

EM129 Assist in the installation of equipment to produce an engineered system in food and drink operations		
SQA Unit Code	HD5W 04	
Level 3	SCQF Level 6	Credit value 53

Unit Summary

This standard identifies the competences you need to assist in the installation of equipment to produce an engineered system in food and drink operations, in accordance with approved manufacturers procedures and protocol. All of which encompass an integrated system involving two of the following interactive technologies: mechanical, electrical, fluid power or process controller. Typical systems will include automated equipment such as conveyors, robots, pick-and-place devices, stacking devices, automated systems, transfer equipment, processing plant, and material handling devices with fluid power and electrical mechanisms attached. Food and drink operations is a term used in this standard to cover the following sub sectors of Meat, Drinks, Confectionery, Fresh Produce, Bakery, Seafood and Dairy.

This standard does not involve general maintenance/repair type activities, such as removal and replacement of existing equipment, or the installation of items of equipment that are simple, self-contained items requiring minimal installation. It does, however, include the connection of sub-assemblies where these have been broken down for transportation purposes.

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 sensors and actuators which could be electrical, fluid power, water or raw material supplies, as appropriate to the equipment installed. Where appropriate, you may also assist in work with computers or programmable logic controllers (PC/PLCs), making connections, installing hardware and loading and editing software. 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.

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 be assessed as competent you must demonstrate to your assessor that you can consistently perform to the requirements set out below. Your performance evidence must include at least one observation by your assessor.

You must be able to:	You need to show: Evidence must be work-based,
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	simulation alone is only allowed where shown in <i>bold italics</i>
<p>1. Assist in the installation of equipment to produce an engineered system in food and drink operations</p> <p>This means you:</p> <p>Work safely at all times, complying with health and safety and other relevant food and drink regulations, directives and guidelines</p> <p>Follow all relevant manufacturer's instructions, protocol, requirements and documentation for the installation being carried out</p> <p>Use the correct tools and equipment for the installation operations, and check that they are in a safe, clean and usable condition</p> <p>Assist in the installation, positioning and securing of the equipment, using appropriate methods and techniques</p> <p>Carry out and/or assist in checking the installation, and make any adjustments in accordance with the specification</p> <p>Deal promptly and effectively with problems within your control and report those that cannot be solved</p> <p>Dispose of waste items in a safe and environmentally acceptable manner</p> <p>Assist in the completion of installation documentation</p>	<p>Evidence of assisting in the installation of equipment to produce an engineered system in food and drink operations as part of your role in accordance with workplace procedures and within the limits of your own responsibilities.</p>

You need to know and understand:

Evidence of knowledge and understanding should be collected during observation of performance in the workplace. Where it cannot be collected by observing performance, other assessment methods should be used.

1. the health and safety requirements of the area in which the installation activity is to take place, and the responsibility these requirements place on you not to compromise food safety
2. the isolation and lock-off procedure or permit-to-work procedure that applies to the system, including the critical control points
3. the specific health and safety food and drink precautions to be applied during the installation procedure, and their effects on others
4. the requirements of the British Retail Consortium (BRC) guidelines and standards in relationship to the installation activities
5. the specific requirements of your customer/client specifications in relationship to the installation activities
6. your responsibilities in relationship to Hazard Analysis and Critical Control Points (HACCP, TACCP, VACCP) during the installation activities
7. the hazards associated with installing equipment to form an engineered system, and with the tools and equipment used, and how to minimise them and reduce any risks
8. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the installation
9. what constitutes a hazardous voltage and how to recognise victims of electric shock
10. how to reduce the risks of a phase to earth shock (including insulated tools, rubber mating and isolating transformers)
11. how to obtain and interpret information from job instructions and other documentation used in the installation activities (including installation drawings, specifications, manufacturers' manuals, BS7 regulations, symbols and terminology)
12. the basic principles of how the system functions, and its operating sequence
13. the principles of the equipment's design features for safe operation in a food or drink environment including minimising the chance of contaminants or foreign bodies in the final product
14. methods of marking out the site for positioning the equipment, and the tools and equipment used for this
15. methods of drilling holes in masonry for rag bolts and expanding bolts (including use of grouting and adhesives)
16. the various mechanical fasteners that will be used, and their method of installation
17. methods of lifting, handling and supporting the equipment during the installation activities
18. methods of levelling and aligning the equipment, and the types of tools, instruments and techniques used
19. methods of connecting to mechanical power transmission devices (including shafts, couplings belt and chain drives)
20. the different types of cabling used in the installation activities, and their methods of termination
21. the different types of wiring enclosures that are used (to include conduit, trunking and traywork systems)
22. the installation and termination of a range of electrical components (such as plugs, switches, sockets, lighting and fittings)
23. why electrical bonding is critical, and why it must be both mechanically and electrically secure
24. the care, handling and application of ohmmeters, multimeters and other electrical measuring instruments
25. methods of assembling and installing pipework, hoses and fittings
26. how to recognise a range of fluid power components
27. recognition of contaminants and the problems they can create, and the effects and likely symptoms of contamination in the system

28. the recognition of process instrumentation and associated peripherals (including pressure, flow, temperature)
29. the recognition of PLC systems and associated peripheral devices (including input/output (I/O) devices)
30. the processes in place to segregate the tools and equipment used into high or low risk areas
31. the checks required to ensure that all tools, materials and components are all accountable before operating the equipment
32. how to conduct any necessary checks to ensure the equipment integrity, functionality, accuracy and quality of the installation (including the fitting of guards to all moving parts, and covers on electrical connections)
33. how to recognise installation defects (including leaks, poor seals, misalignment, ineffective fasteners, foreign object damage)
34. the problems that can occur with the installation operations, and how these can be overcome
35. the fault-finding techniques to be used if the equipment fails to operate correctly
36. the recording documentation to be completed for the activities undertaken
37. the cleaning requirements/policies in place before putting the equipment into full operational production
38. the extent of your own responsibility and to whom you should report if you have problems that you cannot resolve

Evidence of performance may employ examples of the following assessment:

- observation
- written and oral questioning;
- evidence from company systems (e.g. Food Safety Management System)
- reviewing the outcomes of work
- checking any records of documents completed
- checking accounts of work that the candidate or others have written