



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **CPPFES3042A Install and commission pre-engineered fire-suppression systems**

**Release: 1**

## **CPPFES3042A Install and commission pre-engineered fire-suppression systems**

### **Modification History**

Revised unit

Element structure and performance criteria changed to incorporate outcomes of deleted unit PRMFES41A Install pre-engineered fixed plant fire suppression systems

Unit based on PRMPFES42A Install, inspect, test and maintain pre-engineered fire system for transportable equipment

### **Unit Descriptor**

This unit of competency specifies the outcomes required for a fire system technician to install and commission a pre-engineered fire-suppression system.

### **Application of the Unit**

This unit of competency supports fire protection technicians responsible for installing pre-engineered fire-suppression systems. The person would often be employed by the system's manufacturer or the manufacturer's agent as an endorsed installer.

Individuals operate within the scope of their defined roles and responsibilities and verify according to work procedures and Australian standards that pre-engineered fire-suppression system is installed and operates as intended.

The unit must be applied strictly according to relevant state or territory legislative and industry requirements.

### **Licensing/Regulatory Information**

Work in this area must be completed according to relevant legislative, industry, customer and organisational requirements, including occupational health and safety (OHS) policies and procedures.

Different states and territories may have regulatory mechanisms that apply to this unit.

Candidates are advised to check for regulatory limitations.

Note: Some manufacturers provide endorsement of suitably trained personnel, which permits fire system technicians to undertake installation and commissioning work on particular pre-engineered systems.

### **Pre-Requisites**

Not applicable.

## Employability Skills Information

This unit contains employability skills.

## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

- |   |   |     |   |
|---|---|-----|---|
| 1 | Interpret and comply with legal and industry requirements relating to fire system operations. | 1.1 | <i>Legislative and industry requirements</i> are interpreted, confirmed and applied in addition to <i>organisational requirements</i> .   |
|   |   | 1.2 | Installation requirements of <i>pre-engineered fire-suppression systems</i> are <i>checked for compliance</i> with legislative and industry requirements and <i>action</i> is taken according to organisational requirements. |
|   |   | 1.3 | Preparations for installation work are made according to organisational requirements.   |
| 2 | Conduct pre-installation inspections and checks.  | 2.1 | Necessary work permits are obtained prior to entering customer premises.  |
|   |   | 2.2 | Risk assessment review of equipment is conducted and additional risk reduction measures are reviewed with customer according to legislative and industry requirements and type of <i>extinguishing agent</i> .                |
|   |   | 2.3 | Installation design is confirmed as appropriate according to <i>customer requirements</i> and manufacturers' specifications.  |
|   |   | 2.4 | Scope of protection, operational parameters, and system and equipment interfaces are determined according to organisational and customer requirements, Australian standards and manufacturers' specifications.                |
|   |   | 2.5 | Installation and location of equipment are planned to satisfy customer requirements and manufacturers'  |

- specifications.
- 2.6 Materials are assembled ready for installation according to manufacturers' specifications.
- 3 Install a pre-engineered fire-suppression system.
- 3.1 **System components** are installed according to customer and organisational requirements, Australian standards and manufacturers' instructions.
- 3.2 **Auxiliary shutdown** fire system and equipment interface and alarm device connections are installed according to customer requirements, Australian standards and manufacturers' specifications.
- 3.3 System is charged according to customer and organisational requirements, Australian standards and manufacturers' specifications.
- 3.4 Installation site is left clean and tidy on completion of work.
- 3.5 Installation **documentation** is completed according to Australian standards and legislative and manufacturers' requirements.
- 4 Commission an installed fire-suppression system.
- 4.1 Safety procedures are followed according to customer, organisational and manufacturers' requirements.
- 4.2 **Commissioning procedures and tests** are conducted on componentry according to Australian standards and manufacturers' requirements.
- 4.3 System is reinstated as fully operational status as specified in manufacturers' documentation and organisational requirements.
- 4.4 Commissioning results are recorded according to relevant **commissioning schedule**, Australian standards and manufacturers' documentation.
- 4.5 Documentation on installed system and commissioning is completed according to organisational, customer and manufacturers' requirements.

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills

- skills to work safely when:
  - applying workplace housekeeping procedures
  - handling and transporting containers
  - using hand and power tools
- effective customer service skills
- language, literacy and numeracy skills to:
  - communicate with others clearly and concisely, verbally and in writing
  - interpret risk assessment documents to verify system requirements and identify fire hazards not considered in initial design risk assessment
  - read and comply with work instructions and specifications
  - read and record measurements
  - record and report information neatly and legibly
- planning and organising skills to:
  - estimate time to complete activities
  - prioritise tasks
- interpersonal skills to relate to people from a range of social and cultural backgrounds
- technical skills to:
  - install and test system components according to manufacturers' requirements
  - install brackets and high-pressure hose and metal tubing to meet manufacturers' requirements
  - locate nozzles, pipe runs, containers, actuators, fire detectors and other system components to meet manufacturers' requirements
  - operate standard controls on proprietary systems to verify system operation to manufacturers' requirements
  - pressurise containers in situ, using pressure regulators connected to gaseous containers, such as a nitrogen cylinder
  - replace extinguishing agent and components
  - terminate or join flexible high-pressure hose and metal tubing to meet manufacturers' requirements

### Required knowledge

- features of legislation and regulations relevant to the application, for example fire protection of:
  - mobile and transportable equipment

- commercial cooking equipment
- marine engine compartments
- importance of adhering to legislative requirements, safety procedures and workplace procedures, including implications for plant warranty or safety issues of:
  - not applying legislative requirements to job functions
  - not adhering to safety procedures and action to take when a breach of health, safety or other policy occurs
  - not involving customer or not referencing plant manufacturer's documentation before working on fixings, access holes or component location
- limitations of maintenance and repair activities that may be conducted by the service technician
- pre-engineered fire-suppression systems, including:
  - design, installation and commissioning requirements and limitations of the manufacturers' proprietary system
  - identification and purpose of the major components in the fire-suppression system for different manufacturers' proprietary systems
  - key installation design requirements for pre-engineered systems
  - manufacturers' requirements and standards applicable to design, installation, commissioning, inspecting, testing and maintaining a pre-engineered fire-suppression system
  - procedures for inspecting, testing and maintaining the system to verify operation to manufacturers' requirements
  - purpose of installing the system
  - purpose of fire-suppression systems
  - reasons for commissioning after installation
  - types of fire-extinguishing agents used in pre-engineered systems and their uses

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by observation of practical demonstrations of installing and commissioning a proprietary pre-engineered system, conducted at the customer's work site or simulated workplace.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit for at least one type of the pre-engineered fire-suppression system listed in the range statement.</p> <p>In particular the person should demonstrate the ability to:</p> <ul style="list-style-type: none"> <li>• locate, interpret and apply relevant information, standards and specifications</li> <li>• comply with organisational policies and procedures, including quality requirements</li> <li>• communicate and work effectively and safely with others</li> <li>• conduct service operations according to customer, manufacturer and organisational requirements</li> <li>• install, commission and provide documentation on at least two complete systems according to the current Australian standard relevant to installation.</li> </ul> <p>Note: Evidence of the manufacturer's endorsement of installation and commissioning of installed systems to meet the current Australian standard must also be provided.</p>
Context of and specific resources for assessment	<p>Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements.</p> <p>Resource implications for assessment include:</p> <ul style="list-style-type: none"> <li>• access to customer premises or a simulated workplace environment</li> <li>• assessment documentation</li> <li>• necessary tools, specialist equipment, manuals and relevant documentation</li> <li>• training and assessment record book.</li> </ul>
Method of assessment	<p>Assessment methods must:</p> <ul style="list-style-type: none"> <li>• satisfy the endorsed Assessment Guidelines of the Property Services Training Package</li> <li>• include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently</li> </ul>

	<p>identify and correctly interpret the essential underpinning knowledge required for practical application</p> <ul style="list-style-type: none"> <li>• reinforce the integration of employability skills with workplace tasks and job roles</li> <li>• confirm that competency is verified and able to be transferred to other circumstances and environments.</li> </ul>
Guidance information for assessment	<p>Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.</p> <p>Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.</p> <p>This unit could be assessed on its own or in combination with other units relevant to the job function, for example:</p> <ul style="list-style-type: none"> <li>• CPPFES2027A Inspect, test and maintain non-gaseous pre-engineered fire-suppression systems.</li> </ul>



## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<p><b><i>Legislative and industry requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• building surveyor requirements</li> <li>• manufacturers' system manuals</li> <li>• relevant legislation relating to installing and commissioning fire protection equipment, including:             <ul style="list-style-type: none"> <li>• dangerous goods regulations</li> <li>• environmental regulations</li> <li>• licensing arrangements</li> <li>• international shipping codes</li> <li>• marine codes for different Australian States</li> <li>• OHS legislation, codes and regulations</li> </ul> </li> <li>• relevant commonwealth and state or territory building Acts, regulations or codes, such as Building Code of Australia (BCA)</li> <li>• relevant Australian standards, including:             <ul style="list-style-type: none"> <li>• risk assessment section of AS 4360 Risk management</li> <li>• note: Australian standards are frequently revised and users must always check for currency and amendments</li> </ul> </li> <li>• system approval listing, such as:             <ul style="list-style-type: none"> <li>• CSIRO ActivFire</li> <li>• Factory Mutual (FM)</li> <li>• Underwriters Laboratories (UL).</li> </ul> </li> </ul>
<p><b><i>Organisational requirements</i></b> may be located in quality assurance and procedures manuals relating to:</p>	<ul style="list-style-type: none"> <li>• documentation and information systems and processes</li> <li>• legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations</li> <li>• legislation relevant to service operation</li> <li>• OHS policies, procedures and programs</li> <li>• using electronic job scheduling and communication devices.</li> </ul>
<p><b><i>Pre-engineered fire-suppression systems</i></b> are:</p>	<ul style="list-style-type: none"> <li>• fire protection systems consisting of:             <ul style="list-style-type: none"> <li>• supply of extinguishing agent of pre-determined quantity</li> <li>• pipework with nozzle arrangement installed up to a maximum permitted design according to manufacturer's pre-engineered limitation requirements and applicable Australian standard (note: no hydraulic calculations are required to size pipework or nozzles)</li> </ul> </li> <li>• fitted to a wide variety of fixed and mobile plant and equipment,</li> </ul>

	<p>such as:</p> <ul style="list-style-type: none"><li>• commercial cooking equipment, including:<ul style="list-style-type: none"><li>• associated ducts and filters</li><li>• exhaust plenums</li><li>• exhaust systems</li></ul></li><li>• fixed plant used in a range of industry sectors, such as mining, marine and power generation, including:<ul style="list-style-type: none"><li>• engine bays</li><li>• fuel pumping skids</li><li>• generators</li></ul></li><li>• industrial vehicles used in a range of industry sectors, such as mining, forestry and waste management, including:<ul style="list-style-type: none"><li>• draglines</li><li>• earthmovers</li><li>• graders</li><li>• loaders</li><li>• trucks.</li></ul></li></ul>
--	--

<p><b><i>Checking for compliance</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• undertaking commissioning tests detailed in Australian standards and manufacturers' documentation to verify performance of an installed, repaired or altered piece of equipment or system</li> <li>• applying inspection, test and survey requirements to equipment or systems, according to Australian standards, to determine that they are: <ul style="list-style-type: none"> <li>• capable of operating as originally installed</li> <li>• providing the coverage and protection needed to meet original design or performance requirements</li> <li>• still suitable for the fire hazard or risk being protected, as no change in occupancy or use of the area protected has occurred since the equipment or system was installed or last modified</li> </ul> </li> <li>• reviewing documentation to verify that the systems are installed according to legislative and industry requirements, such as: <ul style="list-style-type: none"> <li>• equipment listing</li> <li>• relevant commonwealth and state or territory building Acts, regulations and codes</li> <li>• relevant Australian standards listed for that system.</li> </ul> </li> </ul>
<p><b><i>Action</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• advising customer</li> <li>• documenting non-compliance</li> <li>• making equipment safe</li> <li>• reporting, as required.</li> </ul>
<p><b><i>Extinguishing agents</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• foam</li> <li>• powder</li> <li>• water mist</li> <li>• wet chemical</li> <li>• combination of any of the above when compatible.</li> </ul>
<p><b><i>Customer requirements</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• confirming or varying service instructions</li> <li>• following sign-in and sign-out procedures for entry to or exit from premises</li> <li>• industry requirements</li> <li>• insurance requirements</li> <li>• providing non-routine or urgent services</li> <li>• providing routine services</li> <li>• providing written or verbal confirmation of services provided or future maintenance schedule</li> <li>• sighting work permits</li> <li>• system specifications.</li> </ul>
<p><b><i>System components</i></b> may include:</p>	<ul style="list-style-type: none"> <li>• actuators</li> <li>• agent discharge nozzles</li> <li>• agent distribution, pipework and hoses</li> </ul>

	<ul style="list-style-type: none"> <li>• container valves</li> <li>• control equipment</li> <li>• detection devices</li> <li>• extinguishing agent containers, such as tanks and cylinders</li> <li>• support brackets.</li> </ul>
<i>Auxiliary shutdown</i> may include:	<ul style="list-style-type: none"> <li>• air conditioning shutdown signal to an electrical contactor to stop air conditioning</li> <li>• cooking fuel line shutdown signal to a gas solenoid valve on main inlet pipe supply to cooking appliances</li> <li>• cooking power supply shutdown signal to an electrical contactor to isolate main electrical supply to cooking appliances</li> <li>• vehicle or plant engine shutdown signal to engine emergency shutdown circuitry.</li> </ul>
<i>Documentation</i> may include:	<ul style="list-style-type: none"> <li>• certificates of inspection</li> <li>• corrective action reports</li> <li>• customer recommendation forms</li> <li>• equipment recommendation forms</li> <li>• installation drawings and schedules</li> <li>• maintenance record systems</li> <li>• manufacturers' system documentation</li> <li>• product documentation</li> <li>• service agreements</li> <li>• service and maintenance manuals.</li> </ul>
<i>Commissioning procedures and tests</i> may include:	<ul style="list-style-type: none"> <li>• discharges</li> <li>• leaks</li> <li>• pressure</li> <li>• recharging</li> <li>• visual inspections.</li> </ul>
<i>Commissioning schedules</i> may include:	<ul style="list-style-type: none"> <li>• customer schedules</li> <li>• schedules in Australian standards</li> <li>• system manufacturer's schedules.</li> </ul>

## Unit Sector(s)

Fire protection equipment

## Custom Content Section

Not applicable.