
Overview

This standard identifies the competences you need to assist in the installation of environmental pollution control equipment, in accordance with approved procedures. You will be required to assist in the installation of equipment for an environmental pollution control system, which could be air pollution control equipment (such as decarbonisation (CO₂ reduction), denitrification, deodorising, desulphurisation, dust collectors, smoke filters, scrubbers, and removal of refrigerant gases); effluent treatment equipment (such as aerobic and anaerobic biochemical treatment, filter screens and presses, liquid separators, waste oil treatment, sewage treatment, industrial waste water treatment); noise and vibration equipment (such as vibration prevention and isolation, noise attenuation and acoustic enclosures); waste and used product handling, storing and recycling equipment (such as appliance recycling, battery recycling, incinerators, ash handling, heat recovery, shredders and crushers, conveyors and sorters, compaction).

This standard does not involve maintenance/repair type activities, such as removal and replacement of existing equipment.

You will be required to use the appropriate tools and equipment throughout the installation activities, and to apply a range of installation methods and techniques to position, level and align the equipment and to make connections to the required services. The installation activities will include making checks and adjustments, in line with your permitted authority, and assisting others to ensure that the installed equipment functions to the required specification.

Your responsibilities will require you to comply with organisational policy and procedures for the installation activities undertaken, and to report any problems with the activities, tools or equipment used that you cannot personally resolve, or are outside your permitted authority, to the relevant people. You must check all tools, equipment and materials used in the installation activities are removed from the work area on completion of the work, and that all necessary job/task documentation is completed accurately and legibly. You will be expected to work to instructions, alone or in conjunction with others, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

The installation activity may be carried out as a team effort, but you must demonstrate a significant personal contribution to the installation activities, in order to satisfy the requirements of the standard, and you must demonstrate competence in all the areas required by the standard.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will enable you to adopt an informed approach to applying mechanical installation procedures. You will have an understanding of the equipment being installed, and its installation requirements, in adequate depth to provide a sound basis for carrying out the installation process safely and effectively.

You will understand the safety precautions required when carrying out the installation activities, especially those for ensuring the safe isolation of services. You will be required to demonstrate safe working practices throughout, and will understand your responsibility for taking the necessary safeguards to protect yourself and others in the workplace.

Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety and other relevant regulations, directives and guidelines
2. follow all relevant instructions/documentation for the installation being carried out
3. use the correct tools and equipment for the installation operations, and check that they are in a safe and usable condition
4. assist in the installation, positioning and securing of the equipment, using appropriate methods and techniques
5. carry out and/or assist in checking the installation, and make any adjustments in accordance with the specification
6. assist in using fault location methods and techniques on the installed equipment
7. deal promptly and effectively with problems within your control and report those that cannot be solved
8. dispose of waste items in a safe and environmentally acceptable manner
9. assist in the completion of installation documentation

Knowledge and understanding

You need to know and understand:

1. the specific safety practices and procedures that are to be observed when installing environmental pollution control equipment (including the related legislation, regulations and recommendations such as the Water Regulations Advisory Scheme (WRAS), The Prevention and Control of Legionellosis, and Safe Working in Confined Spaces, CE supply of machinery regulations)
2. the isolation and lock-off procedure or permit-to-work procedure that applies
3. the specific health and safety precautions to be applied during the installation procedure, and to the particular plant and site installation details
4. the hazards associated with installing environmental pollution control equipment, and with the tools and equipment used, and how they can be minimised
5. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the installation
6. how to obtain and interpret information from job instructions and other documents needed in the installation process (such as drawings, specifications, manufacturers' manuals, regulations, symbols and terminology)
7. the basic principles of how the equipment functions, and its operating sequence
8. methods and techniques used to position, assemble, align and secure the plant and equipment
9. methods of making holes for floor fixing bolts (including the use of various fittings, grouting and adhesives)
10. the various mechanical fasteners that will be used, and their method of installation (including, threaded fasteners, special securing devices, masonry fixing devices)
11. procedures for ensuring that you have the correct tools, equipment, and fasteners for the installation activities
12. methods of lifting, handling and supporting the equipment
13. checks, tests, corrections and adjustments to ensure proper equipment safety, integrity, operation and accuracy
14. connecting equipment to external supplies (such as electric, air, water and gas)
15. why electrical bonding is critical, and why it must be both mechanically and electrically secure
16. the procedure for the safe disposal of waste materials
17. recognising defects (such as leaks, misalignment, component looseness, damage, or contamination)
18. the importance of ensuring that the completed installation is left in a safe, clean and damage-free state
19. the dangers of leaving any exposed potential energy sources (these

-
- must be made safe)
 - 20. typical problems that can occur during the installation, and how these can be overcome
 - 21. the fault finding techniques to be used if the equipment fails to operate correctly
 - 22. the recording documentation to be completed for the activities undertaken
 - 23.
- the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

Scope/range related to performance criteria

1. Carry out **all** of the following during the installation of the environmental pollution control equipment:
 1. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
 2. confirm that authorisation to carry out the installation activities has been given
 3. check that safe access and working arrangements for the installation area have been provided
 4. confirm that services have been safely isolated, ready for the installation (such as mechanical, electricity, gas, air or fluids)
 5. check that all required installation consumables are available
 6. leave the work area in a safe condition and free from foreign object debris
2. Assist in the installation of **one** of the following types of environmental pollution control equipment:
 1. air pollution control equipment (such as decarbonisation (CO₂ reduction), denitrification, deodorising desulphurisation, dust collectors, smoke filters, scrubbers, and removal of refrigerant gases)
 2. effluent treatment equipment (such as aerobic and anaerobic biochemical treatment, filter screens and presses, liquid separators, waste oil treatment, sewage treatment, industrial waste water treatment)
 3. noise and vibration equipment (such as vibration prevention and isolation, noise attenuation and acoustic enclosures)
 4. waste and used product handling, storing and recycling equipment (such as appliance recycling, battery recycling, incinerators, ash handling, heat recovery, shredders and crushers, conveyors and sorters, compaction)
3. Assist in the installation of **eight** of the following components:
 1. annunciator
 2. actuators
 3. wiring enclosures
 4. distribution board
 5. mechanical drives
 6. switches
 7. switch gear
 8. burners

-
9. ducting
 10. instrumentation
 11. containment booms
 12. pumps
 13. pipework and hoses
 14. floor baseplates
 15. safety devices
 16. safety device
 17. gear boxes
 18. motor and starter
 19. monitoring device
 20. motors
 21. control panel
 22. couplings or linkages
 23. sensors
 24. building management device
 25. relays or solenoids
 26. cables and wires
4. Apply installation methods and techniques to include **five** of the following:
1. marking out of locating and securing positions
 2. aligning equipment
 3. drilling and hole preparation
 4. levelling equipment
 5. fitting inserts (such as rag or expanding bolts)
 6. shimming and packing
 7. positioning the equipment
 8. fitting anti-vibration mountings
 9. making installation connections (such as mechanical, electrical, fluid power, utilities)
 10. securing by using mechanical fixings
 11. applying screw fastener locking devices
5. Use **three** of the following instruments during the installation activities:
1. straight edges and feeler gauges
 2. plumb lines/taut wires
 3. engineers' levels
 4. alignment telescopes
 5. dial test indicators
 6. laser equipment
 7. mechanical measuring instruments (such as rule, tape)
 8. self-diagnostic equipment
 9. electrical measuring instruments (such as multimeter)
 10. theodolite
 11. fluid power measuring equipment (such as pressure, flow)

12. vibration transducer

6. Assist in the movement and positioning equipment using **two** of the following

1. slings
2. portable lifting devices
3. rollers/skates
4. jacks
5. cranes
6. block and tackle
7. hoists
8. manual handling
9. fork lift

7. Carry out **all** of the following checks, and make corrections/adjustments as appropriate:

1. making 'on-load' checks
2. making sensory checks (sight, sound, smell, touch)
3. checking level and alignment
4. ensuring that dangerous areas are properly guarded
5. lubrication effects
6. checking torque settings of fasteners
7. checking for leaks

plus: assist in carrying out **two** of the following checks:

8. assembly fits
9. system pressures and flows
10. mechanical integrity
11. speeds and feeds
12. electrical integrity
13. vibration levels
14. temperature levels
15. testing to ensure that the equipment meets the requirements of the installation

8. Assist in dealing with **two** of the following conditions during the installation process:

1. installations with no faults
2. partial equipment malfunction
3. complete malfunction of equipment

9. Assist in using fault location methods and techniques on the installed equipment, to include **one** of the following:

1. diagnostic aids (such as company records/history, manufacturers' manuals, fault analysis charts, troubleshooting guides)

-
2. fault finding technique (such as six point, half-split, unit substitution)
 3. function testing the installation/running equipment self-diagnostics
10. Produce installations which comply with **one** of the following:
1. equipment manufacturer's operation range
 2. BS, ISO and/or BSEN standards
 3. customer standards and requirements
 4. company standards and procedures
11. Assist in the completion of the relevant paperwork, to include **one** from one of the following:
1. installation records
 2. company-specific documentation
 3. job card

Developed by	Enginuity
Version Number	2
Date Approved	28 Feb 2015
Indicative Review Date	30 Mar 2018
Validity	Current
Status	Original
Originating Organisation	Semta
Original URN	SEMEMI2-54
Relevant Occupations	Maintenance Fitter
Suite	Engineering Maintenance and Installation Suite 2
Keywords	Engineering; manufacturing; installation; environmental pollution; control equipment; air pollution; effluent treatment; waste