Australian Government

AHCIRG438 Select and manage pumping systems for irrigation

Release: 1

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Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture, Conservation and Land Management Training Package Version 4.0.

Application

This unit of competency describes the skills and knowledge required to identify irrigation system requirements, select pump and supervise installation, commissioning and testing of pump system, develop maintenance procedures and troubleshoot irrigation pumping systems.

High voltage electrical work must be carried out by a qualified electrician.

The unit applies to individuals who apply specialised skills and knowledge to the selection and management of irrigation pumping systems and have responsibility for the output of others. This includes applying and communicating non-routine technical solutions to predictable and unpredictable problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Irrigation (IRG)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify irrigation system requirements from the irrigation design	1.1 Identify the components of the irrigation pumping system 1.2 Determine the water source and height of pull for water into the system 1.3 Determine the water output for irrigation

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Calculate the total friction loss of irrigation components
2. Select pump according to type, installation, range of flow rates, operating head and delivery distance	2.1 Select pump type based on pumping task and placement and the power source 2.2 Calculate total operating head requirements 2.3 Calculate pump discharge requirements based on irrigation output requirements and friction losses in the system 2.4 Determine pump motor speed and power requirements 2.5 Determine pump limiting suction lift 2.6 Interpret pump performance curves when selecting an efficient irrigation pump 2.7 Determine the size of the impeller from the pump curve
3. Supervise installation of pumps	3.1 Ensure pump is level and sited as close as possible to water source 3.2 Verify pump is properly anchored and connections are airtight 3.3 Confirm pump and motor connection are correctly aligned and motor is ventilated 3.4 Verify filters and valves are correctly fitted and orientated 3.5 Check pump is connected to the irrigation controller if required
4. Oversee commissioning and testing of pumping system	4.1 Develop pre-start and start up procedures 4.2 Check delivery performance and verify power usage and water output against requirements and pump specifications 4.3 Ensure pumping system is checked for leakages and cavitation 4.4 Confirm pumping system is operating effectively
5. Develop maintenance procedures for the pumping system	5.1 Develop routine maintenance procedures to rectify the effects of normal wear 5.2 Develop periodic inspection checklists to assist in maintenance scheduling 5.3 Carry out pump overhaul or repairs 5.4 Keep pump maintenance records, including details of pump and pumping system components for ordering
6. Carry out troubleshooting on	6.1 Investigate lack of discharge or pressure and change settings or components

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Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
pumping systems	6.2 Investigate loss of water suction and make alterations to placement or fix leakages 6.3 Investigate cavitation in pumps and change settings or components 6.4 Investigate excessive power consumption and review design and pump selection and check for mechanical defects

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.

Skill	Description
Reading	• Identify and interpret information regarding selecting and managing irrigation pumping systems
Numeracy	• Calculate water output, friction loss and operating head requirements • Identify and record pump system component numbers
Navigate the world of work	• Identify and describe own workplace requirements, including safety requirements, associated with own role and area of responsibility

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCIRG438 Select and manage pumping systems for irrigation	AHCIRG410 Select and manage pumping systems for irrigation	Performance criteria clarified Foundation skills added Assessment requirements updated	Equivalent unit

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Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

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