



**Australian Government**

# **PMA40116 Certificate IV in Process Plant Technology**

**Release 2**

# PMA40116 Certificate IV in Process Plant Technology

## Modification History

Release 2. Elective unit codes and titles updated. Supersedes and is equivalent to PMA40116 Certificate IV in Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA40113 Certificate IV in Process Plant Technology.

## Qualification Description

The PMA40116 Certificate IV in Process Plant Technology is a technical qualification for plant technicians and operations technicians who 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. 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 chemical, hydrocarbons and refining industries.

Other non-technical Certificate IV qualifications are available for production support employees at this level, such as MSM40116 Certificate IV in Process Manufacturing.

## Entry Requirements

There are no entry requirements for this qualification.

## Packaging Rules

To be awarded the PMA40116 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:
- a minimum of **one (1)** unit of competency 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:** **Five (5)** elective 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.

**Note:** Where prerequisite units are identified they must be counted in the total number of units required for achievement of the qualification.

## Core units of competency

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Complete all **five (5)** units from the following list.

| Unit code                            | Unit title  |               |
|--------------------------------------|---|---------------|
| MSMENV272                            | Participate in environmentally sustainable work practices |               |
| MSMSUP100                            | Apply workplace context to own job                        |               |
| MSMSUP102                            | Communicate in the workplace                              |               |
| MSMWHS110                            | Follow emergency response procedures                      |               |
| MSMWHS200                            | Work safely   |               |
| <b>ELECTIVE UNITS</b>                |   |               |
| <b>Group A – Technical electives</b> |   |               |
| Unit code                            | Unit title  | Prerequisites |
| MSMOPS400                            | Optimise process/plant area                               |               |
| MSMOPS401                            | Trial new process or product                              |               |
| PMAOPS402                            | Respond to abnormal process situations                    | MSMSUP390     |
| PMAOPS405                            | Operate complex control systems                           |               |
| PMAOPS410                            | Operate remote production facilities                      |               |
| PMAOPS411                            | Manage plant shutdown and restart                         |               |
| PMAOPS433                            | Manage wells and gathering systems                        |               |
| PMAOPS434                            | Commission wells and gathering systems                    |               |
| PMAOPS450                            | Solve colour problems                                     |               |
| PMAOPS460                            | Monitor and operate tailings management facilities        |               |
| <b>Group B – Support electives</b>   |   |               |

| Unit code | Unit title   | Prerequisites |
|-----------|--|---------------|
| MSMENV472 | Implement and monitor environmentally sustainable work practices       |               |
| MSL954004 | Obtain representative samples in accordance with sampling plan         |               |
| MSMPER400 | Coordinate permit process  | MSMPER300     |
| MSMSUP400 | Develop and monitor quality systems                                    |               |
| MSMSUP404 | Coordinate maintenance   |               |
| MSMSUP405 | Identify problems in fluid power system                                |               |
| MSMSUP406 | Identify faults in electronic control                                  |               |
| MSMWHS400 | Contribute to WHS management system                                    |               |
| MSMWHS401 | Assess risk  |               |
| MSS403085 | Ensure process improvements are sustained                              |               |
| MSS403011 | Facilitate implementation of competitive systems and practices         |               |
| MSS405013 | Facilitate holistic culture improvement in an organisation             |               |
| MSS403086 | Improve cost factors in work practices                                 |               |
| MSS403040 | Facilitate and improve implementation of 5S                            |               |
| MSS403054 | Facilitate breakthrough improvements                                   |               |
| MSS403087 | Mistake proof an operational process                                   |               |
| MSS404084 | Undertake process capability improvements                              |               |
| MSS404060 | Facilitate the use of planning software systems in a work area or team |               |
| MSS404085 | Undertake proactive maintenance analyses                               |               |
| MSS404086 | Assist in implementing a proactive maintenance strategy                |               |

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| MSS405052  | Design an experiment   | MSS404054 |
| PMAOMIR306   | Operate control panel during an emergency                    | PMAOPS315 |
| PMAOMIR407   | Audit incident preparedness and established response systems |           |
| PMAOMIR418   | Coordinate incident response                                 |           |
| PMAOMIR424   | Develop and maintain community relationships                 |           |
| PMAOMIR430   | Conduct and assess incident exercises                        |           |
| PMAOMIR444   | Develop incident containment tactics                         |           |
| PMAOMIR449   | Monitor legal compliance obligations during incidents        |           |
| PMASUP410  | Develop plant documentation                                  |           |
| PMASUP420  | Minimise environmental impact of process                     |           |
| PMASUP432  | Coordinate pipeline projects                                 | MSMPER300 |
| PMASUP440  | Commission/recommission plant                                |           |
| PMASUP441  | Decommission plant   |           |
| PMASUP444  | Plan plant preparation and isolation                         |           |
| PMASUP445  | Participate in HAZOP studies                                 | PMAOPS280 |
| PMAWHS420  | Develop first aid procedures and manage resources            |           |
| TAEASS401  | Plan assessment activities and processes                     |           |
| TAEASS402  | Assess competence  |           |
| TAEASS403  | Participate in assessment validation                         |           |
| TAEASS502  | Design and develop assessment tools                          |           |
| <p>Up to <b>one</b> (1) relevant unit may be chosen from this Training Package, other endorsed Training Packages and accredited courses, where that unit is packaged in a Certificate IV or Diploma.</p> |  |           |

| <b>Group C – Other electives</b> |  |                      |
|----------------------------------|--|----------------------|
| <b>Unit code</b>                 | <b>Unit title</b>  | <b>Prerequisites</b> |
| FBPPHM2001                       | Follow work procedures to maintain Good Manufacturing Practice requirements          |                      |
| FBPPHM3001                       | Apply Good Manufacturing Practice requirements                                       |                      |
| HLTAID011                        | Provide First Aid  |                      |
| MEM04001B                        | Operate melting furnaces   | MEM13004B            |
| MEM05012C                        | Perform routine manual metal arc welding   |                      |
| MEM09002B                        | Interpret technical drawing  |                      |
| MEM09003B                        | Prepare basic engineering drawing  | MEM09002B            |
| MEM11011B                        | Undertake manual handling  |                      |
| MEM16005A                        | Operate as a team member to conduct manufacturing, engineering or related activities |                      |
| MEM18011C                        | Shut down and isolate machine/equipment  |                      |
| MSMBLIC001                       | Licence to operate a standard boiler   |                      |
| MSMBLIC002                       | Licence to operate an advanced boiler  |                      |
| MSL952001                        | Collect routine site samples   |                      |
| MSL973013                        | Perform basic tests  |                      |
| MSMENV172                        | Identify and minimise environmental hazards  |                      |
| MSMOPS100                        | Use equipment  |                      |
| MSMOPS102                        | Perform tasks to support production  |                      |
| MSMOPS200                        | Operate equipment  |                      |
| MSMOPS212                        | Use organisation computers or data systems   |                      |

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| MSMPER200 | Work in accordance with an issued permit                 |           |
| MSMPER201 | Monitor and control work permits                         |           |
| MSMPER202 | Observe permit work                                      |           |
| MSMPER205 | Enter confined space                                     | MSMPER200 |
| MSMPER300 | Issue work permits                                       | MSMWHS201 |
| MSMSUP101 | Clean workplace or equipment                             |           |
| MSMSUP106 | Work in a team   |           |
| MSMSUP200 | Achieve work outcomes                                    |           |
| MSMSUP204 | Pack products or materials                               |           |
| MSMSUP205 | Transfer loads   |           |
| MSMSUP210 | Process and record information                           |           |
| MSMSUP240 | Undertake minor maintenance                              |           |
| MSMSUP273 | Handle goods   |           |
| MSMSUP280 | Manage conflict at work                                  |           |
| MSMSUP291 | Participate in continuous improvement                    |           |
| MSMSUP292 | Sample and test materials and product                    |           |
| MSMSUP300 | Identify and apply process improvements                  |           |
| MSMSUP301 | Apply HACCP to the workplace                             |           |
| MSMSUP303 | Identify equipment faults                                |           |
| MSMSUP309 | Maintain and organise workplace records                  |           |
| MSMSUP310 | Contribute to the development of workplace documentation |           |
| MSMSUP330 | Develop and adjust a production schedule                 |           |
| MSMSUP382 | Provide coaching/mentoring in the workplace              |           |
| MSMSUP383 | Facilitate a team  |           |

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| MSMSUP390  | Use structured problem-solving tools                              |                                     |
| MSMWHS100  | Follow WHS procedures   |                                     |
| MSMWHS201  | Conduct hazard analysis   |                                     |
| MSMWHS205  | Control minor incidents   |                                     |
| MSMWHS210  | Undertake first response to non-fire incidents                    |                                     |
| MSMWHS212  | Undertake first response to fire incidents                        |                                     |
| MSMWHS216  | Operate breathing apparatus                                       |                                     |
| MSMWHS217  | Gas test atmospheres  |                                     |
| MSMWHS218  | Control the risks of falls  |                                     |
| MSMWHS300  | Facilitate the implementation of WHS for a work group             | MSMWHS200                           |
| MSS402002  | Sustain process improvements                                      |                                     |
| MSS402082  | Apply cost factors to work practices                              |                                     |
| MSS402031  | Interpret product costs in terms of customer requirements         |                                     |
| MSS402040  | Apply 5S procedures   |                                     |
| MSS402050  | Monitor process capability  |                                     |
| MSS402051  | Apply quality standards   |                                     |
| MSS402083  | Use planning software systems in operations                       |                                     |
| MSS402080  | Undertake root cause analysis                                     |                                     |
| MSS402081  | Contribute to the application of a proactive maintenance strategy |                                     |
| PMAOMIR210 | Control evacuation to muster point                                |                                     |
| PMAOMIR301 | Undertake initial rescue  | MSMWHS216<br>MSMWHS217<br>HLTAID003 |
| PMAOMIR302 | Respond to a helideck incident                                    |                                     |



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| PMAOMIR317 | Facilitate search and rescue operations                       |                        |
| PMAOMIR322 | Manage incident response information                          |                        |
| PMAOMIR323 | Manage communication systems during an incident               |                        |
| PMAOMIR346 | Assess and secure an incident site                            |                        |
| PMAOPS101  | Read dials and indicators                                     |                        |
| PMAOPS105  | Select and prepare materials                                  |                        |
| PMAOPS201  | Operate fluid flow equipment                                  |                        |
| PMAOPS202  | Operate fluid mixing equipment                                |                        |
| PMAOPS204  | Select and use utilities and services                         |                        |
| PMAOPS205  | Operate heat exchangers                                       |                        |
| PMAOPS208  | Operate chemical separation equipment                         |                        |
| PMAOPS210  | Operate solids handling equipment                             |                        |
| PMAOPS211  | Operate manufacturing extrusion systems                       |                        |
| PMAOPS213  | Package product/material                                      |                        |
| PMAOPS216  | Operate local control system                                  |                        |
| PMAOPS217  | Operate wet milling equipment                                 |                        |
| PMAOPS220  | Monitor chemical reactions in the process                     |                        |
| PMAOPS221  | Operate and monitor prime movers                              |                        |
| PMAOPS222  | Operate and monitor pumping systems and equipment             | PMAOPS221 OR PMAOPS324 |
| PMAOPS223  | Operate and monitor valve systems                             |                        |
| PMAOPS224  | Provide fluids for utilities and support                      |                        |
| PMAOPS226  | Monitor and operate flare systems                             |                        |
| PMAOPS230  | Monitor, operate and maintain pipeline stations and equipment |                        |

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| PMAOPS231 | Control gas odourisation   |  |
| PMAOPS232 | Operate filtration equipment                                     |  |
| PMAOPS233 | Monitor wells and gathering systems                              |  |
| PMAOPS234 | Monitor and operate low pressure compressors                     |  |
| PMAOPS236 | Monitor continuous process plant                                 |  |
| PMAOPS240 | Store fluids in bulk   |  |
| PMAOPS241 | Operate Joule-Thomson effect device                              |  |
| PMAOPS242 | Moor ships for transfer of bulk processed particulates or fluids |  |
| PMAOPS246 | Operate separation equipment                                     |  |
| PMAOPS247 | Operate powered separation equipment                             |  |
| PMAOPS260 | Conduct screening operations                                     |  |
| PMAOPS261 | Operate bulk solids loading equipment                            |  |
| PMAOPS262 | Operate digestion equipment                                      |  |
| PMAOPS263 | Operate leaching equipment                                       |  |
| PMAOPS264 | Operate solvent extraction equipment                             |  |
| PMAOPS265 | Operate magnetic/electrical separation equipment                 |  |
| PMAOPS280 | Interpret process plant schematics                               |  |
| PMAOPS290 | Operate a biotreater   |  |
| PMAOPS306 | Operate and troubleshoot production unit                         |  |
| PMAOPS310 | Operate and troubleshoot distillation system                     |  |
| PMAOPS311 | Operate and troubleshoot reactors and reaction equipment         |  |
| PMAOPS313 | Operate and troubleshoot furnaces to induce reaction             |  |
| PMAOPS314 | Operate and troubleshoot compressor systems                      |  |

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| PMAOPS315 | Operate and troubleshoot process control systems     |  |
| PMAOPS343 | Transfer bulk fluids into/out of storage facility    |  |
| PMAOPS316 | Organise storage and logistics of general materials  |  |
| PMAOPS309 | Operate solids handling/storage facility             |  |
| PMAOPS317 | Undertake ship transfer operations                   |  |
| PMAOPS319 | Adjust batch   |  |
| PMAOPS318 | Conduct artificial lift                              |  |
| PMAOPS322 | Undertake well management                            |  |
| PMAOPS328 | Operate and troubleshoot heating furnace             |  |
| PMAOPS331 | Operate and troubleshoot gas turbine system          |  |
| PMAOPS332 | Generate electrical power                            |  |
| PMAOPS334 | Operate and troubleshoot gas absorption system       |  |
| PMAOPS336 | Operate and troubleshoot fixed-bed adsorption system |  |
| PMAOPS337 | Operate and troubleshoot liquid extraction system    |  |
| PMAOPS338 | Communicate and monitor pipeline activities          |  |
| PMAOPS339 | Operate and troubleshoot wells and gathering systems |  |
| PMAOPS342 | Conduct pipeline pigging                             |  |
| PMAOPS341 | Operate and troubleshoot cryogenic processes         |  |
| PMAOPS350 | Match and adjust colour                              |  |
| PMAOPS360 | Operate a metalliferous kiln/furnace                 |  |
| PMAOPS361 | Operate a smelting furnace                           |  |
| PMAOPS362 | Operate a blast furnace                              |  |

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| PMAOPS364   | Operate an electrochemical process                      |  |
| PMAOPS365   | Operate pelletising equipment                           |  |
| PMAOPS366   | Operate sintering equipment                             |  |
| PMAOPS390   | Operate a biochemical process                           |  |
| PMASMELT260 | Form carbon anodes                                      |  |
| PMASMELT261 | Bake carbon anodes                                      |  |
| PMASMELT262 | Clean and strip anode rods                              |  |
| PMASMELT263 | Spray carbon anodes                                     |  |
| PMASMELT264 | Start up reduction cells                                |  |
| PMASMELT265 | Operate reduction cells                                 |  |
| PMASMELT266 | Deliver molten metal                                    |  |
| PMASMELT267 | Cast ingots   |  |
| PMASMELT268 | Operate vertical direct casting process                 |  |
| PMASMELT269 | Operate cell tending equipment                          |  |
| PMASMELT270 | Supply product from reduction cells                     |  |
| PMASUP236   | Operate vehicles in the field                           |  |
| PMASUP237   | Undertake crane, dogging and load transfer operations   |  |
| PMASUP241   | Maintain pipeline easements                             |  |
| PMASUP242   | Monitor pipeline civil works                            |  |
| PMASUP243   | Monitor and maintain pipeline coatings                  |  |
| PMASUP244   | Prepare and isolate plant                               |  |
| PMASUP245   | Break and make flanged joints using hand tools          |  |
| PMASUP246   | Disconnect and reconnect non-flared tube fitting joints |  |
| PMASUP305   | Operate Offshore Cranes                                 |  |

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| PMASUP311 | Operate communications hub  |           |
| PMASUP341 | Monitor and maintain instrument and control systems                           | MSMPER300 |
| PMASUP342 | Monitor and maintain electrical systems                                       | MSMPER300 |
| PMASUP348 | Monitor and maintain cathodic protection systems                              |           |
| PMASUP349 | Monitor and control repairs and modifications on operational pipe             |           |
| PMASUP345 | Monitor vibration   |           |
| PMASUP350 | Control corrosion   |           |
| PMASUP347 | Undertake corrosion inspection on process plant                               |           |
| PMAWHS211 | Prepare equipment for emergency response                                      |           |
| PMAWHS213 | Undertake fire control and emergency rescue                                   |           |
| PMAWHS214 | Undertake helicopter safety and escape  |           |
| PMAWHS215 | Apply offshore facility abandonment and sea survival procedures and practices |           |
| PMAWHS221 | Maintain first aid resources and records                                      |           |
| PMAWHS310 | Investigate incidents   |           |
| PMAWHS311 | Lead emergency teams  |           |
| PMAWHS312 | Command the operation of survival craft                                       |           |
| PMAWHS320 | Provide advanced first aid response   | HLTAID003 |
| PMAWHS321 | Provide first aid response in remote and/or isolated area                     | HLTAID003 |
| MSMPMC302 | Operate equipment to blend/mix materials                                      |           |
| MSMPMC303 | Operate grinding equipment  |           |
| MSMPMC306 | Operate crushing equipment  |           |
| MSMPMC324 | Move materials  |           |

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| PSPGEN015   | Work effectively with diversity          |  |
| TAEASS301   | Contribute to assessment                 |  |
| TAEDEL301   | Provide work skill instruction           |  |
| TLID2010  | Operate a forklift                       |  |
| UEPOPL001   | Licence to operate a steam turbine       |  |
| UEPOPS319   | Operate and monitor gas production plant |  |
| Up to <b>four</b> (4) relevant units may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are packaged in a Certificate II, III or IV. |  |  |

## Qualification Mapping Information

Release 2. Supersedes and is equivalent to PMA40116 Certificate IV in Process Plant Technology (Release 1).

Release 1. Supersedes and is equivalent to PMA40113 Certificate IV in Process Plant Technology.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=9fc2cf53-e570-4e9f-ad6a-b228ffdb6875>