Australian Government

Department of Education, Employment and Workplace Relations

UEENEED034B Configure and maintain industrial control system networks

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

UEENEED034B Configure and maintain industrial control system networks

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor	**1**)

1.**1**) **Descriptor**

This unit covers installing, configuring and maintaining communication service on a control network. It encompasses safe working practices, applying knowledge of industrial control network topology and protocols, configuring data links, bus monitoring and system management and access, network testing and documenting system settings.

Note:
This unit applies to all aspects of Electrotechnology - engineering applications only. For general competencies related to Information Technologies refer to the latest endorsed IT Training Package.

Application of the Unit

Application of the Unit	**4**)

This unit applies to any recognised development program that leads to the acquisition of a formal award at AQF level 5 or higher.

Licensing/Regulatory Information

1.2) **License to practice**

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 and where applicable contracts of training such as apprenticeships.

Pre-Requisites

Prerequisite Unit(s)   **2**)

2.1) **Competencies**

There are no prerequisite competencies for this unit.

Employability Skills Information

Employability Skills   **3**)

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 unit of competency   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 configure and maintain industrial control system networks.	1.1	OHS procedures for a given work area are identified, obtained and understood.
		1.2	Established OHS risk control measures and procedures are followed in preparation for the work.
		1.3	The nature of the industrial control system and network is established from control system specifications and in consultation with appropriate person(s).
		1.4	Activities are planned to meet scheduled timelines in consultation with others involved in the work.
		1.5	Network operating system versions and updates needed to configure and maintain the network are obtained in accordance with established procedures and checked against job requirements.
2	Configure and maintain industrial control system networks.	2.1	OHS risk control measures and procedures for carrying out the work are followed.
		2.2	Control application network components are installed, upgraded and configured in accordance with developer's instructions and network requirements.
		2.3	Devices, desktop environment, network protocols and services and system security are implemented in accordance with requirements.
		2.4	Access to control data and resources is configured within the limitations specified for each user.
		2.5	Network malfunctions are identified and rectified using logical techniques and drawing knowledge of control devices, storage, network protocols, connections and services and system security configuration processes.
		2.6	Network performance and reliability is monitored and optimised in accordance with

ELEMENT		PERFORMANCE CRITERIA	
			established procedures.
		2.7	Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes.
		2.8	Network administration is carried out efficiently without waste of materials and energy or damage to apparatus, the surrounding environment or other services.
3	Document control system network configuration and maintenance activities.	3.1	Written justification is produced for network maintenance and upgrading and appropriate person(s) notified in accordance with established procedures.
		3.2	Network maintenance documentation is maintained in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Evidence shall show that knowledge has been acquired of safe working practices and to configure and maintain industrial control system networks.

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

The extent of the essential knowledge and associated skills (EKAS) required is given in Volume 2 - Part 2.2 EKAS. It forms an integral part of this unit.

2.3.11	Control system network basics
2.3.12	Control network infrastructure
2.18.1	Occupational Health and Safety principles

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit and must be read in conjunction with the performance criteria and the range statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of this 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. It is recognised that, 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 have a bearing on the decision as to how much and how detailed 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

EVIDENCE GUIDE

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 shall be met.

Evidence for competence in this unit shall be considered holistically.   Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines - UEE07'.   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 essential knowledge and associated skills 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:

  - Configure and maintain industrial control system networks as described in 8) and including:

    A   Establishing industrial control system and network requirements and operating system versions and updates.

    B   Installing, upgrading and configuring control application network components correctly.

EVIDENCE GUIDE

	C	Configuring access to control data and resources for each user.

C   Configuring access to control data and resources for each user.

D   Identifying network malfunctions.

E   Rectifying network malfunctions.

F   Documenting network configuration and maintenance activities.

G   Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items.

Note:
Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

Context of and specific resources for assessment

9.3)

This unit should 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 in this unit.

These should be used in the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions for assessment 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 configuring and maintaining industrial control system networks.

EVIDENCE GUIDE

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 primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.
Concurrent assessment and relationship with other units	**9.5**) For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit: UEENEED015B Administer user networks

Range Statement

RANGE STATEMENT

8) 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 shall be demonstrated in relation to configuring and maintaining an industrial control system networks with at least three distributive control loops, two programmable controllers and one HMI system controller.

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

2.2) Literacy and numeracy skills

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   5   Writing   5   Numeracy   5

Custom Content Section

Competency Field   **5**)

Computer Systems

EE-Oz Training Standards