

OCCUPATIONAL STANDARD

Layer of Biogas Technology Technician, Level 4

The occupational standard is a document that describes professional activity and sets out competence requirements, i.e. a set of skills, knowledge and attitudes required for successful job performance in a particular occupation.

The occupational standard provides the basis for:

- 1) preparing curricula and training and programmes that meet the requirements of the labour market
- 2) assessing persons’ competence, including self-assessment and conformity assessment when the qualification is awarded
- 3) description of and provision of information about occupations
- 4) planning a person’s career and laying the groundwork for life-long learning
- 5) ascertaining and planning training needs
- 6) preparing job descriptions and recruiting employees
- 7) comparing competence internationally (using certificates)

This primary-level occupational standard provides the basis for the vocational curriculum.

Occupational (qualification) title	EstQF level
Layer of biogas technology technician, Level 4	4
Title on the certificate Layer of biogas technology technician	



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Part A QUALIFICATION DESCRIPTION

A.1 Job content

Layer of biogas technology technician 4 performs tasks related to assembling and fitting out biogas equipment running on agricultural by-products, energy crops, bio-waste and sewage sludge (for example, installing equipment and fitting out equipment and technological assemblies at the plant). Independently Performs regular installation works, under the supervision of specialists (supplier, project manager, biogas equipment operator) in charge of fitting out for configuring the plant Layer of biogas technology technician 4 acts according to plan and economically, and constantly pursues individual development.

A.2 Units

1. Planning and organisation of work

- 1.1 Becoming acquainted with the site, general documentation, tasks and conditions
- 1.2 Preparation of a work plan
- 1.3 Organisation of one’s workplace

2. Installation of equipment at the biogas plant

- 2.1 Installation of primary equipment (including pumps, power installations, heating installations and measuring equipment)
- 2.2 Connecting equipment to infrastructure (including piping)
- 2.3 Electrical installation works, including cabling under the supervision of the specialist in charge
- 2.4 Checking of own work
- 2.5 Completion of documentation related to installation works (including work logs and formal records)

3. Fitting out and starting the biogas plant

- 3.1 Fitting out equipment and technological assemblies at the plant according to the instructions
- 3.2 Participation in commissioning
- 3.2 Participation in the testing and configuration of the biogas plant
- 3.4 Completion of documentation related to fitting-out (including work logs and formal records)

4. Safety of the working environment

- 4.1 Compliance with occupational safety requirements
- 4.3 Environmental safety and risks
- 4.4 Electrical safety
- 4.5 Gas safety

A.3 Working environment and specific aspects of work

The layer of biogas technology technician works outdoors, at construction sites or technical structures or facilities. When working at outdoor sites, allowance should be made for extreme weather conditions (for instance, thunderstorms or storms)
Risks involved in the work include electric shock, falling and the risks of explosion, fire, asphyxiation and poisoning.
To ensure their own and fellow employee' safety, the employee is obliged to comply with occupational safety regulations and instructions and the requirements of managers (specialists in charge) of a given work operation.

A.4 Tools

The main tools include manual and special tools, mechanisms and measuring equipment.

A.5 Personal characteristics necessary for this job: abilities and personality traits

Coping with the work presupposes physical endurance, accurate and coordinated movements, good eyesight and hearing, and a readiness to operate at heights.

Successful completion of work is supported by logical thinking, an ability to concentrate and adapt, consistency, emotional stability, teamwork skills and analytical ability.

Work presupposes collaboration with specialists in related fields and when solving problems.

A.6 Documents required for working in the occupation

When working as a layer of biogas technology technician, it is mandatory to hold a certificate for layer of biogas technology technician, Level 4.

A certificate proving the completion of a medical examination and a certificate proving the completion of courses on safety in electrical, gas and/or pressure works are required.

If a certificate of competence is available for the person managing gas or electrical works or pressure equipment works, the layer of biogas technology technician may perform the relevant works independently or act as working group head. In the absence of certificates of competence, gas, electrical and pressure equipment works should be performed under the supervision of a person holding a certificate of competence.

A.7 Possible job titles

Installer

A.8 Occupational training

Instruction for becoming a layer of biogas technology technician is provided at vocational educational institutions, adult professional training courses or at the workplace. Work presupposes basic knowledge about and skills for electricity, automated equipment, gas and engineering.



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Part B

COMPETENCE REQUIREMENTS

B.1. Competencies required when qualification is sought, B.2.1 – B.2.4

B.2 Competencies

MANDATORY COMPETENCIES

B.2.1 PLANNING AND ORGANISATION OF WORK

Performance indicators:

- 1) reads and understands design documentation, including specialist terminology and notations and symbols used on drawings and in designs
- 2) links information received with their own tasks, asking questions to obtain clarification from suppliers, line manager, clients or others if needed
- 3) reads the installation manual for equipment, also a manual in a foreign language using a dictionary if needed
- 4) uses various means of communication and the computer at the level of the average user;
- 5) assesses the scale of works, materials and time requirement, applying appropriate calculation methods (converting units and performing surface, volume and percentage calculations)
- 6) determines the operations and activities sequence needed for the performance of a task
- 7) selects installation technology and methods, drawing on design documentation and equipment and installation manuals
- 8) assembles the necessary materials, equipment and tools (including lighting equipment, temporary power supply system)
- 9) prepares their workplace, installs work and installation equipment based on the agreed logistics, checks to ensure the workspace is neither energised nor pressurised, keeps the workplace clean and tidy.

Knowledge:

- 1) general knowledge about electrical engineering, gas production, utilisation, engineering and automation (including terminology)
- 2) teamwork principles, understanding the role of a member of a working group (obligations, rights and responsibility).

Methods of assessment: theoretical test, practical calculation task and interview.

B.2.2 INSTALLATION OF EQUIPMENT AT THE BIOGAS PLANT

Performance indicators:

- 1) becomes acquainted with the documentation for the equipment and prepares it for installation, first checking the conformity of the equipment to be installed to the terms of reference and design documentation
- 2) determines the location of the installation of equipment; installs equipment using appropriate methods and means (for instance, lifting mechanisms)
- 3) assembles equipment and actuators, allowing for installation requirements for materials and equipment, knows the operational principles, structure and practices of equipment (including automated safety equipment and pressure equipment) and actuators, Proficient in the practices of installation, knows how to use the necessary work equipment (including tools)
- 4) installs the necessary structures, supports, clampings, piping and pipe reinforcements, and connects the equipment to pipes
- 5) performs the insulation and anti-corrosion treatment of equipment; installs equipment, covers and cables between electrical cabinets, control panels for automated equipment and control centres; and



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<p>connects the equipment and cabling under the supervision of the person competent in electrical engineering</p> <p>6) checks the conformity of the installed equipment and connections to the terms of reference and design documentation and the operational readiness of equipment</p> <p>7) completes a work log for installation works and prepares the necessary formal records.</p>
<p><u>Knowledge:</u></p> <p>1) types of construction works (including earthworks and concreting works, lifting operations and metal-working) and safety requirements for construction works</p> <p>2) properties of biogas.</p>
<p><u>Methods of assessment:</u> practical task and interview</p>

<p>B.2.3 FITTING OUT AND STARTING THE BIOGAS PLANT</p>
<p><u>Performance indicators:</u></p> <ol style="list-style-type: none"> 1) becomes acquainted with the manufacturer’s installation requirements for equipment and technological assemblies and those provided under the design 2) before activation, performs the stipulated fitting out for equipment and their parts, adhering to instructions for fitting out 3) before activation, fits out assemblies and their parts, adhering to instructions for fitting out, knowing the principles of fitting out technological assemblies and equipment 4) checks the operational readiness of the installed equipment and connections (including electrical supply); 5) activates equipment and assemblies as supervised and according to the assigned task 6) assesses the operating mode of activated equipment and responds according to the situation and instructions 7) maintains the parameters required during the activation process (for instance, production process temperature, pH balance and organic matter load) 8) assists the suppliers of biogas production and utilisation technology, applying knowledge about combined production of electricity and heat, biogas purification technology, and the properties of important chemical compounds found and created in the processes and of chemicals used therein 9) checks the operational parameters of equipment and informs the specialist in charge about the results of testing and the progress of configuration works 10) adjust necessary operational parameters according to instructions, knowing the meaning of the parameters and the effect of their change on processes in the operation of the plant (including limits) 11) completes the preassigned test documentation and log or prepares formal records.
<p><u>Knowledge:</u></p> <p>Nature of anaerobic digestion processes and operational principles of digestion equipment.</p>
<p><u>Methods of assessment:</u> practical task or situational task and interview</p>

<p>B.2.4 PRESERVATION OF OCCUPATIONAL AND ENVIRONMENTAL SAFETY</p>
<p><u>Performance indicators:</u></p> <ol style="list-style-type: none"> 1) to prevent and avoid hazards, allows in their work for statutory requirements for electrical, gas and pressure works, knows how to detect hazards and acts according to safety instructions if a hazardous situation occurs (transmits information promptly, provides first aid or the like) 2) handles chemicals safely, being aware of the effect of chemicals and the hazards of working with them 3) environmental safety and health requirements 4) to ensure occupational safety and prevent any risks, uses personal protective equipment (insulating gloves, protective helmet, goggles etc) and is aware of the practices of personal protective equipment
<p><u>Knowledge:</u></p>



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1) national and internal normative documents, operational rules and safety requirements for working safety requirements for working with power installations (for example, equipment of heating boiler plants and combined heat and power plants) and mobile machinery (for instance, cranes, hoists).

Assessment method: integrated within other assessment methods.



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Part C

GENERAL INFORMATION AND ANNEXES

C.1 Information on the preparation and approval of the occupational standard, on the body awarding occupational qualifications, and reference to the location of the occupational standard in classifications	
1. Occupational standard identification in the register of occupational qualifications	07-17052012-2.7/2k
2. Occupation and qualifications in the occupation	Installation and maintenance of equipment for producing renewable energy, layer of biogas technology technician
3. Related occupations	Installer of heating equipment, mechatronics specialist, refrigeration mechanic, mechanic/metal-worker of agricultural and industrial machinery, environmental technology metal-worker, electrician
4. The occupational standard is compiled by: names of people and organisations	Rein Oselin Järvamaa Vocational Training Centre Andres Annuk Estonian University of Life Sciences Argo Normak EMÜ Taastuvenergia Keskus (Centre of Renewable Energy of Estonian University of Life Sciences) Õnne-Ly Reidla Estonian Power and Heat Association Henry Uljas Baltic Biogas Kai Pank Climate and Energy Agency Katrín Tammjärv National Examinations and Qualifications Centre Ahto Oja Mõnus Minek OÜ Jaan Allem Estonian Association of Electrical Enterprises
5. Occupational standard approved by (designation of professional council)	Professional Council for Energy, Chemical and Mining Industries
6. Number of the decision by the Professional Council	8
7. Date of the decision by the Professional Council	17 May 2012
8. The occupational standard is valid until (date)	25 May 2016
9. Occupational standard version number	2
10. Reference to the Classification of Occupation (ISCO 08)	7412 Electrical mechanics and fitters
11. Reference to the European Qualifications Framework (EQF)	4
C.2 Occupational (qualification) title in a foreign language	
In English: Layer of Biogas Technology Technician	
In Russian: Монтёр биогазовых установок	