Apprenticeship Standard for Food and Drink Maintenance Engineer

Section 1: Occupational Profile

The Food and Drink industry is an exciting place to be a Maintenance Engineer. World class companies in the industry use some of the most innovative, modern and technically automated equipment available to manufacture a wide range of food and drink products for consumers. Companies employ Mechanical and/or Multi-skilled Maintenance Engineers according to the type of products they make.

Food and Drink Mechanical Maintenance Engineers will mainly work with mechanical and electrical equipment and production systems. Food and Drink Multi-skilled Maintenance Engineers will work with mechanical and electrical equipment plus highly automated programmable control systems.

Both Mechanical and Multi-skilled Engineers need to maximise the benefits of the technology and equipment they work with. Depending on the type of product and plant in the company, engineering activities carried out will include routine maintenance, fault finding and diagnosis, testing and commissioning. They must ensure that maintenance activities contribute to optimising food and drink production levels.

Food and Drink Mechanical and Multi-skilled Engineers must ensure that all maintenance activities are conducted safely, and practices comply with food safety legislation in this highly regulated industry. They must understand the key features of working with consumable products and how they this affects food industry maintenance practices.

Food and Drink Engineers will work autonomously, taking responsibility for their own tasks and also work effectively in teams.

Section 2: Food and Drink Maintenance Engineer – The Core Knowledge, Skills and Behaviours

Food and drink maintenance engineers will have the following core knowledge, and will understand:

Core Knowledge

- Food processing/manufacturing and product knowledge (to meet company requirements eg Dairy/Confectionery/Meat processing)
- Legislation and regulations in the food and drink industry, including understanding of:
    - Food Safety
    - Health and Safety
    - Hazard Analysis Critical Control Point (HACCP), Threat Assessment Critical Control Point (TACCP), Vulnerability Assessment Critical Control Point (VACCP)
- Basic principles of sustainability and environmental legislation
- The impact of customer requirements and demands on the food supply chain
- The key principles of cleaning and hygiene processes covering both Cleaning in Place (CIP) and cleaning out of place systems
- The key principles of quality management systems and processes
- The key principles of Continuous Improvement (CI) Management
- Materials science, including the key features of raw materials, their uses in food production and types of equipment used to process them
- Types of best practice maintenance approaches and techniques in the food and drink industry
- The principles of fault finding techniques
- The operation of mechanical equipment in the food and drink industry
- How to produce replacement components
- The function of fluid power systems
- The operation of heat exchange equipment
- The principles of cutting and welding in the food and drink industry
- Principles of electrical systems, including their uses, safety and legislation
- Services and utilities knowledge, including the importance and impact of energy management and pollution control in food production

Food and drink maintenance engineers will demonstrate the following core skills, and will be able to:

Core Skills

- Plan and prepare for maintenance of engineered systems in the food and drink industry
- Perform first line routine mechanical maintenance, including removing and replacing components, cleaning, lubrication, inspection and fault finding
- Apply 'best practice' techniques, including condition monitoring and proactive maintenance
- Produce replacement components, using manual and machine processes
- Maintain fluid power systems
- Weld stainless steel and other materials used in food production equipment
- Perform first line electrical maintenance, including testing, fault finding, repairing and replacing components
- Apply mathematical techniques to solve engineering problems

Food and drink maintenance engineers will demonstrate the following core behaviours:

Behaviours

- Safe working: ensures safety of self and others, food safe, challenges safety issues
- Ownership of work: accepts responsibility, is proactive, plans work
- Pride in work: integrity, aims for excellence, time management
- Self-development: links own objectives to support the business, seeks learning and development opportunities
- Integrity and respect: for colleagues, good communication with managers
- Working in a team: builds good relationships with others
- Problem solving: takes responsibility until a solution is reached, challenges others, works to solve root cause of problems
- Responsiveness to change: flexibility to changing environment and demands
- Company/industry perspective: knowledge of company and food industry, acts as an ambassador
- Effective communication: with colleagues/managers, in writing, visually, verbally

Section 3: Additional Knowledge and Skills for Mechanical and Multi-Skilled Maintenance Engineers

In addition to the core skills, knowledge and behaviours, food and drink maintenance engineers will demonstrate specialist additional skills and knowledge from either the mechanical or multi-skilled options. All apprentices must complete the core plus **one** of the options.

Mechanical maintenance engineers will:

- Monitor mechanical equipment in food and drink operations
- Repair and produce replacement complex mechanical components to required standards
- Produce complex welded joints in a range of positions using a range of different processes
- Review welding activities

Multi-skilled maintenance engineers will:

- Understand the principles of electrical machines, testing electrical equipment and circuits
- Understand the operation of process controllers within an engineered system
- Commission and perform maintenance of instrumentation/process control systems
- Perform maintenance of programmable control systems
- Understand the requirements of electrical installations

Section 4: Additional Information

Duration	Typically 42 to 48 months
Entry Requirements	Employers will set their own criteria, but typically an entrant to this apprenticeship will already have achieved a minimum of Level 2 in English, maths, a Science and ICT.
Level	Level 3
Qualification	Apprentices are required to complete a level 3 Diploma in food and drink engineering maintenance prior to taking the end-point assessment for this apprenticeship
Progression	On completion of this standard, apprentices may progress to further learning within the food and drink industry, or a range of employment opportunities
English and Maths	Apprentices without level 2 English and maths will need to achieve this level prior to taking the end-point assessment for this apprenticeship
Standard Review	After 3 years
Professional Recognition	This standard has been designed to satisfy the requirements for Professional Registration as Engineering Technician (EngTech) as defined by the UK Standard for Professional Engineering Competence (UK-SPEC)