Wastewater Treatment Technician

Unit WWTTO05 Sludge Dewatering

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 sludge dewatering operations 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:

SD1 Control sludge dewatering operations on wastewater treatment works

SD2 Optimise sludge dewatering operations on the basis of process performance, test results and analysis of trends

SD3 Restore sludge dewatering processes to normal operation through identification of the root cause of faults arising with the processes

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. SHEA Water or equivalent
2. WWTTC08 – Sludge Storage, Treatment and Transportation

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 implementing the 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. Safely carry out operational and first line maintenance tasks relating to the process, fault finding and resolution
P7. Identify and locate the sludge dewatering processes and associated equipment on the works and on the information system e.g. SCADA / HMI
P8. Identify all mechanical, electrical and instrumentation assets which monitor and control the sludge dewatering processes on the works and on the information system e.g. SCADA / HMI
P9. Confirm the correct configuration, operation and performance of the sludge dewatering processes and that it corresponds to the information system e.g. SCADA / HMI
P10. Identify and maintain control parameters associated with the sludge dewatering processes and associated equipment
P11. Optimise the sludge dewatering processes to efficiently achieve the required parameters
P12. Respond to alarms correctly
P13. Instigate corrective actions to restore the sludge dewatering processes to compliant conditions, taking account of process lag time
P14. Evaluate trend data from the information system e.g. SCADA / HMI, tests and / or 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
P15. Complete, record and report associated on-site monitoring to specification, appropriate to the works and to ensure the works process parameters are maintained
P16. Identify and locate any chemicals, storage, mixing and pumping equipment used in sludge dewatering processes on the works and on the information system e.g. SCADA / HMI
P17. Monitor, check, record and report chemical dosing on their works

P18. Deal with spillages / pollutions safely and correctly
P19. Manage sludge holding and dewatering facilities regarding quality and quantity to ensure optimum effectiveness of dewatering processes and wastewater treatment processes

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 – Sludge Dewatering

K9. How to safely carry out operational and first line maintenance tasks taking into account any systems of work and operating procedures
K10. The current legislation and directives that control sludge dewatering, recycling and disposal
K11. The key principles and objectives of sludge dewatering operations on wastewater treatment works and describe the flow route, including any works returns
K12. Key process parameters and variables associated with sludge dewatering
K13. The main generic different types of sludge dewatering processes including pumps and associated ancillary equipment used and the design considerations associated with these. These may include:
    a) Centrifuges
    b) Belt presses
    c) Plate presses
K14. The correct design and optimal operation of sludge dewatering processes, the common problems associated with them and the consequences of sub-optimal performance
K15. How to control sludge storage facilities regarding quality and quantity
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 sludge dewatering processes and how it corresponds to the information system e.g. SCADA / HMI
K18. Any chemicals used in the sludge dewatering processes, the reason and sequence of their use
K19. The range of plant used to store, mix and pump chemicals and the methods of operation available (automatic or manual and calibration)
K20. The range of instrumentation used to monitor and control the process and their calibration requirements
K21. Alarms, action levels, authorisation levels and consequences associated with the process
K22. Factors which can affect sludge cake and return liquor quality including operational, mechanical, chemical and weather related factors
K23. How to identify the root cause of sludge dewatering problems
K24. Understand the sequence of actions required to restore the processes to compliant conditions, taking account of all process variables and process lag times
K25. The consequences of sub-optimal sludge dewatering operations on the treatment works including the consequences of:
a) Maintenance
b) Deliberate adjustments
c) Taking a process unit out of service
K26. How to complete sludge dewatering monitoring to specification and any limitations
K27. The tools used in first line maintenance tasks, their uses and limitations
K28. 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. Ongoing 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