



Australian Government

PMA40113 Certificate IV in Process Plant Technology

Release 1

PMA40113 Certificate IV in Process Plant Technology

Modification History

Release 1 - Supersedes PMA40108. New pathway for metalliferous processing/refining included. All other sector pathways remain equivalent.

Description

The PMA40113 Certificate IV in Process Plant Technology has been developed as a technical qualification for use in the PMA08 Chemical, Hydrocarbons and Refining Training Package.

Job roles/employment outcomes

The PMA40113 Certificate IV in Process Plant Technology is intended for plant technicians. The technician will typically be involved in solving complex problems which require theoretical knowledge, combined with an understanding of the production process and equipment across the plant.

Application

This qualification is typically used to develop employees performing a technical role that includes an ability to work independently and conduct technical problem solving according to the needs of the work in the manufactured mineral products industries.

Non-technical team leaders, coordinators and supervisors may be better served by a qualification in competitive manufacturing. The MSA41108 Certificate IV in Competitive Manufacturing is available for team leaders at this level where the job requires sophisticated manufacturing practice skills rather than technical skills.

People with this qualification may be expected to work in one of the following sectors:

- fine chemicals
- heavy chemicals
- petrochemicals
- polymer manufacture
- hydrocarbon extraction
- hydrocarbon transmission
- hydrocarbon processing/refining
- minerals processing/refining
- metalliferous processing/refining
- metals smelting/processing
- other related areas.

Training programs for this qualification are suitable to be undertaken as part of a formal training contract with an employer under an Australian Traineeship or Apprenticeship arrangement.

Pathways Information

Pathways into the qualification

This qualification may be accessed by direct entry. Credit may be granted towards this qualification by those who have completed PMA30113 Certificate III in Process Plant Operations, MSA30107 Certificate III in Process Manufacturing, MSA30208 Certificate III in Manufacturing Technology or other relevant qualifications. Credit for this qualification may also include units contained within relevant skill sets.

Pathways from the qualification

Further training pathways from this qualification include PMA50110 Diploma of Process Plant Technology, MSA51108 Diploma of Competitive Manufacturing, MSA50108 Diploma of Manufacturing Technology or other relevant qualifications, including appropriate vocational graduate qualifications.

Additional qualification advice

MSA41108 Certificate IV in Competitive Manufacturing is available for team leaders at this level who already possess technical skills and who require additional manufacturing practice skills above those available in this qualification.

Licensing/Regulatory Information

There are no specific licences that relate to this qualification. However, in some jurisdictions some units of competency in this qualification may have licensing or regulatory requirements. Local regulations should be checked for details.

Entry Requirements

Not applicable.

Employability Skills Summary

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	<ul style="list-style-type: none"> • maintain communication about multiple subjects and with multiple audiences • complete incident and other reports • communicate technical information • update workplace documentation • maintain workplace records
Teamwork	<ul style="list-style-type: none"> • identify and describe own role and role of other • assist others identify role • lead team teams either formally or on an ad hoc basis • resolve conflicts between teams
Problem-solving	<ul style="list-style-type: none"> • recognise persistent problems or those not definable by direct observation • determine problems needing priority action • investigate and analyse problems and potential solutions • work with technical experts to define problems and develop possible solutions • apply appropriate theory base for problem • follow through items initiated until final resolution has occurred • identify and isolate faults in entire plant • use a range of formal problem solving techniques
Initiative and enterprise	<ul style="list-style-type: none"> • proactive in fine tuning of entire plant • seeks out areas requiring improvement • anticipate the impact of the process on customers and value chain members
Planning and organising	<ul style="list-style-type: none"> • prioritise actions to achieve required outcomes for plant • plan work requirements for plant • plan plant maintenance or shutdowns/turnarounds • identify tasks to achieve plant goals • allocate tasks • monitor completion of allocated tasks • develop and adjust schedules
Self-management	<ul style="list-style-type: none"> • plan own work requirements from plant requirements • operate within appropriate time constraints and work standards • select and use appropriate techniques • identify resource requirements, document and monitor • recognise limitations and seek timely advice

Learning

- maintain and develop own competency
- assist others to develop their required competencies
- lead improvement procedures/strategies

Technology

- improvements to and fine tuning of entire process
- start up and shut down planning and coordinating a shut down/start up of plant
- solving of problems not directly observable
- monitor product/process quality
- function and operating principles of unit, system or plant area
- maintain workplace records

Packaging Rules

To be awarded the PMA40113 Certificate IV in Process Plant Technology competency must be achieved in **twenty six (26)** units of competency:

- **five (5)** core units of competency
- **twenty one (21)** elective units of competency chosen as specified below.

Note: Where prerequisite units apply, these must be considered in the total number of units chosen.

Core units of competency

Unit code	Unit title
MSAENV272B	Participate in environmentally sustainable work practices
MSAPMOHS110A	Follow emergency response procedures
MSAPMOHS200A	Work safely
MSAPMSUP100A	Apply workplace procedures
MSAPMSUP102A	Communicate in the workplace

Elective units of competency

Select **twenty one (21)** units as specified below:

- A minimum of **one (1)** from Group A
- The remainder may be chosen from Groups A, B and C (with a maximum of **eighteen (18)** from Group C) to bring the total number of electives to **twenty one (21)**.

Note that up to **five (5)** units can be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified in Groups B and C.

Group A – Specialist electives

Unit code	Unit title	Prerequisites
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MSAPMOPS400A	Optimise process/plant area	*
MSAPMOPS401A	Trial new process product	
PMAOPS402A	Respond to abnormal process situations	*
PMAOPS405A	Operate complex control systems	
PMAOPS410B	Monitor remote production facilities	
PMAOPS411B	Manage plant shutdown and restart	
PMAOPS433A	Manage wells and gathering systems	
PMAOPS434A	Commission wells and gathering systems	
PMAOPS450B	Solve colour problems	
PMAOPS460A	Monitor and operate tailings management facilities	

One (1) unit may be chosen from Group A in PMA50110 Diploma of Process Plant Technology

Group B

Unit code	Unit title	Prerequisites
MSS403011A	Lead a competitive manufacturing team	
MSS403013A	Lead team culture improvement	
MSS403002A	Ensure process improvements are sustained	
MSS403030A	Improve cost factors in work practices	
MSS403040A	Facilitate and improve implementation of 5S	
MSS403041A	Facilitate breakthrough improvements	
MSS403051A	Mistake proof an operational process	
MSS404051A	Undertake process capability improvements	*

MSS405052A	Apply statistics to operational processes	
MSS404060A	Facilitate the use of planning software systems in a work area or team	*
MSS404081A	Undertake proactive maintenance analyses	
MSS404082A	Assist in implementing a proactive maintenance strategy	
MSAENV472B	Implement and monitor environmentally sustainable work practices	
MSAPMOHS400A	Contribute to workplace OHS management system	*
MSAPMOHS401A	Assess risk	
MSAPMOPS404A	Co-ordinate maintenance	
MSAPMOPS405A	Identify problems in fluid power system	
MSAPMOPS406A	Identify problems in electronic control systems	
MSAPMPER400A	Coordinate permit process	*
MSAPMSUP400A	Develop and monitor quality systems	
MSL954001A	Obtain representative samples in accordance with a sampling plan	
PMAOHS420B	Develop first aid procedures and manage resources	
PMAOMIR305A	Operate panel during an emergency	*
PMAOMIR407B	Audit incident preparedness and established response system	
PMAOMIR418B	Coordinate incident response	
PMAOMIR424B	Develop and maintain community relationships	
PMAOMIR430B	Conduct and assess incident exercises	
PMAOMIR444B	Develop incident containment tactics	

PMAOMIR449B	Monitor legal compliance obligations during incidents	
PMASUP410B	Develop plant documentation	
PMASUP420B	Minimise environmental impact of process	
PMASUP432B	Coordinate pipeline projects	
PMASUP440B	Commission/recommission plant	
PMASUP441C	Decommission plant	
PMASUP444A	Plan plant preparation and isolation	
PMASUP445A	Participate in HAZOP studies	*
TAEASS401B	Plan assessment activities and processes	
TAEASS402B	Assess competence	
TAEASS403B	Participate in assessment validation	

Up to **one (1)** relevant unit may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where that unit is available at Certificate IV or Diploma.

Group C

Unit code	Unit title	Prerequisites
FDFPH1001A	Follow work procedures to maintain Good Manufacturing Practice	
FDFPH2001A	Apply Good Manufacturing Practice procedures	
FDFPHGMP3A	Monitor the implementation of Good Manufacturing Practice procedures	
MEM05012C	Perform routine manual metal arc welding	
MEM07033B	Operate and monitor basic boiler	

MEM07034A	Operate and monitor intermediate class boiler	*
MEM09002B	Interpret technical drawing	
MEM09003B	Prepare basic engineering drawing	*
MEM11011B	Undertake manual handling	
MEM16005A	Operate as a team member to conduct manufacturing, engineering or related activities	
MEM18011C	Shutdown and isolate machines/equipment	
MEM40001B	Operate melting furnaces	
MSS402002A	Sustain process improvements	
MSS402030A	Apply cost factors to work practices	
MSS402031A	Interpret product costs in terms of customer requirements	
MSS402040A	Apply 5S procedures	
MSS402050A	Monitor process capability	
MSS402051A	Apply quality standards	
MSS402060A	Use planning software systems in operations	
MSS402080A	Undertake root cause analysis	
MSS402081A	Contribute to the application of a proactive maintenance strategy	
MSAPMOHS100A	Follow OHS procedures	
MSAPMOHS205A	Control minor incidents	
MSAPMOHS210B	Undertake first response to non-fire incidents	
MSAPMOHS212A	Undertake first response to fire incidents	
MSAPMOHS216A	Operate breathing apparatus	
MSAPMOHS217A	Gas test atmospheres	
MSAPMOHS220A	Provide initial first aid response	

MSAPMOHS300A	Facilitate the implementation of OHS for a work group	
MSAPMOPS100A	Use equipment	
MSAPMOPS102A	Perform tasks to support production	
MSAPMOPS200A	Operate equipment	
MSAPMOPS212A	Use enterprise computers or data systems	
MSAPMPER200C	Work in accordance with an issued permit	
MSAPMPER201A	Monitor and control work permits	
MSAPMPER202A	Observe permit work	
MSAPMPER205C	Enter confined space	
MSAPMPER300C	Issue work permits	*
MSAPMSUP101A	Clean workplace or equipment	
MSAPMSUP106A	Work in a team	
MSAPMSUP172A	Identify and minimise environmental hazards	
MSAPMSUP200A	Achieve work outcomes	
MSAPMSUP201A	Receive or despatch goods	
MSAPMSUP204A	Pack products or materials	
MSAPMSUP205A	Transfer loads	
MSAPMSUP210A	Process and record information	
MSAPMSUP240A	Undertake minor maintenance	
MSAPMSUP280A	Manage conflict at work	
MSAPMSUP291A	Participate in continuous improvement	
MSAPMSUP292A	Sample and test materials and product	
MSAPMSUP300A	Identify and implement opportunities to maximise production efficiencies	*
MSAPMSUP301A	Apply HACCP to the workplace	

MSAPMSUP303A	Identify equipment faults	
MSAPMSUP309A	Maintain and organise workplace records	
MSAPMSUP310A	Contribute to development of plant documentation	
MSAPMSUP330A	Develop and adjust a production schedule	
MSAPMSUP382A	Provide coaching/mentoring in the workplace	
MSAPMSUP383A	Facilitate a team	
MSAPMSUP390A	Use structured problem solving tools	
MSL952001A	Collect routine site samples	
MSL973001A	Perform basic tests	
NWP357B	Monitor, operate and control reverse osmosis and nano-filtration processes	
PMAOHS211B	Prepare equipment for emergency response	
PMAOHS213B	Undertake fire control and emergency rescue	
PMAOHS214B	Undertake helicopter safety and escape	
PMAOHS215B	Apply offshore facility abandonment and sea survival procedures	
PMAOHS221B	Maintain first aid supplies and records	
PMAOHS310B	Investigate incidents	
PMAOHS311B	Lead emergency teams	
PMAOHS312B	Command the operation of survival craft	
PMAOHS320C	Provide advanced first aid response	
PMAOHS321B	Provide first aid response in remote and/or isolated area	
PMAOMIR210B	Control evacuation to muster point	
PMAOMIR301B	Undertake initial rescue	
PMAOMIR302B	Respond to a helideck incident	

PMAOMIR317B	Facilitate search and rescue operations	
PMAOMIR320B	Manage incident response information	
PMAOMIR321B	Manage communication systems during an incident	
PMAOMIR346B	Assess and secure an incident site	
PMAOPS101C	Read dials and indicators	
PMAOPS105C	Select and prepare materials	
PMAOPS201B	Operate fluid flow equipment	
PMAOPS202B	Operate fluid mixing equipment	
PMAOPS203B	Handle goods	
PMAOPS204B	Use utilities and services	
PMAOPS205B	Operate heat exchangers	
PMAOPS208B	Operate chemical separation equipment	
PMAOPS210B	Operate particulates handling equipment	
PMAOPS211B	Operate manufacturing extruders	
PMAOPS213B	Package product/material	
PMAOPS216B	Operate local control system	
PMAOPS217B	Operate wet milling equipment	
PMAOPS220B	Monitor chemical reactions in the process	
PMAOPS221B	Operate and monitor prime movers	
PMAOPS222B	Operate and monitor pumping systems and equipment	*
PMAOPS223B	Operate and monitor valve systems	
PMAOPS224B	Provide fluids for utilities and support	
PMAOPS230B	Monitor, operate and maintain pipeline stations and equipment	

PMAOPS231B	Control gas odourisation	
PMAOPS232B	Produce product by filtration	
PMAOPS233A	Monitor wells and gathering systems	
PMAOPS234A	Monitor and operate low pressure compressors	
PMAOPS240B	Store liquids in bulk	
PMAOPS241A	Operate Joule-Thomson effect device	
PMAOPS242A	Moor ships for transfer of bulk processed particulates or fluids	
PMAOPS246A	Operate separation equipment	
PMAOPS247A	Operate powered separation equipment	
PMAOPS260A	Conduct screening operations	
PMAOPS261A	Operate bulk solids loading equipment	
PMAOPS262A	Operate digestion equipment	
PMAOPS263A	Operate leaching equipment	
PMAOPS264A	Operate solvent extraction equipment	
PMAOPS265A	Operate magnetic/electrical separation equipment	
PMAOPS280B	Interpret process plant schematics	
PMAOPS290B	Operate a biotreater	
PMAOPS300B	Operate a production unit	
PMAOPS301B	Produce products by distillation	*
PMAOPS302B	Operate reactors and reaction equipment	
PMAOPS303B	Operate furnaces to induce reaction	
PMAOPS304B	Operate and monitor compressor systems and equipment	*
PMAOPS305B	Operate process control systems	

PMAOPS307B	Transfer bulk fluids into/out of storage facility	*
PMAOPS308B	Organise storage and logistics of general materials	
PMAOPS309B	Operate particulates handling/ storage equipment	
PMAOPS312B	Undertake ship loading/unloading operations	
PMAOPS319A	Adjust batch	
PMAOPS320B	Conduct artificial lift	
PMAOPS321B	Undertake well management	
PMAOPS323A	Operate and monitor heating furnace	
PMAOPS324A	Operate a gas turbine	
PMAOPS325B	Generate electrical power	
PMAOPS326B	Produce product using gas absorption	
PMAOPS327B	Produce product using fixed bed dehydration	
PMAOPS329B	Produce product using liquid extraction	
PMAOPS330B	Communicate pipeline control centre operations	
PMAOPS333A	Operate wells and gathering systems	
PMAOPS335A	Conduct pipeline pigging	
PMAOPS340B	Operate cryogenic processes	
PMAOPS350B	Match and adjust colour	
PMAOPS360A	Operate a metalliferous kiln/furnace	
PMAOPS361A	Operate a smelting furnace	
PMAOPS362A	Operate a blast furnace	
PMAOPS364A	Operate an electrochemical process	
PMAOPS365A	Operate pelletising equipment	

PMAOPS366A	Operate sintering equipment	
PMAOPS390B	Operate a biochemical process	
PMASMELT260B	Form carbon anodes	
PMASMELT261B	Bake carbon anodes	
PMASMELT262B	Clean and strip anode rods	
PMASMELT263B	Spray carbon anodes	
PMASMELT264B	Start up reduction cells	
PMASMELT265B	Operate reduction cells	
PMASMELT266B	Deliver molten metal	
PMASMELT267B	Cast aluminium ingots	
PMASMELT268B	Vertical direct casting	
PMASMELT269A	Operate cell tending equipment	
PMASMELT270A	Supply product from reduction cells	
PMASUP236B	Operate vehicles in the field	
PMASUP237B	Undertake crane, dogging and load transfer operations	
PMASUP241B	Maintain pipeline easements	
PMASUP242B	Monitor pipeline civil works	
PMASUP243B	Monitor and maintain pipeline coatings	
PMASUP244A	Prepare and isolate plant	
PMASUP305A	Operate offshore cranes	
PMASUP311A	Operate communications hub	
PMASUP341B	Monitor and maintain instrument and control systems	*
PMASUP342B	Monitor and maintain electrical systems	*
PMASUP343B	Monitor and maintain cathodic protection	

	systems	
PMASUP344B	Monitor and control repairs and modifications on operational pipe	
PMASUP345A	Monitor vibration	
PMASUP346A	Control corrosion	
PMASUP347A	Undertake corrosion inspection in a petrochemical environment	
PMC552002C	Operate equipment to blend/mix materials	
PMC552003C	Operate grinding equipment	
PMC552008B	Operate crushing equipment	
PMC562070B	Move materials	
PSPGOV308B	Work effectively with diversity	
RIIOHS204A	Work safely at heights	
RIIRIS201B	Conduct local risk control	
TAEASS301B	Contribute to assessment	
TAEDEL301A	Provide work skill instruction	
TLID2010A	Operate a forklift	
UEPOPS319B	Operate and monitor gas production plant	
UEPOPS340B	Operate and monitor a steam turbine	

Up to **four (4)** relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are available at Certificates III and IV.

Custom Content Section

Not applicable.