OCCUPATIONAL QUALIFICATION STANDARD

Chartered Energy Efficiency Specialist, EstQF Level 8

An occupational qualification standard is a document which describes the set of skills, knowledge and attitudes, i.e. competence requirements, needed to successfully accomplish duties. Occupational qualification standards are used for compiling curricula and awarding qualifications.

Occupational title	Level of Estonian Qualifications Framework (EstQF)
Chartered Energy Efficiency Specialist, EstQF Level 8	8

Part A
DESCRIPTION OF WORK

A.1 Description of work

The main goals of an energy efficiency specialist's work are assessing the energy efficiency of buildings and giving advice for improvements in accordance with the principles of sustainable development, occupational ethics, modern engineering knowledge and best practice in consultation and construction.

The following occupational qualification standards have been developed in the profession of Energy Efficiency Specialist:
- Energy Auditor, Level 6
- Diploma Energy Efficiency Specialist, Level 7
- Chartered Energy Efficiency Specialist, Level 8

This occupational qualification standard describes the professional competences of Chartered Energy Efficiency Specialist, Level 8.

According to the Building Code, Chartered Energy Efficiency Specialist, Level 8 is a competent person who is prepared to work in an interdisciplinary team with specialists from related fields, if necessary involving and instructing other specialists and taking responsibility for the results of their team. They compile energy audits for buildings and companies independently and responsibly, issue energy efficiency certificates for existing and new buildings as well as buildings undergoing major renovations and give advice on the energy efficiency of buildings and companies.

Energy efficiency specialists at this level are able to find solutions to complex problems and enact said solutions in an economically and socially acceptable and environmentally friendly manner.
A chartered energy efficiency specialist is a senior specialist in the energy efficiency of buildings and companies who has considerable experience. They are capable of creating new solutions and technologies and assessing the energy efficiency of complex projects, works, etc.

Competence in auditing company resource efficiency can also be certified as part of the qualification of Energy Efficiency Specialist, Level 8.

A.2 Tasks

A.2.1 Assessing existing buildings
1. Collecting and analysing source data
2. Drawing up an action plan
3. Getting specialists from related fields involved
4. Inspecting the site
5. Conducting measurements
6. Assessing the functionality of technical and electrical systems
7. Assessing the state of fencing structures
8. Assessing the state of the indoor climate

9. Assessing the impact of technological devices 10. Preparing an energy consumption analysis 11. Calculating the building's energy consumption 12. Identifying shortcomings and making suggestions for their improvement A.2.2 Performing technical-economic analyses 1. Assessing the cost of measures implemented and savings 2. Assessing the feasibility of planned measures 3. Assessing the economic expediency of planned measures 4. Compiling a report A.2.3 Compiling energy audits of buildings 1. Assessing the technical systems of a site 2. Analysing the special energy consumption indicators of a site 3. Defining the priorities of energy efficiency methods 4. Compiling an assessment and submitting proposals for improvements 5. Formalising an energy audit A.2.4 Compiling energy audits for companies 1. Collecting and analysing source data 2. Drawing up an action plan 3. Getting specialists from related fields involved 4. Inspecting the site 5. Conducting measurements 6. Assessing the current state of buildings 7. Assessing the energy consumption of industrial or commercial processes, installations and services 8. Preparing an energy consumption analysis of an entire company or a part thereof 9. Identifying shortcomings and making suggestions for their improvement A.2.5 Advising on energy efficiency and taking part in related projects 1. Compiling energy conservation plans 2. Compiling forecasts and development scenarios 3. Taking part in energy efficiency projects 4. Performing feasibility studies 5. Compiling expert evaluations 6. Defining indicators characteristic of the efficiency of projects and measures A.2.6 Compiling and issuing energy performance certificates for existing buildings 1. Compiling energy performance certificates 2. Issuing energy performance certificates A.2.7 Modelling the energy use of a building and compiling a calculated energy performance certificate 1. Collecting and analysing source data 2. Calculating energy use 3. Modelling the energy use of a building 4. Certifying the minimum requirements of energy efficiency 5. Advising the design team and customer 6. Assessing the project solution 7. Compiling the energy efficiency part of a construction project 8. Formalising energy performance certificates to be issued
Elective areas of work
A.2.8 Auditing company resource efficiency 1. Preparing an auditing action plan 2. Assembling a team 3. Mapping current resource use 4. Assessing the current situation

5. Assessing resource potential 6. Defining and analysing resource-saving projects 7. Preparing monitoring plans 8. Compiling a report
A.3 Work environment and specific nature of work
Work is mainly conducted in an office, but also on site. Where necessary, measurements and interviews must be conducted. If necessary, specialised uniforms and protective gear must be used on certain sites and general occupational safety requirements must be observed. Sites may be in different regions, due to which the work is flexible and with a varying pace.
A.4 Tools
Usual office technology (computers, communication devices, etc.) and software (word processing software, spreadsheets, Internet communication, etc.), specialised calculation programmes and measuring technology.
A.5 Personal qualities required for work: abilities and characteristics
The profession requires an innovative and environmentally friendly way of thinking that facilitates sustainable development, creativity, independence, willingness to make decisions, analytical skills, precision, a sense of responsibility and willingness to communicate and cooperate.
A.6 Professional preparation
Chartered Energy Efficiency Specialist, Level 8 has technical higher education and specialised work experience and has completed further training.
A.7 Most common occupational titles
Energy Auditor, Issuer of Energy Performance Certificates, Modeller of Energy Use, Energy Expert, Project Lead of Energy Efficiency, Head Consultant, Scientist, Energy and Resource Auditor
A.8 Regulations governing profession
a) The Building Code and relevant implementing acts, including: Regulation no. 55 of the Ministry of Economic Affairs and Communications of 3 June 2015, 'Minimum Requirements for Energy Performance of a Building', Regulation no. 58 of the Ministry of Economic Affairs and Communications of 5 June 2015, 'Methodology for Calculating the Energy Performance of Buildings', Regulation no. 36 of the Ministry of Economic Affairs and Communications of 30 April 2015, 'Requirements for Energy Performance Certificates and the Issuing of Such Certificates', Regulation no. 28 of the Ministry of Economic Affairs and Communications of 8 April 2015, 'Requirements for the Energy Audits of Buildings' b) The Energy Sector Organisation Act and relevant implementing acts c) Construction project EVS 932 d) EVS-EN 15251, EVS-EN 16798-3

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
When applying for the qualification of Chartered Energy Efficiency Specialist, Level 8, occupation-specific competences B.2.1-B.2.7 and recurring competence B.2.9 must be certified. Additional competence B.2.8 may also be certified.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Assessing existing buildings	EstQF Level 8
Performance indicators: 1. Prepares tables and forms with which to gather data. Obtains the necessary data and documentation and assesses their adequacy and sufficiency. 2. Compiles a detailed strategy and schedule, if necessary asking customers to specify the terms of reference. Agrees on an inspection date with the customer and works with them to arrange access to all of the parts and technological systems of the site to be audited (e.g. power switch and boiler room). 3. Assesses the need to involve specialists from related fields. If necessary, gets the specialists involved and gives them their tasks. 4. Performs or organises site inspections in accordance with the terms of reference and the objectives of the work. 5. Performs or organises measurements using prepared measuring tools or commissions measuring services. 6. Assesses the functioning of heating, domestic water, cooling and ventilation systems, automatics, electric installations, illumination devices and renewable energy systems in accordance with the principles of energy efficiency. 7. Assesses the state of fencing structures, including their thermal transmittance, air leakage and moisture regime in accordance with the principles of energy efficiency. 8. Assesses the state of the indoor climate based on the intended and actual use of the building. 9. Assesses the impact of technological devices on a building's energy efficiency and indoor climate. 10. Compares the data obtained to data from similar sites. Compiles an analysis in accordance with the order, formatting its graphic, textual and illustrative parts clearly and coherently and using correct terminological language. 11. Calculates a building's annual energy consumption using various calculation methods (e.g. degree-days and dynamic simulations). 12. Defines significant shortcomings and ways of improving technical situations, giving advice on boosting energy efficiency.	
Knowledge: 1) measuring tools and resources; 2) methods of measuring the efficiency of heating, water, cooling and ventilation systems, electrical installations and illumination devices; 3) thermal transmittance, air leakages and moisture regimes; 4) operating principles of technical systems; 5) relevant legal acts, standards and methods.	
B.2.2 Performing technical-economic analyses	**EstQF Level 8**
Performance indicators: 1. Assesses the cost and presumed savings of implementing potential efficiency methods both in physical units and monetarily. 2. Analyses the viability of implementing potential efficiency methods in accordance with technical aspects, cost efficiency, market options, environmental conditions, innovation, risks and other aspects. 3. Determines a base scenario for energy use and production. Analyses the technical-economic expediency of implementing efficiency methods while considering the bigger picture and making generalisations. Uses different methods of assessing cost-benefit, such as NPV and IRR. Performs an analysis of sensitivity towards different variables. 4. Compiles a report in accordance with the order, formatting its graphic, textual and illustrative parts clearly and coherently and using correct terminological language.	
Knowledge: 1) energy efficiency measures; 2) energy consumption calculation methods, including dynamic simulations; 3) assessment methods of cost-benefit based on discounting; 4) relevant legal acts, standards and methods.	
B.2.3 Compiling energy audits of buildings	**EstQF Level 8**
Performance indicators: 1. Submits a general description of all audited technological systems and provides an assessment of their situation.	

2. Analyses and assesses the energy consumption data of audited sites and compares them to energy consumption in previous years at the same site and with special energy consumption data from similar sites. 3. Submits measures suitable for implementation on site as a prioritised list, based on technological-economical cost-benefit calculations. 4. Submits a summarised assessment and proposals for amendments for an audited site in a way that is comprehensible to the site's owner and administrator. 5. Compiles an audit report, making sure it corresponds with the order and terms of reference and that its graphic, textual and illustrative parts are formatted clearly, legibly and comprehensively.	
Knowledge: 1) legal acts related to auditing; 2) methods, standards, etc. necessary for auditing; 3) fuel, electricity and heating prices, including energy transmission fees, etc.; 4) energy conservation methods; 5) forms of audit reports.	
B.2.4 Compiling energy audits for companies	**EstQF Level 8**
Performance indicators: 1. Prepares tables and forms with which to gather data. Obtains the necessary data and documentation and assesses their adequacy and sufficiency. 2. Compiles a detailed strategy and schedule, if necessary asking customers to specify the terms of reference. Agrees on an inspection date with the customer and works with them to arrange access to all of the parts and technological systems of the site to be audited (e.g. power switch and boiler room). 3. Assesses the need to involve specialists from related fields. If necessary, gets the specialists involved and gives them their tasks. 4. Agrees on an audit date with the customer and works with them to arrange access to all of the data and components to be audited. Performs a company inspection. 5. Performs the necessary measurements or commissions measuring services. 6. Assesses the current state of buildings. 7. Assesses the energy consumption of industrial or commercial processes, installations and services. 8. Compiles an analysis of the entire energy balance of a company or analyses every energy type separately. 9. Defines significant shortcomings and ways of improving energy efficiency and makes proposals on how to boost energy efficiency, either partially or within a company as a whole.	
Knowledge: 1) legal acts related to auditing; 2) methods, standards, etc. necessary for auditing; 3) energy conservation methods; 4) forms of audit reports.	
B.2.5 Advising on energy efficiency and taking part in related projects	**EstQF Level 8**
Performance indicators: 1. Resolves problems related to energy efficiency creatively and innovatively and plans and offers solutions for conservative and sustainable energy use. 2. Predicts future energy consumption and offers different development scenarios, assessing their cost efficiency and expediency. 3. Takes part in different projects (such as those for development plans and planning) as a specialist in the energy efficiency field 4. Compiles and formalises feasibility studies for credit institutions. 5. Compiles expert assessments and opinions in the field of energy efficiency. 6. Defines indicators characteristic of the efficiency of projects and measures, conducts calculations and analyses the results.	
Knowledge: 1) possible uses of renewable energy and their impact on energy efficiency 2) legal acts concerning energy efficiency; 3) relevant standards and methods; 4) the impact of renewable energy measures on the environment.	

B.2.6 Compiling and issuing energy performance certificates for existing buildings	EstQF Level 6
Performance indicators: 1. Compiles energy performance certificates based on the energy expenditure measured. 2. Fills in energy performance certificate forms and their annexes correctly and in accordance with requirements.	
Knowledge: 1) legal acts, methods, standards, etc. relevant to the issuing of energy performance certificates.	
B.2.7 Modelling the energy use of a building and compiling a calculated energy performance certificate	**EstQF Level 8**
Performance indicators: 1. Checks whether there are sufficient data to model energy consumption and compile an energy performance certificate. 2. Defines appropriate software and methods for calculating the energy consumption of buildings. 3. Models the energy consumption of buildings using appropriate software and methods. 4. Certifies the compliance of buildings undergoing planning or major renovations with the energy efficiency requirements of legal acts. 5. Advises a building's planning team and owner on parameters affecting energy efficiency. 6. Provides an assessment of project solutions, taking into account the requirements of legal acts and energy efficiency. 7. Compiles the energy efficiency part of a construction project in accordance with the requirements of legal acts and standards. 8. Fills in energy performance certificate forms and their annexes correctly and in accordance with requirements. Enters information concerning energy performance certificates in the state register.	
Knowledge: 1) legal acts concerning the energy efficiency of buildings; 2) methods of calculating dynamic heat transfer; 3) legal acts, methods, standards, etc. relevant to the issuing of energy performance certificates and their fields of application; 4) energy performance certificate forms for different building types; 5) relevant standards and legal acts concerning planning.	

OPTIONAL COMPETENCES

Additional competence B.2.8 may also be certified.

B.2.8 Auditing company resource efficiency	EstQF Level 8
Performance indicators: 1. Prepares an action plan for auditing resource efficiency. 2. Assembles an auditing team. Assesses the need to include specialists from related fields and gets them involved in the team. 3. Defines in greater detail the objects, resources and projects examined as part of their audit and maps current resource use. Defines resource input-output flow, taking measurements where necessary. 4. Analyses and assesses existing resource use. Defines a base scenario. 5. Defines the unit of production of the site(s) and assesses and analyses resource conservation potential based thereon. 6. Defines measures (projects) and their limits. Describes conservation methods and analyses methods (projects) on the basis of resources and sites. Defines the production volumes, resources and input-output flow of a measure (project). Calculates the potential savings and cost and performs a technical-economic analysis. Assesses the risks and synergies of different measures (projects). Analyses aspects of innovation. 7. Prepares a plan to monitor resource efficiency and assess achievements in resource conservation. 8. Formalises reports correctly and in accordance with audit report forms.	
Knowledge: 1) legal acts, standards and methods relevant to the industry; 2) resource flow and balance;	

3) basics of economic analysis; 4) methods and principles of risk assessment; 5) innovation; 6) resource efficiency; 7) principles of sustainable development and clean manufacturing; 8) ecological design and the principles of the life cycle; 9) the circular economy.

RECURRING COMPETENCES

B.2.9 Recurring competences of Chartered Energy Efficiency Specialist, Level 8	EstQF Level 8
Performance indicators: 1. Understands the nature and importance of the social and economic role played by energy efficiency specialists, takes into account social factors and follows the requirements of professional ethics in their work (see Annex 1 – Energy Auditor's and Energy Efficiency Specialist's Professional Ethics and Code of Conduct). 2. Is informed about and takes into account innovations, knowledge and best practice in their sector and specialty and the requirements of legal acts. 3. Comprehends and implements the principles of resource and energy efficiency and those of sustainable development in construction environments, using appropriate scientific, technical or technological solutions to perform their tasks. 4. Comprehends and implements methods used in baseline studies and related fields needed to fulfil the terms of reference to produce three-dimensional solutions and base conditions. Possesses and extends their theoretical approach, enabling them to adopt new technologies and systems. Offers new methods and solutions. 5. Is familiar with the specific nature of other parts of the construction project and their effect on energy efficiency. 6. Analyses their experience and skills and assesses their need for self-improvement. Participates in further training and takes advantage of opportunities to further themselves professionally. 7. Contributes to the development of the sector through a variety of activities, e.g. participating in law-making, supervising students, writing professional articles and conducting training activities. Promotes through their activities wider acknowledgment and appreciation of energy efficiency. 8. Takes part in teamwork or leads their own team(s). Respects their colleagues and is familiar with work culture. Acts in accordance with agreements, behaves consistently and takes responsibility for their own decisions and actions and, where necessary, the decisions and actions of their team. Creates networks required for cooperation. 9. Plans their own work and, where necessary, the work of their team and acts in a goal-oriented manner with the objective of offering a high-quality service. Defines priorities and divides up resources (such as time and people) accordingly. 10. Uses appropriate communication techniques when communicating with business partners, team members and customers. Determines and analyses the interests and needs of the individual parties involved and finds sensible and balanced solutions to any underlying issues that may arise. Mediates specialised technical information to all parties clearly and comprehensively. Is able to handle contradictory and non-standard situations. 11. Is guided in their work by occupational, device, installation and other safety guidelines. 12. Utilises in their work all of the energy efficiency engineering knowledge they have, including the nature of thermal dynamic and heat transfer processes, the basics of construction physics, the basic solutions and calculation principles of fencing structures, the nature of indoor climates and the principles of guaranteeing them, the operating principles of building technological systems (heating, ventilation, water, sewerage and cooling systems), the operating principles of the electricity and automatics systems of buildings, the principles of local and renewable energy production, the basics of calculating the energy efficiency of a building and its economic assessment and basic knowledge of the renovating of structures. 13. Uses in their work appropriate and modern information and communications technologies (hereafter referred to as ICT) and opportunities and software solutions specific to their occupation. 14. Uses a computer for information processing, communication, safety, content creation and problem-solving at the Independent user level (see Annex 2 – Scale of self-assessment in digital competence). 15. Uses correct Estonian at the B2 level in their work and when compiling documents and at least one foreign language at the B1 level. (See Annex 3 – Language skills level descriptions)	

Part C
GENERAL INFORMATION AND ANNEXES

C.1 Information concerning compilation and certification of occupational qualification standard and reference to classification of occupations	
1. ID of occupational qualification standard in register of occupational qualifications	22-22062018-1.3/4k
2. Occupational qualification standard compiled by:	Teet Tark, Hevac OÜ Peter Haab, Sweco Projekt AS Tiit Pukk, Nivoo Projekt Tõnu Jõesaar, Termopilt Tartu OÜ Paul Einaste, AS Esvika Elekter Alo Mikola, Tallinna Tehnikaülikool Margus Tali, Majandus- ja Kommunikatsiooniministeerium Mikk Maivel, Riigi Kinnisvara AS
3. Occupational qualification standard approved by:	Architecture, Geomatics, Construction and Real Estate
4. No. of decision of Sectoral Council	14
5. Date of decision of Sectoral Council	22.06.2018
6. Occupational qualification standard valid until	19.06.2023
7. Occupational qualification standard version no.	4
8. Reference to International Standard Classification of Occupations (ISCO 08)	2151 Electrical Engineers
9. Reference to European Qualifications Framework (EQF)	8
C.2 Occupational title in foreign language	
English:	Chartered Energy Efficiency Specialist, EstQF Level 8
C.3 Annexes	
Lisa 1 Energy Auditor’s and Energy Efficiency Specialist’s Professional Ethics and Code of Conduct	
Lisa 2 Scale of self-assessment in digital competence	
Lisa 3 Language skills level descriptions	