Goal of the project:
The main goal of the NEZEBUILD project relates to the design and detailing of a technical solution for NZEBs, and to the validation of such designs through extensive monitoring. Design, detailing and execution do not allude solely to construction elements but also to installation systems.

Short description of the project:
In Dumbravita, (near Timisoara) Timis county, a residential building has already been constructed as a double house. Under these circumstances, constant monitoring of hygro-thermal parameters is being carried out. Based on the data provided by the monitoring system, a detailed evaluation of energy performance shall be carried out. In respect with the monitored elements, the equipment can be divided into 10 major groups. Naturally, it can be stated that all the important hygro-thermal and climate parameters will be monitored.

Project implemented by:
Project partnership comprising "Politehnica" University of Timisoara - CCI Department and Arhitim.

Implementation period: 2012-2015

Main activities:
Design and detailing of NZEB system, procurement of materials, equipment and energy performance certification for NZEB system / research report / Scientific papers. Evaluation of energy performances for the PH using recorded monitoring data, execution of construction works and installation of HVAC system, design of the monitoring system, procurement and set-up of equipment and accessories for NZEB and initializing of the monitoring activities. PH vs. NZEB comparative study on energy efficiency, Optimization of global cost for NZEB and evaluations regarding Life-cycle assessment of NZEB. Life-cycle assessment of NZEB, dissemination of recommendations and general rules for new energy efficient residential houses in temperate climate.

Results:
Expected results of the project as well as end products go hand-in-hand with the appointed objectives of the project. Thus, the main end products are the deliverables, in the form of detailed guidelines, plans and recommendations that shall be drawn up.

Research report including project design of NZEB and evaluation and presenting sustainable solutions for architectural details.

Documents which attest the build-up the finishing and installation system and Energy certification of the Passive House building using real energy consumption.

Recording the comfort parameters of the NZEB and report charts of monitored parameters.

"The energy of the mind is the essence of life."

Aristotle

Monthly Monitoring Data Sheets related to the envelope and to indoor and outdoor conditions and comparative study related to the efficiency of NZEB versus PH based on monthly evaluation of consumed energy, as well as comparative study on real behaviour of efficient buildings.

Global cost analyses report and Life Cycle Assessment of the NZEB system and elaborating a useful guide for designers and researchers related to the NZEB.

The main results consist of exhaustive knowledge and fathom of NZEB systems. However, during implementation of the project is most probable that the research team will achieve important new findings and will generate patents for some subassemblies.

Fields of interest:
Energy efficiency;
Nearly Zero Energy Building;
Passive House;
Advancement of energy-efficiency of buildings with all aspects of environmentally, economically and socially sustainable construction sector.

Financed through/by:
The project is financed by Romanian Ministry of Education through the UEFISCDI entity, in the framework of PN – II – PT – PCCA – research program.

Research team:
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Research Centre for Retrofitting of Constructions

Applicability and transferability of the results:
The topic of the project and the issues that it addresses are of great importance not only for Romania and Europe, but for all of the developed countries in the world which can afford to apply measures for enhancement of energy efficiency.

The most important target groups of individuals, to whom the results and end products of the project will be most interesting, is represented by the scientists and specialists working on energyconsumption projects. Another targeted group of the project are stakeholders who can take real actions for sustainable energy consumption by adjusting the way they approach buildings, both new and existing ones.

All issued documents in the shape of deliverables will assure the transfer of knowledge intra- and inter-disciplinary, generating further know-how for scientific community and for practicing specialists (civil and environmental engineers, electrical and energy engineers, architects, technicians). Furthermore, the guidelines would enable and encourage architects and planners to properly consider the optimal combination of improvements in energy efficiency and use of energy from renewable sources when planning, designing, building and renovating industrial or residential areas.

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