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

Fit-to-NZEB
Innovative training schemes for retrofitting to nZEB-levels

Printed materials: project flyer, poster and final brochure

Deliverable 7.4

of the FIT-TO-NZEB project, financed under grant agreement No 754059 of the HORIZON 2020 Programme of the EU

Led by:
Center for Energy Efficiency EnEffect

Contents

PROJECT POSTER

Project posters are used throughout the project, preserving the Fit-to-NZEB visual identity but identifying the main strengths and achievements according to target audience. Here are some of the examples:

Fit-to-NZEB
Καινοτόμα εκπαιδευτικά προγράμματα
Για ανακαίνιση σε επίπεδα nZEB

Είμαστε ευχαριστημένοι με την ποιότητα αναβάθμισης των κτιρίων?

Οχι, δεν είμαστε. Δυστυχώς, οι εργασίες ανακαίνισης δεν έχουν την ποιότητα που ευχόμαστε και υπάρχει σοβαρός λόγος για αυτό – γενικά ελάχιστοι επαγγελματίες έχουν την απαραίτητη γνώση και εμπειρία, για να παραδώσουν ένα ποιοτικό έργο ανακαίνισης. Ένα έργο που όχι απλά εξοικονομεί ενέργεια, αλλά βελτιώνει την άνεση σας, φέρνει καθαρό αέρα μέσα στο σπίτι, βελτιώνει την υγεία σας, και στο τέλος σε κάνει χαρούμενο και ικανοποιημένο, χωρίς περιττά έξοδα.

Αυτό είναι ακριβώς το σημείο στο οποίο το νέο πρόγραμμα Fit-to-NZEB στοχεύει - να αυξηθούν οι ικανότητες και οι δεξιότητες των επαγγελματιών του τομέα των κατασκευών στις συμμετέχουσες χώρες μέσα από μοναδικά εκπαιδευτικά προγράμματα και σεμινάρια , που θα συμβάλλουν στην ποιοτική και ποσοτική βελτίωση των ριζικών ενεργειακών αναβαθμίσεων. Χάρη σε εμάς θα βρεις εκπαιδευτικό υλικό πάνω στην ενεργειακή αναβάθμιση για όλες τις βαθμίδες εκπαίδευσης και δια βίου μάθησης. Για πανεπιστήμια, τεχνικές σχολές και κολέγια, ινστιτούτα επαγγελματικής κατάρτισης, ακόμη και επαγγελματικά λύκεια.

Τα Κέντρα Κτιριακής Τεχνογνωσίας

Το Fit-to-NZEB χρησιμοποιεί τις εκπαιδευτικές και επικοινωνιακές υποδομές του προπομπού του Train-to-NZEB (www.train-to-nzeb.com), μέσω του οποίου λειτουργούν ήδη 5 κέντρα στην Ανατολική και Νότια Ευρώπη αφιερωμένα στην ενεργειακή εξοικονόμηση και τις ΑΠΕ στα κτίρια, προσθέτοντας 3 ακόμη στο δίκτυο Μας βρίσκετε στην Τσεχία, τη Ρουμανία, την Βουλγαρία, την Ιταλία, την Κροατία, την Ιρλανδία, την Ελλάδα, την Τουρκία και την Ουκρανία.

Δεν είμαστε κοντά σας?.
Ρίξτε μια ματιά στο online περιεχόμενο στο www.fit-to-nzeb.com
Ή ακόμη καλύτερα συνεργαστείτε μαζί μας!
Δείτε περισσότερα στο www.facebook.com/fit2nzeb και στο www.twitter.com/Fit2nZEB.

Τι υπάρχει διαθέσιμο:

- Νέα εκπαιδευτικά προγράμματα για πανεπιστημιακές σχολές αρχιτεκτόνων και πολιτικών μηχανικών
- Νέα εκπαιδευτικά προγράμματα για επαγγελματικά κολέγια και λύκεια
- Νέα εκπαιδευτικά προγράμματα για κέντρα κατάρτισης και σεμινάρια επί τόπου του έργου
- Πιλοτικά σεμινάρια και παρουσιάσεις
- Σχέδια κατασκευής καινοτόμων μοντέλων σε πραγματικές διαστάσεις για άμεση επιτόπου εκπαίδευση
- Πληθώρα διδακτικού υλικού και πρακτικών ασκήσεων

Συντονιστής: EnEffect

Εταίροι: SEVEn, URBAN INCD INCERC

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 649810.

Fit-to-NZEB
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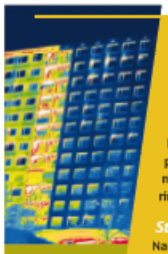
Model 1: Revitalizace panelového domu



Model zobrazuje řešení zateplení a rekonstrukce stávajícího železobetonového prefabrikovaného objektu, např. typového panelového domu z 80. let 20. století. Zateplení bude aplikováno na připravenou fasádu, která bude nejdříve zbavena nečistot a bude provedena výměna těsnící výplně spár mezi jednotlivými panely. Je zde navržen venkovní kontaktní zateplovací systém fasádními deskami z EPS polystyrenu, kotvený talířovými hmoždinkami, na povrchu opatřený probarvenou akrylátovou omítkou. V úrovni soklu bude provedena nová hydroizolace, přes ni kontaktní zateplení z XPS polystyrenu Perimetr a na jeho povrchu soklová omítka Marmolit.

Střecha

Na nosné konstrukci stávající ploché střechy je navržena parozábrana a tepelná izolace z PIR desek s krytinou z hydroizolační folie z měkčeného PVC. Atika bude obložena deskami z XPS polystyrenu, koruna atiky bude kryta oplechováním, kotveným přes impregnovanou OSB desku.

Podlaha na terénu

Na stávající podlahové konstrukci je navržena pouze nová nášlapná vrstva, v tomto případě keramická dlažba. Před jejím provedením bude svislá spára mezi podlahovou deskou a stěnou utěsněna rohovou vzduchotěsnou páskou.

Strop

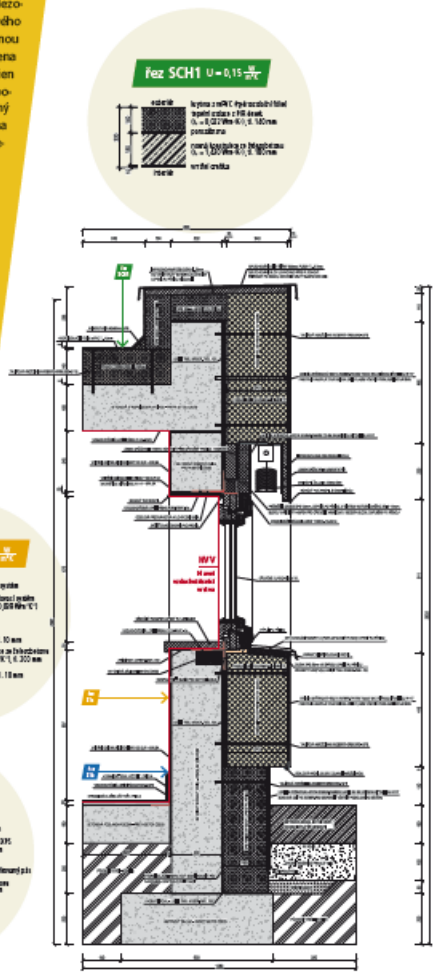
Konstrukce bude ponechána bez úprav, pouze spára mezi stropním panelem a stěnou bude utěsněna rohovou vzduchotěsnou páskou.

Okenní konstrukce

Jako výplně okenních otvorů jsou navržena dřevěná Euro-okna IV78 s izolačním trojsklem a díky jejich předsazenému kotvení mimo betonovou stěnu bude celý rám zapuštěn do tepelné izolace fasády. Vnitřní parapet bude dřevěný, vnější je navržen plechový z poplastovaného plechu. Vnější i vnitřní napojení omítek na okno bude provedeno pomocí okenních PVC lišt. Nad oknem bude osazena venkovní hliníková žaluzie profilu C80 s kastlíkem skrytým v zateplené fasádě. Žaluzie je ke stěně kotvena systémovými ocelovými profily přes dřevěné prvky, kotvení je pak z důvodu eliminace tepelného mostu zakryto deskou z XPS polystyrenu. Čelo kastlíku bude provedeno z impregnované OSB desky a přetaženo akrylátovou omítkou fasády.

Hlavní vzduchotěsnící vrstva

Hlavní vzduchotěsnící vrstva (HVV) stěn je tvořena stávajícími panely prefabrikované konstrukce. Spáry mezi panely před obložením tepelnou izolací budou z lice přetěsněny pomocí polyetylénového provazce a akrylátového tmelu. Z rubové strany budou opatřeny vzduchotěsnící páskou (např. Flex tape). Tato páska bude použita také k utěsnění spár mezi podlahovými (stropními) deskami a fasádními panely a spár mezi nově osazenými okny a okenními otvory. HVV střechy tvoří prefabrikované stropní desky, v místech spojů panelů pak hydroizolační asfaltové pásy (parozábrana) pod tepelnou izolací.



Další informace o projektu: www.fit-to-nzeb.com

Aktuální nabídka kurzů: www.stavebniakademie.cz

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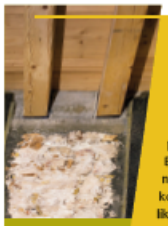
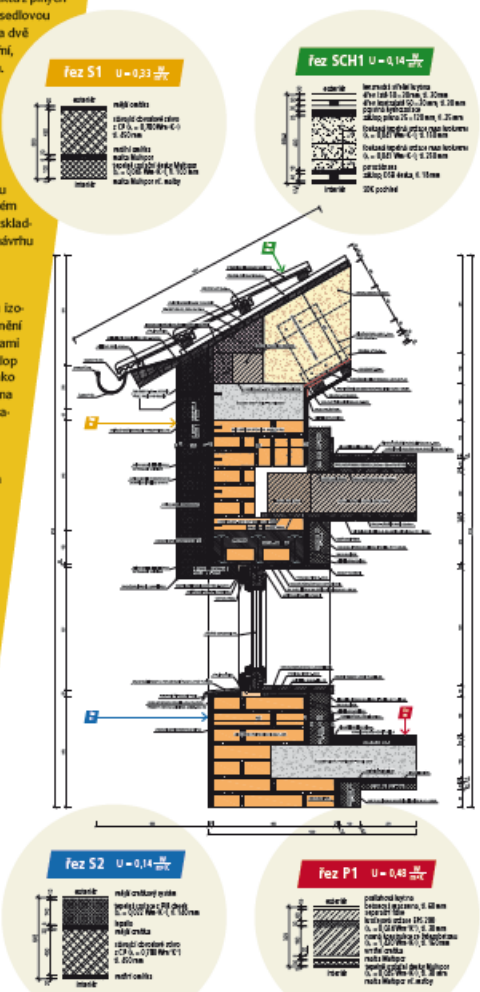
Model 2: Venkovní a vnitřní zateplení historických objektů



Model zobrazuje rekonstrukci stávajícího zděného objektu z plných cihel, s betonovým a dřevěným trámovým stropem a sedlovou střechou s dřevěným krovem. Jsou na něm znázorněna dvě různá řešení zateplení – klasické vnější a atypické vnitřní, vhodné především pro objekty s historicky cennou fasádou. Jako venkovní zateplení je zde navržen kontaktní zateplovací systém fasádními deskami z PIR desek (např. Baumit Resolution), kotvený talířovými hmoždinkami, na povrchu opatřený jednosložkovou silikonovou omítkou. Vnitřní zateplení je navrženo kontaktní z kalcium silikátových desek systému Ytong Multipor, lepené systémovou maltou, kotvené talířovými hmoždinkami a na povrchu opatřené systémovou maltou se skleněnou síťovinou. Systém Multipor má výhodu v tom, že se jedná o difúzně otevřenou skladbu materiálů, které jsou kapilárně aktivní a při správném návrhu nedochází ve skladbě k tvorbě řas a plísní.



Střecha

Stávající sedlová střecha bude zateplena foukanou tepelnou izolací (např. Knauff Thermo). Pro její aplikaci bude vytvořeno bednění z latí kotvených ke krokvím OSB příložkami, zaklopené OSB deskami s parozábranou. Nad krokvemi bude položen nový dřevěný záklop z prken s pojistnou hydroizolací. Těžko přístupná místa krovu, jako prostor za pozednicí, budou před provedením záklopu zateplena izolací z minerálních vláken. Jako střešní krytina budou použity keramické tašky uložené na dřevěné latě přes kontralatě.

Strop betonový

Stávající betonová stropní deska mezi vytápěným a nevytápěným prostorem bude opatřena vnitřním zateplením ze spodní strany, tzn. obložena deskami systému Ytong Multipor lepené systémovou maltou, kotvené talířovými hmoždinkami a na povrchu opatřené systémovou maltou se skleněnou síťovinou.

Strop dřevěný trámový

Nosné trámy stávajícího trámového stropu budou odkryty, jejich zhlaví ošetřena impregnací a nově podložena impregnovanou bukovou podložkou. Strop bude z obou stran zaklopen dřevěnými prkny, ze spodní strany opatřen omítkou a nad horním záklopem je navržena skladba z kročejové izolace a dvojice sádrovláknitých desek Fermacell.

Okenní konstrukce

Jako výplně okenních otvorů jsou navržena dřevěná Eurookna IV78 s izolačním trojsklem, kotvená do středu stěny, u vnějšího zateplení s PIR izolací překrývající vnější rám okna a u vnitřního zateplení se zateplením parapetem deskami systému Ytong Multipor. Vnitřní parapet bude dřevěný, vnější je navržen plechový z poplastovaného plechu. Vnější i vnitřní napojení omítek na okno bude provedeno pomocí okenních PVC lišt.

Hlavní vzduchotěsnící vrstva

Hlavní vzduchotěsnící vrstva (HVV) stěn je tvořena stávajícími zděnými stěnami z plných cihel. U venkovního zateplení budou spáry mezi nově osazenými okny a okenními otvory opatřeny vzduchotěsnící páskou (např. Flex tape). U vnitřní izolace z principu navržené technologie Ytong Multipor spáry utěsněny nejsou. HVV střechy tvoří hydroizolační asfaltové pásy (parozábrana) z horní strany záklopu zateplovaného prostoru.

Další informace o projektu: www.fit-to-nzeb.com

Aktuální nabídka kurzů: www.stavebniakademie.cz

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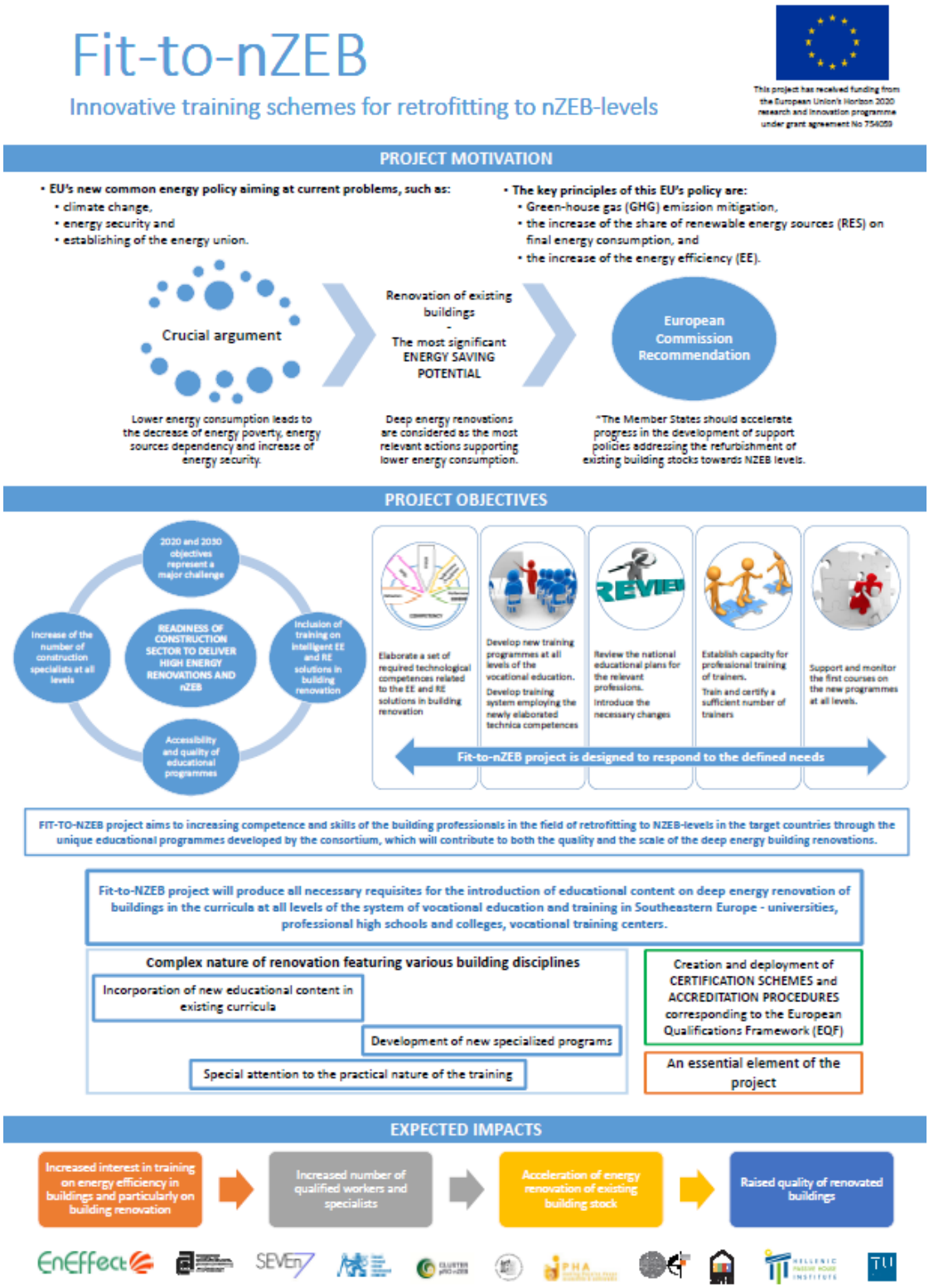
ČESKÁ STAVEBNÍ AKADEMIE PRAHA

SEVEn THE ENERGY EFFICIENCY CENTER, z.s.

Before the development of the visual identity, a poster explaining the concept and objectives of the project was prepared by UNIZAG, parts of which were later used in future presentations and other promotional activities.



PROJECT ROLL-UP

The project roll-ups are used at major national and international dissemination events, e.g. European Sustainable Energy Week, C4E Forum, MADE Expo in Milan, CLIMA 2019 conference in Bucharest, International Passive House Conference, etc.

Fit-to-NZEB
for retrofitting to nZEB-levels
Innovative training schemes

Are we happy with the quality of the building renovation?

No, we are not. Unfortunately, not all renovation works are of the quality we pray for, and there's a good reason for that – in general, professionals rarely have the knowledge, skills and experience necessary to deliver a quality renovation project. One that not only saves energy, but increases your comfort, brings clean air inside, improves your health, and at the end - makes you happy and satisfied, with your money well spent.

This is precisely where the new Fit-to-NZEB project fits in: it aims to increase the competence and skills of the building professionals in the participating countries through unique educational programmes and training courses, which will contribute to both the quality and the scale of the deep energy building renovations. With us, you will find educational content on deep energy retrofit for all levels of the vocational training and education system - universities, professional high schools and colleges, vocational training centers, and even elementary schools.

The Building Knowledge Hubs

Fit-to-NZEB uses the training and communication infrastructure of its predecessor Train-to-NZEB (www.train-to-nzeb.com), which already operates 5 training centers in Eastern and Southern Europe dedicated to energy efficiency and RES in buildings, adding 3 more in the network. We are there for you in Czech Republic, Romania, Bulgaria, Italy, Croatia, Ireland, Greece, Turkey and Ukraine.

Not close enough? Check out our online content at www.fit-to-nzeb.com. Or even better, become our new partner!

See more at www.facebook.com/fit2nzeb and www.twitter.com/Fit2nZEB

What's in there for you:

New training programmes for architecture and civil engineering universities
New training programmes for professional colleges and high schools
New training programmes for vocational training centers and on-site training courses
Pilot courses and demonstrations
Design drawings of innovative hands-on training and demonstration models
A wealth of teaching materials and practical exercises

Coordinator:

Partners:

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Use of project poster and roll-up

Croatian national Fit-to-NZEB conference

Presentation of the President of the Chinese HVAC and Energy Efficiency national committee at the Bulgarian nZEB conference

PROJECT FLYER

The project flyer was prepared, printed and disseminated in 2000 copies in English and then replicated in national languages for local dissemination goals. Here are some of the examples:

Flyer in English

trainings

OUR PROJECT

Fit-to-NZEB: Training for Deep Energy Retrofit

The "Fit-to-NZEB" project aims to provide world-class training on energy efficiency and RES in existing buildings, based on new training programmes and up-to-date training equipment for a set of training and education centers around Europe.

It will increase the competence and skills of building professionals in the field of deep energy retrofit in the participating countries - Czech Republic, Romania, Bulgaria, Italy, Croatia, Ireland and Greece - through unique educational programmes, which will contribute to both the quality and the scale of building renovations. The project will produce all necessary requisites for the introduction of educational content on deep energy retrofit in the curricula at all levels of the vocational training and education system - universities, professional high schools and colleges, vocational training centers, on-the-job training, and even elementary schools.

WHAT'S IN THERE FOR YOU?

It doesn't matter if you are a designer, a construction worker, a public official responsible for the urban landscape, or you just want to cut your energy bills: there is a training course and advice especially for you. With our up-to date training programmes and materials coming from the world's leaders in sustainable building, you'll learn important things about buildings you don't know yet. With our new training facilities, demonstration tools and numerous partners from the construction industry, you'll see and touch things in buildings you probably haven't seen before. And what is best – if you are a training institution and you want to take your training offer, one step further so as to be compliant with the new European nZEB standards, we'll be there to give you a lift.

But first of all, why don't you a get a taste of it at www.fit-to-nzeb.com?

WHAT ARE OUR GOALS?

The main tasks of the project are to develop and pilot innovative training programmes on deep energy retrofit for all levels of the academic and vocational training and education systems, and to design and build specialized hands-on training and demonstration models in the participating training centers.

However, we seem to be a bit more ambitious... Because if we really want well performing buildings in our cities and countries, we need to:

(1) increase the demand for training on energy efficiency in buildings and particularly on deep energy retrofit,

(2) increase the number of qualified workers and specialists along the whole construction chain,

(3) accelerate the energy renovation of the existing building stock, at the same time raising the quality of the renovated buildings.

Fit-to-NZEB
for retrofitting to nZEB-levels
Innovative training schemes

www.fit-to-nzeb.com

trainings

OUR NETWORK

Fit-to-NZEB aims to transfer the knowledge and experience of leading research and training institutions from Ireland (Passive House Academy) and Austria (Technical University – Vienna) to 6 European countries – Bulgaria, Romania, the Czech Republic, Italy, Greece and Croatia. The consortium is lead by Center for Energy Efficiency EnEffect (Bulgaria) and includes also University of Architecture, Civil Engineering and Geodesy (Bulgaria), SEVEn and Czech Technical University in Prague (Czech Republic), Association Cluster for Promoting Nearly Zero Energy Buildings (Pro-nZEB) and Technical College for Architecture and Public Works – Bucharest (Romania), University of Zagreb, Faculty of Construction Engineering (Croatia), Zero Energy and Passivhaus Institute for Research – ZEPHIR (Italy), Hellenic Passive House Institute (Greece). In addition, the project team use the training and communication infrastructure of its predecessor Train-to-NZEB (www.train-to-nzeb.com), which already operates 5 training centers in Eastern and Southern Europe dedicated to energy efficiency and RES in buildings, including partners from Turkey and Ukraine.

FOR CONTACTS

Coordinator of the project:

EnEffect

Center for Energy Efficiency EnEffect
1, Hristo Smirnenski Blvd, fl. 3
1164 Sofia, Bulgaria
Tel.: +359 2 963 17 14
E-Mail: eneffect@eneffect.bg

Contact point:
Dragomir Tzanev
Mob.: +359 882 493 110
E-Mail: dtzanev@eneffect.bg

Partners:

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www.fit-to-nzeb.com

Flyer in Bulgarian

обучения

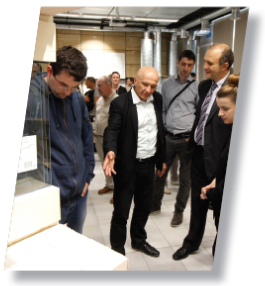
НАШИЯТ ПРОЕКТ

Fit-to-NZEB: Обучения за енергийно ефективно обновяване на сградите

Проектът „Fit-to-NZEB“ има за цел да осигури обучения по енергийна ефективност в съществуващи сгради от световна класа – въз основа на новаторски програми за обучение и съвременно оборудване в 6 учебни центъра в страни от Източна и Южна Европа, между които и България.

Безспорно е, че повишаване на компетентността и уменията на строителните специалисти е необходимо – не само в България, но и в цяла Европа. Заедно с нас, екипи от Чехия, Румъния, Италия, Хърватия, Ирландия, Австрия и Гърция ще работят за създаване на уникални образователни програми, които ще допринесат не само за качеството, но и за мащаба на сградното обновяване. Проектът ще осигури необходимите материали и учебни програми на всички равнища от системата за професионално обучение и образование – университети, професионални гимназии и колежи, центрове за професионално обучение, обучение на работното място, и дори основни училища.

КАКВО ПРЕДЛАГАМЕ?



Няма значение дали сте проектант, строителен специалист, общински експерт или просто искате да намалите сметките си за енергия: имаме специално обучение и съвети за вас. С нашите новаторски учебни програми и материали, разработени от световните лидери в областта на устойчивото строителство, ще научите важни неща за сградите, които все още не знаете. С нашето ново оборудване за практически упражнения, демонстрационни модели и многобройни партньори от строителната индустрия ще видите и ще се докоснете до материали и съоръжения, които вероятно не сте виждали досега. А ако представлявате обучителна институция, предлагаме точно това, което ви е нужно: нови учебни програми и помагала, за да бъдете в крак с новите европейски стандарти за почти нулево енергийни сгради.

Но преди всичко, защо не научите повече за нас на www.fit-to-nzeb.com?

КАКВИ СА НАШИТЕ ЦЕЛИ?

Основните задачи на проекта са да се разработят новаторски учебни програми и да се проведат пилотни курсове за енергийно ефективно обновяване на сгради за всички равнища от системата на професионалното образование и обучение, както и да се проектират и изградят специализирани практически и демонстрационни модели в участващите учебни центрове.
Ние обаче добре разбираме, че за да успеем, трябва да сме малко по-амбициозни... Защото, ако наистина искаме добре функциониращи сгради в нашите градове и държави, трябва:

(1) да увеличим търсенето на обучения за енергийна ефективност в сградите и по-специално за енергийно ефективни реконструкции,

(2) да увеличим броя на квалифицираните работници и специалисти по цялата строителна верига,

(3) да ускорим енергийното обновяване на съществуващия сграден фонд, като същевременно работим за повишаване на качеството на проектите и изискванията към специалисти и строители.

Fit-to-NZEB
иновативни знания за обновяване до равнището на ПНЕ сгради

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обучения

НАШАТА МРЕЖА

Fit-to-NZEB има за цел да пренесе знанията и опита на водещи изследователски и учебни институции от Ирландия (Академия Пасивна къща) и Австрия (Технически университет - Виена) в 6 европейски страни – България, Румъния, Чехия, Италия, Хърватия. Консорциумът се ръководи от Центъра за енергийна ефективност ЕнЕфект (България) и включва също Университета по архитектура, строителство и геодезия (България), SEVEn и Чешкия технически университет в Прага (Чехия), Асоциация Клъстер за насърчаване на почти нулево енергийните сгради и Техническия колеж по архитектура и благоустройство - Букурещ (Румъния), Строителния факултет към Загребския университет (Хърватия), Института за научни изследвания за нулево енергийни и пасивни сгради ZEPHIR (Италия), Института за пасивни къщи в Гърция. Освен това, екипът на проекта използва обучителната и комуникационна мрежа на своя предшественик Train-to-NZEB (www.train-to-nzeb.com), който вече управлява 5 центъра за обучение в Източна и Южна Европа, посветени на енергийната ефективност и ВЕИ в сградите, включително с партньори от Турция и Украйна.

ЗА КОНТАКТИ

Координатор на проекта:

Център за енергийна ефективност ЕнЕфект
бул. Христо Смирненски 1, ет. 3
1164 София, България
Тел.: +359 2 963 17 14
e-mail: eneffect@eneffect.bg

Лице за контакт:
Драгомир Цанев
Моб.: +359 882 493 110
e-mail: dtzanev@eneffect.bg

Партньори:

Този проект е финансиран от програмата на Европейския съюз за научни изследвания и иновации „Хоризонт 2020“ съгласно Споразумение за отпускане на безвъзмездна помощ № 754059

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Flyer in Czech

školení instruktáž ukázky

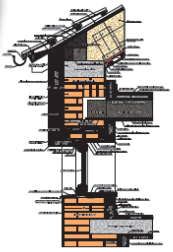
O PROJEKTU

Inovativní školicí programy pro komplexní renovace stávajících objektů na úroveň budov s téměř nulovou spotřebou energie (nZEB).

Cílem projektu Fit-to-NZEB je pomocí nových inovativních školicích programů zvyšovat odbornost pracovníků ve stavebnictví na všech úrovních se zaměřením na komplexní renovace budov, nastartovat rychlejší obnovu stavebního fondu a zvýšit kvalitu rekonstruovaných budov. Školicí programy jsou určeny pro odborné střední školy, technické vysoké školy i pro všechny pracovníky ze stavební praxe. Vytvořené programy budou začleněny do výuky technických škol i do odborné přípravy v rámci celoživotního vzdělávání. Velký důraz při školení je kladen na praktickou výuku u cvičných modelů a využívání zkušeností předních českých odborníků i příkladů dobré praxe ze zahraničí a to zejména z Irska, Rakouska a dalších. Partnery projektu jsou mimo jiné i čtyři evropské univerzity včetně ČVUT v Praze.

Aktuální nabídka kurzů:
www.stavebniakademie.cz

VÝZVY A ODPOVĚDI



- *Znáte již nZEB – nearly Zero Energy Buildings?*
- *Víte co jsou komplexní renovace budov a jak je správně realizovat?*
- *Víte o povinnosti stavět od roku 2020 pouze budovy s téměř nulovou spotřebou energie?*
- *Zvyšte si konkurenceschopnost a zlepšete si u nás své odborné znalosti a dovednosti o renovacích budov a nZEB.*

HLAVNÍ CÍLE

- *Zvýšení kvality provádění rekonstrukcí budov*
- *Zvýšení odbornosti pracovníků ve stavebnictví na všech úrovních*
- *Nastartovat rychlejší obnovu stavebního fondu*

Školicí programy jsou určeny pro

- *odborné střední školy*
- *technické vysoké školy*
- *pracovníky ze stavební praxe*

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školení

CO JE DOBRÉ VĚDĚT

Začátkem roku 2020 platí v ČR povinnost stavět pouze budovy s téměř nulovou spotřebou energie (nearly Zero Energy Buildings, nZEB). Povinnost stavět nZEB vychází z evropské legislativy a výrazně ovlivňuje celý sektor stavebnictví, protože klade nové požadavky na návrh a výstavbu budov. Parametry budov s téměř nulovou spotřebou energie musí být splněny nejen u všech novostaveb, ale také při větších změnách dokončených budov – tedy u komplexních renovací budov (Deep Energy Retrofit, DER).

Předpokládá se, že v roce 2050 bude stavební fond v Evropě tvořen přibližně ze 75 % současnými budovami a zbytek budou tvořit již novostavby ve standardu nZEB. Stávající budovy tedy představují značný potenciál pro snižování energetické náročnosti, na který je vhodné se zaměřit. Pro využití potenciálu v maximální možné míře je však zapotřebí disponovat dostatečným množstvím proškolených stavebních odborníků.

PARTNEŘI PROJEKTU

Partneři Fit-to-NZEB
Partneři Train-to-NZEB

Koordinátor projektu:
EnEffect

Partneři projektu:

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Flyer in Croatian

izobrazba

NAŠ PROJEKT

Fit-to-NZEB: Izobrazba za Dubinsku Energetsku Obnovu

Cilj projekta „Fit-to-NZEB" je pružanje najbolje moguće izobrazbe u području energetske učinkovitosti i obnovljivih izvora energije u postojećim zgradama. Nekoliko trening centara u Europi biti će opremljeno najsuvremenijim edukacijskim pomagalima te će provoditi izobrazbu, na temelju novorazvijenih programa izobrazbe.

Ovakva izobrazba će poboljšati kompetencije i vještine stručnjaka u području dubinske energetske obnove zgrada u zemljama koje sudjeluju na projektu – Češkoj, Rumunjskoj, Bugarskoj, Italiji, Hrvatskoj, Irskoj i Grčkoj – kroz jedinstvene programe izobrazbe, koji će ujedno doprinijeti kvaliteti, ali i opsegu energetske obnove zgrada. Projekt Fit-to-NZEB će omogućiti sve potrebne preduvjete za uvođenje obrazovnog sadržaja o dubinskoj energetskoj obnovi zgrada u nastavni plan na svim razinama stručnog i visokoškolskog obrazovanja - sveučilišta, stručne srednje i više škole, centrima za stručno osposobljavanje, osposobljavanje na radnom mjestu, pa čak i osnovnim školama.

KOJA JE VAŠA KORIST?

Kroz ovaj projekt posebno je za Vas kreiran program izobrazbe i savjetovanje. Bez obzira jeste li projektant, građevinski radnik, arhitekt, projektant, ili korisnik koji želi smanjiti svoju potrošnju energije. Uz trening program i najsuvremenije materijale koji dolaze od vodećih svjetskih stručnjaka u pogledu energetski učinkovite gradnje, naučit ćete sve o dubinskoj energetskoj obnovi zgrada. S novim trening centrima, alatima i modelima za demonstraciju i brojnim partnerima iz građevinske industrije, imat ćete prilike upoznati se s proizvodima s kojima se najvjerojatnije još niste susreli. Ako pak predstavljate Instituciju za obrazovanje i želite nadograditi svoju ponudu na tržištu i napraviti korak unaprijed kako bi bili u skladu s novim standardima gradnje zgrada gotovo nulte energije, tada smo tu kako bi vam u tome pomogli.

Ali, prije svega, zašto se ne bi sami uvjerili odlaskom na www.fit-to-nzeb.com?

KOJI SU NAŠI CILJEVI?

Glavni ciljevi projekta su razvijanje i održavanje pilot programa izobrazbe u području dubinske energetske obnove zgrada za sve razine obrazovanja, od akademskog do stručnog te usavršavanja postojećih inženjera i radnika. Dodatan je cilj projektiranje i izgradnja specijaliziranih praktičnih modela za izobrazbu i demonstracije u centrima za izobrazbu koji sudjeluju u projektu.

Međutim, izgleda da smo još ambiciozniji... jer ako stvarno želimo učinkovitije zgrade u našim gradovima i državama, tada je potrebno:

(1) postrožiti zahtjeve za izobrazbu o energetskoj učinkovitosti zgrada s posebnim naglaskom na dubinsku energetsku obnovu,

(2) povećati broj radnika i specijalista duž cijelog građevinskog lanca s potrebnim znanjima i vještinama,

(3) ubrzati energetsku obnovu postojećih zgrada, ali u isto vrijeme povećati kvalitetu obnovljenih zgrada.

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izobrazba

NAŠA MREŽA

Cilj projekta Fit-to-NZEB je prenijeti znanje i iskustva vodećih istraživačkih i obrazovnih ustanova iz Irske (Passive House Academy) i Austrije (Technical University – Vienna) u 6 zemalja EU – Bugarsku, Rumunjsku, Češku, Italiju, Grčku i Hrvatsku. Konzorcij koji vodi Centar za energetsku učinkovitost EnEffect (Bugarska) čine i Arhitektonski, građevinski i geodetski fakultet u Sofiji (Bugarska) SEVEn - Centar za energetsku učinkovitost i Češko Tehničko Sveučilište u Pragu (Češka), Pro-nZeb Klaster za promicanje zgrada gotovo nulte energije, Tehnička škola za arhitekturu i javne radove Ioan N. Socolescu (Rumunjska), Sveučilište u Zagrebu, Građevinski fakultet (Hrvatska), Istraživački institut za zgrade gotovo nulte energije i pasivne kuće ZEPHIR (Italija), Helenski institut za pasivne kuće (Grčka). Osim toga, projektni tim koristi infrastrukturu za izobrazbu i komunikacije svojih prethodnika sa projekta Train-to-NZEB (www.train-to-nzeb.com), koji već upravlja sa 5 centara za izobrazbu u Istočnoj i Južnoj Europi posvećenih energetskoj učinkovitosti i obnovljivim izvorima energije u zgradarstvu, uključujući partnere iz Turske i Ukrajine.

KONTAKTI

Koordinator projekta:

Center for Energy Efficiency EnEffect
1, Hristo Smirnenski Blvd, fl. 3
1164 Sofia, Bulgaria
Tel.: +359 2 963 17 14
E-Mail: eneffect@eneffect.bg

Kontakt:
Dragomir Tzanev
Mob.: +359 882 493 110
E-Mail: dtzanev@eneffect.bg

Kontakt u Hrvatskoj, Građevinski fakultet u Zagrebu:
Bojan Milovanović
Tel.: +385 1 463 93 16
E-Mail: bmilovanovic@grad.hr

Partneri:

Ovaj projekt je financiram sredstvima programa za istraživanje i inovacije Obzor 2020 pod brojem 754059 Sporazuma o dodjeli bespovratnih sredstava

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Flyer in Romanian

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Fit-to-NZEB: Scheme de instruire inovative pentru renovarea clădirilor la nivel nZEB

SCOP

Furnizarea cerințelor necesare pentru introducerea conținutului educațional referitor la renovarea energetică majoră a clădirilor în programele de învățământ la toate nivelurile de calificare și formare profesională din Sud-Estul Europei: **universități, licee și școli profesionale, centre de formare profesională, centre de evaluare de competențe**, prin includerea conținutului educațional nou dezvoltat în programele existente și prin dezvoltarea unor noi programe de pregătire specializate.

OBIECTIVE SPECIFICE

- Elaborarea unui set de competențe în domeniul tehnic, cerut de soluțiile de eficiență energetică și de sistemele de utilizare a surselor regenerabile de energie în renovarea clădirilor.
- Dezvoltarea de noi programe de instruire la toate nivelurile în învățământul profesional și în dezvoltarea continuă a angajaților în concordanță cu setul de cerințe tehnice elaborat.
- Revizuirea planurilor naționale de educație în profesiile relevante din domeniu și propuneri de introducere a schimbărilor necesare.
- Stabilirea nivelului de pregătire profesională al formatorilor existenți și pregătirea unui număr suficient de formatori.
- Susținerea și monitorizarea primelor cursuri din noile programe, la fiecare nivel de studiu.

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PARTENERI

LEGEND:
Partners
Train-to-NZEB partners

CONTACT

Coordonator Fit-to-NZEB
Centrul pentru Eficiență Energetică EnEffect
1, Hristo Smirnenski Blvd, fl.#3
1164 Sofia, Bulgaria
Tel: +359 2 963 17 14
Fax: +359 2 963 25 74
Email: eneffect@eneffect.bg
Web: www.eneffect.bg

Coordonator Fit-to-NZEB România
Cluster pRO-nZEB
Sos. Pantelimon 266, Sector 2
021652, București, România
Tel: +40 21 2550835
Email: pro-nzeb@incd.ro
Web: www.pro-nzeb.ro

Acest proiect a primit finantare din partea Programului Uniunii Europene pentru cercetare și inovare Orizont 2020 în temeiul acordului de grant nr.754059.

FINAL PROJECT BROCHURE

A comprehensive final project brochure was prepared and printed in 2000 copies in May 2019. It has been disseminated at major international events such as the European Sustainable Energy Week, national events as the 2nd Bulgarian nZEB conference and many others.

A downloadable electronic version is available through the project website.

The full brochure is available in Annex to this deliverable.

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Innovative training schemes for retrofitting to nZEB-levels

Fit-to-NZEB, a Horizon 2020 project continuing the legacy of the BUILD UP Skills Initiative within the Construction Skills topical area, aims to increase the competence and skills of the building professionals in 7 European countries - Bulgaria, Croatia, Czech Republic, Greece, Ireland, Italy and Romania - through unique educational programmes and pilot training courses, which will contribute to both the quality and the scale of the deep energy building renovations throughout EU.

Overview: project and major results

Exactly two years ago, we promised that we will do our best to set up a full range of innovative qualification and training schemes for deep energy building retrofitting supported by RES. This target included both elaboration of new training programmes and materials for all professional groups and support for development of innovative training facilities - with the goal to provide world-class practical training on building renovations aiming at Nearly Zero-Energy Buildings (NZEB) levels.

Today, we are proud to share the following results:

- A full review of deep renovation training programmes and materials;
- A set of learning outcomes on 17 topics related to deep energy retrofit, distributed according to the relevant EQF levels;
- 7 model training programmes, ranging from Master programmes' classes to short-term upskilling courses;
- Training materials on each of the 17 topics, including annotated presentations, exercises, examination questions and references;
- Fully equipped training facilities in 7 European countries;
- More than 150 newly trained trainers, capable to deliver the new training content using the practical training facilities;
- 20 pilot courses conducted in universities, professional high schools and vocational training centers, subject to continuous monitoring for improvement of the training schemes;
- More than 10 Memoranda of Understanding with education and training providers willing to use the new training programmes and materials;
- A large and constantly growing network of dedicated professionals, for whom deep energy retrofit has become a part of the daily routine and a source of professional pride and identity.

Learning outcomes: new knowledge, skills and competences for deep energy retrofits

Based on a thorough review of the existing training programmes and materials on deep energy retrofit and an analysis of the training gaps in the involved countries, a compendium of the knowledge, skills and competences required for deep energy retrofit was developed. The learning outcomes, organized in 17 distinct topics of relevance to NZEB-level retrofit process, are defined for each targeted level along the EQF. The required technical competences are collected and analyzed according to the identified needs of the pre-defined target groups – the main beneficiaries of the project, in close cooperation within a broad network of local stakeholders.

The review of the accessible training materials, the analysis of the training gaps and needs and the set of learning outcomes are freely available at our website – www.fit-to-nzeb.com. Being one of the most important outcomes of the project, they are delivered in a flexible format allowing application of any selected topic in respect to the specifics of the training plan of the interested educational institution or vocational training provider.

The process of developing the common learning outcomes demonstrated the value of the broad networks and national discussion platforms established under the BUILD UP Skills initiative of the EC. Without this large group of stakeholders which we were able to engage in all our discussions since 2011, it would have been much harder to cover all topic areas, and what is more important, to gain the trust of the VET institutions for piloting the courses. As a culmination of the whole process, these courses proved to be really successful – but it was only possible through this fantastic common effort supported by the strong international partnerships and local stakeholders' communities.

Dragomir Tzanev, EnEffect-Bulgaria, coordinator of the Fit-to-NZEB project

Development of demonstration and practical training models

A key component of the Fit-to-NZEB project is the organization of practical training facilities following the example of the Building Knowledge Hubs (BKHs), developed under the preceding Train-to-NZEB project (www.train-to-nzeb.com). The design of retrofit models for the purpose of training serve two functions: a) as demo models for the purpose of demonstration of typical construction detailing and sequence of elements as well as for sketching exercise, discussion and oral examination. These models comprise one complete solution in respect of achieving the unbroken continuity of airtightness, insulation, minimal thermal bridging and, preferably, wind-tightness. The construction types selected are typical for each country but retrofitted in respect of the higher building performance required to achieve nZEB levels; b) as practice models that more or less correspond to the demo model construction types but for the purpose of hands-on practical training and examination. Unlike the complete demo model, these models are stripped to their basic structure, providing the basis for the practical retrofitting work.

Detailed guidelines for establishing of dedicated practical training facilities are freely available at www.fit-to-nzeb.com, ready for use by any interested training provider. With the support of the project, 4 entirely new such facilities are set up - in Croatia, Greece, Ireland and Italy, and 3 existing ones expanded – in the Czech Republic, Romania and Bulgaria (with a new branch opening in the professional high school of architecture and construction in the city of Pazardzhik).

„It's is very important to see exactly how to install correctly a window or how to prevent mould and condensation in walls. It's also very useful to learn the commissioning of a residential ventilation system. For me as a building physicist this was all known in theory, but new in praxis. So it was very important to participate in a TTT course and get ready to share this knowledge with technicians and construction workers in our new facilities in the future."

Dimitris Pallantzas, Certified PH Designer, Education Officer at HPHI

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 754059

Fit-to-NZEB: www.fit-to-nzeb.com

Coordinator:

Center for Energy Efficiency EnEffect
1, Hristo Smirnenski Blvd, fl.#3
Sofia 1164, Bulgaria
T: +359 2 963 17 14
www.eneffect.bg

Project partners:

- University of Architecture, Civil Engineering and Geodesy – Sofia, Bulgaria, www.uacg.bg
- SEVEn, the Energy Efficiency Center – Prague, Czech Republic, www.svn.cz
- Czech Technical University in Prague, Czech Republic, www.cvut.cz/en
- Association Cluster for Promoting Nearly Zero Energy Buildings (Pro-nZEB), Romania, www.pro-nzeb.ro
- Technical College for Architecture and Public Works, Bucharest, Romania, www.colegiulionsocolescu.ro
- Passive House Academy / MosArt Landscape Architecure Research, Ireland, www.passivehouseacademy.com; www.mosart.ie
- University of Zagreb, Faculty of Civil Engineering, Croatia www.grad.unizg.hr/en
- Zero Energy and Passivhaus Institute for Research (ZEPHIR), Italy, www.zephir.ph
- Hellenic Passive House Institute, Greece, www.eipak.org
- Technical University – Vienna, Austria, www.eeg.tuwien.ac.at