OCCUPATIONAL QUALIFICATION STANDARD

Refrigeration Site Manager, EstQF Level 5

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.

The occupational qualification standard of Refrigeration Site Manager, Level 5 forms the basis for the preparation of training programmes and occupational training curricula that meet the requirements of the labour market, as well as the basis of competence assessment.

Occupational title	Level of Estonian Qualifications Framework (EstQF)
Refrigeration Site Manager, EstQF Level 5	5

Part A
DESCRIPTION OF WORK

A.1 Description of work
Refrigeration Site Manager, Level 5 installs and maintains systems containing refrigerants in order to create an artificial climate in trade, transport, housing, industry, etc. The work of a refrigeration site manager includes locksmith, electrical and automation work. A refrigeration site manager installs and maintains systems containing complex refrigerants, manages the performance of installation projects, activates and adjusts a variety of refrigeration equipment and finds the causes of errors. They check for system leaks in both open and unopened cold circuits and collect refrigerant, regardless of the amount. They supervise and organise the activities of employees, being responsible for the work of others. The profession also includes the following occupational qualification standards: Refrigeration Mechanic, Level 3; and Refrigeration Mechanic, Level 4.
A.2 Tasks
A.2.1 Installation of refrigeration equipment and systems 1. Installing utility lines. 2. Connecting and installing refrigerant pipes. 3. Installing factory-assembled equipment. 4. Installing equipment made from refrigeration components. A.2.2 Maintenance and operation of refrigeration equipment and systems 1. Regulating equipment. 2. Testing equipment. 3. Servicing equipment. 4. Detecting and repairing faults in equipment. 5. Activating, regulating and adjusting equipment. A.2.3 Leakage testing of cooling systems by opening cooling circuit 1. Testing cooling circuit. 2. Conducting procedures after testing. A.2.4 Leakage testing of cooling systems without opening cooling circuit 1. Testing cooling circuit. 2. Conducting procedures after testing. A.2.5 Refrigerant collection

1. Collecting refrigerant from cooling system. 2. Conducting procedures after collection. A.2.6. Management. 1. Managing the performance of installation projects. 2. Mentoring those being supervised. 3. Organising work and performing quality control of work.
A.3 Work environment and specific nature of work
Work takes place both indoors and outdoors. Work can also take place at heights. Noise, vibration, dust and temperature fluctuations may occur. Exposure to live equipment and substances that may cause allergic reactions is possible, requiring strict compliance with occupational safety requirements, the use of personal protective equipment and the wearing of special clothing, where necessary. Safety requirements in the use of devices and equipment (including tools) must be observed.
A.4 Tools
The main tools are electrical or mechanical manual and specialty tools and measuring devices (testers, ammeters, etc.).
A.5 Personal qualities required for work: abilities and characteristics
The work requires physical endurance, precise and coordinated movements, normal vision and hearing and a willingness to work at heights. Successful work is supported by continuous self-development, consistency, emotional stability and the ability to adapt, analyse, work in a team and self-organise.
A.6 Professional preparation
The professional skills of a Level 5 refrigeration mechanic are generally acquired at a vocational education institution. A prerequisite for studying is work experience and the qualification of Refrigeration Mechanic, Level 4.
A.7 Most common occupational titles
Refrigeration and air conditioning mechanic, ship’s refrigeration mechanic, etc.
A.8 Regulations governing profession
According to European Commission Regulation (EU) No 2015/2067, an occupational qualification certificate corresponding to the category I activities specified in the regulation is required for positions related to the installation, maintenance, service, leakage control and gas collection of equipment containing greenhouse gases. Compliance is confirmed with a certificate from the register of occupational qualifications. In addition, all persons applying for the qualification set out in the various occupational qualification standards must have completed environmental training that includes Estonian and European and legislation governing the environmental impact of substances and the handling of substances (F-gases and ODSs). Electricity and operations work is usually done under the guidance of an expert in the field of electrical engineering. If the refrigeration mechanic has a valid A, B, B1 or C certificate of competency for electricity, they may do the relevant work in electrical installations upon the decision of their employer according to the rights and competencies afforded by the certificate. It is mandatory to undergo and pass a medical check-up, complete occupational safety training and training on work involving an open flame and possess the corresponding certificates.

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
Competences B.2.1-B.2.7 must be certified when applying for the qualification of Refrigeration Site Manager, Level 5.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Installation of refrigeration equipment and systems	EstQF Level 5
Performance indicators: 1. installs, connects and disconnects pipes on the basis of the installation documentation provided; 2. has the right to compile drawings and working diagrams of the assembly and to propose changes to the design of the technical system; 3. uses the main pipe connection methods (except for making permanent joints for steel pipes); 4. prepares the welding workstation; 5. connects the pipes by soldering or screw coupling, ensuring that the refrigerant is leak-proof; 6. attaches the pipes to the correct locations following the installation instructions; 7. reads and understands the technical documentation of the device and acts accordingly; 8. prepares for the connecting of equipment to utility lines; 9. installs the device in its location in accordance with the installation instructions and the terms of reference; 10. connects the device to utility lines. 11. fills and activates equipment containing refrigerant, without any limit on the amount of refrigerant; 12. prepares installation diagrams; 13. installs components according to technical documentation.	
Knowledge: 1) types of pipes, their areas of use and connection methods; 2) basics of welding technology; 3) fire safety requirements; 4) types, measurements and areas of use of cables; 5) basic principles of the operation of refrigeration components; 6) main refrigeration components and their connection methods; 7) special types of equipment and their areas of use; 8) materials used in the profession, compatibility of materials; 9) basics of electrical engineering, automation and electronics; 10) use of controller-based automation.	
Assessment method(s): Exam, test job, interview and job evaluation forms.	
B.2.2 Maintenance and operation of refrigeration equipment and systems	**EstQF Level 5**
Performance indicators: 1. regulates protection, regulation and control automation for the operation of a single integrated refrigeration system; 2. deals with control and monitoring systems to ensure the optimal operation of the refrigeration system; 3. checks that the newly installed system is leak-proof by compressing the inert gas; 4. drains, pressurises, inspects and repairs equipment and systems and performs follow-up checks, where necessary (if no leak is detected by other methods); 5. reads the maintenance and operating instructions; 6. cleans the device according to the factory instructions; 7. checks the setting parameters, amends the settings where necessary and checks the operation of the equipment; 8. determines equipment defects using measuring instruments; 9. using mechanical skills, repairs or replaces components and parts according to factory instructions and analogues; 10. supervises repair work on the device; 11. vacuums the device to remove air and moisture; 12. tests and configures the device; 13. adjusts the components of the refrigeration system to ensure its correct operation; 14. monitors the operation of the device during certain periods/intervals; 15. tests the pressure of the device to check its holding and strength; 16. documents the results of the work (recording the details in the maintenance book). 17. performs a general inspection of the system.	
Knowledge: 1) potential leaks in a refrigeration system; 2) types and uses of cleaning products;	

3) principles of inspection and maintenance; 4) multi-stage refrigeration systems. 5) construction and areas of use of system components; 6) mechanics.	
Assessment method(s): Exam, test job, interview and job evaluation forms.	
B.2.3 Leakage testing of cooling systems by opening cooling circuit	**EstQF Level 4**
Performance indicators: 1. visually and manually checks that the newly installed system is leak-proof by compressing the inert gas in accordance with Commission Regulation (EC) No 1516/2007; 2. checks for leaks in the refrigeration system using direct and indirect methods, in accordance with Regulation (EC) No 1516/2007 and the system manual; performs a follow-up inspection of the system after corrective actions; 3. registers all problems that have arisen and data from maintenance and repair work in the manner prescribed; 4. when a leak is detected, repairs and adjusts the refrigeration system and performs a follow-up inspection.	
Knowledge: 1) potential leaks in a refrigeration system; 2) leakage control methods.	
Assessment method(s): Exam and test job	
B.2.4 Leakage testing of cooling systems without opening cooling circuit	**EstQF Level 3**
Performance indicators: 1. visually and manually inspects a refrigeration system for leaks in accordance with Commission Regulation (EC) No 1516/2007; 2. checks that the system is leak-proof using direct and indirect methods without opening the cooling circuit, in compliance with Regulation (EC) No 1516/2007 and the system manual; 3. uses an appropriate electronic leak detection device; 4. records the results of the leak inspection in the prescribed manner; 5. reports any detected faults and follows emergency instructions.	
Knowledge: 1) potential leaks in a refrigeration system; 2) leakage control methods.	
Assessment method(s): Exam and test job	
B.2.5 Refrigerant collection	**EstQF Level 3**
Performance indicators: 1. empties containers and fills containers with refrigerant in both liquid and gaseous states; 2. collects refrigerants from a refrigeration circuit or containers using collection equipment and ensuring minimum losses; 3. removes refrigerant oil from the system; 4. selects the weight type suitable for the amount of refrigerant and weighs the collected refrigerant; 5. marks and stores containers in the prescribed manner.	
Knowledge: 1) operating principles and use of the collection device; 2) the procedure for handling refrigerant (including contaminated refrigerants and oils); 3) specific physical and chemical properties of the most common refrigerants (toxicity, fire hazard, density, vapour pressure, etc.); 4) health and fire safety requirements related to the handling of refrigerants.	
Assessment method(s): Exam and test job	
B.2.6 Management	**EstQF Level 5**
Performance indicators:	

1. organises the activities of refrigeration mechanics: divides up work tasks and makes sure that employees are safe; 2. supervises and advises colleagues and directs employees to use quality assurance techniques; 3. participates in the economic activities of the company, including the identification of risks and the development of preventive measures; 4. evaluates the unit's performance and the performance of employees/those being supervised; 5. evaluates the quality of the work undertaken by subcontractors; 6. inspects the refrigeration system.
Knowledge: 1) fundamentals of business and economics; 2) best practice in customer service; 3) principles of project management.
Assessment method(s): Exam, test job, interview and job evaluation forms.

RECURRING COMPETENCES

B.2.7 Recurring competences of Refrigeration Site Manager, Level 5	**EstQF Level 5**
Performance indicators: 1. reads and understands technical documentation and acts accordingly; 2. measures and fixes parameters with the help of measuring devices; 3. handles the basic tools and instruments of the profession; 4. follows all occupational health and safety, environmental protection and electrical safety requirements in every stage of their work; 5. focuses on clients and works in a way that is financially efficient, with their work result meeting all quality requirements; 6. advises clients, identifies the client’s needs and resolves service-related problems according to the specific nature of the company; 7. navigates legislation in the field of refrigerant and pressure equipment; 8. is proficient in the use of the most common word-processing and spreadsheet programmes and the documentation programmes based thereon.	
Knowledge: 1) occupational terminology, symbols used in electrical drawings, basic and derived electrical units of the SI system and conversion and reference calculations; 2) legislation related to the profession; 3) the principles of thermodynamics; 4) rules of customer service; 5) basics of providing first aid; 6) safety requirements in the use of tools and resources; 7) waste management; 8) fundamentals of mathematics; 9) basics of electrical engineering (applications of the Ohm and Kirchhoff laws in direct and alternating current circuits, principles and uses of electrical machines and equipment); 10) basics of automation (sensor classification); 11) properties and use of electrical materials (conductors, insulators and semiconductor materials); 12) electronic components and circuits. 13) safety requirements in the use of devices and equipment (including tools); 14) classification and use of manual and specialist tools and mechanisms; 15) the environmental impact of refrigerants and related environmental legislation; 16) appropriate technologies to replace or reduce the use of fluorinated greenhouse gases and their safe management.	
Assessment method(s): Recurring competences are evaluated as part of the assessment of the other competences listed in the occupational qualification standard.	

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	07-17112016-3.3/7k
2. Occupational qualification standard compiled by:	Virge Raaga, Eesti Külmaliit Riho Pilv, Cooltec OÜ Imre Soorand, Eesti Külmaliit Roland Jung, TRV Kliima AS Viljo Kaul, Termex OÜ Kati-Liis Kensap, Keskkonnaministeerium Stanislav Štõkov, Eesti Keskkonnauuringute Keskus
3. Occupational qualification standard approved by:	Energy, Mining and Chemical Industry
4. No. of decision of Sectoral Council	3
5. Date of decision of Sectoral Council	17.11.2016
6. Occupational qualification standard valid until	09.11.2021
7. Occupational qualification standard version no.	7
8. Reference to International Standard Classification of Occupations (ISCO 08)	7127 Air Conditioning and Refrigeration Mechanics
9. Reference to European Qualifications Framework (EQF)	5
C.2 Occupational title in foreign language	
English:	Refrigeration Site Manager, EstQF Level 5
C.3 Annexes	
Lisa 1 Külmatehniku kutsete tööosade võrdlustabel	