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# EPA Specification Maintenance and Operations Engineering Technician – Wind Turbine Technician



## EPA Specification Section 4 – The MOET standard with Amplification and Guidance

### Contacts

**This specification has been designed to provide all the advice and guidance you need to prepare yourself and your apprentices for end-point assessment. However, if you have any further questions please contact the EUIAS Help Desk using one of the following:**

**Help Desk email: [enquiries@euias.co.uk](mailto:enquiries@euias.co.uk)**

**Help Desk telephone: 0121 745 1310 option 2**

# The MOET standard in detail

The MOET standard consists of:

- Core knowledge (4 elements)
- Core skills (4 elements)
- Behaviours (7 elements)
- Specialist skills for electrical specialism (4 elements)

The following pages list each of the elements of the standard, the assessment method(s) required and additional Amplification and Guidance from EUIAS on the range and depth expected.

## Core Knowledge

### Assessed in Knowledge Test AND Technical Interview

CK1 **First principles** relating to the operation and maintenance of appropriate plant and equipment

CK2 Relevant industry **health and safety standards, regulations, and environmental and regulatory requirements**

CK3 **Maintenance and operational practices, processes and procedures** covering a range of plant and equipment

CK4 The **relevant engineering theories and principles** relative to their occupation

### Core Knowledge: Amplification and Guidance

#### CK1 First principles

- Purpose of the plant/equipment
- Impact of plant/equipment malfunction or failure
- Interaction with other process plant/equipment
- Normal operating conditions such as temperatures, speeds, pressures, loads, as appropriate

## **CK2 Health and safety standards, regulations, and environmental and regulatory requirements**

- Control of Substances Hazardous to Health procedures
- Working at Height Regulations
- Risk assessment procedures
- Personal protection equipment
- Manual handling and lifting and rigging
- Isolation procedures
- Site safety signage
- Confined space entry
- Compliance with site safe systems of work

## **CK3 Maintenance and operational practices, processes and procedures**

- Selection and use of tools, equipment & materials
- Engineering calculations
- Testing & inspection activities
- Condition monitoring
- Fault-finding skills
- Use of technical drawings
- Root cause analysis

## CK4 Engineering theories and principles

### Wind turbine

- Basic wind turbine construction: tower, blade, nacelle, generator, gearbox, horizontal and vertical axis turbines
- Wind characteristics: mean speeds, distribution, turbulence, direction, shear
- Principles of electricity generation
- Betz coefficient
- Relationship between wind speed and power; capacity factor

## Core Skills

### Assessed in Practical Observation alone

CS1 Comply with industry **health, safety and environmental working practices and regulations**

CS2 Communicate with and provide information to **stakeholders** in line with personal role and responsibilities

CS3 Prepare work areas to undertake work related activities and reinstate those areas after the completion of the work-related activities

CS4 Assess and test the performance and condition of plant and equipment

### Assessed in Practical Observation AND Technical Interview

CS5 **Locate, and rectify faults** on plant and equipment

CS6 Read, understand and interpret **information** and work in compliance with **technical specifications and supporting documentation**

CS7 Inspect and maintain appropriate plant and equipment to meet operational requirements

CS8 Communicate, **handover** and confirm that the appropriate engineering process has been completed to specification

## Core Skills: Amplification and Guidance

### CS1 Health, safety and environmental working practices and regulations

- Roles and responsibilities in relation to the HSE Regulations
- Site safety systems, including communicating with others
- Site safety signage
- Risk assessment procedures
- Correct use of personal protection equipment

### CS2 Stakeholders

- Team members
- Colleagues at handover
- Line managers
- Internal and external safety personnel

### CS5 Locate, and rectify faults

- Systematic and effective approaches to fault finding
- Isolation/overrides/inhibits
- Use of historical operational data

### CS6 Information, technical specifications and supporting documentation

- Company procedures for the control of work
- Operating specifications and maintenance records

### CS8 Handover

- Verbal handovers
- Handover documentation

## Behaviours

### Assessed in Technical Interview

B1 Critical reasoning – uses resources, techniques and **obtained facts to develop sound solutions** while recognising and defining problems

### Assessed in Practical Observation

B2 Health and Safety – follows health and 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

B3 Quality focused – ensures that work achieves quality standard both occupationally and personally

B4 Working with others – has the ability to work well with people from different disciplines, backgrounds and expertise to accomplish an activity safely and on time

B5 Interpersonal skills – gets along well with others and takes into account their needs and concerns

B6 Sustainability and ethical behaviour – **behaves ethically** and undertakes work in a way that contributes to sustainable development

B7 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**

## Behaviours: Amplification and Guidance

B5 Obtained facts, sound solutions

- autonomous work related decisions based on accurate and reliable information

B1 Appropriate techniques

- following site and company procedures

B6 Behaves ethically

- Honesty
- Fairness
- Respecting the rights of individuals

B7 Regular monitoring and checking of information

- Noticeboards
- Supervisor briefings
- Intranet
- Briefing sessions

## Specific Skills – Wind Turbine Technicians

### Assessed in Practical Observation AND Technical Interview

**WT1 Position, assemble, install and dismantle** mechanical plant and equipment to agreed specifications

**WT2** Carry out **planned, unplanned and preventative** maintenance procedures on mechanical plant and equipment

**WT3** Replace, repair and/or remove components in mechanical plant and equipment and ensure its return to operational

condition **WT4** Diagnose and determine the **cause of faults** in mechanical plant and equipment

\*\*\* Note that only one of the above skills needs to be assessed during the Practical Observation \*\*\*

## Wind Turbine Technicians: Amplification and Guidance

### WT1 Position, assemble, install and dismantle

- Positioning could include the fitting of new or replacement complex devices including but is not limited to pitch and yaw controls and mechanisms, drive systems etc. There should also be an element of positioning specification involved e.g. orientation, location, alignment, purity. These activities are completed in logical and progressive stages
- Assembling activities are commonly part of the positioning work and could involve but is not limited to the assembly of associated equipment such as gearboxes, transmissions, mountings, clamps, guards.
- Installation activities could include but is not limited to the installation of gearboxes, generators, seals and bearings.
- Dismantle activities could involve the isolation of equipment followed by the removal of devices or complex components that interact with other parts of the device. This could include but is not limited to transmissions, gearboxes, generators.

### WT2 Planned, unplanned, preventative

- Planned maintenance is commonly described as work that is facilitated as part of the company maintenance philosophy. Typical work could include function tests, inspections, condition monitoring etc. This work is normally carried out when the equipment is offline or in planned shutdown periods
- Unplanned maintenance is commonly describes as work that is commonly the result of a breakdown of equipment and/or systems
- Preventative maintenance is commonly described as work that is carried out on a predetermined period to reduce the risk of breakdown or failure. It can involves the inspection, repair, replenishment, replacement of components, cleaning and adjustments

### WT4 Cause of faults

Fault-finding techniques including but not limited to:

- Visual
- Compliance
- Condition monitoring
- Historical data
- Third party input
- Root cause analysis
- Function tests
- Measurement