

**EM131** Apply total productive maintenance (TPM) in food and drink operations

**SQA Unit Code**

**HD5X 04**

**Level 3**

**SCQF Level 6**

**Credit value 25**

**Unit Summary**

This standard covers the competences required to apply Total Productive Maintenance (TPM) principles to equipment and processes used in food and drink operations, and aims to prevent equipment problems by identifying potential causes rather than waiting for a problem to occur. It involves the measurement of the six classic hidden losses, assessment of potential and priorities for loss reduction. It covers the application of the TPM principles and processes to

resources, including plant and equipment, machines, office equipment, service equipment and utilities. It also concerns assessment of the equipment/process condition, the steps required to restore the equipment/process to good working order, and then to set a robust asset care regime to maintain this condition. 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 required to apply the appropriate TPM techniques, and to use the data gathered on the resource to refine the working practices through the application of autonomous, condition based and planned maintenance. Working practice improvement will include cleaning and checking, early problem detection and process monitoring, and routine servicing. This will involve close working with both production and maintenance staff, and will include cross-shift implementation (if applicable to your organisation).

You will be expected to take full responsibility for your own actions within the activity, and for the quality and accuracy of the work that you carry out.

Applying safe working practices will be a key issue throughout, especially related to food safety risks.

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. Apply total productive maintenance (TPM) in food and drink operations</p> <p>This means you:</p> | <p>Evidence must be work-based, simulation alone is only allowed where shown in <b><i>bold italics</i></b></p> <p>Evidence of applying total productive maintenance (TPM) in food and drink operations as part of your role in accordance with workplace procedures and within the limits of your own</p> |

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| <p>Work safely at all times, complying with health and safety and other relevant food and drink regulations, directives and guidelines</p> <p>Select the appropriate asset on which to carry out the Total Productive Maintenance (TPM) activity</p> <p>Obtain the necessary information to carry out the activity</p> <p>Carry out the TPM activity by applying the appropriate techniques</p> <p>Calculate and use the overall equipment effectiveness (OEE) measure and information to determine which elements of the OEE and their associated losses need improvement</p> <p>Develop and use an action plan which will reduce/eliminate the losses</p> <p>Implement improvements to working practices through the TPM activities</p> | <p>responsibilities.</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 food and drink related health and safety requirements of the area in which you are carrying out the Total Productive Maintenance (TPM) activities
2. the principles of TPM, and how they can be applied in administration procedures, safety improvement and quality maintenance within food and drink operations
3. the requirements of the British Retail Consortium (BRC) guidelines and standards in relationship to the maintenance activities
4. the specific requirements of your customer/client specifications in relationship to the maintenance activities
5. your responsibilities in relationship to Hazard Analysis and Critical Control Points (HACCP, TACCP, VACCP) during the maintenance activities
6. how to select an asset on which to carry out the TPM activity as an initial pilot area (assets can be plant and equipment, machines, office equipment, service equipment, utilities)
7. how to implement a systematic and structured approach to carrying out autonomous, condition based and planned maintenance
8. the difference between a chronic and sporadic loss, and the countermeasures to

both

9. how to calculate overall equipment effectiveness (OEE)
10. where to find the information required to calculate the OEE for the chosen asset
11. the benefits of having a TPM system
12. the importance of taking ownership of the TPM system, and the issues that can be expected to be resolved
13. the six major losses (including Breakdowns, Set-up and adjustments, Small stops, Slow running, Start-up defects and Production defects) their impact on OEE and how loss-reduction actions need to be prioritised
14. the use of standard operating procedures, single point lessons and machine/process start-up and shutdown procedures
15. improvement activities that will drive the implementation of the TPM activities (including Kaizen and team working)
16. critical processes and early problem detection steps
17. loss areas and opportunities for improvement
18. standards of wear, and the ability to stabilise the component life
19. the techniques of visual management used to communicate the information and results obtained by this process (including TPM activity boards and checklists)
20. the integration with workplace organisation and improving OEE
21. possible contaminants and their sources
22. the extent of your own authority, and the relevant escalation procedures in the event of 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