Institute for Apprenticeships & Technical Education

Standard in development

L3: Power industry overhead linesperson

Title of occupation

Power industry overhead linesperson

UOS reference number

ST1330

Core and options

Yes

Option title/s

Power industry overhead linesperson - distribution

Power industry overhead linesperson - transmission

Level of occupation

Level 3

Route

Engineering and manufacturing

Typical duration of apprenticeship

30 months

Target date for approval

01/11/2023

Resubmission

No

Would your proposed apprenticeship standard replace an existing framework?

No

Does professional recognition exist for the occupation?

Yes

Occupation summary

Overhead linespersons work in the power industry for power utility owners, operators, or contractors.

They work on overhead line power distribution and transmission networks. Distribution lines carry electricity from a substation to consumers - residential and commercial. Transmission lines move electricity from a power plant or power station to the various substations.

The Office of gas and electricity markets (Ofgem) regulates the industry.

This is a core and options apprenticeship. An apprentice must be trained and assessed on the core and one option. The options are:

- Option 1. Power industry overhead linesperson - distribution
- Option 2. Power industry overhead linesperson - transmission

Distribution overhead linespersons work on small scale structures capable of carrying up to 132,000 volts, and their support mechanisms. They work on and near live apparatus.

Transmission overhead linespersons work on large support structures for example steel towers - capable of carrying 132,000 volts and above, and their support mechanisms. They work near live apparatus.

Both transmission and distribution overhead linespersons conduct planned and reactive work to maintain and repair plant and equipment. They receive safety documents and organise and supervise a working party (group of workers). They monitor working conditions and react to maintain safety. Completing work and safety records is also part of their role. They work at sites across a company's or client's power network. This means they may have to drive vehicles requiring driving licenses. They work in all weather conditions. They may have to be on standby duty and work shifts outside normal working hours. The role requires a good level of physical ability and working at height.

Distribution overhead linespersons also construct distribution overhead line plant and apparatus for example, wooden poles. And their work may involve working on customers' premises or property.

Overhead linespersons work with other linespersons and support operatives. They also have contact with other internal and external stakeholders. This may include engineers, managers, reinstatement teams, and admin staff. On a site they may interact with site agents and other trades. They speak with domestic and commercial customers regarding work and sometimes the public to keep them updated on work progress. They typically report to an experienced operational engineer.

They help to maintain the safe supply of electricity and the development of flexible networks that are vital to achieving environmentally sustainable networks. Work must comply with the electricity safety, quality, and continuity regulations (ESQCR). Safety is a top priority for the industry. They must comply with health, safety and environmental regulations and procedures. Failure to do so could have serious consequences for self, others, and the environment. They must complete tasks in line with the network's procedures and specifications, to set timescales and unit costs. They must present a professional image of

the company and themselves. They must be competent to hold an authorisation to fulfil their duties under their company's safety rules.

They may need to hold CSCS (construction skills certification scheme card) cards.

Typical job titles

Overhead lines craftsperson | Overhead linesperson

Are there any statutory/regulatory or other typical entry requirements?

Yes

Entry requirements

Typically, applicants do not need specific pre-requisite qualifications. They will need to demonstrate the ability to pick up new knowledge and skills, and to achieve goals whilst working both independently or as part of a team to fulfil the requirements of the role.

Core occupation duties

DUTY	KSBS
Duty 1 Prepare for overhead lineperson activities.	K1 K3 K4 K6 K20 K21 K25 K26 K27 K29 K30 S1 S2 S3 S4 S17 S20 S21
Duty 2 Receive safety documents and organise and supervise a working party.	K1 K2 K3 K4 K5 K6 K19 K20 K21 K24 K25 K26 S1 S2 S3 S6 S7 S8 S9 S10 S20 S21 S23 S25 B3 B4 B5 B6 B7
Duty 3 Maintain work site health, safety, and environmental compliance. Ensure site is left compliant. Ensure maintenance of tools and equipment. Complete risk assessments.	K2 K3 K5 K7 K8 K9 K10 K11 K12 K13 K14 K15 K16 K17 K18 K21 K25 K26 S7 S8 S9 S10 S11 S12 S14 S15 S16 S20 S22 S25 B1 B2 B3 B4 B7
Duty 4 Operate plant or vehicles equipped with tools and materials. Load and unload equipment from vehicles safely and securely.	K21 K25 K26 K28 S5 S13 S20 S21 S25 B3 B5 B7
Duty 5 Liaise with stakeholders to co-ordinate works, ensure tasks are delivered, advise of impact of works, and report progress and issues.	K1 K2 K4 K6 K19 K21 K24 K25 K26 S20 S21 S22 S25 B3 B4 B5 B6 B7
Duty 6 Complete work and safety records.	K2 K21 K22 K23 K24 S18 S20 S22 S23 S24 S25 B3 B7
Duty 7 Maintain supplies of consumables.	K4 K6 K20 K21 K22 K23 K24 K27 S1 S2 S3 S17 S20 S23 S24
Duty 8 Contribute to improvement activities - supporting alternative ways of working to improve	K1 K21 K22 K24 K25 K26 K27 K28 K29 K30 S19 S20 S21 S24

network safety, sustainability, reduce cost and drive efficiency.	
Duty 9 Carry out lifting operations.	K21 K25 K28 S13 S20 S21

Option duties

Power industry overhead linesperson - distribution duties

DUTY	KSBS
Duty 10 Construct distribution overhead line plant and apparatus capable of carrying up to 132 kilovolt (kV) and their support mechanisms.	K31 K33 K34 K35 K36 K37 K38 K39 K40 K41 K42 K43 K44 K45 K46 S25 S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36 S38 S39 S40 S41 S42 S43 S45 B1 B2 B3 B4 B5 B6 B7
Duty 11 Undertake fault-finding activities on power distribution networks.	K31 K32 K34 K35 K36 K37 K38 K39 K40 K41 K43 K44 K45 K46 S25 S27 S28 S29 S30 S31 S32 S33 S35 S36 S38 S39 S40 S41 S42 S43 S45 B1 B2 B3 B4 B5 B6 B7
Duty 12 Maintain and test overhead line plant and apparatus capable of carrying up to 132 kV.	K31 K34 K35 K36 K37 K38 K39 K40 K41 K43 K44 K45 K46 S25 S27 S28 S29 S30 S31 S32 S33 S35 S36 S38 S39 S40 S41 S42 S43 S45 B1 B2 B3 B4 B5 B6 B7
Duty 13 Repair overhead line plant and apparatus capable of carrying up to 132 kV.	K31 K34 K35 K36 K37 K38 K39 K40 K41 K43 K44 K45 K46 S25 S27 S28 S29 S30 S31 S32 S33 S35 S36 S38 S39 S40 S41 S42 S43 S44 S45 B1 B2 B3 B4 B5 B6 B7
Duty 14 Dismantle overhead line plant and apparatus capable of carrying up to 132 kV.	K31 K34 K35 K36 K37 K38 K39 K40 K41 K43 K44 K45 K46 S25 S27 S28 S29 S30 S31 S33 S35 S36 S37 S38 S40 S41 S42 S43 S45 B1 B2 B3 B4 B5 B6 B7

Power industry overhead linesperson - transmission duties

DUTY	KSBS
Duty 15 Install transmission overhead line plant and apparatus capable of carrying 132 kilovolt (kV) and above.	K47 K48 K49 K50 K51 K52 S25 S46 S47 S48 S49 S50 S51 S52 S53 B1 B2 B3 B4 B5 B6 B7
Duty 16 Maintain and test overhead line plant and apparatus capable of carrying 132 kV and above.	K47 K48 K49 K50 K51 K52 S25 S47 S48 S49 S50 S51 S52 S53 B1 B2 B3 B4 B5 B6 B7
Duty 17 Repair overhead line plant and apparatus capable of carrying 132 kV and above.	K47 K48 K49 K50 K51 K52 S25 S47 S48 S49 S50 S51 S52 S53 B1 B2 B3 B4 B5 B6 B7
Duty 18 Dismantle overhead line plant and apparatus capable of carrying 132 kV and above.	K47 K48 K49 K50 K51 K52 S25 S47 S48 S49 S50 S51 S52 S53 B1 B2 B3 B4 B5 B6 B7

KSBs

Knowledge

K1: Power network industry appreciation: generation of electricity, Transmission Network Operator, Distribution Network Operator (DNO), Independent Distribution Network Operator (IDNO), Independent Connections Provider (ICP), supplier, generators - role and boundary of operation.

K2: The office of gas and electricity markets (Ofgem) - their role and powers.

K3: Power industry regulations: Electricity at Work Regulations, and The Electricity Safety, Quality and Continuity Regulations (ESQCR). Their purpose and basic requirements.

K4: Overhead linesperson's role and responsibilities. Limitations of role and escalation procedures. Different teams and functions involved in operations: how they work together.

K5: Responsibilities of persons as defined in industry standard safety rules: supervising a working party, competent persons. Authorisation roles and responsibilities. Safety documentation.

K6: Business operation considerations: how activities may impact customers, financial constraints (budgets), penalties and rewards, ethical business practices.

K7: The hazards associated with work on or near electrical power networks.

K8: The dangers of electricity and how an electric shock can be received: direct contact, induced (impressed) voltage, and arcing. Electric shock emergency procedures.

K9: Health and safety regulations, standards, and guidance - their purpose and basic requirements: asbestos awareness, Construction Design Management (CDM), Health and Safety at Work Act, confined spaces awareness, Control of Substances Hazardous to Health (COSHH), Lifting Operations and Lifting Equipment Regulations (LOLER), lone working, Management of Health and Safety at Work, Provision and Use of Work Equipment Regulations (PUWER), Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR), and warning signs and symbols.

K10: Risk assessments and method statements. Emergency procedures. Personal protective equipment (PPE). Manual handling. Fire safety.

K11: Emergency first aid.

K12: Working at height awareness. Safe access and egress methods: hierarchy of methods, inspection, operation, and maintenance requirements.

K13: Working at height personal protective equipment: harnesses, fall restraint and arrest equipment. User inspection, operation, and maintenance requirements. Rescue from height equipment and methods.

K14: Asset security requirements.

K15: Plant and vehicle check requirements.

K16: The Environmental Protection Act - its purpose and basic requirements. Environmental management systems standard.

K17: The power industry's net zero strategy. Principles of sustainability and the circular economy. Impact of sites of special scientific interest, and flora and fauna on work. Potential effects on the environment of companies and individuals not complying with good environmental practices.

K18: Recycling and waste management requirements.

K19: Access to Private Land, Streets and Wayleaves.

K20: Planning, prioritising, organisation, and time management techniques for self and working party.

K21: Communication techniques. Industry terminology. Adapting style to audience.

K22: Written communication techniques.

K23: Documentation requirements; importance of accurate records.

K24: Information and digital technology. Computers and mobile devices. Software: email, word processing, databases, productivity and collaboration software, and work and asset management systems. General Data Protection Regulation (GDPR). Cyber security.

K25: Team working principles.

K26: The principles of equality, diversity, and inclusion in the workplace.

K27: Mathematical theory in power engineering. Round numbers, scientific notation, percentages and ratios. Areas, perimeters, volumes and surface areas of simple shapes. Scales, tables, graphs and charts. Pythagoras' Theorem and sin, cos, and tan in right-angled triangles. Substitution of numerical values into simple engineering formulae. The sequence of arithmetic operations.

K28: Mechanical theory in power engineering. Mass, force and weight. Parameters of mechanical systems. The components of hydraulic and pneumatic systems. Statics and forces. Energy, work and power. The parameters of material tensile strengths. The parameters of mechanical advantage. The lever principle and theorem of movement.

K29: Electrical theory in power engineering. Circuit technology. Magnetism and electromagnetism. Transformers.

K30: Power engineering electrical plant and apparatus, the properties and purpose of transformers, switchgear, earthing devices, voltage control and automated equipment.

K31: Distribution. The installation and jointing methods of common conductor types; causes and consequences of common faults.

K32: Distribution. The symptoms and causes of common faults on electrical power circuits, plant and apparatus. Problem solving and fault-finding techniques: non-invasive visual examinations, testing procedures. Root cause analysis.

K33: Distribution. Methods for locating and avoiding utilities. Avoiding danger from underground services and overhead exposed conductors. The health and safety executive guidance and requirements: HSG 47 (Avoiding danger from underground services) and GS6 (Avoiding danger from overhead power lines).

K34: Distribution. Working on live apparatus and working in proximity to live apparatus protocols. Justification for live working.

K35: Distribution. Distribution support structures capable of carrying up to 132 kV and their support mechanisms installation requirements.

K36: Distribution. Distribution network excavation methods and requirements.

K37: Distribution. Distribution conductor types, construction, features and tensioning of: all aluminium alloy conductor (AAAC) 30-175mm, Cross-linked polyethylene (XLPE), low voltage earthing, domestic and industrial service cables, cadmium and copper conductors 16-150mm.

K38: Distribution. Distribution rigging techniques on conductors and structures capable of carrying up to 132kv.

K39: Distribution. Pole mounted plant and apparatus: installation, commissioning, and dismantling requirements.

K40: Distribution. Other utility apparatus that may be present on structures: utility plans.

K41: Distribution. Awareness of domestic and industrial supply earthing. Earthing installation requirements. Earth electrode testing.

K42: Distribution. Cut out requirements.

K43: Distribution. Customer service requirements and techniques.

K44: Distribution. Low voltage operational switching and testing requirements.

K45: Distribution. Low voltage electrical testing requirements and result interpretation.

K46: Distribution. New Roads and Street Works Act (NRSWA): signing, lighting, and guarding. Avoidance of services. Safe excavation.

K47: Transmission. The types and characteristics of common transmission conductors and joints; causes and consequences of common installation faults.

K48: Transmission. Working in proximity to live apparatus protocols.

K49: Transmission. Transmission support structures capable of carrying 132kv and above, their construction methods and requirements for support mechanisms and temporary stays.

K50: Transmission. Transmission rigging techniques on conductors and transmission towers capable of carrying 132kv and above.

K51: Transmission. High voltage temporary earthing requirements.

K52: Transmission. Management of circulating currents.

Skills

S1: Review drawings, instructions, or information to understand the task for example, work instructions, wiring diagrams, design specifications, utility plans, on-line search documents.

S2: Prioritise and plan work with consideration for safety, environmental impact, quality, and cost.

S3: Identify and organise resources to complete tasks for example, consumables.

S4: Identify apparatus to be worked on.

S5: Conduct plant or vehicle checks.

S6: Receive and clear a safety document (permit to work). Brief a working party.

S7: Identify hazards and risks and apply control measures.

S8: Apply health and safety procedures in compliance with regulations, standards, and guidance. For example, safe access and egress, demarcate the work area, working at height, confined spaces, COSHH.

S9: Respond in the event of an emergency first aid situation including situations where there is electrical risk.

S10: Apply measures to leave power work environments in a safe and secure condition for example, anticlimbing guards, danger notices, barriers, lighting.

S11: Apply sustainability principles for example, minimising waste.

S12: Segregate waste for reuse, recycling, and waste transfer.

S13: Select, check, prepare, use or operate, and store personal tools and equipment.

S14: Use working at height equipment for example mobile working platforms, scaffolding, ladders.

S15: Select, inspect, and use personal climbing equipment to access and manoeuvre to a work position at height on overhead line plant and apparatus.

S16: Fit and operate a rescue device at height.

S17: Select, check, and prepare resources.

S18: Record information.

S19: Identify areas for improvement. For example, in relation to quality, cost, time, safety, and environmental impact.

S20: Communicate with others to give and receive information for example, colleagues, customers, and stakeholders.

S21: Apply team working principles.

S22: Report or escalate issues outside limits of responsibility.

S23: Produce or amend documents for example, handover notes, procedures, reports.

S24: Use digital and information technology. Follow cyber security requirements.

S25: Plan how to meet personal and organisation development needs. Carry out and record continued professional development (CPD) activities. Evaluate CPD against plans made.

S26: Distribution. Select and operate lifting equipment in overhead lines distribution work for example, cranes and winches.

S27: Distribution. Carry out visual inspection to identify evidence of overhead services and buried utilities. Use locating equipment.

S28: Distribution. Mark the position of services and sub-structures on the work site.

S29: Distribution. Follow procedures for working on or in proximity to live apparatus.

S30: Distribution. Select and use specialist LV live working PPE.

S31: Distribution. Erect overhead lines plant and apparatus for example, poles, support mechanisms, stays.

S32: Distribution. Install circuit main earths (CMEs) and additional (drain) earths.

S33: Distribution. Install fixed earthing conductors and carry out earth electrode testing.

S34: Distribution. Install cut outs.

S35: Distribution. Install or replace conductors, insulators and ancillary equipment on overhead line plant or apparatus including sagging, tensioning and termination where required.

S36: Distribution. Install, connect, and commission pole mounted plant and apparatus for example, transformers, pole mounted circuit breakers, and switchgear.

S37: Distribution. Dismantle pole mounted plant and apparatus for example, transformers, pole mounted circuit breakers, and switchgear.

S38: Distribution. Conduct pre-energisation tests.

S39: Distribution. Conduct post-energisation (commissioning) checks.

S40: Distribution. Perform testing procedures before and after switching operations.

S41: Distribution. Interpret testing procedure results and action required.

S42: Distribution. Operate switchgear and fuses making and breaking live conductor connections.

S43: Distribution. Recognise fault conditions and identify the root cause.

S44: Distribution. Replace components or resolve issues for example, replace high resistance joints or damaged conductor.

S45: Distribution. Apply customer service techniques.

S46: Transmission. Select and operate lifting equipment in overhead lines transmission work for example, cranes and winches.

S47: Transmission. Check overhead line plant and apparatus is safe to access, install flag and check wristlets if required.

S48: Transmission. Install access equipment for example, platforms, ladders, and spacer trollies.

S49: Transmission. Install high voltage temporary earthing equipment.

S50: Transmission. Install or replace conductors, insulators and ancillary equipment on overhead line plant or apparatus including sagging, tensioning and termination where required.

S51: Transmission. Carry out conductor compression jointing.

S52: Transmission. Connect spacers to conductors.

S53: Transmission. Test compression joints.

Behaviours

B1: Prioritise health and safety. For example, risk aware, minimise risks, and proactively work towards preventing accidents.

B2: Consider the environment and sustainability when using resources and carrying out tasks.

B3: Take ownership for work and responsibility for its impact on others. For example, self-motivated, disciplined in the approach to work tasks, identify and deal appropriately with distractions to enable tasks to be achieved, work carried out in line with standards.

B4: Respond and adapt to work demands. For example, adapt working methods to reflect changes in working environment, take initiative -making on the spot decisions, re-prioritise workloads to react to emergency response to fault scenarios.

B5: Perform in a professional manner for example, polite, courteous, and respectful to customers and members of the public.

B6: Team-focus to meet work goals and support inclusivity. For example, support others, show respect to people from different trades, disciplines, backgrounds, and expertise.

B7: Committed to continued professional development to maintain and enhance competence in own area of practice.

Qualifications

English and Maths

Apprentices without level 2 English and maths will need to achieve this level prior to taking the End-Point Assessment. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and maths minimum requirement is Entry Level 3. A British Sign Language (BSL) qualification is an alternative to the English qualification for those whose primary language is BSL.

Does the apprenticeship need to include any mandated qualifications in addition to the above-mentioned English and maths qualifications?

Yes

Other mandatory qualifications

Emergency first aid (1 day course)

Level: 3

Professional recognition

This standard aligns with the following professional recognition:

- The Institution of Engineering and Technology (IET) [TBC] for Engineering Technician (EngTech) [TBC]

Consultation

Progression Routes

ST0475 Electrical power networks engineer L4

ST0157 Electrical power protection and plant commissioning engineer L4

Supporting uploads

Mandatory qualification uploads

Mandated degree evidence uploads

Professional body confirmation uploads