

---

## Overview

This standard identifies the competences you need to carry out corrective maintenance activities on emergency power generation equipment used in food and drink operations, in accordance with approved procedures. This will include the engine/primary power source, the generator, the electrical load connection, and the appropriate control equipment. The maintenance activity will involve dismantling, removing and maintaining faulty or damaged sub-assemblies and components, including engine components, generator, fans, pumps, valves, couplings, ducting, heaters, filters and control gear, and equipment including speed governors, voltage regulation, safety control devices, fire protection and shutdown systems, measurement display and recording systems, control panels, electrical components and wiring. 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 able to apply a range of dismantling and assembly methods and techniques, to include marking/labelling of components to aid the assembly, aligning/adjusting of components, and dismantling components by mechanically dismantling, unplugging, de-soldering, and removal of screwed, clamped and crimped connections.

You will be able 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.

---

## Performance criteria

### You must be able to:

1. work safely at all times, complying with health and safety, environmental and other relevant food and drink regulations, directives and guidelines
2. obtain and use the correct issue of company and/or manufacturers drawings and maintenance documentation
3. plan and communicate the maintenance activities to cause minimal disruption to normal working
4. follow the relevant maintenance schedules to carry out the required work
5. carry out the maintenance activities in accordance with organisational procedures within the limits of your personal authority
6. isolate equipment (including mechanical, electricity, gas, air, steam, fuel oil or fluids) in accordance with organisational procedures
7. provide and maintain safe access and working arrangements for the maintenance area in accordance with organisational procedures
8. re-connect and return the system to service on completion of the maintenance activities
9. report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
10. complete maintenance records and documentation in accordance with organisational requirements
11. dispose of waste materials in accordance with safe working practices and approved procedures

---

## Knowledge and understanding

### You need to know and understand:

1. the health and safety and environmental 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
2. the isolation and lock-off procedures or permit-to-work procedure that applies to the equipment being maintained including the critical control points
3. the specific health and safety precautions to be applied during the maintenance procedure, and their effects on others
4. the relevant legislation requirements of the 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), Threat Assessment and Critical Control Points (TACCP), Vulnerability Assessment and Critical Control Points (VACCP) during the maintenance activities
7. the importance of wearing the correct personal and environmental protection equipment (PPE) and other appropriate safety equipment during the maintenance process
8. what constitutes a hazardous voltage and how to recognise victims of electric shock
9. how to reduce the risks of a phase to earth shock (including insulated tools, rubber mating and isolating transformers)
10. hazards associated with carrying out maintenance activities on emergency power generation equipment/systems (including moving machinery, hot components, stored pressure/force, live electrical connections, handling oils and coolants, using damaged or badly maintained tools and equipment, not following laid-down maintenance procedures), and how to minimise them to reduce any risks
11. how to obtain and interpret drawings, specifications, manufacturers' manuals and other documents needed in the maintenance process
12. the procedure for obtaining replacement parts, materials and other consumables necessary for the maintenance activities
13. company policy on repair/replacement of components during the maintenance process
14. the basic principles of how the equipment functions, its operation sequence, the working purpose of individual units/components and how they interact (to include principles of power generator sets, the function of the stator, rotor and excitation system, principles of AC power generation, electrical losses, synchronizing and loading,

- output voltage control)
- 15. the principles of the equipment's design features for safe operation in a food or drink environment including minimising the chance of contaminates or foreign bodies in the final product
- 16. generator and prime mover tripping and protection devices
- 17. generator and bus terminal connections
- 18. why electrical earthing and bonding is critical and why it must be both mechanically and electrically secure
- 19. the sequence to be adopted for the dismantling/reassembly of various types of assemblies
- 20. the methods and techniques used to dismantle/assemble emergency power generation equipment (including removing bolted components and assemblies, removing components requiring pressure, unplugging, de- soldering, removal of screwed, clamped and crimped connections)
- 21. methods of checking components are fit for purpose, how to identify defects and wear characteristics, and the need to replace 'lified' or consumable items (including lubricants, batteries, lamps, filters, seals and gaskets)
- 22. how to make adjustments to components/assemblies to ensure they function correctly
- 23. methods of removing and replacing components and units without damaging the system and infrastructure
- 24. the use of electrical measuring equipment (including multimeters and resistance testers)
- 25. methods of testing equipment and systems for leaks, and the tools and equipment that can be used
- 26. types and application of coolants and antifreeze agents; quantities used; and methods of flushing and filling the system
- 27. 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 their intended purpose
- 28. the processes in place to segregate the tools and equipment used into high or low risk areas
- 29. the checks required to ensure that all tools, materials and components are all accountable before operating the equipment
- 30. the cleaning requirements/policies in place before returning the equipment into full operational production
- 31. the generation of maintenance documentation and/or reports following the maintenance activity
- 32. the equipment operating and control procedures to be applied during the maintenance activity
- 33. how to use lifting and handling equipment correctly and safely in the maintenance activity
- 34. the problems associated with the maintenance activity, and how they can be overcome
- 35. the organisational procedure to be adopted for the safe disposal of waste of all types of materials including any spoilt food or drink

- 
- products
36. the extent of your own authority and to whom you should report if you have problems that you cannot resolve

IMPEM143

Maintain emergency power generation equipment used in food and drink operations



Developed by	Improve
Version Number	3
Date Approved	26 Feb 2021
Indicative Review Date	31 Jan 2024
Validity	Current
Status	Original
Originating Organisation	NSAFD
Original URN	IMPEM143
Relevant Occupations	Manufacturing Technologies, Plant and Machine Operatives, Process Operatives, Process, Plant and Machine Operatives
Suite	Food and Drink
Keywords	Food and drink; Engineering; manufacturing; maintenance; emergency power; turbine; alternators; engines; alternators; generators; governors; voltage regulators; chargers