

Water Treatment Technician

Unit W TTC05 Works Design Flows and Hydraulics

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 work design flows and hydraulics 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?

Water treatment technicians need to be able to:

- WDFH1 Understand basic flow calculations and their significance for the treatment process
- WDFH2 Understand basic hydraulic principles and their relevance to water treatment
- WDFH3 Understand how flow and hydraulics can influence throughput and quality
- WDFH4 Analyse data and perform simple calculations to understand the limitations of the processes to cope with flow and hydraulic loading

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. Completion of all health and safety training requirements related to this module activity
2. Completion of the process specific modules

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 control measures required
- P4. Maintain accurate and up to date records
- P5. Report information and data to the designated person

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- P6. Carry out procedure for maintaining flow instruments in line with company instructions including paperwork and records
- P7. Review and analyse the performance of the flow instruments to ensure compliance.
- P8. Perform simple calculations to demonstrate changing chemical requirements in response to changes in plant flow
- P9. Perform simple calculations using process flow to calculate residence times and velocities within filters
- P10. Calculate chlorine contact time and CT within the treatment process, demonstrating an awareness of the effect of flow and contact tank design on CT and its relevance for the disinfection process

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 when working with water treatment processes
- K2. The organisation's safety rules, policies and procedures when working with water treatment processes
- K3. The hazards associated with working with water treatment processes and the correct way to respond to them
- K4. How to select, inspect and use PPE when working with water treatment processes
- 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

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- K9. The requirements for flow monitoring and reporting for water production and regulators
- K10. The principles of flow monitoring and measurement equipment including terminology
- K11. The basic principles of hydraulics including solids loading
- K12. The monitoring of hydraulic loading and control limitations
- K13. The effects of the measurements on control systems such as dosing control
- K14. The effect of flow or hydraulic changes on key process streams or equipment and the significance of these for water quality and plant performance
- K15. The significance of design capacity of processes for plant performance
- K16. Understand flow pacing and the effects this has on chemical dosing or pump operation
- K17. Key flow control systems and operation of these in automatic or manual
- K18. The risks associated with incomplete or inaccurate flow measurement
- K19. Contingency plans associated with the water treatment works when monitoring equipment is unavailable or incorrect

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

