



LATVIAN NATIONAL TRAINING

1ST MODULE

Title: Dynamic energy simulation

Duration: 4 hours

Type: class room lectures

Short description of the module (aims, content etc.):

Precise building energy simulation allows correct evaluation of energy savings and calculation of payback time. Currently widely used steady state energy calculation tools in Latvia don't consider air-tightness, occupant schedule, wind specifics, massivity of building constructions, Floating COP values of heating/cooling equipment etc. For large office buildings and buildings with large windows area and mechanical cooling systems the dynamic energy simulation tools are the most appropriate approach to make precise energy consumption estimation especially for summer time.

This module is focused on building energy analysis using such dynamic energy simulation software as IDA-ICE, RIUSKA etc. In scope of this module the participants will learn on 3D building model import using IFC format, creation of building 3D model, definition of materials properties and climatic conditions. Each participant will receive IDA-ICE three-months educational license.

During the lectures the comparison of energy calculation using steady tool and dynamic energy calculation for MORE-CONENCT case building will be analyzed.

After completing this module individuals will be able to create own building model, to define boundary conditions and to make simplified building dynamic energy simulation.



2ND MODULE

Title: Building air tightness

Duration: 4 hours

Type: self-learning 2h and class room lectures – 2 hours

Short description of the module (aims, content etc.):

Air-tightness became an actual issues since mid90ies. All new modern buildings as well as renovated buildings should fulfill strict requirements for building envelope air-tightness level. MORE-CONNECT retrofitting approach deals with prefabricated panels. The air-tightness of panels' joints and connection between existing wall and panels plays significant role in overall building energy efficiency. Thus, correct blowerdoor test should be performed before and after building retrofitting in order to define weak points and to make all necessary improvements during the modular retrofitting process.

In scope of this module the theoretical and practical aspects of building's air tightness will be presented. Participants will learn how to identify critical air leakage points and to perform real measurements using simulator trainer for building. During the learning module attendees will get information on building preparation and blowerdoor unit set procedures to perform high quality airtightness test.

After completing this module individuals will be able to set up blowerdoor units un to perform real airtightness measurements using manufacturer automatic setting.



3RD MODULE

Title: 3D scanning and BIM process

Duration: 4 hours

Type: self-learning 2h and class room lectures – 2 hours

Short description of the module (aims, content etc.):

One of the MORE – CONNECT project objectives is to develop a one-stop-shop concept for the end-users. In this 'one-stop-shop' proposition the end-user will deal with only one party, responsible for the total renovation, starting from an inventory of the existing situation, inventory of specific end-user demands, translation into modular renovation kits, mounting and installing, financing and aftercare. This can be done only by use of modern technologies and BIM process.

This module is focused on description of 3D practical application for building retrofitting process. In scope of this module tips and tricks for quality 3D scanning of existing multi apartment buildings will be presented and discussed. Two 3D technology: "classic" and "3D from drone" will be presented and compared.

The "point cloud to BIM" process will be explained and analyzed through the different software. In addition the energy simulation and prefabricated modules design on the created BIM model will be explained.

After completing this module individuals will be able to choose proper scanning technology and software for data processing. Which allows them to organize and manage retrofitting process based on 3D scanning and automated production process.



4TH MODULE

Title: Ventilation and modular HVAC systems

Duration: 4 hours

Type: class room lectures – 4 hours

Short description of the module (aims, content etc.):

The primary objective of this learning module is to give information and present study results on how to evaluate possible heating, ventilation and air-conditioning solutions for nZEB multi apartment buildings.

In scope of this module technology inventory and review of all necessary components that are necessary to climatize the buildings will be evaluated. A specific focus will be paid to modular solutions. The design specifics of embedded ventilation ducts and modular energy unit will also analyzed.

The ventilation norms and guidelines for MORE-CONENCT project countries will be compared and discussed. The module will summarize a brief overview of different ventilation systems advantages and disadvantages. It will provide comparison of installation and running costs for various ventilation solution for Latvian case study.

After completing this module individuals will be able to choose ventilation strategy considering building type, technical conditions and user behavior. Also knowledge on duct sizing and selection of ventilation units will be obtained.