reduce or remove hazards are known and completed as part of the job. • early warning signs of equipment needing attention or with potential problems are recognised, that is, alarms, indicators or unusual noises or performance in equipment. These aspects may be best assessed using a range of scenarios/case studies/what-ifs as the stimulus with a walk-through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations that may have been generated from the past incident history of the plant, incidents on similar plants

EVIDENCE GUIDE	
	around the world, hazard analysis activities and similar sources.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios/case studies/what-ifs will be required as will a bank of questions which will be used to probe the reasoning behind the observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units. Consider co-assessment with other relevant units. This competency may be assessed in conjunction with: • *MSAPMOHS200A Work safely* • *MSAPMOHS110A Follow emergency response procedures* • *MSAPMSUP205A* Transfer loads. Other units which are relevant to the job.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

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 italicized wording, if used in the Performance Criteria, is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs if the candidate, accessibility of the item, and local industry and regional contexts.	
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.
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.
Cell maintenance	Reduction cell maintenance activities includes: • adjusting bath cover • housekeeping • ensuring covers, safety equipment and guards are in place
Emergency responses	Emergency responses include those related to: • leak/loss of containment • evacuation due to fire or open circuit cell • loss of power • excessive emissions of fumes or particulate • major oil spill • equipment failure.
Equipment and tools	Equipment and tools may include: • cell tending equipment • hand tools • harnesses and slings • materials handling equipment.
Hazards	Hazards may include: • heat (burns, dehydration and heat stress) • energy sources, eg hydraulic, pneumatic and electric • electro magnetic effects

RANGE STATEMENT	
	• high pressure piping and valves • pinch and crush points • moisture • banned items • mobile equipment and pedestrian interaction • suspended loads and roller conveyors • hazardous materials, eg reactive alumina, kaowool, tar and pitch • molten materials.
Hazard control methods	Hazard control measures should follow the hierarchy of control, be specific to the hazard and work area and include relevant Personal Protective Equipment
Housekeeping	Housekeeping procedure may include cleaning the area, removal of contaminants, safety inspections and rectification of issues that could compromise safety.
Isolation	Isolation refers to the complete isolation of the equipment from all sources of power or energy or isolate process flows and movement of machinery such to render it safe to work on as per site procedure.
Personal protective equipment	Personal Protective Equipment (PPE) requirements relate to the specified PPE for the task or job to be undertaken. PPE may include specific insulated boots, heat resistant material, full-ventilated suits, full-face masks or situation specific equipment.
Pre-start checks	Pre-start checks relate to the required site or equipment pre-start checklist and must be completed before the equipment is operated or as otherwise stated in the procedures.
Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • batch sheets • temporary instructions • any similar instructions provided for the smooth running of the plant. For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (eg Responsible Care) and government regulations.
Shutdown procedures	Shut down procedure must follow equipment and site authorised checklist and may include:

RANGE STATEMENT	
	• communication to supply and delivery areas • communication to impacting areas • obtaining appropriate authorisations • rescheduling operations • liaison with maintenance teams.
Reports and records	Reports and records may include: • computer readouts locally or in the control room • routine inspections (daily readings, monthly checks) • scheduled maintenance activities • shift log sheet • mandatory or statutory inspections • hazard, accident and incident reports • quality inspection reports of the product.
Work requirements	Work requirements includes shift briefings, shift logs supervisor or crew leader meetings, toolbox talks and handover details.
Health, **safety and environment** (**HSE**)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State 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. Persons are required to have skills in hazard identification, assessment and application of control measures, eg spills and leaks identified, contained and cleaned up. Exposure to hazardous materials requires minimal personal contact, recognition of hazards and appropriate controls.

Unit Sector(s)

Unit sector	Operational/technical

Competency field

Competency field	

Co-requisite units

Co-requisite units	