Maintenance & Operations Engineering Technician

Occupational Profile

Maintenance & Operations Engineering Technician covers four roles: Electrical Technician; Mechanical Technician; Control & Instrumentation Technician and Plant Operations Technician. They will maintain the safety, integrity and effective operation of plant and equipment in one or more of the following Industries that are part of or have activities that are part of the broader national infrastructure Engineering Sector: the electricity generating environment, which may use a range of different fuels including coal, gas, nuclear, wind and other renewable sources; oil and gas refining; nuclear waste reprocessing; processing and production of chemicals; pharmaceuticals; human and animal food; cosmetics; petrochemicals; sewerage and the exploration and exploitation of oil and gas.

Electrical/Mechanical/Control and Instrumentation Technicians will work on various types of plant and equipment commonly found throughout the Engineering Industry sectors and the Technicians can be expected to migrate through these sectors during the course of their careers. Dependent upon the sector that they are employed in there may be subtle differences in terms of the composition and application of the plant and equipment, however the fundamental principles of operation will be the same regardless of the engineering sector. These Technicians will undertake installation, testing, servicing, removal, replacement, maintenance and repair of a range of equipment, sometimes complex, as part of planned preventative and reactive maintenance programmes. They may also undertake decommissioning activities when plant is being removed from service.

Plant Operation Technicians will undertake the safe and efficient operation of complex integrated energy conversion and production plant and systems. These activities could include plant commissioning, isolation and testing, plant preparation, plant start-up and shut down, monitoring and controlling plant and dealing with critical operational problems.

They will be responsible for the quality of their own work, possibly others' and ensuring the work is completed safely, meets stakeholder quality, time and budget requirements, whilst maintaining the efficient running of plant and equipment.

Entry Requirements

Typically 3 GCSEs at grade C or higher including mathematics, English and science, or equivalent and/or relevant experience.

A Technician must have the core requirements below and demonstrate the specialist requirements in one role.

Core Knowledge:

A Technician will understand:

- first principles relating to the operation and maintenance of appropriate plant and equipment.
- relevant industry health and safety standards, regulations, and environmental and regulatory requirements.
- maintenance and operational practices, processes and procedures covering a range of plant and equipment.
- the relevant engineering theories and principles relative to their occupation.

Core Skills:

A Technician will apply their knowledge of plant and systems to safely perform maintenance and operational activities with minimum supervision. This will require them to:

- comply with industry health, safety and environmental working practices and regulations
- locate, and rectify faults on plant and equipment.
- communicate with and provide information to stakeholders in line with personal role and responsibilities.
- read, understand and interpret information and work in compliance with technical specifications and supporting documentation.
- prepare work areas to undertake work related activities and reinstate those areas after the completion of the work related activities.
- inspect and maintain appropriate plant and equipment to meet operational requirements
- assess and test the performance and condition of plant and equipment.
- communicate, handover and confirm that the appropriate engineering process has been completed to specification.

Core Behaviours

- **Health & Safety** – follows health & safety policies and procedures and be prepared to challenge unsafe behaviour using appropriate techniques to ensure the protection of people and property when working alone and/or with appropriate supervision.
- **Quality focused** – ensures that work achieves quality standard both occupationally and personally.
- **Working with others** – works well with people from different disciplines, backgrounds and expertise to accomplish an activity safely and on time.
- **Interpersonal skills** – gets along well with others and takes into account their needs and concerns.
- **Critical reasoning** – uses resources, techniques and obtained facts to develop sound solutions while recognising and defining problems.
- **Sustainability and ethical behaviour** – behaves ethically and undertakes work in a way that contributes to sustainable development.
- **Risk awareness** – demonstrates high concentration, the desire to reduce risks, ability to be compliant and awareness of change, through regular monitoring and checking of information.

Specialist roles

In addition an Electrical Technician will be able to:

- position, assemble, install and dismantle electrical plant and equipment, which will include motors, switchgear, cables & conductors, to agreed specifications.
- carry out planned, unplanned and preventative maintenance procedures on electrical plant and equipment.
- replace, repair and/or remove components in electrical plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults in electrical plant and equipment.

In addition a Mechanical Technician will be able to:

- position, assemble, install and dismantle mechanical plant and equipment which will include pumps, valves, gearboxes, pipework, to agreed specifications.

- carry out planned, unplanned and preventative maintenance procedures on mechanical plant and equipment.
- replace, repair and/or remove components in mechanical plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults in mechanical plant and equipment.

In addition a Control & Instrumentation Technician will be able to:

- position, assemble, install and dismantle plant and equipment which will include instrumentation and control of temperature, pressure and flow systems to agreed specifications.
- carry out planned, unplanned and preventative maintenance procedures on plant and equipment.
- replace, repair and/or remove components in plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults in plant and equipment.
- calibrate and configure instrument and control systems.

In addition a Plant Operations Technician will understand:

- complex thermal, chemical, mechanical and electrical energy conversion processes.
- the principles, design and operation of plant, systems and equipment used for energy conversion and production.

In addition, a Plant Operations Technician will be able to:

- safely and efficiently carry out routine and non-routine operating procedures on plant and equipment.
- monitor and control the operation and performance of the plant and equipment
- handover and accept responsibility for plant and equipment.
- evaluate and solve complex problems within energy conversion plant and systems.
- rapidly and correctly respond to contingencies and abnormal conditions, to maintain energy conversion and production plant and equipment within operational parameters.

Qualifications: Apprentices must achieve level 2 English and mathematics prior to taking the end-point assessment for the apprenticeship if they haven't achieved them on entry.

Duration: Typically 36 - 42 months

Link to Professional Registration: This standard will meet the professional standards of the Engineering Council for registration as Engineering Technician (Eng Tech) by an appropriate Professional Engineering Institution.

Level: This apprenticeship is level 3.

Review date: This standard will initially be reviewed 3 years after publication.