



**Education for zero
energy Buildings using
Building Information
Modelling**

Grant Agreement: 600946-EPP-1-2018-1-IE-EPPKA2-KA

Learning Unit 10



Co-funded by the
Erasmus+ Programme
of the European Union



ENERGY SIMULATION WITH BIM TOOLS

EQF	7	Target	Facility manager Project manager Consultant Designer Specialist in green building
Description			

The following learning unit focuses on the analysis and interpretation of a Building Energy Model (BEM). In order to guarantee economic viability and to provide solutions, advanced knowledge in BEM analysis is indispensable in the first steps of the construction design process. Aspects and parameters involved in a nZEB qualification will be studied and analysed to ensure nZEB values before construction. Preventing and anticipating future problems will speed up your work and all the agents involved.

Objectives

- Analyse a Building Energy Model (BEM).
- Make economic feasibility studies and apply solutions.
- Verify and evaluate the parameters needed to accomplish a nZEB building.

Generic competence

- Ability to apply construction procedures, methodology and planning techniques.
- Proactive, anticipatory and change-oriented behaviour.
- Cognitive and practical skills to perform tasks related to the process of designing energy saving buildings.
- Advanced skills and good practices in the realization of nZEB designs.
- Advanced skills evaluating the influence of each parameter on the energy demand of the building.
- Knowledge of the design, analysis and construction of building works.
- Spatial vision skills and knowledge of graphic representation techniques through computer-aided design applications.



Specific competence

- Utilise the technology to drive sustainability reporting and testing.
- Understand effects software has to workflows and what mapping needs to occur to ensure project coordination and collaboration.
- Identify the different existing tools for energy simulation.
- Quality checking procedures for design standards and compliance within BIM.
- Utilise the model and technologies to assist with value engineering testing and validation procedures.
- Utilise the technology to drive systems analysis for performance-based solutions.
- Understand the interaction between energy performance and IEQ.
- Perform energy simulations and feasibility studies.
- Assess systems related to building function and architecture.
- Design and engineer energy reduction systems to reach nZEB.
- Design of an architectural sustainable building (including sustainable and flexible floorplan).
- Evaluate the integrated design.

Recommended learning methodology

Methodology

The recommended methodology for the course would be Gamification, is based on the application of elements of games (non-playful context), in order to influence the behaviour of people from the stimulation of their motivation.

In addition, another recommended methodology would be Design Thinking. A methodology that considers innovation as a holistic approach, where students through technology and their own interests or training needs converge through an action plan designed by themselves. It is based on finding the most original solution to a real problem given by the teacher, and for which the students will have to analyse the situation, establish hypotheses, and foresee possible impacts of the action.



Method

The recommended methods will be based on individual work and the adaptation to Self-learning.

Recommended assessment methodology

The recommended assessment methodology would be the resolution of practical cases and the realization of tests destined to evaluate the knowledge of regulations and the necessary documentation for building nZEB.
