

EM119 Maintain mechanical equipment within an engineered system used in food and drink operations

SQA Unit Code

HD5N 04

Level 3

SCQF Level 6

Credit value 56

Unit Summary

This standard identifies the competences you need to carry out corrective maintenance on mechanical equipment within an engineered system used in food and drink operations, in accordance with approved procedures. You will be required to maintain a range of mechanical equipment, such as gearboxes, pumps, motors, conveyor systems, processing plant and packaging equipment, which are working in an integrated system involving two of the following interactive technologies: electrical, fluid power or process controller. 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.

You will be expected to isolate and disconnect items and components of the interactive technologies in order to gain access to and remove the mechanical units and components that require replacing or repair. This will involve dismantling and reassembling a variety of different types of assemblies and sub-assemblies which, in some instances, will need to be dismantled to component level.

You will be expected to work with minimal supervision, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

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:
<p>1. Maintain mechanical equipment within an engineered system used 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 the relevant maintenance schedules to carry out the required work</p>	<p>Evidence must be work-based, simulation alone is only allowed where shown in <i>bold italics</i></p> <p>Evidence of maintaining mechanical equipment within an engineered system used in food and drink operations as part of your role in accordance with workplace procedures and within the limits of your own responsibilities.</p>

<p>Carry out the maintenance activities within the limits of your personal authority</p> <p>Carry out the maintenance activities in the specified sequence and in an agreed timescale</p> <p>Report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule</p> <p>Complete relevant maintenance records accurately and pass them on to the appropriate person</p> <p>Dispose of waste materials in accordance with safe working practices and approved procedures</p>	
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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 maintenance activity is to take place, and the responsibility these requirements place on you not to compromise food safety and quality
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 maintenance activity, and their effects on others
4. the requirements of the British Retail Consortium (BRC) guidelines and standards in relationship to the maintenance activities
5. the specific requirements of your customer/client specifications in relationship to the maintenance activities
6. your responsibilities in relationship to Hazard Analysis and Critical Control Points (HACCP, TACCP, VACCP) during the maintenance activities
7. what constitutes a hazardous voltage and how to recognise victims of electric shock
8. how to reduce the risks of a phase to earth shock (including insulated tools, rubber mating and isolating transformers)
9. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the maintenance activities
10. hazards associated with carrying out maintenance activities on an integrated system (such as handling fluids, stored pressure/force/temperature, electrical supplies, process controller interface, using damaged or badly maintained tools and equipment, not following laid-down maintenance procedures), and how to minimise these and reduce any risks

11. how to obtain and interpret drawings, charts, specifications, manufacturers' manuals, history/maintenance reports and other documents needed for the maintenance activities
12. the basic principles of how the system functions, its operation sequence, the working purpose of individual units/components, and how they interact
13. the principles of the equipment's design features for safe operation in a food or drink environment such as minimising the chance of contaminants or foreign bodies in the final product
14. the procedure for obtaining replacement parts, materials and other consumables necessary for the maintenance, including their safe/hygienic storage before use
15. company policy on repair/replacement of components during the maintenance activities
16. the sequence to be adopted for dismantling and reassembling the equipment, to both sub-assembly and individual component level
17. methods of removing components that have interference fits (expansion, contraction or pressure)
18. the techniques used to dismantle/assemble integrated equipment (including release of pressures/force, proof marking to aid assembly, plugging exposed pipe/component openings, dealing with soldered joints, screwed, clamped and crimped connections)
19. methods of attaching identification marks/labels to removed components or cables, to assist with re-assembly
20. methods of checking that components are fit for purpose, and the need to replace 'lived' or consumable items (including lubricants, seals, gaskets and bearings)
21. how to make adjustments to components/assemblies, to ensure they function correctly
22. how to check that tools and equipment are free from damage or defects, are in a safe and usable condition, and are configured correctly for the intended purpose
23. the processes in place to segregate the tools and equipment used into high or low risk areas
24. the checks required to ensure that all tools, materials and components are all accountable before operating the equipment
25. the importance of making 'off-load' checks before proving the equipment with the electrical supply on
26. the cleaning requirements/policies in place before returning the equipment into full operational production
27. the generation of maintenance documentation and/or reports on completion of the maintenance activity
28. the equipment operating and control procedures to be applied during the maintenance activity
29. how to use lifting and handling equipment safely and correctly in the maintenance activity
30. the problems that can occur during the maintenance activity, and how they can be overcome
31. the organisational procedure to be adopted for the safe disposal of waste of all types of materials including any spoiled food or drink products
32. the extent of your authority and to whom you should report if you have a problem 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