



Australian Government

UEGNSG048 Conduct butt fusion of large diameter polyethylene gas pipeline systems

Release: 1

UEGNSG048 Conduct butt fusion of large diameter polyethylene gas pipeline systems

Modification History

Release 1. This is the first release of this unit of competency in the UEG Gas Industry Training Package.

Application

This unit involves the skills and knowledge required to butt fuse large diameter polyethylene (PE) gas pipeline systems.

It includes preparing to weld PE pipe, handling, jointing, constructing and welding PE gas distribution mains. It also includes gas distribution, gathering lines, secondary mains (high pressure) and gas transmission line work and completing relevant documentation.

This unit applies to large PE pipe diameter greater than 180 mm.

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

Pre-requisite Unit

Not applicable.

Competency Field

Gas Distribution

Unit Sector

Gas Industry

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to weld PE pipe

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Workplace safety, environmental and sustainable energy practices for the site are identified, obtained and understood

- 1.2 Job requirements are obtained and interpreted from plans, specifications and instructions
 - 1.3 Relevant job requirements and workplace procedures for work activities are discussed with relevant person/s, including third parties, to determine and confirm work schedule and respective responsibilities
 - 1.4 Hazards are identified, workplace safety and environmental risks are assessed, and control measures are prioritised, implemented and monitored in accordance with workplace procedures
 - 1.5 Scope of responsibility under the relevant job requirements, including all work permits and/or relevant notifications, is determined and confirmed to access the services and perform work in accordance with job requirements and workplace procedures
 - 1.6 Equipment, tools and personal protective equipment (PPE) needed to carry out work activities are identified, obtained and checked for correct operation and safety in accordance with workplace procedures and manufacturer instructions
 - 1.7 Materials, plans, diagrams, drawings and resources required for work are confirmed and obtained in accordance with workplace procedures
 - 1.8 Pre-start test weld sample is prepared in accordance with workplace procedures
- 2 **Construct and weld PE gas distribution mains**
 - 2.1 Workplace safety and environmental risk control measures, schedule of work and workplace procedures for carrying out work are followed
 - 2.2 Appropriate materials, tools and equipment are selected and used safely in accordance with manufacturer instructions and workplace procedures
 - 2.3 Unsuitable or damaged materials, including improperly stored materials, are rejected/rectified and reported in accordance with workplace procedures
 - 2.4 Work is completed within agreed timeframe and to industry standards in accordance with job requirements and workplace procedures
 - 2.5 Unplanned events are referred to the relevant person/s

- for directions in accordance with workplace procedures
- 2.6** Welding and laying of polyethylene gas distribution mains are conducted in accordance with relevant industry standards and workplace procedures
 - 2.7** Faults and operational conditions of the components are identified, repaired or replaced, and reported in accordance with organisational job requirements
 - 2.8** Welds quality check of work and testing of pipework is carried out in accordance with industry standards, work instructions and workplace procedures
- 4 Complete work and relevant documentation**
- 3.1** Workplace safety risk control measures for work completion are followed
 - 3.2** Quality and safety checks of the work are conducted in accordance with job requirements, workplace procedures and community and industry standards
 - 3.3** Worksite is cleaned, reinstated and made safe in accordance with workplace procedures
 - 3.4** Tools, equipment and any surplus resources/materials are cleaned, checked and securely stored in accordance with workplace procedures
 - 3.5** Incidents are reported and followed up as required in accordance with workplace procedures
 - 3.6** Relevant person/s is notified of work completion in accordance with workplace procedures
 - 3.7** Work completion documentation is completed accurately and provided to relevant person/s in accordance with workplace procedures

Foundation Skills

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

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEG Gas Industry Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit supersedes and is equivalent to UEGNSG200 Conduct butt fusion of large diameter polyethylene gas pipeline systems.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6a6c032e-ffcb-4f3d-8063-415efbd261e8>

Assessment Requirements for UEGNSG048 Conduct butt fusion of large diameter polyethylene gas pipeline systems

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying equipment material handling procedures in accordance with workplace procedures
- applying relevant industry standards, guidelines, codes of practice and regulations, including pre-start test weld
- applying relevant workplace safety requirements and procedures, including applying risk control measures for stray, static and electrical faults
- applying sustainable energy and environmental principles and practices
- assembling, joining and laying polyethylene gas distribution mains in accordance with workplace procedures
- assessing pipework prior to welding and post-weld in accordance with weld specifications
- assessing real time weather and site condition controls, including high wind, secondary cleaning processes and control measures
- checking tools, equipment, plant and personal protection equipment (PPE) for correct operation and safety, including ensuring equipment is in calibration dates in accordance with workplace procedures or manufacturer specifications
- cleaning, checking and storing tools and equipment
- communicating effectively with others
- completing required documentation and reporting
- conducting visual weld inspection, quality and safety checks in accordance with weld specifications
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- identifying and correctly reading plans, drawings, manuals and diagrams
- installing large diameter polyethylene butt fused system on gas distribution mains, including:
 - calculating butt welding parameters
 - checking generator specifications to welder requirements and associated equipment rating
 - selecting materials and capabilities
- preparing the weld site and specific environment in accordance with safe work method statement (SWMS), job specification, work instruction or project requirements
- rehabilitating and maintaining a clean work area

- reporting and rejecting unsuitable or damaged materials in accordance with workplace procedures
- selecting correct materials, equipment, tools, PPE and measurement devices
- undertaking at least two joints; one joint pre-start test weld joint in accordance with relevant industry standards and job specification, at least one of the joints must be completed with fully automated butt fusion equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- conditions for direct installation and insertion of polyethylene (PE) pipeline
- construction of PE pipelines
- effective communication techniques
- environmental and sustainable energy principles and practices
- installation, inspection and testing of PE pipelines
- jointing procedures, methods and calculations
- material compatibility, including material thicknesses and types
- PE gas pipeline types, characteristics and components
- problem-solving techniques
- relevant industry standards, legislation, regulations and codes of practice
- relevant manufacturer specifications
- relevant materials, plans, diagrams, drawings and resources
- relevant materials, tools, equipment, plant, measuring devices and PPE
- relevant workplace safety requirements, including:
 - legislated work health and safety (WHS)/occupational health and safety (OHS) requirements
 - legislated industry/technical specific requirements
 - workplace safety procedures
 - manufacturer requirements
 - hazards, risk assessment and control measures
 - hazards of working with gas
 - hazardous activities, including the use of power tools, lifting, manual handling, climbing, and working in restricted space, excavations and trenches
 - relevant SWMS/job safety analysis (JSA) or risk mitigation processes, including electrostatic hazards and risk mitigation
 - risk controls for stray, static and electrical faults
- relevant workplace documentation, including calculations and inspection results
- relevant workplace policies and procedures, including material storage, inspection, handling and reporting workplace procedures
- site preparation, safety plans, job requirements and work schedules
- weld quality and safety checks.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

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Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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