Fit-to-NZEB: Innovative training schemes for retrofitting to nZEB-levels
Fit-to-NZEB: Why?

Crucial argument

Lower energy consumption leads to the decrease of energy poverty, energy sources dependency and increase of energy security.

Renovation of existing buildings
- The most significant ENERGY SAVING POTENTIAL

European Commission Recommendation

"The Member States should accelerate progress in the development of support policies addressing the refurbishment of existing building stocks towards NZEB levels."
Fit-to-NZEB: Logic of the action

- H2020 project (June 2017 –June 2019)
- Tackling the most pressing issue around
- Covering the full scale of the academic & VET system (EQF levels 2-7)
- Complementing and providing sustainability of T2NZEB & BUILD UP Skills
- Local capacity for trainings on deep energy retrofit
- Broadening of the geographical scope and large-scale networking

© EnEffect

www.fit-to-nzеб.com
© Horia Petran | INCD URBAN-INCERC
Fit-to-NZEB: Team & Geographic scope

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 754059

www.fit-to-nzec.com

© Horia Petran | INCD URBAN-INCERC
BKH Romania: General outline

- Network organization centred on the former Centre for Energy Performance of Buildings within NIRD URBAN-INCERC
- Support provided by partners BDG, FPIP (regional centre Brașov) and other stakeholders / industry supporters
- Experts & trainers: in-house and external
- Course offer: in-house and in partnership

On-site workers
High level specialists, designers
Decision makers

Technology demonstration
Theory. & Practical Training
Tech. consultancy, R&D
Technology integration - nZEB
Integration of nZEB solutions

IR analysis (in situ)
(Numerical) Simulation

Mock-ups: Insulation, Airtightness, Thermal Bridges

In situ

PH Windows

Various structures & ETICS

Mechanical Ventilation with Heat Recovery

Airtightness tests

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 754059

www.fit-to-nzeb.com

© Horia Petran | INCD URBAN-INCERC
BKH Romania: București

Airtight room

Airtightness exercises

Courses for Tradespersons and Designers / Consultants (Passive House certified) → The sure way towards nZEB

www.fit-to-nzeb.com

© Horia Petran | INCD URBAN-INCERC
BKH Romania: Brașov

Solar thermal & PV

Airtightness exercises

Mock-ups: Insulation, Airtightness, Thermal Bridges

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 754059

www.fit-to-nzeb.com

© Horia Petran | INCER
Aim

To develop a collaboration framework to implement technological concepts and specific projects for promoting nearly zero energy buildings in Romania

Key objective

Construction market – R&D (– public administration):

- Initiation and performance of joined activities to define and implement of research and development projects for nZEB
- Creating the market conditions to ensure fulfilment of Romania's commitments for sustainable development and implementation of strategies for energy efficiency in the built environment

→ January 2016 ...
Fit-to-NZEB: Challenges

- 2020 and 2030 objectives represent a major challenge
- Inclusion of training on intelligent EE and RES solutions in building renovation
- Accessibility and quality of educational programmes
- Increase of the number of construction specialists at all levels

READINESS OF CONSTRUCTION SECTOR TO DELIVER HIGH LEVEL ENERGY RENOVATIONS AND nZEB

© Horia Petran | INCD URBAN-INCERC
Fit-to-NZEB: Goals

Elaborate a set of required technological competences related to the EE and RE solutions in building renovation.

Develop new training programmes at all levels of the vocational education. Develop training system employing the newly elaborated technica competences.

Review the national educational plans for the relevant professions. Introduce the necessary changes.

Establish capacity for professional training of trainers. Train and certify a sufficient number of trainers.

Support and monitor the first courses on the new programmes at all levels.

Fit-to-nZEB project is designed to respond to the defined needs

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 754059.

www.fit-to-nzеб.com

© Horia Petran | INCD URBAN-INCERC
Fit-to-NZEB: Expected impacts

Increased interest in training on energy efficiency in buildings and particularly on building renovation

Increased number of qualified workers and specialists

Raised quality of renovated buildings

Acceleration of energy renovation of existing building stock

© Horia Petran | INCER
Fit-to-NZEB: Learning Outcomes

<table>
<thead>
<tr>
<th>Competence</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge (factual and theoretical)</td>
<td>EQF 3</td>
</tr>
<tr>
<td>Skills (cognitive, practical and social)</td>
<td>EQF 4-5</td>
</tr>
<tr>
<td>Autonomy and Responsibility</td>
<td>EQF 6-7</td>
</tr>
<tr>
<td>General</td>
<td>EQF 3</td>
</tr>
<tr>
<td>Cognitive &amp; practical</td>
<td>EQF 3</td>
</tr>
<tr>
<td>Completion of tasks</td>
<td>EQF 3</td>
</tr>
<tr>
<td>Comprehensive, specialised</td>
<td>EQF 4-5</td>
</tr>
<tr>
<td>Comprehensive range - cognitive and practical</td>
<td>EQF 4-5</td>
</tr>
<tr>
<td>Management and supervision review, eval.</td>
<td>EQF 4-5</td>
</tr>
<tr>
<td>Advanced and highly specialised</td>
<td>EQF 6-7</td>
</tr>
<tr>
<td>Advanced cognitive and practical</td>
<td>EQF 6-7</td>
</tr>
<tr>
<td>Decision-making, manage complex activities / projects</td>
<td>EQF 6-7</td>
</tr>
</tbody>
</table>

© Passive House Academy

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 754059

www.fit-to-nzeg.com
© Horia Petran | INCD URBAN-INCERC
F2NZEB: Learning Outcomes

Planning and design instruments
- Project management
- Quality assurance

Step-by-step retrofit plans

Ecology and Sustainability

Conservation of historic building fabric

Achieving measurable results

Building services
- MVHR
- Heating and Cooling
- DHW
- Control & Automation
- Lighting

RES
- Energy storage

Optimal solar gains
- Passive house principles

Basics of building physics

Building Envelope
- Thermal insulation
- Minimizing thermal bridges
- Highly efficient windows

Airtightness, vapour and moisture movement, windtightness

Comfort, health and safety (incl. IAQ)
- Summer comfort / passive cooling strategies
- Fire safety

NZEB Neighborhoods
- Distributed energy production & EMS
- Energy cooperatives

Energy retrofit nZEB

ENGAGING STAKEHOLDERS

Cost effectiveness

Energy efficiency and building renovation policies

www.fit-to-nzeb.com
© Horia Petran | INCD URBAN-INCERC

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 754059
Fit-to-NZEB: Programs

1) For institutions of higher education (EQF 6-7): 60 h
   (30 h lectures & 30 h seminars)
2) For professional high schools
   - “Construction” professional direction (EQF 3-5): 60 h
     (24 h lectures & 36 h practical lessons)
   - “Electrical engineering & energy sector” prof. direction
     (EQF 3-5): 36 h (12 h lectures & 24 h practical lessons)
3) For Vocational Training Centres (incl. on-site, EQF 2-5):
   12/16/40 h
   - Building Envelope,
   - Mechanical Systems
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 754059.

**IF SKY IS THE LIMIT, THEN GO THERE.**

- Robust regulation
- Compliance
- Awareness
- Competences

ALL NEW BUILDINGS!!

nZEB (nearly zero)

Cost optimal requirements

Renovation?? (nZEB level)

RENOVATION PASSPORT??

→ Zero Emissions Building Stock??

Cost optimal requirements
PEOPLE WHO SAY IT CANNOT BE DONE SHOULD NOT INTERRUPT THOSE WHO ARE DOING IT
Thank you!

Horia Petran

NIRD URBAN-INCERC
The Building Knowledge Hub
Bucharest, Romania
Șos. Pantelimon 266
hp@incerc2004.ro

Cluster Pro-nZEB
Șos. Pantelimon 266
Bucharest, Romania
www.pro-nzeb.ro
pro-nzeb@incd.ro