Modification history

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| Release | Comments |
| Release 1 | This version released with PPM Training Package Version 1.0. |

| ppmwas340 | Troubleshoot and rectify water systems |
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| Application | This unit of competency describes the outcomes required to identify, diagnose, rectify and report faults in water systems, in the pulp and paper industry.  This unit applies to senior operators and production specialists who manage troubleshoot and rectify water systems, in a pulp or paper manufacturing facility. This typically involves working in a facility with complex integrated equipment and continuous operations.  No licensing, legislative or certification requirements apply to this unit at the time of publication. |
| Prerequisite Unit | Nil |
| Unit Sector | Pulp and Paper Manufacturing (PPM) |

| Elements | Performance Criteria |
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| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element. |
| 1. Identify and analyse causes of faults | 1.1. Check workplan according to documentation and procedures, workplace health and safety (WHS) procedures, productivity requirements, risks and hazards identification, environmental workplace procedures, standard operating procedures (SOP) and house keeping requirements.  1.2. Check availability of materials and supplies.  1.3. Use alarms and visual checks on water systems to determine fault type.  1.4. Interpret sampling and testing results to identify deviations from specifications.  1.5. Use an appropriate analysis to identify and locate cause and source of problem.  1.6. Access relevant sources of information to assist analysis. |
| 2. Rectify plant and equipment faults | 2.1. Shutdown equipment and implement isolation procedures, prior to fault rectification, as required.  2.2. Identify, repair or replace faulty equipment.  2.3. Adjust process and carry out operator level maintenance.  2.4. Return plant and equipment to normal operations.  2.5. Verify restoration to normal operations and communicate to relevant personnel. |
| 3. Rectify water quality faults | 3.1. Identify quality faults or variations by observation, systematic sampling and testing.  3.2. Take samples for a tests to detect quality faults  3.3. Interpret test results and make operational adjustments, as required.  3.4. Rectify faults or recommend further action, as required.  3.5. Action out-of-specification water, as required |
| 4. Record and report operational data | 4.1. Document variations from specifications and performance variations, as required.  4.2. Record causes of deviation and corrective action undertaken.  4.3. Communicate relevant information to appropriate personnel. |

| Foundation Skills  This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria. | |
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| Skill | Description |
| Numeracy skills to: | * interpret instruments, gauges and data recording equipment * use measuring equipment and undertake calculations to aid testing and troubleshooting. |
| Oral communication skills to: | * use appropriate spoken communication strategies with work colleagues and other personnel, on site to to assist with analysis and resolution of operational problems and to manage troubleshooting and maintenance. |
| Reading skills to: | * read and interpret documentation, procedure manuals and test results relevant to water systems. |
| Writing skills to: | * record accurately and legibly, fault rectifications, using correct technical vocabulary * access, navigate and enter computer based information. |
| Problem solving skills to: | * maintain situational awareness in the work area * analyse and use sensory information to adjust process to maintain and co-ordinate safety, quality and output. |
| Technology skills to: | * use electronic and other control systems to control equipment and processes. |

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| Unit Mapping Information | | | |
| Code and title current version | Code and title previous version | Comments | Equivalence status |
| PPMWAS340 Troubleshoot and rectify water systems | FPPWAS340A Troubleshoot and rectify water systems |  | Equivalent unit |

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| Links | Companion Volumes, including Implementation Guides, are available at VETNet:  <https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=12998f8d-d0ac-40bc-a69e-72a600d4fd93> |

| TITLE | Assessment requirements for PPMWAS340 Troubleshoot and rectify water systems |
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| Performance Evidence | |
| A person demonstrating competency in this unit must satisfy all of the elements and performance criteria of this unit, and must be able to provide evidence that they can:   * troubleshoot and rectify water systems, at least twice in line with required enterprise intervals, by: * selecting and using appropriate troubleshooting methods to correct water system, water quality and equipment faults * responding to the causes and impacts of unplanned shutdowns and processes and taking corrective action * implementing isolation and access procedures prior to fault rectification * maintaining a clean and hazard free work area and following safety chemical handling procedures * reporting on operational and rectification data * using safety accessories, including protective and high visibility, safety clothing and electronic communication equipment when working with water systems * communicating effectively, through written and verbal means, the corrective actions undertaken. | |

| Knowledge Evidence |
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| A person competent in this unit must be able to demonstrate knowledge of:   * organisational procedures relevant to workplace health and safety with particular emphasis on: * use of personal protective equipment (PPE) * equipment lock out and isolation procedures * handling chemicals and hazardous substances, including spill and disposal guidelines * plant clearance requirements * emergency procedures and responses * job safety analysis documentation and processes * plant permit systems and processes * high risk load shifting licensing requirements where relevant * major hazard facility requirements where relevant * troubleshooting methods that can be applied across problem faults in water systems * documentation and procedures relevant to water systems, in the pulp and paper industry and including: * standard operating procedures (SOP), housekeeping and risk and hazard identification * productivity requirements and quality procedures * environmental sustainability requirements and practices * machinery and plant manufacturing operating manuals * enterprise policies and procedures * manufacturer's specifications and maintenance documentation * Safety Data Sheets (SDS) * process and instrument diagrams * operator's log and job sheets and maintenance logs * incidents reports * impact of different types of water sources including raw, mains or recycled water on water systems * use of sampling and testing checks including consistency, pH, conductivity, flocculation, colour, suspended solids, caustic strength, alkalinity, impurities, brine, bacteria, colour and acid strength * key features of water systems, processes and associated services sufficient to troubleshoot including plant layout, theory of operation, causes and effects of adjustments made to water system and processes and relationships between water system, processes and associated services * implications of the use of water types including fresh water, treated water, de-mineralised water, softened water, filtrate-clarified water, potable water, dilution water (filtrate) ex-vacuum system waste water (effluent), white water (ex-machine) and cloudy water , on water systems * how to identify and respond to hazards and risks of water systems including: * confined space * hazardous chemicals and materials * biological hazards and environmental hazards * heat, height and slippery surfaces * pressures, fumes and electrical equipment * compressed air, nip points and flooding * key features of maintenance systems including operator level maintenance as per site agreements, operator maintenance schedules, maintenance suppliers and pro-active maintenance strategies including Total Productive Maintenance (TPM) and Reliability Centred Maintenance (RCM) * use of electronic and other control systems, operation and application to make appropriate adjustments that control the water system * materials and supplies including chemicals and filtering mediums * water systems including de-alkalinisation plant, de-mineralisation plant, water softening plant, chemical treatment plant, reverse osmosis plant, clarifier plant, chillers, water storage systems, filtration systems, cooling towers, condensers, and potable water plant. * equipment including flow control and metering devices, pumping systems, electronic and digital monitoring and metering, valving systems, pipes, fittings, chemical testing and analysis equipment, chemical dosing equipment, tanks and chests, communication equipment, aeration ponds, chemical handling equipment, hand and power tools, pest control equipment, load shifting equipment, computer systems, electronic screens and alarms, process control systems, fully automated, semi-automated, manually operated plant and equipment appropriate to water processes and systems |

| Assessment Conditions |
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| The following resources must be made available:   * access to the full range of troubleshooting equipment involved in maintaining integrated continuous operation of water systems in a pulp or paper manufacturing facility * personal protective equipment required for operating water systems * relevant personnel for the purposes of communicating information * sample workplace documentation, procedures and reports including standard operating procedures (SOP), quality procedures ,environmental sustainability requirements/practices, plant manufacturing operating manuals, enterprise policies and procedures, oil or chemical spills and disposal guidelines, plant isolation documentation, safe work documentation,   Competency is to be assessed in the workplace or in a productive environment that accurately reflects performance in a workplace.  Assessor requirements  Assessors must:   * hold the appropriate assessor competency standards as outlined in regulations; and * be able to demonstrate vocational competencies at least to the level being assessed; and * be able to demonstrate how they are continuing to develop their VET knowledge and skills as well as maintaining their industry currency and assessor competence. |

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