Australian Government

UEENEEI126A Provide solutions to pneumatic-hydraulic system operations

Release: 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

UEENEEI126A Provide solutions to pneumatic-hydraulic system operations

Modification History

Release	Action	Core/Elective	Details	Points
2	Edit	N/A	Show full pre-req chain in the unit	
2	Edit	N/A	Inserted topic numbering in Required Skills and Knowledge	
2	Edit	N/A	Replaced "essential knowledge and associated skills" with "required skills and knowledge"	
2	Edit	N/A	Insert the words "pneumatic" and "hydraulic" to Required Skills and Knowledge to differentiate between T4 and T9	

Unit Descriptor

Unit Descriptor **1) Scope:**

1.1) Descriptor

This unit covers the set-up and maintenance of pneumatic and hydraulic systems. It encompasses working safely, problem solving procedures, including using measuring instruments, applying appropriate circuit theorems and providing solutions derived from measurements and calculations and justification for such solutions.

Application of the Unit

Application of the Unit **2)**

This unit applies to any recognised development program that leads to the acquisition of a formal award at AQF level 4 or higher. It may also be suitable for employment-based programs under an approved contract

of training.

Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit do not require a license to practice in the workplace. However, practice in this unit is subject to regulations directly related to occupational health and safety, codes of work practice and standard work procedures related to the operation of pneumatic and hydraulic operated automated machinery

Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications
UEENEEI125A	Provide solutions to fluid circuit operations

Literacy and numeracy skills **4.2)**

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each

scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 3 Writing 3 Numeracy 3

Employability Skills Information

Employability Skills **5)**

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA	
1 Prepare to provide solutions to pneumatic/hydraulic system operations	1.1	OHS procedures for a given work area are identified, obtained and understood
	1.2	OHS risk control work preparation measures and procedures are followed.
	1.3	The nature of the system problem is obtained from documentation or from work supervisor to establish the scope of work to be undertaken.
	1.4	Advice is sought from the work supervisor to ensure the work is coordinated effectively with others.

ELEMENT	PERFORMANCE CRITERIA	
	1.5	Sources of materials that may be required for the work are established in accordance with established procedures.
	1.6	Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety
2 Provide solutions to pneumatic/hydraulic system operations	2.1	OHS risk control work measures and procedures are followed.
	2.2	The need to test or measure active systems is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures
	2.3	Systems are checked as being isolated where necessary in strict accordance OHS requirements and procedures
	2.4	Established methods are used for solving system problems from measure and calculated values, as they apply to pneumatic/hydraulic circuits.
	2.5	Unexpected situations are dealt with safely and with the approval of an authorised person.
	2.6	Problems are solved without damage to apparatus, circuits, the surrounding environment or services and using sustainable energy practices with the minimum waste and rework.
3 Complete work and document solutions to discovered problem	3.1	OHS work completion risk control measures and procedures are followed.
	3.2	Work site is cleaned and made safe in accordance with established procedures.
	3.3	Justification for solutions used to solve system problems is documented.
	3.4	Work completion is documented and appropriate person(s) notified in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the required skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and providing solutions to pneumatic/hydraulic system operations.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EI126A Pneumatics and hydraulics systems

Evidence shall show an understanding of pneumatics and hydraulics to an extent indicated by the following aspects:

T1	Terms and there definitions used in pneumatic components and systems
T2	Application, operation and installation requirements of pneumatic components and systems
T3	Interpretation and selection of manufacturers equipment specifications to establish the performance of pneumatic components
T4	Construct pneumatic circuits from control diagrams
T5	Location and correction of faults on pneumatic components and systems
T6	Terms and there definitions used in hydraulics components and systems
T7	Application, operation and installation requirements of hydraulic components and systems
T8	Interpretation and selection of manufacturers equipment specifications to establish the performance of hydraulic components
T9	Construct hydraulic circuits from control diagrams
T10	Location and correction of faults on hydraulics components and systems

Evidence Guide

EVIDENCE GUIDE

9) 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 this Training Package.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment **9.1)**

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. In some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work influence how/how much the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit **9.2)**

Before the critical aspects of evidence are considered all prerequisites must be met.

Evidence for competence in this unit shall be considered holistically. Each Element and associated performance criteria must be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement
  - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
  - Demonstrate an understanding of the required skills and knowledge as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
  - Demonstrate an appropriate level of skills enabling employment
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Provide solutions to pneumatic/hydraulic system operations as described in 8) and including:

A Determining the operating parameters of existing systems

B Using established problem solving methods

C Taking relevant measurements accurately

D	Interpreting measured values appropriately
E	Providing effective solutions to system problems from measurements and calculations
F	Giving written justification of solutions provided
G	Dealing with unplanned events by drawing on required skills and knowledge to provide appropriate solutions incorporated in a holistic assessment with the above listed items

Context of and specific resources for assessment

9.3)

This unit must be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, the conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to providing solutions to pneumatic/hydraulic system operations.

Method of assessment

9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires

assessment in a structured environment which is intended primarily for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the required skills and knowledge described in this unit.

Concurrent assessment and relationship with other units

9.5)

There are no concurrent assessment recommendations for this unit.

Range Statement

RANGE STATEMENT

10) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit must be demonstrated in relation to pneumatic/hydraulic power systems as they apply to problems related to engineering diagnosis and development work functions in any of the following:

- determining the operating parameters of an existing system
- altering an existing system to comply with specified operating parameters
- developing systems to comply with a specified function and operating

In relation to both types of the following systems:

- Pneumatics – any two of the following main components:
  - Cooler
  - Dryer
  - Filter
  - Receiver
- Control devices – any two of the following components:
  - Linear actuator
  - Rotary actuator
  - Directional control valve
  - Timer
  - Counter
- Hydraulics – any two of the following main components:
  - Two cylinder sequenced system
  - Single cylinder skip-check system
- Control devices – any two of the following components:
  - Rotary actuators
  - Linear actuators
  - Directional control valve
  - Rotary control valve
  - Pressure control valve

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Instrumentation and Control