

Wastewater Treatment Technician

Unit WWTTC05 Primary Settlement Operations

This training specification has been developed from the water process technician standard. The specification details the **minimum** training specification, as agreed by industry employers, to deliver the skills and knowledge required to carry out primary settlement operations used in the water sector.

The specification details the critical requirement of the activity to carry out the work outlined and does not preclude employers from adding to the skills and knowledge detailed by the specification in their own training programmes.

All work must be carried out to approved procedures and practices and in accordance with statutory health, safety and environmental requirements.

What does this specification look like?

Wastewater treatment technicians need to be able to:

- PST1 Control sedimentation operations on wastewater treatment works
- PST2 Optimise sedimentation operations on the basis of downstream process performance, test results and analysis of trends
- PST3 Restore sedimentation operations to normal operation through identification of the root cause of faults arising with the process

What do I need to take this module?

Candidates to be **assessed** as competent in this area should have successfully completed the modules shown below or have evidence demonstrating an equivalent level of competence.

1. Wastewater flows and hydraulics
2. Process control systems
3. Wastewater compliance and performance monitoring

Performance Criteria

To achieve this unit, you will need to be able to:

General Requirements

- P1. Identify the work area to be accessed using company documentation, systems and work instructions
- P2. Select, inspect and wear required PPE in line with company procedures
- P3. Carry out a site specific risk assessment of the work area, identifying the hazards and the control measures required
- P4. Maintain accurate and up to date records
- P5. Report information and data to the designated person

Task Specific – Primary Settlement operations

- P6. Identify and locate the primary settlement tanks and associated equipment on the works and on the information system e.g. SCADA / HMI
- P7. Safely carry out operational and first line maintenance tasks relating to the primary settlement tank operations including removing blockages and fault finding
- P8. Identify all mechanical, electrical and instrumentation assets which monitor and control the primary settlement tank processes on the works and on the information system e.g. SCADA / HMI
- P9. Confirm the correct configuration, operation and performance of the primary settlement tanks and ancillary equipment corresponds to the information system e.g. SCADA / HMI.
- P10. Identify and maintain control parameters associated with primary settlement tank processes on their works
- P11. Respond to alarms correctly
- P12. Instigate corrective actions to restore the primary settlement tank processes to compliant conditions, taking account of process lag time
- P13. Evaluate trend data from the information system e.g. SCADA / HMI and process performance to identify:
 - a) Normal trends or cycles for the works, and
 - b) Atypical trends or changes and the underlying or root causes for the change
- P14. Optimise the primary settlement operations to efficiently achieve the required parameters
- P15. Identify any chemicals, storage, mixing and pumping plant used on the primary settlement tank processes and on the information system e.g. SCADA / HMI
- P16. Monitor, check, record and report chemical dosing on their works
- P17. Complete sludge level monitoring to specification, appropriate to the works
- P18. Carry out operations to minimise the risk to process performance

Knowledge and Understanding

To achieve this unit, you will need to know and understand:

General Requirements

- K1. The principles of Health, Safety and Environmental legislation in relation to working with wastewater
- K2. The organisation's safety rules, policies and procedures relating to working with wastewater
- K3. The hazards associated with working with wastewater and the correct way to respond to them
- K4. How to select, inspect and use PPE when working with wastewater
- K5. How to carry out a site specific risk assessment and identify workplace hazards
- K6. How to respond in the event of an emergency situation in the workplace environment
- K7. How to leave the work area in a safe and secure condition
- K8. The company recording and reporting process

Task Specific – Primary Settlement Operations

- K9. How to safely carry out operational and first line maintenance tasks taking into account any systems of work and operating procedures
- K10. The objectives of primary settlement tank processes and consequences of sub-optimal performance
- K11. The main generic different types of tanks, pumps and associated ancillary equipment used and the design considerations associated with these
- K12. Key process parameters and variables associated with primary settlement tank operation, desludging system design and design limitation of works
- K13. The correct operation of primary settlement tank and desludging processes and the consequences of sub-optimal performance
- K14. The consequences of:
 - a) Maintenance
 - b) Deliberate adjustments
 - c) Sub-optimal sedimentation
 - d) Desludging operations
 - e) Taking a process unit out of service;on the subsequent process streams
- K15. Legislation and permit requirements controlling primary settlement tank operations
- K16. How to interrogate the information system e.g. SCADA / HMI to:
 - a) Identify and control Items of mechanical, electrical and instrumentation equipment
 - b) Evaluate trend data differentiating normal operational cycles from fault conditions

- K17. How to confirm the configuration, operation and performance of the primary settlement tank and desludging processes and how it corresponds to the information system e.g. SCADA / HMI
- K18. The range of instrumentation used to monitor and control the process and their calibration requirements
- K19. Alarms, action levels, authorisation levels and consequences associated with the process
- K20. How to identify the root cause of primary settlement tank process problems
- K21. The sequence of actions required to restore the processes to compliant conditions, taking account of all process variables and process lag times
- K22. How to monitor sludge levels to specification and identifying any limitations
- K23. Types of chemicals used, the reason why, and the factors that influence their selection, use and sequence of addition
- K24. The range of plant used to store, mix and pump chemicals and the methods of operation available (automatic or manual and calibration)
- K25. How to identify the root cause of chemical dosing process problems and the sequence of actions required to restore the process to compliant conditions, taking account of all process variables and process lag times
- K26. The tools used in first line maintenance tasks, their uses and limitations
- K27. Data collection, recording, reporting and maintenance requirements

How will it be assessed?

To achieve this unit, you will need to be able to provide evidence of the performance criteria and the knowledge and understanding requirements listed above.

Assessment types:

1. External assessment – an external accrediting body will assess against a national minimum standard
2. Internal assessment process – a company led on-going assessment against requirements
3. End-point assessment – see assessment plan for further details here (will be Energy & Utility Skills defined)

What type of evidence will be expected?

To achieve this unit, you will need to be able to provide evidence of the performance criteria and the knowledge and understanding requirements listed above.

Evidence types:

1. On-going local assessments
 - a) Assessment plan, review, feedback, standard assessment sheets
2. Knowledge based learning
 - a) Classroom, exams, assignments, Q&A sessions, e-learning modules
3. Evidence portfolios
 - a) Learning logs, photos, observation sheets

Assessment types and process

