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Application: **Designer in Solar photovoltaic energy - 'Equivalencies' Assessment Tool**

Person:

Response for: **LT - National Industry competence framework / NVQ Structure**

*Relevant* *Capable?*

- ☐ Renewable Energy Sector ☐
  - ☐ Installer of solar energy equipment ☐
    - ☐ **Work safety** ☐
      - ☐ » Appliance of knowledge and skills related to work safety referring to the national and international standards and requirements ☐

| | | |
|---|---|---|
| *Skills / Performance* | ☐ | To apply the knowledge of the national legal acts and standards of work safety in in the installation of the solar energy systems and equipment. (2) |
| | ☐ | To apply the knowledge of the European norms and certification applied for the solar energy systems and equipment (2) |
| | ☐ | Environmental requirements for solar energy installations. (2) |
| *Knowledge / Cognitive* | ☐ | Lithuanian legal acts and standards of work safety in the installation of the solar energy systems and equipment. (4) |
| | ☐ | European norms and certification applied for the solar energy systems and equipment (4) |
| *Affective / Behaviour* | ☐ | Rigorousness in following the work safety requirements and norms prescribed by the national legal acts and international standards. (1) |
| | ☐ | High sense of responsibility for the safety of yourself and colleagues. (1) |
| | ☐ | Responsible attitude to the environment and it's protection (1) |

      - ☐ » Identification of the risks of exploitation of water supply, electric supply and other systems related to the installation of solar energy (photovoltaic and thermal) equipment ☐

| | | |
|---|---|---|
| *Skills / Performance* | ☐ | To use the diagnostic and measuring devices and equipment for the assessment of the risks of exploitation. (1) |
| | ☐ | To prepare the reports on the assessment of the risks of exploitation of water supply, electric supply and other systems related to the installation of solar energy (photovoltaic and thermal) equipment. (7) |
| *Knowledge / Cognitive* | ☐ | General knowledge about the measuring equipment and devices. (4) |
| | ☐ | Usage of the solar energy equipment in the buildings. (4) |
| | ☐ | Possible risks of exploitation of water supply, electric supply and other systems related to the installation of solar energy (photovoltaic and thermal) equipment. (4) |
| *Affective / Behaviour* | ☐ | Attentiveness and thoroughness in executing measuring and diagnostic. (1) |
| | ☐ | Analytical thinking (2) |

    - ☐ **Choosing the concept and composition of the solar energy systems** ☐
      - ☐ » Definition of the solar energy systems and their components typical for active and passive systems ☐

| | | |
|---|---|---|
| *Skills / Performance* | ☐ | To describe the components of the active solar energy systems and their functions. (3) |
| | ☐ | To describe the components of the passive solar energy systems and their functions. (3) |
| | ☐ | To prepare technical specifications of active and passive solar energy systems. (7) |
| | ☐ | To calculate the costs and value of the installation of the solar energy systems and equipment. (5) |

*Knowledge / Cognitive*
- Features of the solar energy systems, their dimensions, selection of the systems and their components. (4)
- Types of components of solar energy systems and equipment. (6)
- Costs and economic benefits of the solar energy systems and equipment. (3)
- Subsidies and state financial support for the purchase and installation of solar energy systems. (6)

*Affective / Behaviour*
- Analytic thinking (1)
- Attention to details, comprehensiveness (2)

» Identification of location of the components of the solar energy systems

*Skills / Performance*
- To prepare the scheme of solar energy systems with the indication of location of components (1)
- Schemes of solar energy systems (3)

*Affective / Behaviour*
- Analytic thinking (1)
- Attention to details, comprehensiveness (1)

» Designing of the scheme of the positioning and configuration of the solar energy systems and equipment

*Skills / Performance*
- To draw the scheme of the positioning and configuration of the solar energy systems and equipment. (1)

*Knowledge / Cognitive*
- Configurations of solar energy systems (4)

*Affective / Behaviour*
- Analytic thinking (1)
- Attention to details, comprehensiveness (1)

**Identification of the site of installation of solar energy systems and installing of the necessary balance equipment**

» Selecting the suitable site for the installation of the solar energy systems and equipment in the building

*Skills / Performance*
- To identify the direction of the positioning and inclination of the water boiler that uses the sun photovoltaic and thermic energy. (1)
- To evaluate the suitability of the equipment for the building and climate conditions. (1)

*Knowledge / Cognitive*
- General knowledge on the heating systems in the buildings. (4)
- Knowledge on the local boilers and related equipment. (4)
- Knowledge on the hot water supply systems in the buildings. (4)

*Affective / Behaviour*
- Analytic thinking (1)
- Ability to make logical conclusions referring to the input information (2)
- Systemic thinking (1)

» Defining the installation types and methods

*Skills / Performance*
- He/she installs the solar energy balance equipment by applying installation types and methods suitable for the given types of roofing materials. (9)

*Knowledge / Cognitive*
- Assembling technologies of solar energy systems. (4)

*Affective / Behaviour*
- Ability to make logical conclusions referring to the input information. (2)
- Ability to work in the height (1)

**Designing of the solar energy systems and equipment**

» Identification of the circuits and flows of energy

*Skills / Performance*
- To identify the need of thermal energy in the building. (1)

- To design the circuits and flows of energy (1)
- Select types of conductors (1)
- Set parameters of each power circuit (1)
- Identify the size, parameters and location of the all related equipment and sub-systems and to choose the point of connection (1)

*Knowledge / Cognitive*

- Knowledge of the consumption of electric energy and the electric equipment in the buildings (4)
- Knowledge about the consumption of hot and cold water and the equipment of cold and hot water in the buildings. (4)
- Identification of the need of thermal energy in the building. (1)

*Affective / Behaviour*

- Analytical skills (1)
- Ability to make logical conclusions referring to the input information (2)
- Systemic thinking (1)

» Designing of the process schemes and drawings of the solar energy systems and equipment

*Skills / Performance*

- To work with IT software for technical design (CAD) (5)

*Knowledge / Cognitive*

- General knowledge on the technical designing (4)

*Affective / Behaviour*

- Ability to make logical conclusions referring to the input information (2)
- Analytic thinking (2)
- Thoroughness (1)