



Australian Government

AHCIRG410 Select and manage pumping systems for irrigation

Release: 1

AHCIRG410 Select and manage pumping systems for irrigation

Modification History

Release Number	TP Version	Comments
1	AHCv1.0	Initial release

Application

This unit of competency describes the skills and knowledge required to operate and maintain irrigation pumping systems.

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

It applies to individuals who analyse information and exercise judgement to complete a range of advanced skilled activities and demonstrate deep knowledge in a specific technical area. They have accountability for the work of others and analyse, design and communicate solutions to a range of complex problems. All work is carried out to comply with workplace procedures.

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

Pre-requisite Unit

Nil.

Unit Sector

Irrigation (IRG)

Elements and Performance Criteria

Element	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 an 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 1.4 Calculate the total friction loss of irrigation components

Element	Performance criteria
2. Select pump according to type, installation, range of flow rates, operating head and delivery distance	2.1 Select the basic type of pump based on the pump task and placement and the power source 2.2 Calculate the total operating head required 2.3 Calculate the required discharge for the pump based on the irrigation output required and friction losses in the system 2.4 Determine the speed and power requirements of the pump motor 2.5 Determine the limiting suction lift of the pump 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 sited as close as possible to water source and is level 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 Determine that 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 the pump and all pumping system components for ordering
6. Carry out troubleshooting on pumping systems	6.1 Investigate lack of discharge or pressure and change settings or components 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

Foundation Skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Unit Mapping Information

This unit is equivalent to AHCIRG410A Select and manage pumping systems for irrigation.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>