

Power Unit 61

High Voltage Cable Jointing (up to 20 kV)

This specification has been developed from the power network standard. The specification details the required skills, knowledge and behaviours to establish competence to carry out high voltage jointing procedures on underground cables up to 20 kV.

The specification details the requirements for TWO separate high voltage categories. Candidates will be assessed and receive registration for BOTH of the following categories:

1. HV Cable (XLPE)
2. HV Cable (PILC)

The specification details the critical requirements of the activity to establish competence and does not preclude employers from adding to the skills and knowledge detailed by the specification in their own training programmes.

What does competence look like?

HVJ1 Being able to confidently carry out a range of high voltage electrical cable jointing procedures on underground cables in accordance with company procedures

HVJ2 Demonstrating a safety conscious approach to the control of hazards associated with the activity whilst working and communicating effectively with other team members to achieve tasks

What do I need to take this module?

Candidates to be assessed as competent in this skill area should have completed the modules shown below or have evidence demonstrating an equivalent level of competence.

1. SHEA Power (Revised Version) – providing basic health, safety and environmental awareness and an introduction to specific health, safety and environmental factors relating to the power sector
2. Access, Movement and Egress (Underground Cables) – an industry assessment of a person's competence to enter, move around and exit an underground cable work area in a safe manner
3. Location and Avoidance of Utilities – an industry assessment of a person's competence to identify and locate utilities using electronic location equipment
4. Safe Excavation of Utilities – an industry assessment of a person's competence to safely excavate and maintain excavations

Performance Criteria

To achieve this unit, you will need to be able to:

General Requirements

- P1. Identify the cable jointing work area to be accessed using available information
- P2. Select and wear the PPE required to carry out the jointing activity
- P3. Carry out a site specific risk assessment of the cable jointing area, identifying the hazards and the control measures required (requirements included in SHEA Power (Revised Version) and BESC / AME Underground Cables)
- P4. Implement the control measures necessary to meet safety requirements for the jointing activity e.g. barriers, signage, lighting
- P5. Carry out a pre use inspection of the jointing tools and equipment to be used inspecting for condition and service information including a cable spiking gun
- P6. Assess and confirm the work space is adequate for the jointing task to be carried out including suitable access / egress, lighting and protection from adverse weather
- P7. Set up a cable spiking gun in accordance with a senior authorised person's instructions and company procedures, under supervision
- P8. Receive and comply with instructions to achieve safety from the system for work to be carried out in accordance with company procedures
- P9. Carry out a visual inspection of the integrity of the high voltage cable/s to be worked on
- P10. Use approved tools to prepare and joint cables in accordance with company procedures
- P11. Identify and deal with cable defects in accordance with company procedures
- P12. Confirm joint measurements and tolerances meet with joint specifications and requirements

Task Specific – High Voltage Cable Jointing

Complete ALL of the jointing procedures in BOTH of the following categories:

P.13 XLPE Cables:

- a) Straight through joint
- b) Terminations
- c) Breeches joint
- d) Pot end
- e) Sheath repairs
- f) Trifurcating joints

P14. Paper Insulated Cables:

- a) Transition breeches joint
- b) Transition straight through joint
- c) Pot end

- P15. Install joint protection to ensure connections are protected from ingress of moisture and mechanical damage

- P16. Report to the Senior Authorised Person to confirm clearance on completion of works
- P17. Record joint positions in accordance with company procedures
- P18. Dispose of hazardous and non-hazardous waste materials in line with company procedures
- P19. Store tools and equipment safely and securely and leave the work area work in a safe condition in accordance with company procedures

Knowledge and Understanding

To achieve this unit, you will need to know and understand:

General Requirements

- K1. The principles of Health, Safety and Environmental legislation in relation to work on or near electrical power networks
- K2. The organisation's safety rules, policies and procedures relating to work on or near electrical power networks
- K3. The hazards associated with work on or near electrical power networks and how to deal with them
- K4. How to select, inspect and use PPE for work on or near electrical power networks
- K5. How to carry out a site specific risk assessment and identify workplace hazards
- K6. The dangers of electricity and how an electric shock can be received including: direct contact, induced voltage and arcing
- K7. The effect of adverse weather conditions on jointing activities
- K8. How to respond in the event of emergency situations in the work environment, including electric shock
- K9. How to deal with hazardous and non-hazardous waste materials in accordance with company procedures
- K10. How to leave an underground work area in a safe and secure condition. E.g. signs, lighting and barriers
- K11. How to update, report and record information in accordance with company procedures

Task Specific – High Voltage Cable Jointing

- K12. How to interpret utility drawings and identify underground cables and apparatus
- K13. How to interpret manufacturers' jointing specifications / company procedures
- K14. How to select, inspect and use approved tools and equipment for high voltage jointing procedures
- K15. How to positively identify the correct high voltage cable/s to be worked on
- K16. How to identify cable defects and make minor repairs in accordance with manufacturers' specifications / instructions
- K17. The company high voltage working procedures and how to comply with them
- K18. The moisture testing procedures for paper insulated cables

K19. The maintenance procedures for high voltage spiking equipment in accordance with manufacturers' instructions