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Setting up of 4 Building Knowledge Hub (BKHs)

Deliverable 2.2 of the TRAIN-TO-NZEB project,

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1. INTRODUCTION

The legislative requirements of the European Union and the aims for 2020 in the area of energy savings set a greater need for training workers in the construction industry. According to the Directive of the European Parliament and of the Council 2010/31/EU, the Energy Performance of Buildings Directive II (EPBD II), there is a need to focus on the area of buildings, where there is a large potential for energy savings. In all, buildings make up 40 % of the overall energy consumption in the European Union[1]. Directive 2010/31/EU (EPBD II) sets out the definition for a building with nearly zero energy consumption (nearly Zero Energy Buildings, nZEB) at the European level. On the basis of this definition, the EU Member States have created a definition for nZEB at the national level, this takes into account the given country's economic and climatic conditions.

Meeting the objectives of the European Union by 2020 requires a high number of qualified construction experts in the nZEB field, of which there is currently a lack. Training workers in the construction industry is thus crucial if the EU objectives are to be realistically met. The obligation to only build nearly Zero Energy Buildings from 2021 on puts high demands on expertise during the design, construction and subsequent use of nZEB, both for new buildings and for reconstruction. This is the reason for the Train-to-NZEB project, which will establish training, educational and consulting centres (Building Knowledge Hubs, BKHs), which, through their training and educational programmes and consulting services, will raise the professional qualifications of workers in the construction industry and the wider professional public.

[1] *Directive of the European Parliament and of the Council 2010/31/EU, on the energy performance of buildings* of 19 May 2010, recast.

2. EXECUTIVE SUMMARY

The Train-to-NZEB project aims to provide world-class training on energy efficiency and RES in buildings, based on new training programmes, business plans and up-to-date training equipment for various training and consultation centres around Europe. Its goal is to improve the knowledge and skills in the construction sector and to provide practical trainings, demonstrations and comprehensive consulting services for the design and construction of Nearly Zero-Energy Buildings (nZEB). In order to provide such an amenity, it is necessary to equip BKHs with state of the art equipment and training facilities to fulfil the nZEB obligations.

One of the main tasks for the project is to design and equip 4 fully active training centres in Bulgaria, Romania, Turkey and the Czech Republic and 1 pilot centre in Ukraine. Additionally, combined with the provision of consulting services based on the "One-stop shop" principle, it is expected to increase the interest and capacity for the design and construction of nZEBs supported by RES in the focus countries and to stimulate the market demand for near zero energy development for both new buildings and building renovations.

This document is to summarise and illustrate how each responsible partner have set up the training facilities and consultation centres in each country, known as Building Knowledge Hubs, (hereafter referred to as BKHs), namely in Bulgaria, Czech Republic, Romania, Turkey and Ukraine.

The setting up of the facilities will be based on the Terms of Reference developed in Tasks 2.1 and 2.2. These are available to download on the link: http://www.train-to-nzeb.com/uploads/9/8/8/4/9884716/d2.1_terms_of_reference_technical_equipment__final.pdf. The national team leader in each country is responsible for the execution of developing BKHs, whereas in the case of Bulgaria and Romania where more than one organisation is participating, the budget for equipment and other facilities are distributed among all the partners involved reflecting their joint support in this activity. The equipment will be supplied only and exclusively according to the aforementioned ToR development, as all supporting documentation will be accessible to all parties and EASME at any time. No direct investments for equipment are provisioned for Ukraine because of the uncertain situation in the country, the relatively low experience in EU-financed projects and the lack of BUILD UP Skills basis. However, it is planned that with the existing facilities, the capacity gained through this project and the support received by the Ministry of Regional Development, Construction, Housing and Communal Services and the Kyiv National University, that a significant number of trainings (no less than 30% of the trainings planned for other BKHs) will be completed. The work will be monitored by the national team and the Steering Committee, as strict control on the execution and the invested resources will be imposed during all stages of implementation.

To ensure the success of the progression of the BKHs in each country, a number of prerequisites have been identified, to be carried out by each partner prior to the setting up of the BKHs. As part of the project it is important to establish certain legal and official legislation before establishing contracts and joint ventures. Preparation is important and as part of the project it is intended that business plans are to be drafted and annually updated to

consolidate the viability of the businesses/companies. Therefore the following documents have already been completed by the represented partners:

- Memorandum of Understanding (MoU)
- Terms of Reference (ToR)
- Business Plan
- Procurement documents

Memorandum of Understanding (MoU)

To establish a contractual agreement between the specific partners of the Project "Train-to-NZEB", with the aim to create the EU functioning network of educational and counselling centres (Building Knowledge Hubs, BKHs), providing practical workshops, demonstrations, and comprehensive consulting services for the implementation of buildings with nearly zero energy consumption (buildings NZEB).

Terms of Reference (ToR)

In order to assist the participating countries to set up suitable and appropriate BKH's, a concise yet extensive Terms of Reference (ToR) report has been compiled. The ToR document will provide an essential structure including the physical infrastructure required as well as an indication of course content and delivery mechanism. More fundamentally, it outlines alternative structures for the support and operation of the BKH's. This information is presented as an overview initially and then expanded upon and illustrated in the form of five case study examples. Many of the items discussed in this document are developed as part of the business plan. The ToRs are available at http://www.train-to-nzeb.com/uploads/9/8/8/4/9884716/d2.1_terms_of_reference_technical_equipment__final.pdf.

Business Plan

There are two primary objectives to preparing a business plan. The first is external; to assist in obtaining funding that is essential for the development and growth of the business. The second is internal, which is to provide a plan for early strategic and corporate development. This helps guide an organization towards meeting its objectives, by keeping the business entrepreneur and all its decision-makers headed in a predetermined direction, and by setting out how the company will be run for the following two to three years. In order for business plans to be effective, a plan should be followed and to reviewed periodically. When the business is faced with a difficult decision, the business plan should serve as a guide to help reach correct and calculated decisions. Each Business Plan is being developed and may be reviewed within the deliverable D2.5 Business Plans for each Building Knowledge Hub.

Procurement Advisory Document

The purpose of this document is to establish a framework for a common approach to purchasing, within the Train-to-NZEB Project. An efficient procurement strategy can contribute significantly to the efficiency of the project, ensures that a robust procedure is adopted for the procurement of goods and services under the project and will facilitate future audits.

3. PROGRAMME

The BKHs are to be opened by September 2016 (M16), however all partners have been fervently developing the training programmes as well as establishing the framework and legal implications around partnerships and establishing organisations. It was agreed within the consortium that all provisions should be put in place before the opening of a BKH. Over the last 4 months, the BKHs for Romania, Czech Republic, Turkey and Ukraine have been finalised, opened and promoted. Bulgaria are finalising the partnership with the signing of contracts and should be in place before December 2016. This will confirm that all the BKHs will be up and running ready for training in the forthcoming year.

As part of the programme it is intended that the BKHs will be further equipped and developed as the project continues. The review of the BKHs will be updated on a regular basis and communication and sharing of ideas will continue between all the organisations and industry.

An updated report will be provided in June 2017, M24 to highlight the additional works and facilities for the Building Knowledge Hubs.

4. OVERVIEW

As previously mentioned this document is to summarise and illustrate how each responsible partner organisation are proposing to set up the training facilities and consultation centres in each country, known as Building Knowledge Hubs, (hereafter referred to as BKHs), namely Bulgaria, Czech Republic, Romania, Turkey and Ukraine.

The main organisations are as follows:

Country	Partners	Name of Organisation	Location
Bulgaria	Center for Energy Efficiency (EnEffect), the Bulgarian Construction Chamber (BCC) BSYS.	Agreement between the partners and UACEG – name to be provided	University of Architecture, Civil Engineering and Geodesy (UACEG) in Sophia. Other locations include Pleven and Pazardjik.
Romania	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development (NIRD URBAN-INCERC), Business Development Group (BDG) Pre-University Education Foundation Future (FPIP)	Agreement between partners – name to be provided	Centre for Energy Performance of Buildings, EPB Centre at Nird Urban Incerc in Bucharest. Green Center at FPIP in Brasov.
Czech Republic	SEVEn	Agreement between Seven and ABF – name to be provided	Architecture and Building Foundation (ABF) in Prague Energy Consulting and Information Centres (EKIS) in Prague Future plans in Brno and Ostrava
Turkey	EGE University	EGE University	Civil Engineering Department of EGE University in Izmir.
Ukraine	Municipal Development Institute (MDI)	Agreement between MDI and Kyiv National University of Construction and Architecture (KNUCA) - name to be provided	All-Ukrainian Charitable Organization Municipal Development Institute in Kyiv.

A set of guidelines (Terms of Reference, ToR) for the design of the training facilities have been approved which include requirements for the training premises and specification of the necessary equipment with review of the available products and solutions, description of the building materials, products installations and tools required for the quality implementation of

trainings. The guidelines have focused on providing opportunities for conduction of specialized trainings for all (or most) crafts and professions related to building envelope, building services and RES installation in buildings according to the Roadmaps developed on BUILD UP Skills Pillar I and BUILD UP Skills Pillar II for the involved countries and transfer of existing programmes to countries not covered by BUILD UP Skills.

The training facilities are to be designed utilizing the experience from similar training centres already developed and these have been included within the ToR document. The ToR document provides an essential structure including the physical infrastructure required as well as an indication of training course content and delivery mechanism. Fundamentally, it outlines specifications and examples of models and structures to support the operation of the BKH's. This information is presented in a generic format and then expanded upon with illustrations using five best practice case study examples.

Following on from the ToRs, each national organisation have completed a survey to ascertain what facilities they currently have and how to develop the proposed BKHs to provide appropriate nZEB training to various stakeholders within their own countries. The survey for each country organisation is available to view in *Appendix A* of this Report. Examples of models and different types of equipment have been provided and these will be reviewed for each country.

Extensive discussions and invaluable advice from the Passive House Academy and Passiv House Institute are ensuring that issues regarding continuous insulation, thermal bridging, air tightness, wind tightness and appropriate detailing will all be implemented correctly. Each demonstration model will be used to validate how to construct and detail correctly and is one of the most important requirements to achieve nZEB.

Setting up the BKHs requires the following tasks to be executed:

- Locating a suitable venue
- Legal Contracts signed between all parties.
- Networking with the industry and stakeholders
- Kitting out the training unit namely with:
    - Demonstration models,
    - Working walls,
    - General equipment,
    - Airtightness room,
    - RES and Mvhr equipment
- Kitting out the consultation rooms:
    - Classroom layout and equipment
    - Appropriate training materials
- Promotion and the opening of the BKH

Once the BKHs are established there will be a need to continually improve and add to the models and equipment as the project continues.

5. COUNTRY DESCRIPTION

According to experts there is a strong need for more Vocational Education Training Centers, VET, which would serve as a guarantee and precondition for increasing the quality of the new buildings. The quantitative analysis of the construction sector in each country indicates that the majority of the workforce require further training on topics such as; Energy Efficiency, nZEB and RES. There are very few stakeholders currently attending such specialized trainings, which is a major precondition for the success of the new BKHs.

BULGARIA

The setting up and opening of the Bulgarian BKH encountered a slight delay. At the end of 2015, the Bulgarian national organisation selected the largest professional electrical engineering school in Bulgaria - HENRI FORD, owned by the government to become the newly formed BKH. The school was suitable to host the BKH, which would provide vocational trainings for adults and corporate trainings for private companies. The building was fully equipped with RES practice rooms, semi-equipped ventilation practice rooms, classrooms and is ready to provide building envelope practice rooms. Unfortunately, contractual issues arose and after lengthy negotiations with the school management, it was decided in February 2016 that a new venue was required.

Whilst searching for a new location for the BKH, the team continued to commission market research, attract stakeholders and developed a strong network. The Bulgarian team negotiated with several potential partners to host the BKH which continued until September 2016, finally successfully agreeing to locate the training unit and the consultation room in the building of the University of Architecture, Civil Engineering and Geodesy (UACEG) in Sophia. UACEG and the Bulgarian organisation are currently in the process of finalising a contractual agreement.

It is proposed to locate the classroom unit at a prominent position in the main foyer which will attract great attention from the architectural and engineering students and lecturers. This classroom will also house the demonstration models. The working walls, air tightness room and hands on training will be held in a nearby room with easy access between both locations.

The partners in both Pleven and Pazardzhik currently have basic facilities to run T2NZEB trainings, but as yet there is no official agreement formed to become BKHs. Discussions have been carried out to form an association but due to the under-developed local markets, it is only appropriate at this time to provide support. The venues in Pazardzhik and Pleven are equipped with training rooms suitable for classroom training with flexible room layouts and direct access to some RES equipment. Working walls are currently being constructed and training units are available for practical training. It has been agreed to run the EnerPro courses at these venues.

The EnerPro courses are also being provided at a construction high school in the city of Ruse and two RES high schools in Sofia. All these venues may become BKHs in the future once the new organisation is established.

STAKEHOLDERS:

There are a number of stakeholders and specialist advisors active in the development of the BKHs and they are the Bulgarian Construction Chamber, Construction Qualification Ltd., EnEffect, BSyS Ltd. and the University of Architecture, Civil Engineering and Geodesy (UACEG). In addition there are a number of other organizations that are expected to be attracted at a later stage:

Project stakeholders: NAPOO, different chambers (architects, engineers, etc.), professional schools, and construction companies specialized companies in design, production, etc., people working in the field of energy efficient buildings, etc.

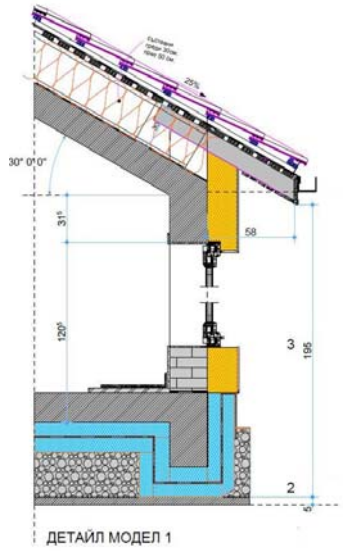
Lectors/specialists (architects, designers) who are usually very well received by the trainees.

One of the important aspects of the project is to implement best practice and standards in this field. The setting up of the network of BKHs with cutting-edge design and facilities, together with the consultations from partners from some of the most advanced countries in this area and the high-quality training of trainers, will permit the execution of the trainings for

construction workers developed on BUILD UP Skills in the best possible manner. The BKH will also provide opportunities for the organization to certify nZEB builders and to update the existing skills. To a large extent, they will also satisfy the existing demand for practical training of trainers and teachers. In addition, demonstration and testing of new products and technologies will be possible, as well as courses by producers and distributors, which will also contribute to the viability of the project.

KITTING OUT THE BKHS

During the sixteen month period, great work was carried out in the design and development of the demonstration models as suggested from the aforementioned ToR document.



The Bulgarian team have designed each model which are currently being constructed in materials suitable for the climate and needs in Bulgaria. The first model demonstrates the importance of continuous insulation, air tightness and thermal breaks. Advice from PHA and PHI have assisted with the design of the model and construction is well underway. It should be noted that the transportation of the models is also an important factor when implementing the design.

Other works include the establishment of the RES technologies with the construction of a mounted working solar panel demonstration models.

RES is an important part of the nZEB requirements and the models produced so far clearly demonstrate how effective renewable sources can be introduced into the modern construction training programmes.

The Market Research has established that specialized EE and RES trainings are necessary for a number of different target groups.

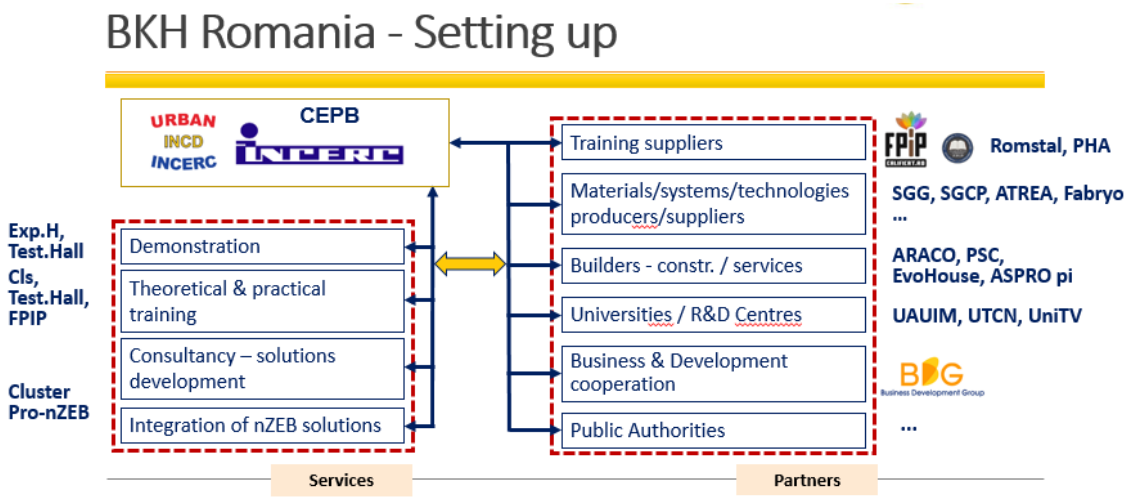
TRAINING

Generally speaking the main target group would be construction sector employees, and a few additional categories:

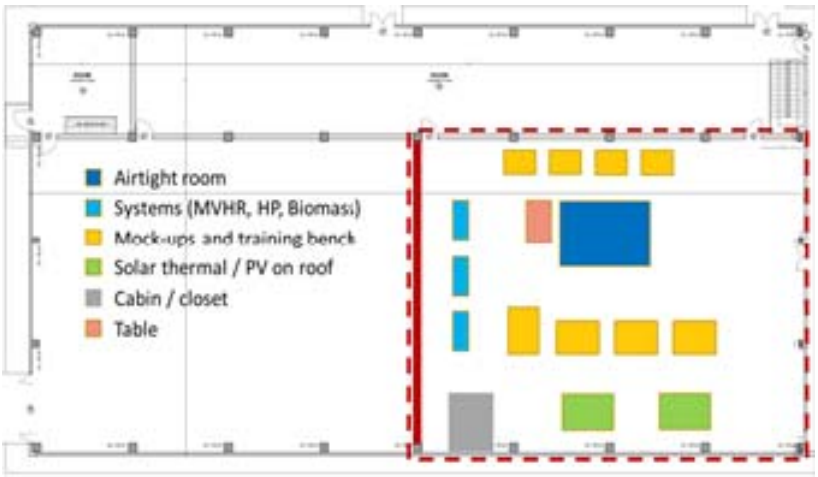
- **Qualified specialists** (high qualified construction specialists, architects, engineers with 4th and higher level of qualification)
- **Tradespeople** (general workers – construction specialists from 1st to 4th level of qualification; technicians (4th level of qualification) and installers (3rd level of qualification), and workers (1st or 2nd level of qualification).
- **Non-specialists** – administration, bankers, salesmen, investors, representatives of the owners' associations, NGOs, specialized media. This group is quite challenging though since it combines numerous smaller subgroups, and each of them has a different level of knowledge regarding EE and RES, and also they have different interests. Therefore, separate trainings for each subgroup might be a good solution.
- **Graduates and post-graduates**
- **Students** (General elective subjects)

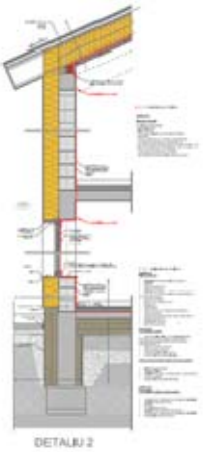
ROMANIA

A network organization for the Romanian Building Knowledge Hubs centered on the existing Centre for Energy Performance of Buildings within INCD URBAN-INCERC was established in June 2016. A dedicated BKH has been facilitated at the existing premises of each of the local partners; URBAN-INCERC, BDG and FPIP. During the set-up stages additional support will be provided by all partners and other stakeholders which have been identified and encouraged to participate in the nZEB project.



As of November 2016, two Memorandum of Understandings have already been signed and two more are in preparation, added to the already planned two BKHs, operated by project partners in Bucharest and Brasov. In Bucharest, INCERC have located a conference building with training and conference facilities. In terms of practical training, the infrastructure is currently under development and requires development to ensure appropriate training and consultations. It is proposed to obtain additional financing for a new project to be developed under the Romanian Structural Funds. There are plans to enlarge the existing buildings to incorporate a Research lab for development and assessment of nZEB technological solutions, including a testing hall. It is envisaged to implement this within three years.



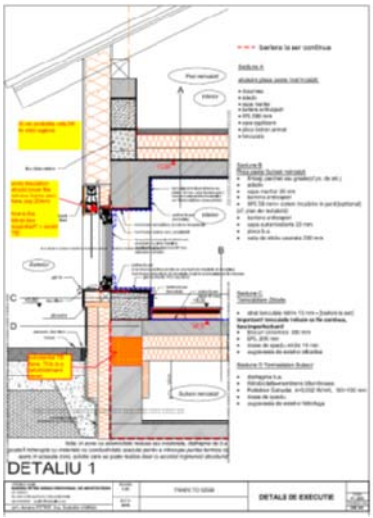


The existing testing hall (Centre EPB) is to be divided into specific areas and this development is advancing slowly but steadily. Infrastructure of the building requires upgrading, such as the retrofitting of the floor, a new lighting system installed, rain proofing the roof, caulking of the windows, installation of radiant heating etc. It is intended that the design and realization of the airtight room is to be completed before training commences as this is an important element of the training programme.

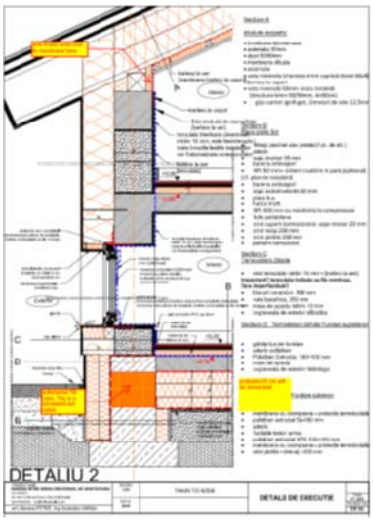
On 20th October 2016 at INCD URBAN-INCERC, Bucharest, the official opening of the BKH took place. This involved a workshop for 61 participants representing all target groups and visits to the prospective training halls and demonstration areas. The event was publicized with two press releases and an article in the Romanian construction magazine. It is also envisaged that BKH Romania will use the existing facilities in Bucharest and Brasov and most likely other stakeholders will be attracted into the nZEB programme soon.

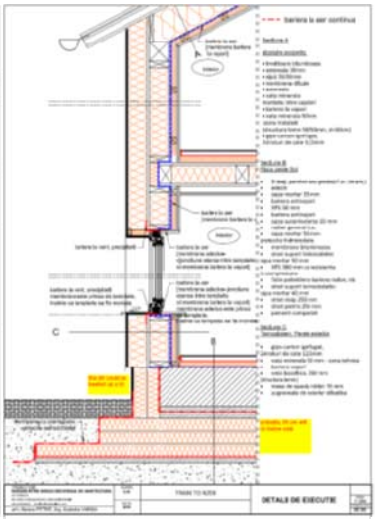
In Brasov, the authorisation procedure is in progress and it is hoped that a BKH will be ready for training in the near future. It has been agreed that various local suppliers and local partners will assist with mock-ups and models with a number of these already completed during November 2016.

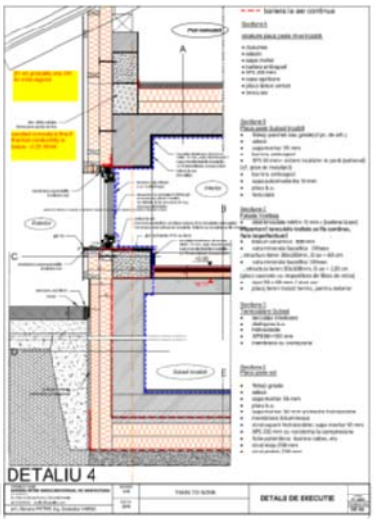
MODELS

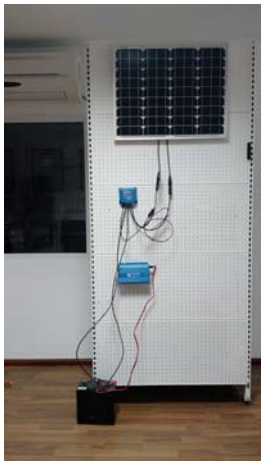


Cluster Pro-nZEB have supported Train-to-nZEB partners with the design and preparation of mock-ups, materials and small systems. These include the demonstration models which are crucial to carry out the training programmes. During the design stages of the demonstration models discussions were held in great detail with PHA and PHI and advice was provided to amend certain detailing and provide alternative solutions if possible. The designs were finally approved in November and presented to the consortium. The demonstration models will be constructed in the coming months and installed into the relevant BKH ready for the training programmes to begin.









Much support was obtained from the construction industry and local partners and are worth a mention and gratitude. These include Atrea, Aereco, Fabryo, Saint Gobain, Alumil, Aluprof, Teraplast, ASPRO, Zero Energy Assoc and Knauf Insulation.

The local partners in Brasov have assisted with the construction and provision of materials to complete RES solar energy mock-ups and these are to be used for certain

modules within the training programmes.

TRAINING

As the preparation of the BKH premises is ongoing, the Romanian team concentrated on the development of detailed training programmes suitable for the Train-to-nZEB stakeholders. Additionally, a pedagogical train-the-trainer course is being developed by the Romanian project partner BDG, looking to complement the already existing technical knowledge.

The nZEB training courses have been structured for three specific cohorts:

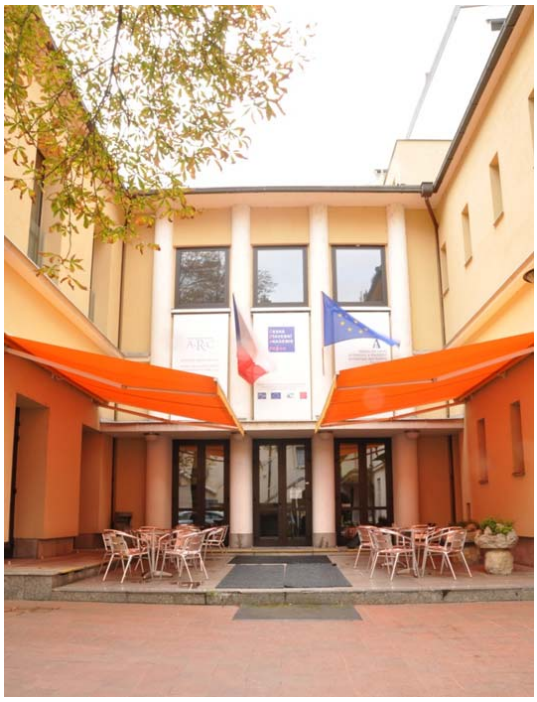
A. On-site Construction Crafts & Professions,
B. Specialists,
C. Non-specialists

Specific modules are provided within each course, to enable each individual to tailor-make there training and assist with developing their required skills and competences linked to their qualification level and/or basic occupation. This knowledge is framed out in 20 modules, each with a detailed description of knowledge and skills gained, competence acquired, learning outcomes, training aids and materials, evaluation procedure and total duration.

CZECH REPUBLIC

OVERVIEW:

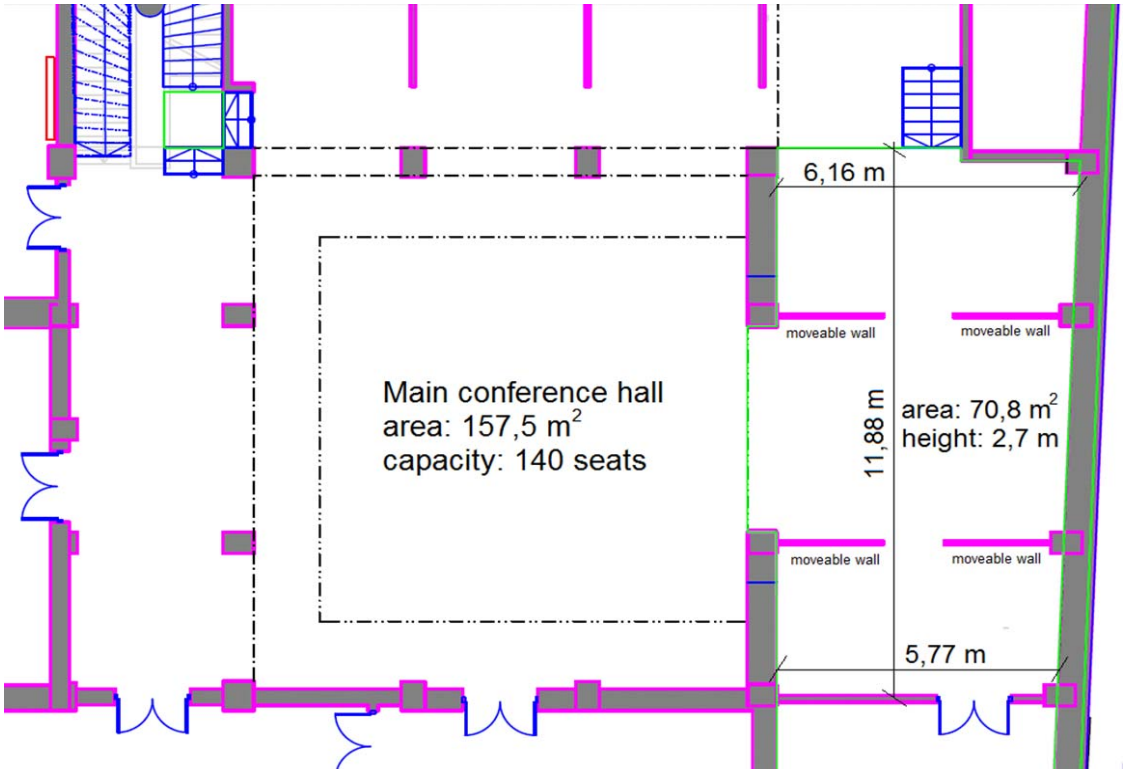
The Czech Republic partner SEVEn will act as the umbrella body for the support and funding of the training center. They have established a large network of partners through two related projects - ingREeS and PROF / TRAC - who are already committed in launching and assisting with the operation of the BKH. There are many important stakeholders involved in the project implementation e.g. Association of Building Entrepreneurs of the Czech Republic, Universities, Czech Green Building Council, Passive House Centre, State Environmental Fund of the Czech Republic, Ministry of Industry and Trade. Czech Chamber of Chartered Engineers and Technicians, Architectural and buildings foundation and Slovak Chamber of Chartered Engineers and Technicians.



SEVEn have concluded an agreement with the Architecture and Building Foundation, ABF. ABF was founded in 1990 on the initiative of the International Union of Building Centres (UICB), which is associated by its statutes to the UN as the recommended form of developing the Czech Building Information Centre. The Foundation was established on the initiative of three individuals who received support for its creation from the then Ministry of Construction and Building of the CR and the Czechoslovak Centre for Construction and Architecture. ABF are further developing co-operation with the Community of Architects (OA), the Czech Chamber of Architects (ČKA), and the Association of Urban Planners.

The Train-to-nZEB consortium visited the premises on 19th July 2016 in a view for approval. Similar agreement is intended for a BKH in Ostrava with comparable conditions offered, to complete and provide appropriate nZEB training models and equipment.

The BKH provided by ABF is located in part of the main building. The conference hall can be used for classroom training purposes and the area behind the hall is suitable for the location of the demonstration models.



It is proposed that the opening of the BKH in Prague and Ostrava will be carried out in early 2017, which will coincide with a large event, with attendance of the Train-to-nZEB partners and representatives of relevant state authorities and main project stakeholders. The models require completion before training can commence and additional materials will be required prior to an official opening.

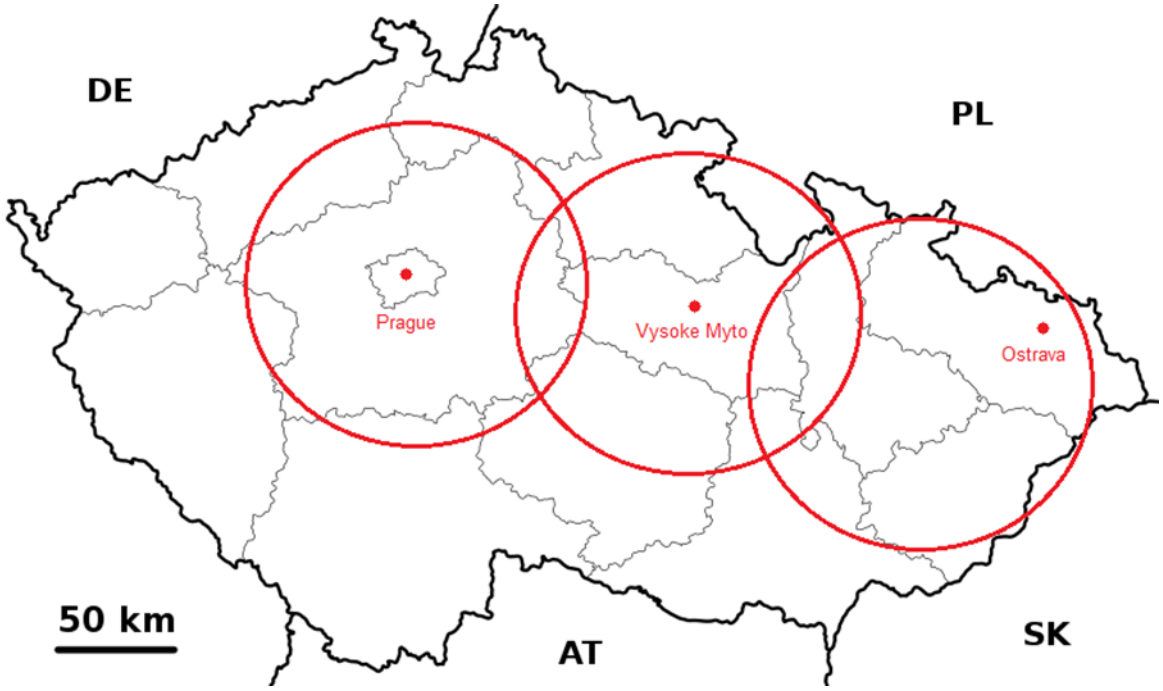
MODELS

SEVEn have modified the drawings of the demonstration models following advice and suggestions from PHA and PHI and are ready to start the manufacture of the demonstration construction types. There will initially be four construction types applicable to the common native constructions and the climatic conditions for the region. It is intended that the models will be in-situ before February 2017.

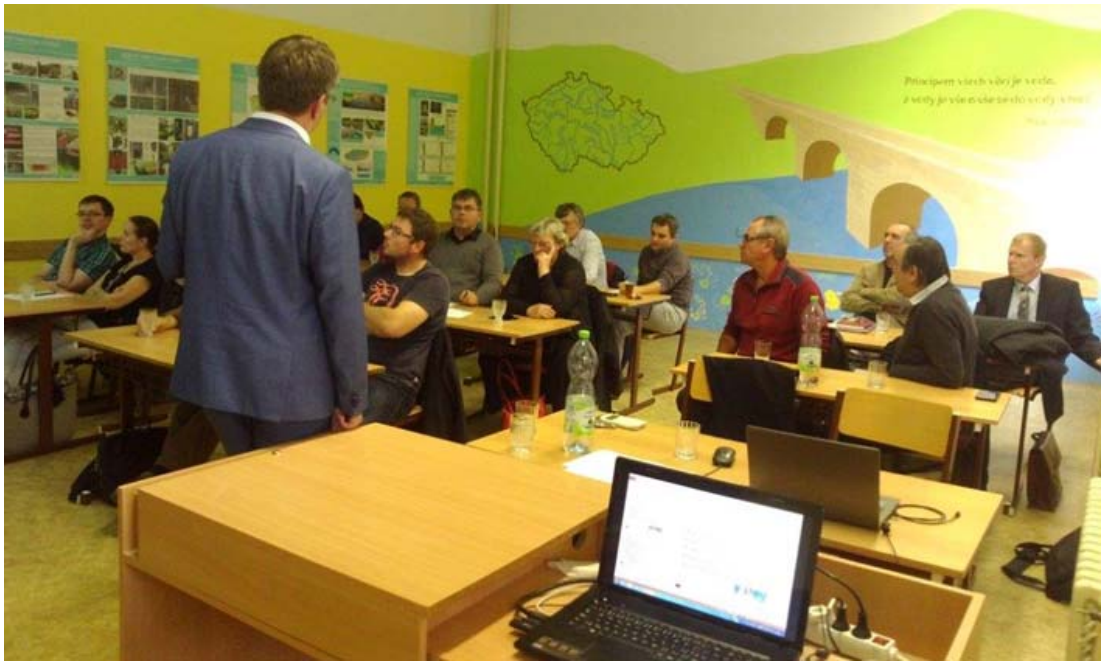
It is intended that duplicate demonstration models will be constructed in Ostrava which will be used as the second BKH. The University Center for Energy Efficient Buildings are agreeable to support and provide assistance with the design and preparation of the drawings and the construction of the demonstration models. It is estimated that the costs will be in the region of 20,000 Euro for 4 models and will be completed by January 2017. Discussions will be held on the priorities of further equipment.

TRAINING

The ABF BKH will execute the largest part of Train-to-nZEB training activities, using trained trainers with extensive experience and supported by the core team of the organization SEVEn. The group of about 20 trainers have undergone a short train-the-trainer session based on materials received by project partners and will start the execution of the trainings in the autumn of 2016, according to the project agenda.



Training was held at the VŠB-Technical University of Ostrava, on the 5th October 2016. Training also took place at the Technical Institute of Civil Engineering and the High School of Civil Engineering in Vysoke Myto on 18th October 2016 and finally at the CTU, Faculty of Civil Engineering in Prague on 19th October 2016.



As implied by the results of the marketing survey conducted by SEVEn in the Czech Republic, the trainings will follow short-term programmes at acceptable prices, combining different training methods (theory, practical exercises, demonstrations, video content and online training) and providing flexibility in terms of the timing of the sessions. The training programmes themselves will follow the pattern set by a selection of EU-financed projects such as QualiBuild and IDES-EDU, as well as contributions by project partners.

TURKEY

The Turkish Building Knowledge Hubs, BKH is governed by the rector of Ege University, Prof. Dr. Candeger Yılmaz. Situated in the Civil Engineering Department, it will be managed by nZEB Turkish BKH Coordinator Prof. Dr. Türkan GÖKSAL ÖZBALTA.

Additionally, the team sets itself the ambitious task to provide continuous technical, administrative and financial consultations for the different stakeholders' groups through case-specific consultations on integrated design, whole building nZEB design, new products and solutions, utilization of the energy saving potential, optimization of the overall energy performance, available financing sources, energy planning for public authorities, etc., according to the national specifics and the capacity.

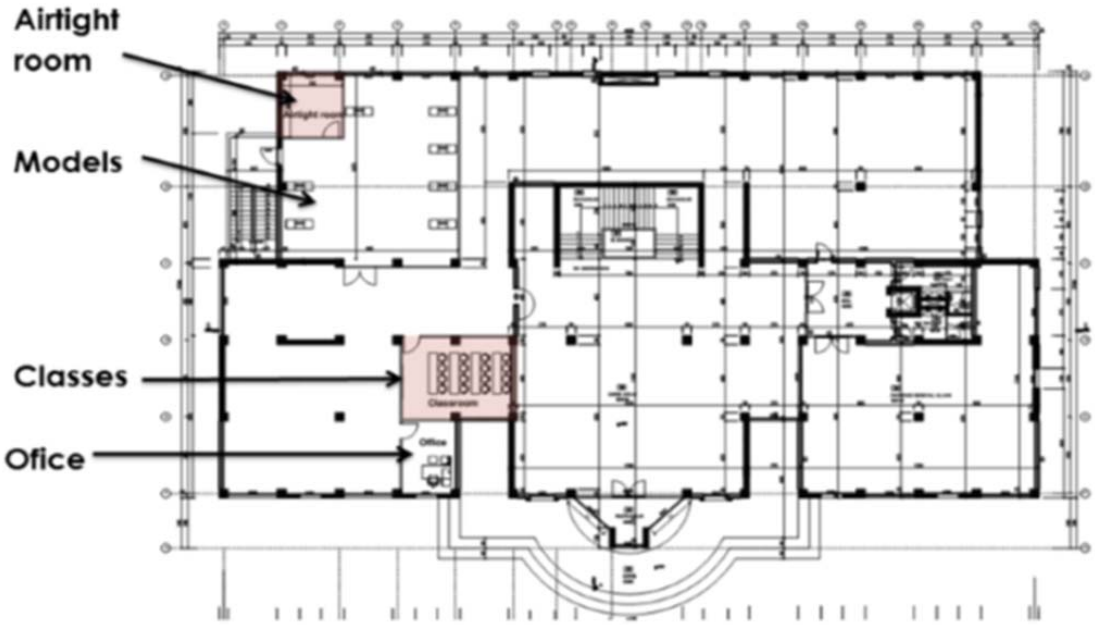
It is intended that engineers, architects, municipality employees and decision makers as well as the trainers in Turkey will be brought together through a unique portal, having significant impact on the construction industry in a large and fast-developing country.

Various stakeholders and organisations are involved with the development of the BKH which include:

1. AEGEAN REGION CHAMBER OF INDUSTRY (EBSO)
2. YENI AYKUTLAR TOPRAK MINING CO.
3. MERAM ROOF TILE– TOPRAK SANAYI A.Ş.
4. KUDRET ROOF TILE SANAYI VE TIC. A.Ş.
5. BLOKSAN – Kiremit-Tuğla- Reks-Asmolen- Blok Sanayi ve Tic. Anonim Şirketi
6. KNAUF INSULATION
7. TUKSAD (TURGUTLU BRICK AND ROOFTILE INDUSTRIAL ASSOCIATION
8. CAM MERKEZİ SANAYII VE TICARET A.S.
9. GULER GUNES ENERJI SISTEMLER A.S.
10. ESSIAD (Aegean Region Refrigeration Industry and Business Association)
11. ONUR ENERGY

The Department of Civil Engineering at Ege University are making big steps towards the completion of the Train-to-NZEB training centre, using the existing facilities but also delivering the necessary demonstration models and training equipment at a very fast pace.

In its remit, the Ege BKH sets as its goal to design and develop training for most crafts and professions related to nZEBs (building shell, building services and RES installation in buildings) and to support the building sector professionals (engineers, architects, municipality employees and decision makers) on delivering quality nZEB projects.



The agreed BKH has been located within the Ege University with classroom, training and demonstration facilities provided on a permanent basis. A specific area for hands-on practical training is in place and whilst the demonstration models are being constructed, additional training elements are being designed and installed to ensure appropriate training. These include an airtightness room, mVHR, samples of windows and insulations.

The air tightness room is an integral part of the BKH and quotes have been attained to determine appropriate costings for the blower door equipment. These ranged from €15,000 to €4,500 and a specification for the air tightness room will be provided by PHA so that appropriate quotes can be obtained by the Turkish organisation.

MODELS

In Turkey, clay bricks are the main method of construction ranging from existing solid forms to modern manufactured insulated brick designs which enable improved energy efficient building. The design of the demonstration models accounted for differing climatic conditions in particular for the extremes in the cold and warm regions. Eight demonstration models are currently being built on site with the intention of explaining the principles of nZEB and carrying out training programmes. Thermal insulation will be applied to each demonstration model during December 2016 to complete the models.

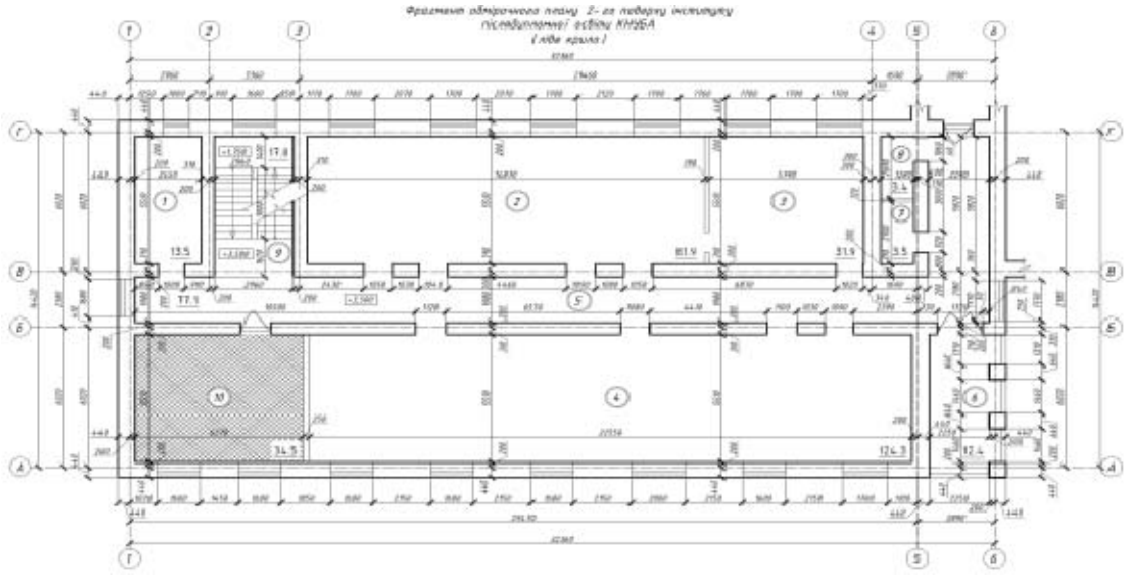
Theoretical calculations were carried out before work commenced to ascertain the correct levels of required insulation for a nearly zero energy building, nZEB. Detailing has also been discussed with PHA and PHI to ensure that appropriate thermal breaks will be considered and applied. In addition, aerated and timber walls will also be constructed.

RES

PV and solar collector will be added to the roof model to represent RES which is an important part of the Train-to-nZEB training programme. The roof system and solar panels are being sourced from BRAAS a leading roofing manufacturer in Turkey.

UKRAINE

In the Ukraine, the project activities are managed by the Train-to-nZEB partner Municipal Development Institute (MDI). The Ukrainian Building Knowledge Hub has been established at the Kyiv National University of Construction and Architecture (KNUCA), where a Memorandum of Understanding has already been signed. MDI are presently concentrating on the refurbishment and completion of the BKH. Although Ukraine did not receive financial assistance to develop the BKH, substantial amount of work has been completed with the construction and installation of the demonstration models, sourcing and obtaining appropriate equipment and demonstration stands, procurement of computers and other necessary materials to carry out the training programmes.



Overall, the KNUCA building has four floors adapted to accommodate primarily training classrooms, administrative and household premises. The rooms need some refurbishment. The available area can be used as follows:

1) room №1 (administrative room);

2) room №2 (demonstration space, workshop room;

3) room №3 (space to accommodate public events, trainings, and other events);

4) room №4 (lecture room and conference room);

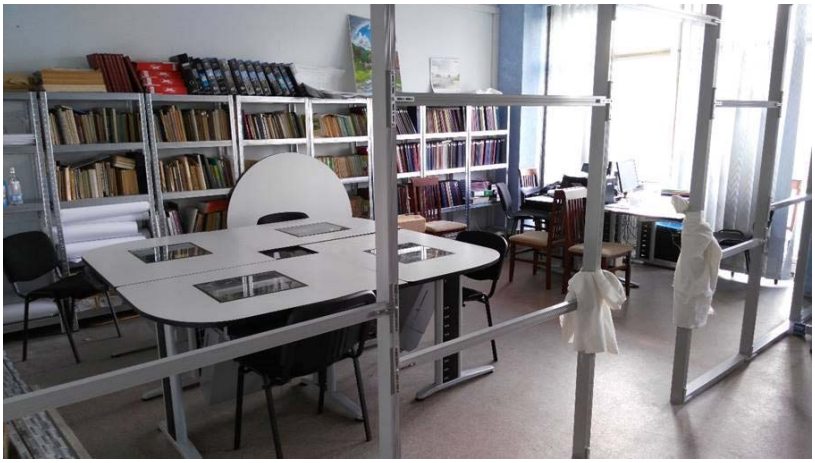
5) passage, 2nd floor of the left wing of the building;

6) balcony on the 2nd floor of the left wing of the building;

7) WC №1 on the 2nd floor of the left wing of the building;

8) WC №2 on the 2nd floor of the left wing of the building;

9) staircase - the left wing of the building.



OPENING

The international scientific conference "Build Master Class 2016" took place in Kyiv on November 16-18. The local partner of the Train-to-NZEB Project – Kyiv National University of Building and Architecture (KNUCA), hosted the Conference. This is the largest international conference in the Ukraine covering the entire scope of design and building knowledge. Last year despite of the status of the conference – national rather than international – it gathered 506 academics and industry professionals. As the main partner in Train to nZEB, MDI assisted KNUCA in organizing the conference and on November 16, the first day of the conference, MDI held the grand opening of the Ukrainian BKH. The participants of the conference were invited to visit the Training Centre.

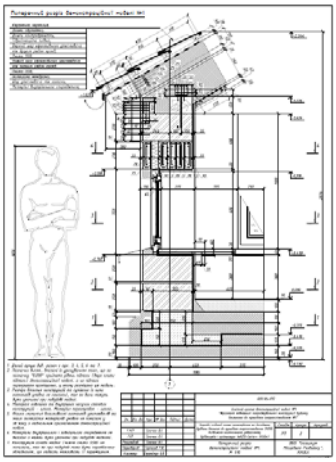
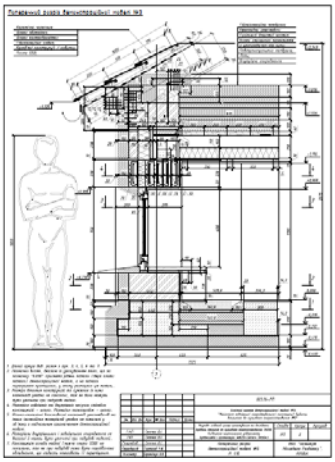
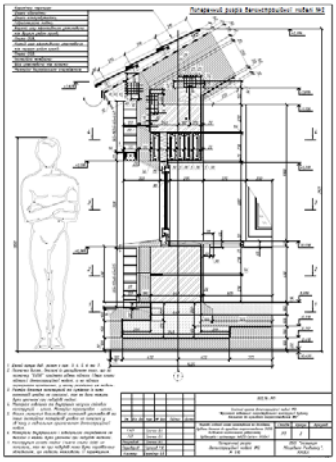
MODELS

MDI has mobilized support from a wide range of producers of EE equipment and materials such as:

- *Rehau* (windows, equipment for engineering networks);
- *TechnoNIKOL* Corporation (energy efficient heat insulation);
- *Henkel Bautechnik* (energy efficient construction materials and equipment, façade systems); *Danfoss* (engineering networks and energy efficient equipment);
- *Aklima* (ventilation and air conditioning systems, alternative energy sources);
- *Manez* (protection from sunlight, design of energy efficient buildings),

- *Vaillant* (heating and ventilation systems), *URSA* (heat insulation and sound proof materials), *Wienerberger* (ceramic materials and ware: blocks, bricks, tiles, other building envelope materials suitable for passive houses),
- *Techno-Alliance* (building materials and aluminium structures, including structures for building envelope and translucent systems).


The demonstration models are currently being finalized after a period of review of the drawings by PHI and PHA. Discussions were held on the suitability of specific products and the insulation properties of certain materials. Detailing was considered especially with regards to thermal bridging and the demonstration models will be complete by the end of 2016.

TRAINING

The trainers will be selected from the pool of leading experts in energy efficiency in construction and architecture; it is anticipated to mobilize expertise of KNUCA and professionals from EE equipment and materials producers (partner companies) who participate in the development of norms and regulations and national building standards. With their assistance, detailed training programmes are already developed, using the experience and also the existing training facilities and laboratories of local manufacturers.

The trainings commenced on the 17th November 2016 with a 5-days training programme (November 17-21) and was attended by members of the construction industry, professionals and academics. Further information on the Ukrainian contribution to Train-to-nZEB is available at: http://www.mdi.org.ua/train-to-nzeb.

By the end of 2016 MDI plan to conduct at least 3 trainings for professional highly qualified specialists (target: 60 trained professionals by the end of the year) at the Ukrainian Building Knowledge Hub.

APPENDIX A – SURVEYS

Business Plan Survey for the design and setting up of Building Knowledge Hubs, BKHs. (Training facilities and Consultation Centres).

Coordinator: Limerick Institute of Technology (LIT)

Partners:
EnEffect (Bulgaria)
B SYS БИ СИС ООД (Bulgaria)
BCC (Bulgaria)
INCD URBANINCERC (Romania)
BDG (Romania)
FUNDATIA F.P.I.P.-VIITOR (Romania)
SEVEn (Czech Republic)
EGE UNIVERSITESI (Turkey)
MDI (Ukraine)

OVERVIEW

The Train to NZEB project is designed to establish a functioning network of training and consultation centres, known as Building Knowledge Hubs (BKH), providing practical trainings, demonstrations and complex consulting services for the implementation of nearly-zero energy buildings (NZEB). In order to deliver functional BKHs a comprehensive set of guidelines for the business plan should be developed as listed below:

- Design and setting up of the training and consultation centres (BKH)
- Administrative and Legal Constitution
- Management
- Maintenance and continual usage.

Within this WP, the BKHs are to be physically established, either through the updating of existing training centres' and consultation facilities or through the provision of equipment for new premises. In parallel, networking activities between the BKHs and within the regions are to be initiated, legally substantiated, facilitated through the required infrastructure and sustainably maintained.

The attached Survey form is to be completed by the relevant project partners overseeing the deployment of the BKHs and is divided into 3 parts:

1. **Operation and Management of BKHs**
2. **Design of Training Centres**
3. **Design of Consultation Centres**

Countries that do not have existing facilities may have facilities in mind or are proposing a premises, in this case details of the proposed premises and organisation structures should be completed.

Please clearly indicate if the facilities/premises are existing or 'proposed'.

PART 1 - OPERATION AND MANAGEMENT OF BKHS

ADMINISTRATION AND LEGAL CONSTITUTION

A business plan template will be forwarded to each BKH partner and in turn will be asked to complete the relevant sections applicable to their own country. In order to formulate a business plan and sustainably establish the BKHs, it will be necessary to consider the legal standing of the business, if not already done so. In general terms most business groupings will form a 'company'. A company is a legal form of business organisation. It is a separate legal entity and, therefore, is separate and distinct from those who run it. A company will have a set of rules and regulations for running and maintaining the company. These rules and regulations are also known as the constitution or as the 'Articles of Association' and may have to be registered. This legal requirement may vary for each country.

A company may not have to draw up a constitution but in its absence the company will be governed by the Companies Act. This may determine the rights, powers, duties and obligations conferred on the company, its board of directors and its shareholders.

It is paramount that each partner determines the best legal standing for its BKHs and seek independent legal advice.

MANAGEMENT STRUCTURE

It is acknowledged that the BKHs may be incorporated into existing organisations or may be new entities. In an effort to visualise the existing or proposed management structures a sample organisational template for partners to complete is attached within the Survey form. This template is not rigid and other formats are acceptable.

MAINTENANCE

BKHs are a long term initiative and as part of this project the centres need to be assessed and remain viable for 3 years. It is intended that the centres will be designed, kitted out, managed and maintained in a sustainable manner and continue operating well beyond the influence of the Train to NZEB project.

The following questions should be asked about the maintenance and upkeep of the knowledge hubs, but many more questions exist:

- What type of maintenance is required?
- Who is responsible for updating models?
- Who is responsible for the construction of the models?
- Who carries out the maintenance?
- Is there housekeeping/cleaning staff?
- Consider mobile units
    - What form should they take? Truck / trailer/ other/ mobile office/ satellite offices etc.?
    - What are the maintenance implications?

FUTURE USAGE

As mentioned earlier it is intended that BKHs will continue long after the influence of the Train to NZEB project. The business plan will make every effort to outline a sustainable future for the BKHs, but the opinions and input from the partners is paramount for success. Therefore, ask yourself the following questions:

- Current and future staffing requirements?
- What funding options are available?
- Should courses be paid for?
- Who will attend the course?
- Is there industry support?
- Who are the relevant stakeholders?
- Should BKHs go to a National rollout?
- Does BKHs stay within the forming company?
- Should the training transfer to national training agencies?
- Should the training transfer to university / apprentice school?
- Should the training transfer to private enterprise?
- Is a modular/mobile unit viable? therefore can travel around the country and capture a wider audience?

PART 2 – DESIGN OF TRAINING CENTRES

Further to the set of guidelines, ToRs for the design of the training facilities, you are asked to input information on your existing or proposed centres in the attached survey form. This form includes the following:

- Requirements for the training premises
- Specification of the necessary equipment,
- Review of the available products and solutions,
- Description of the building materials,
- Description of products installations,
- Description of tools required

The guidelines will be focused on providing opportunities for the conduction of specialized trainings for all (or most) crafts and professions related to the building envelope, building services and RES installation in buildings. The specifications will cover the design for stationary training centres and mobile training labs

Refer to the Roadmaps relevant to your country as developed in the BUSI BUILD UP Skills Pillar I and BUILD UP Skills Pillar II (if applicable).

All the information will be publicly available for use by external interested parties.

PART 3: DESIGN OF CONSULTATION CENTRES

Further to the set of guidelines, ToRs for the design of the consultation centres, you are asked to input information on your existing or proposed centres in the attached form.
This form includes the following considerations:

1. Technical,
2. Administrative
3. Financial consultations

A survey has already been disseminated to each partner to list and provide information of the different stakeholders' groups within their country. These stakeholders will provide the basis for elaboration of a flexible, on-demand service program specialized in the implementation of complete business projects.

These will include case-specific consultations on integrated design, whole building design, new products and solutions, the utilization of the energy saving potential, the optimization of the overall energy performance, available financing sources, the energy planning for public authorities, etc.

Please note that all the information provided in this Business Plan Survey is to be developed further in the business plan template.

SURVEY FOR BULGARIA

Required Information:

Please complete the following where applicable. The more information that you can provide will further improve the quality and success of the BKHs.

The drop down tabs require you to click on the arrows to view the possible choices.

Partner details

	Name of BKH partner	**EnEffect**
	Address of BKH partner	
	Address 1	
	Address2	
	Street	**1, Hristo Smirnenski Blvd**
	City	**1164 Sofia**
	Country	**Bulgaria**
	Telephone number	**+ 359 2 963 17 14**
	Mobile number	**+ 359 882 493 110**
	Website	**www.eneffect.bg**
Coordinator	Last name / family name	**Tzanev**
	First name	**Dragomir**
	Job title	**Deputy Executive Director**
	+359 2 963 17 14	**+359 2 963 17 14**
	Mobile number	**+ 359 882 493 110**
	Skype contact	**drtzanev**

Contact person 1	Last name / family name	**Stankov**
	First name	**Alexander**
	Job title	**Manager**
	Telephone number	**+359 2 963 17 14**
	Mobile number	**+359 884 416 632**
	Skype contact	**Chondy02**
Contact person 2	Last name / family name	
	First name	
	Job title	
	Telephone number	
	Mobile number	
	Skype contact	

Training Centre (TC) details:

Ownership of TC

Public / Private	**Both – two sites operating**
Limited / Unlimited Company	**Unlimited & school**
Company name	**Tangra / Henry Ford vocational high school**
Article of Association or Company constitution	**Yes**

	Number of employees	**Appr. 50/80**
Address	Line 1	**174 Europe Blvd**
	Line 2	**8, Haidut Sider Str**
	Street	
	City	**Sofia**
	Country	**Bulgaria**
	Post/ZIP code	

Management of TC

	Public / Private	**both**
	Limited / Unlimited Company	**Partnership agreement**
	Company name	**n/a**
	Article of Association or Company constitution	**Yes**
	Number of employees	**n/a**
Address if different from above	Line 1	**Office of EnEffect**
	Line 2	
	Street	**1, Hristo Smirnenski Blvd**
	City	**Sofia**
	Country	**Bulgaria**
	Post/ZIP code	**1164**
Manager 1	Last name, First name	**tbd**

Manager 2		
Company secretary		
Other 1		
Maintenance	Facility Manager	**Yes**
	Maintenance Manager	**No**
	Cleaning Staff	**No**

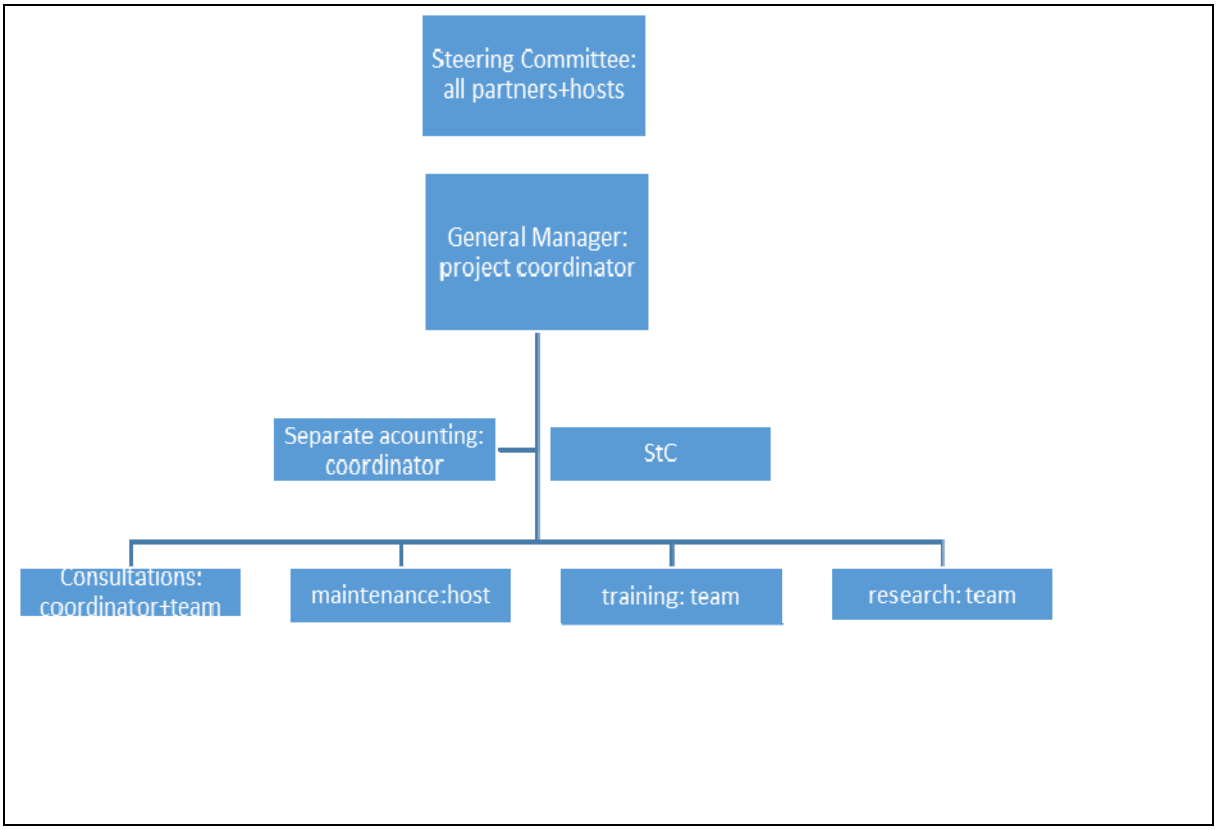
Additional information

The BKH will be structured around two physical training centers, hosted by different partners, specialized on construction/mechanical skills and RES respectively
The T2NZEB team will conclude separate cooperation agreements (contracts) with each of them
The first one is with the only Bulgarian MHVR producer Tangra, which would provide new premises and facilities for the construction/mechanical practical trainings, as well as classrooms
The second is with Henry Ford vocational high school, which already has sufficient facilities for RES trainings and experience in developing training plans, programmes, materials and conducting trainings for both students and adult workers.

*** Please indicate below the proposed Organisation Structure for the BKHs.**

Organisation Structure (tbd)

Please insert the relevant hierarchy for the management of the organisation and who will be running and maintaining the BKHs (both training and consultation centres)



Training Centre 1 details:

Training Centre (TC)

Address

Is the location of TC different from above location	No
Building name / name of TC	Tangra
Line 1	
Street	**174 Europe Blvd**
City	Sofia
Country	Bulgaria

Post/ZIP code	
Opening hours	9-20

***Demonstration space: in design phase**

Size of demonstration area (m^2)	More than 100
Layout	Rectangular
Free wall space (m)	tbd
Height to ceiling (m)	tbd
Number of power outlets	tbd
Operating Voltage/current	tbd
Number of overhead lights	tbd
Total wattage	tbd
Height from floor (m)	More than 6
Lux at 1m	tbd
Natural daylight	No
Number of fire exits	tbd

* Please provide floor plans and photographs if available. Indicate location of lights, sockets, windows, exits and fixed objects on these drawings.

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	Yes

Models and Cut-aways: ALL SUBJECT TO FURTHER DISCUSSION & DESIGN

*** Model 1** (Brief description)

one solid concrete block with external insulation & one insulated aerated concrete wall

*** Model 2** (Brief description)

One monolith (brick) construction with external insulation, with sloping roof

*** Model 3** (Brief description)

One timberframe construction

*** Practice wall 1** (Brief description) : to be further discussed

two timber frame, two solid concrete blocks with external insulation, two monolith (brick) construction with external insulation, one insulated aerated concrete wall. Each of these comprises the basic structure with a window and different sized pipes / ducts and trainees, including a ventilation duct, passing through

*** Practice wall 2** (Brief description)

* Please provide photographs for each model

* If you have more models than the form allows please supply on another sheet.

Specialist equipment available: all to be provided by the project / sponsors

Thermal imaging camera	No
*	
Blower door fan **with** manometer	No
*	
Blower door fan **without** manometer	No
*	
Smoke gun	No
*	
Hot wire anemometer	No
*	
Air-tight room	No
*	

* If 'Yes' please provide details

****Non-specialist equipment: all to be provided by the project / sponsors**

Craft knife	No
Measurement tape	No
Hand saw	No
Power saw	No
Hammer	No
Spirit level	No
Power drill	No
Cutting bench	No
Other **state**	

** 4-6 pieces of equipment required depending on number of practice walls

Additional information

Most of the equipment, and especially insulation and airtightness supplies and materials, windows, bricks/aerated concrete, and hopefully a part of the models/practice walls, are expected to be provided by sponsors/advertisers. Talks are conducted with suppliers of almost all necessary materials and equipment.
EnEffect possesses a thermal imaging camera which could be used for the goals of the project if resources are not sufficient to buy a new one.

Air-tight room (if present)

In design state

Area (m^2)	
Height (m)	
Attic	Yes/No
Skylight	Yes/No
Number of windows	
Number of doors	

Ventilation system	Yes/No
MVHR	Yes/No
Heating system	Yes/No
Service Cavity	Yes/No
Lighting	Yes/No
Service intrusions	Yes/No

Additional information

The airtight room will be designed following the examples described in the ToR and presented in CDETB training centers, using the

Renewable energy systems

Wind turbine	Yes	
	*	
Solar PV	Yes	
	*	
Charge controller	Yes	
	*	
Inverter	Yes	

*	
Solar thermal (vacuum tube)	Yes
*	
Solar thermal (flat plate)	Yes
*	
Solar tank/storage	Yes
*	

Building systems

Air Handling Unit (AHU)	Yes
*	
Mechanical ventilation **with** heat recovery (MVHR)	Yes
*	
Condensing boiler	Yes
*	

* Please provide details

Additional information

The RES facilities are all provided by Henry Ford school, which, in addition to those, has thermal pump with demo underground pipelines installation, pellet boiler, combined heating systems and even mini-water power station. All equipment is operating. Air handling units are also available.
Mechanical ventilation **with** heat recovery (MVHR) will be provided by the specialized company Tangra, host of the other part of the BKH.

Classroom details

	In design phase or existing in the school	
	Size of classroom (m^2)	
	Seating capacity	20
	No. of power sockets	
	Number of desks	10
	Desk arrangement	Moveable
	Number of chairs	20
	Number of fire exits	1
Resources in classroom		
	Overhead projector	Yes
	Interactive whiteboard	No
	Computer(s) for instructor(s)	Yes
	Computers for trainees	Bring own / Both (at different hosts)
	Other	

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	Yes

Additional information

The first host (Tangra) will provide a new premise according to design by EnEffect. Solutions are flexible at this stage.
The second host (Henry Ford) has all the facilities related to a big vocational high school, hosting up 1500 students... and even a bit more. Pictures are attached.

Consultation room

Size of room (m^2)	tbd
Seating capacity	8-10
No. of power sockets	4
Number of desks	roundtable
Desk arrangement	Moveable
Number of chairs	8-10
Number of fire exits	1
Connected to demonstration area	Yes

Resources in consultation room

Overhead projector	Yes
Interactive whiteboard	No
Computer(s) for consultant(s)	Yes
Other	

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	Yes

Additional information

Situated in hosts premises / offices. EnEffect's office could also be used for ancillary consultation prior/post demonstrations

Administration area (for support staff)

Size of administration area (m^2)	
Seating capacity	
Number of desks	
Computers available for BKH administration purposes	

Ancillary Services

Toilet facilities	Same as above
Tea/coffee area	Yes/No
Canteen	Yes/No
Security	Same as above

Additional information

Using existing capacities

Additional Information

Preliminary talks for supporting the centre with free materials/supplies are held with companies like Rollplast and Adverso (windows), Izocam (insulations), etc. The team is credible enough to attract sponsors once the shape of the facilities gets clearer.


MITSUBISHI ELECTRIC
ZUBADAN
ecodan
HYPER HEATING


ZUBADAN
ecodan
HYPER HEATING


www.sunstar.bg


TERMONOVA

SURVEY FOR ROMANIA

Required Information:

Please complete the following where applicable. The more information that you can provide will further improve the quality and success of the BKHs.

The drop down tabs require you to click on the arrows to view the possible choices.

Partner details

	Name of BKH partner	**NIRD URBAN-INCERC**
	Address of BKH partner	**Sos. Pantelimon 266**
	Address 1	
	Address2	
	Street	
	City	**Bucharest**
	Country	**Romania**
	Telephone number	**+4 0216272740**
	Mobile number	
	Website	**www.incd.ro**
Coordinator	Last name / family name	**Petran**
	First name	**Horia**
	Job title	**Head of Centre EPB**
	Telephone number	**+4 0212550835**
	Mobile number	**+4 0723712420**
	Skype contact	**h_petran**

Contact person 1	Last name / family name	**Petcu**
	First name	**Cristian**
	Job title	**Head of Laboratory ITEE**
	Telephone number	**+4 0212550835**
	Mobile number	**+4 0727933350**
	Skype contact	
Contact person 2	Last name / family name	
	First name	
	Job title	
	Telephone number	
	Mobile number	
	Skype contact	

Partner details

Name of BKH partner	**FPIP-Viitor Brasov**
Address of BKH partner	Cladirea GREEN CENTER-Str. Brinduselor nr. 74, **etaj 3**, BIROU 8 **Cod Postal 500397**
Address 1	
Address2	
Street	Brinduselor
City	**Brasov**
Country	**Romania**

	Telephone number	**+4 0268 331 329**
	Mobile number	**+4 0751 272 222**
	Website	**www.calificat.ro**
Coordinator	Last name / family name	**Mereuta**
	First name	**Felicia**
	Job title	**Project Manager**
	Telephone number	
	Mobile number	**+4 0724 563 878**
	Skype contact	
Contact person 1	Last name / family name	**Mereuta**
	First name	**Alina**
	Job title	**Communication responsible**
	Telephone number	
	Mobile number	**+4 0721 318 120**
	Skype contact	**All33na**
Contact person 2	Last name / family name	**Stoia**
	First name	**Ioan**
	Job title	**President**
	Telephone number	
	Mobile number	**+4 0744 265 456**
	Skype contact	

Partner details

	Name of BKH partner	**Business Development Group**
	Address of BKH partner	**80 Plantelor Str. Sector 2, 023976**
	Address 1	
	Address2	
	Street	**Plantelor**
	City	**Bucharest**
	Country	**Romania**
	Telephone number	**0040213179870**
	Mobile number	**0040744298803**
	Website	**www.bdgroup.ro**
Coordinator	Last name / family name	**Nanu**
	First name	**Ciprian**
	Job title	**Business Development Expert**
	Telephone number	**0040213179870**
	Mobile number	**0040723152330**
	Skype contact	**cipriann1**
Contact person 1	Last name / family name	**Nanu**
	First name	**Florentina**
	Job title	**Communication Expert**

	Telephone number	**0040213179870**
	Mobile number	**004723152330**
	Skype contact	**florentinan**
Contact person 2	Last name / family name	**Danila**
	First name	**Narcisa**
	Job title	**Market Research Consultant**
	Telephone number	**0040213179870**
	Mobile number	**0040733518457**
	Skype contact	**narcisa.danila**

Training Centre (TC) details (NIRD URBAN-INCERC):

Ownership of TC

	Public / Private	**Public**
	Limited / Unlimited Company	**-**
	Company name	**NIRD URBAN-INCERC**
	Article of Association or Company constitution	**No**
	Number of employees	**250**
Address	Line 1	**Sos. Pantelimon 266**
	Line 2	
	Street	

	City	**Bucharest**
	Country	**Romania**
	Post/ZIP code	**021652**

Management of TC

	Public / Private	**Public**
	Limited / Unlimited Company	**-**
	Company name	**NIRD URBAN-INCERC**
	Article of Association or Company constitution	**No**
	Number of employees	**250**
Address	Line 1	
	Street	
	City	
	Country	
	Post/ZIP code	
Manager 1	Last name, First name	**Meita Vasile (General Manager)**
Manager 2		**Petran Horia (Head of EPB Centre)**
Company secretary		
Other 1		**Petcu Cristian (Head of Laboratory)**
Maintenance	Facility Manager	**No**
	Maintenance Manager	**Yes**

Cleaning Staff	**Yes**

Additional information

At the moment, no training centre is actually running within NIRD URBAN-INCERC.

The BKH could be initially developed as a small network (without legal personality) based on the existing Centre for Energy Performance of Buildings (within NIRD URBAN-INCERC) in partnership with FPIP and BDG.

The initial (pilot/national) BKH will be developing activities in Bucharest and Brasov using the existing facilities of URBAN-INCERC and FPIP. The content of the programs and will be agreed between the BKH partners based on the identified priorities in the market and according with the existing infrastructure of URBAN-INCERC and FIPIP as well as planning for the implementation of infrastructure upgrading projects (as detailed below).

Partners URBAN-INCERC and FPIP will take care of the technical training and consultancy. An evaluation of infrastructure status and upgrading needs based on the defined training and consultancy programs will be performed at both partners in the inception phase. A planning for identification of solutions to overcoming the potential gaps will be agreed upon so that in the second part of 2016 the BKH can start the delivery of dedicated programs.

BDG will be responsible for communication for non-specialist stakeholders and on-going connection with the market for the development of functional business models for implementation of nZEB concepts in practice.

The (Pilot/National) BKH will conduct training programs with flexible formats adapted to market needs and will investigate best alternatives for long-term sustainability and multiplication of the BKH format(s) in line with the development of the nZEB market in Romania.

Other stakeholders identified and attracted during the project will become partners in the BKH. The link with other organizations will be done by Partnership Agreement(s) which has to be defined in terms of requirements, responsibilities and benefits, management issues and specific activities (legal advice).The relevant stakeholders' organizations will be more clearly identified and approached after the definition of actual training programs under Train-to-nZEB.

An alternative to be explored in the future is the creation of a Cluster Association for the promotion of nZEB in Romania. This is under preparation now, but not having the scope related to the project Train-to-nZEB. However, the link to the envisaged BKH can be discussed starting February 2016 after the legal registration of the association and the discussion of the Cluster development plan.

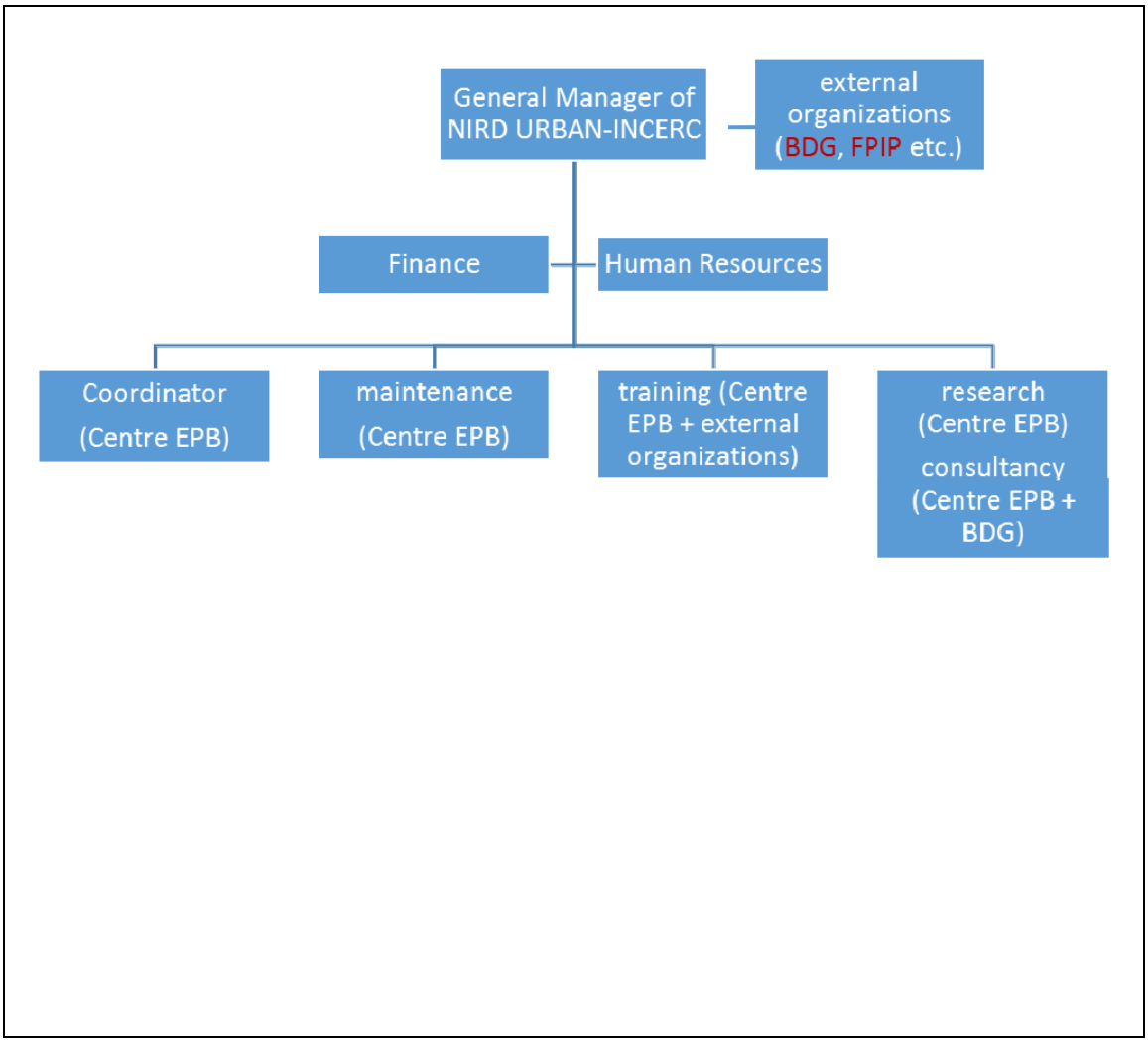
* Please indicate below the proposed Organisation Structure for the BKHs.

Organisation Structure

Please insert the relevant hierarchy for the management of the organisation and who will be running and maintaining the BKHs (both training and consultation centres)

The organisation structure can be defined based on the EPB Centre within NIRD URBAN-INCERC, taking into account the current structure (figure 1) of the institute and the definition of partnership agreements with other stakeholders' organizations.

This approach has to be supported by the establishment of collaborative structures to match two or more organisational charts.



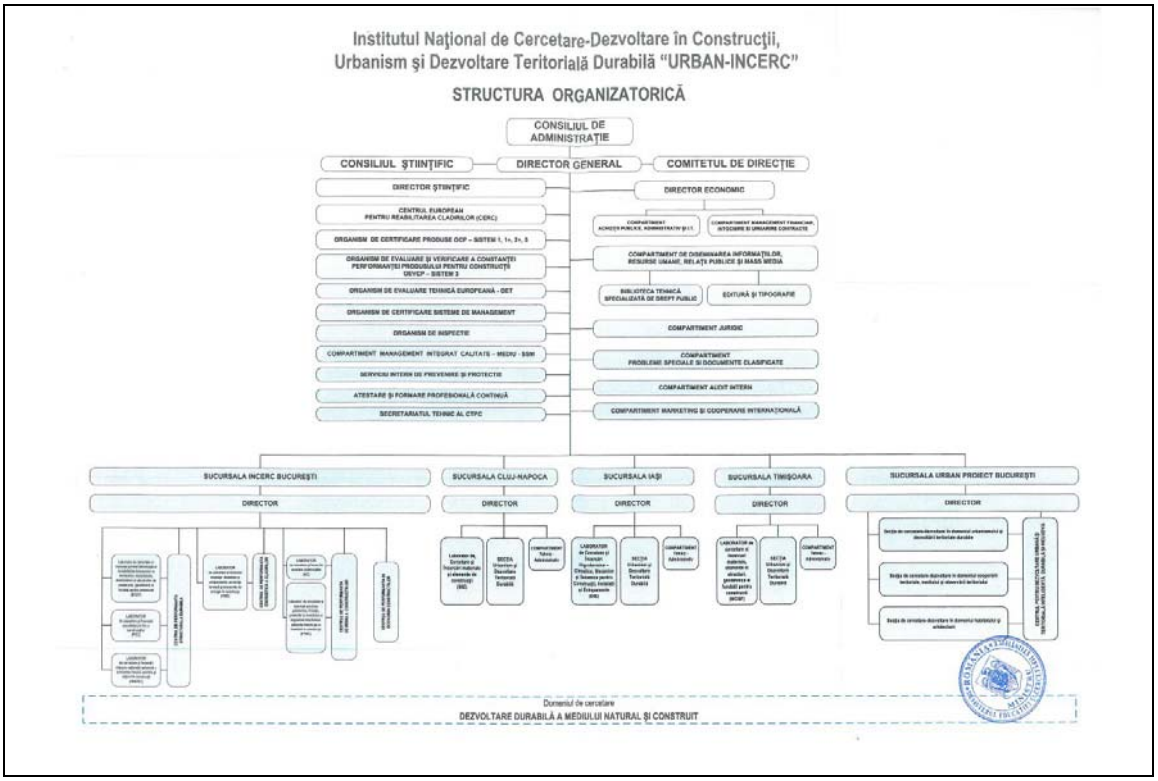


Figure 1 – Organisation structure of NIRD URBAN-INCERC

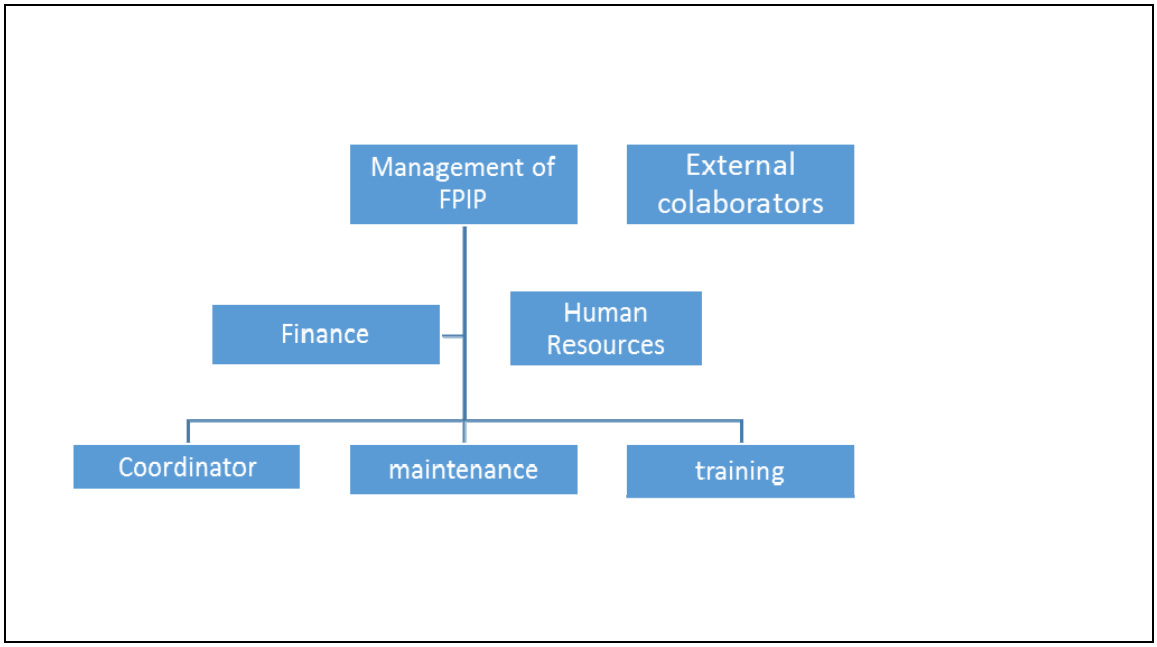


Figure 2 – Organisation structure of F.P.I.P. Viitor

Training Centre details (NIRD URBAN-INCERC):

Training Centre (TC)

Address

Is the location of TC different from above location	No

Building name / name of TC	
Line 1	
Line 2	
Street	
City	
Country	
Post/ZIP code	

Opening hours	08:00 – 16:00

*Demonstration space

Size of demonstration area (m^2)	284
Layout	Rectangular
Free wall space (m)	284
Height to ceiling (m)	5.50
Number of power outlets	flexible
Operating Voltage/current	230/400
Number of overhead lights	tbd
Total wattage	tbd
Height from floor (m)	tbd

Lux at 1m	tbd
Natural daylight	Yes
Number of fire exits	2

* Please provide floor plans and photographs if available. Indicate location of lights, sockets, windows, exits and fixed objects on these drawings.

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	No
Canteen	No
Security	Yes

Models and Cut-aways

* **Model 1** (Brief description)

Experimental building – energy renovated single-family house with controlled heating/cooling (monitored) and solar space attached (for space heating).

* **Model 2** (Brief description)

Experimental building (AnvIntEx) with innovative solutions: (1) ventilated wall with variable thermal resistance and parieto-dynamic effect on air exhaust, (2) space heating / cooling system with endothermic envelope (solar), heat pump, radiant-convective panels, mechanical ventilation with heat recovery.

* **Model 3** (Brief description)

* **Practice wall 1** (Brief description)

* **Practice wall 2** (Brief description)

* Please provide photographs for each model

* If you have more models than the form allows please supply on another sheet.

Specialist equipment available

Thermal imaging camera	Yes
*	**FLIR CAM B20, -40÷120 °C**
Blower door fan **with** manometer	Yes
*	**Retrotec 1000 + DM32**
Blower door fan **without** manometer	No
*	

Smoke gun	No
*	
Hot wire anemometer	Yes
*	**Testo 425, 0÷20 m/s, -20÷70 °C**
Air-tight room	No
*	

* If 'Yes' please provide details

**Non-specialist equipment

Craft knife	Yes
Measurement tape	Yes
Hand saw	Yes
Power saw	No
Hammer	Yes
Spirit level	Yes
Power drill	Yes
Cutting bench	Yes
Other **state**	

** 4-6 pieces of equipment required depending on number of practice walls

Additional information

Air-tight room (if present)

Area (m^2)	
Height (m)	
Attic	Yes/No
Skylight	Yes/No
Number of windows	
Number of doors	
Ventilation system	Yes/No
MVHR	Yes/No
Heating system	Yes/No
Service Cavity	Yes/No
Lighting	Yes/No
Service intrusions	Yes/No

Additional information

An air-tight room could be designed and accommodated within the testing hall (Building unit C) of the EBP Centre building.

Renewable energy systems

Wind turbine	No
*	
Solar PV	No

*	
Charge controller	No
*	
Inverter	No
*	
Solar thermal (vacuum tube)	No
*	
Solar thermal (flat plate)	Yes
*	**2 m² panels installed on terrace of EPB Centre**
Solar tank/storage	Yes
*	**100 l**

Building systems

Air Handling Unit (AHU)	Yes/No
*	
Mechanical ventilation **with** heat recovery (MVHR)	Yes

*	**Installed in AnvIntEx pilot building**
Condensing boiler	No
*	

* Please provide details

Additional information

The experimental building AnvIntEx, located on the URBAN-INCERC–Bucharest platform, is a Ground-Floor+1Level building, with sloped roof. The structure is made of reinforced concrete frames and prefabricated panels with exterior thermal insulation (the thermal resistance of the exterior walls is 1,5 m²K/W). There are four rooms in the building, two on each level, of which two are experimental rooms and the other two are used as technical spaces.

The rooms at first floor are used: first room to perform experimental research / demonstration for 2 developed solutions: (1) endothermic (solar) façade+ Heat pump + radiative-convective panels + HR ventilation, and (2) building envelope component with variable thermal resistance), and the second one as witness room.

The building and the heating/cooling system of the experimental areas are equipped with sensors for the measurement of the intensive and extensive parameters, for the storage of the primary data and for the processing of the measured values for the operation of the main equipment.

Classroom details

Size of classroom (m^2)	8 rooms total 540 m²
Seating capacity	Total 350
No. of power sockets	tbd
Number of desks	tbd

Desk arrangement	Moveable
Number of chairs	350
Number of fire exits	1/room

Resources in classroom

Overhead projector	Yes
Interactive whiteboard	No
Computer(s) for instructor(s)	Yes
Computers for trainees	Don't know

Other	List of rooms in separate table below

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	No
Canteen	No
Security	Yes

Additional information

The rooms are available for various training / conference (seminars, workshops, and round tables), consultation. They are located outside the main building of EPB Centre, but in the same location (address).

Info Conference / training rooms NIRD URBAN INCERC

No.	Room	Floor area (m^2)	No. places (chairs)	Window area (m^2)
1	Conference building Blue Room	213.45	140	12.8
2	Conference building Red Room	63.75	45	15.1
3	Conference building Green Room	47.58	45	11.2
4	Conference building Brown Room	63.13	32	14.9
5	Administrative building Room 154 (ECBR)	27.88	20	10.6
6	Administrative building Room 153 (Energy auditors)	65.72	38	15.9
7	Administrative building 146	27.80	15	10.5
8	Administrative building Room 17	33.57	14	10.6

Consultation room

Size of room (m^2)	
Seating capacity	
No. of power sockets	
Number of desks	
Desk arrangement	Static
Number of chairs	

Number of fire exits	
Connected to demonstration area	No

Resources in consultation room

Overhead projector	Yes/No
Interactive whiteboard	Yes/No
Computer(s) for consultant(s)	No

Other	

Ancillary Services

Toilet facilities	Same as above
Tea/coffee area	Yes/No
Canteen	Yes/No
Security	Same as above

Additional information

Consultation facilities are included in the classrooms presented above.

Administration area (for support staff)

Size of administration area (m^2)	~ 500 m^2
Seating capacity	> 25
Number of desks	> 25
Computers available for BKH administration purposes	~ 5

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	Yes

Additional information

Office area within the EPB Centre main building is considered.

Additional Information

The modernisation of the building of the Centre for Energy Performance of Buildings (EPB Centre) is envisaged using Structural Funds (including energy renovation at nZEB standards and development of research infrastructure). The best-case scenario is: preparation and submission of development project proposal – spring 2016 (after the launching of 2016 Call), evaluation and contracting – end 2016, full implementation – mid 2019).

The EPB Centre building („C21 – Building Services Testing Hall") has a total floor area of 1.793 m^2, is a private propriety belonging to the government and it is administrated by NIRD "URBAN-INCERC", under the coordination of the Ministry of Education and Scientific Research.

The Building is 40 year old, being built in 1970-1977 period. No works of consolidation or capital repairs of the building have been done.

C21 Building has a rectangular shape with maximum plane dimensions 24,83 x 74,36 m, structured in 3 parts: Building unit A aimed for offices and research laboratories, building unit B aimed for research and testing laboratories and building unit C aimed for testing spaces.
The proposed functional zoning to be implemented by modernization of existing facilities: Ground floor - (elevation +0.00), comprises building unit A (office spaces, research laboratories), building unit B (research laboratories, chiller, thermal test room, annexes), building unit C (classrooms, spaces used for practical work, spaces for testing equipment and demonstration).
Currently the classrooms are placed in other buildings than EPB Centre building (within the NIRD URBAN-INCERC platform), the offices of EPB Centre can be used as administrative area, the two demonstration buildings can be used as demonstration facilities, while the building unit C of EPB Centre can be used to accommodate the airtight room and some demonstration models (half of the useful area of the testing hall – approx. 284 sq.m).

Training Centre (TC) details (FPIP):

Ownership of TC

	Public / Private	**Private**
	Limited / Unlimited Company	
	Company name	**FPIP**
	Article of Association or Company constitution	**No**
	Number of employees	**9**
Address	Line 1	Cladirea GREEN CENTER-Str. Brinduselor nr. 74, etaj
	Line 2	3, BIROU 8
	Street	
	City	**Brasov**

	Country	**Romania**
	Post/ZIP code	**500002**

Management of TC

	Public / Private	**Private**
	Limited / Unlimited Company	
	Company name	**FPIP-VIITOR**
	Article of Association or Company constitution	**No**
	Number of employees	**9**
Address	Line 1	Cladirea GREEN CENTER-Str. Brinduselor nr. 74, etaj
if different from above	Line 2	3, BIROU 8
	Street	
	City	**Brasov**
	Country	**Romania**
	Post/ZIP code	500397
Manager 1	Last name, First name	**Stoia Ioan**
Manager 2		
Company secretary		
Other 1		
Maintenance	Facility Manager	**Yes**
	Maintenance Manager	**No**
	Cleaning Staff	**No**

Additional information

The maintenance activities are provided by the building manager in which the training centre is running.

*** Please indicate below the proposed Organisation Structure for the BKHs.**

Training Centre details:

Training Centre (TC)

Address

Is the location of TC different from above location	Yes

Building name / name of TC	Same as the company – FPIP
Line 1	Parcul industrial Metrom,
Line 2	
Street	Carpatilor no. 60
City	Brasov
Country	Romania
Post/ZIP code	500002

Opening hours	It depends on the activity (8.00-20.00)

***Demonstration space**

Size of demonstration area (m^2)	100
Layout	Rectangular
Free wall space (m)	13
Height to ceiling (m)	2.80

Number of power outlets	20 (flexible)
Operating Voltage/current	230
Number of overhead lights	8
Total wattage	800
Height from floor (m)	2.5
Lux at 1m	
Natural daylight	Yes
Number of fire exits	1

* Please provide floor plans and photographs if available. Indicate location of lights, sockets, windows, exits and fixed objects on these drawings.

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	No
Canteen	No
Security	Yes

Models and Cut-aways

* **Model 1** (Brief description)

* **Model 2** (Brief description)

* **Model 3** (Brief description)

* **Practice wall 1** (Brief description)

* **Practice wall 2** (Brief description)

* Please provide photographs for each model

* If you have more models than the form allows please supply on another sheet.

Specialist equipment available

Thermal imaging camera	No	
*		
Blower door fan **with** manometer	No	
*		

Blower door fan **without** manometer	No
*	
Smoke gun	No
*	
Hot wire anemometer	No
*	
Air-tight room	No
*	

* If 'Yes' please provide details

**Non-specialist equipment

Craft knife	Yes
Measurement tape	Yes
Hand saw	No
Power saw	Yes
Hammer	Yes
Spirit level	Yes
Power drill	Yes
Cutting bench	Yes
Other **state**	

** 4-6 pieces of equipment required depending on number of practice walls

Additional information

Pictures of the TC are attached to this file. The space has a mobile separating wall that can be rearranged for the desired needs. For now it is used for the practical training in the field of mechanics, electrical etc.

Air-tight room (if present)

Area (m^2)	
Height (m)	
Attic	Yes/No
Skylight	Yes/No
Number of windows	
Number of doors	
Ventilation system	Yes/No
MVHR	Yes/No
Heating system	Yes/No
Service Cavity	Yes/No
Lighting	Yes/No
Service intrusions	Yes/No

Additional information

Renewable energy systems

Wind turbine	No	
		*
Solar PV	No	
		*
Charge controller	No	
		*
Inverter	No	
		*
Solar thermal (vacuum tube)	No	
		*
Solar thermal (flat plate)	No	
		*
Solar tank/storage	No	
		*

Building systems

Air Handling Unit (AHU)	No
*	
Mechanical ventilation **with** heat recovery (MVHR)	No
*	
Condensing boiler	No
*	

* Please provide details

Additional information

Classroom details

Size of classroom (m^2)	24
Seating capacity	16
No. of power sockets	10(flexible)
Number of desks	5
Desk arrangement	Moveable
Number of chairs	16

Number of fire exits	1

Resources in classroom

Overhead projector	Yes
Interactive whiteboard	No
Computer(s) for instructor(s)	Yes
Computers for trainees	Provided
Other	

Ancillary Services

Toilet facilities	Same as above
Tea/coffee area	No
Canteen	No
Security	Same as above

Additional information

Consultation room

Size of room (m^2)	
Seating capacity	
No. of power sockets	
Number of desks	
Desk arrangement	Static
Number of chairs	
Number of fire exits	
Connected to demonstration area	Yes/No

Resources in consultation room

Overhead projector	Yes
Interactive whiteboard	Yes/No
Computer(s) for consultant(s)	Yes/No

Other	

Ancillary Services

Toilet facilities	Yes/No
Tea/coffee area	Yes/No
Canteen	Yes/No
Security	Yes/No

Additional information

Administration area (for support staff)

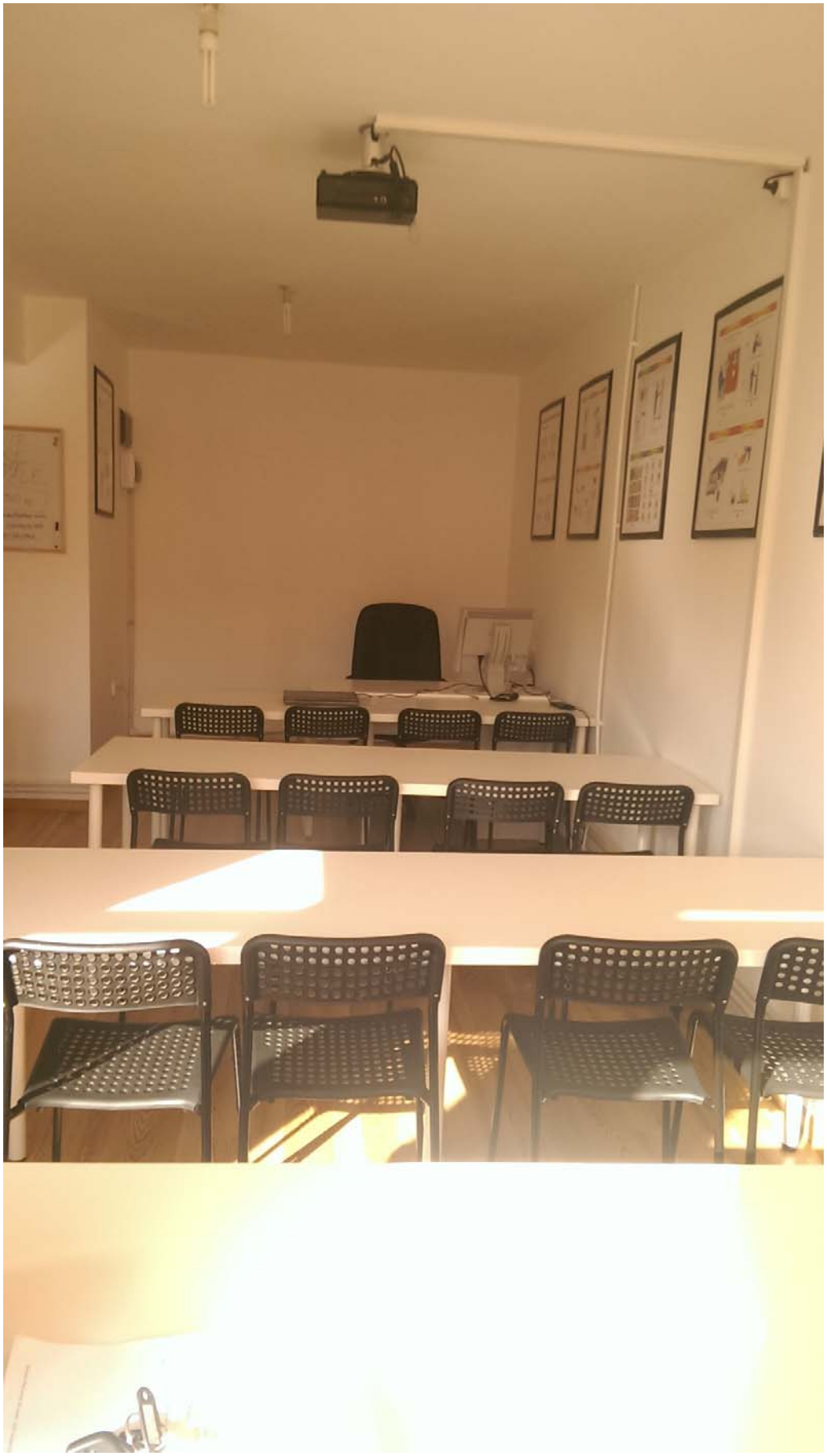
Size of administration area (m^2)	20
Seating capacity	7
Number of desks	1
Computers available for BKH administration purposes	1

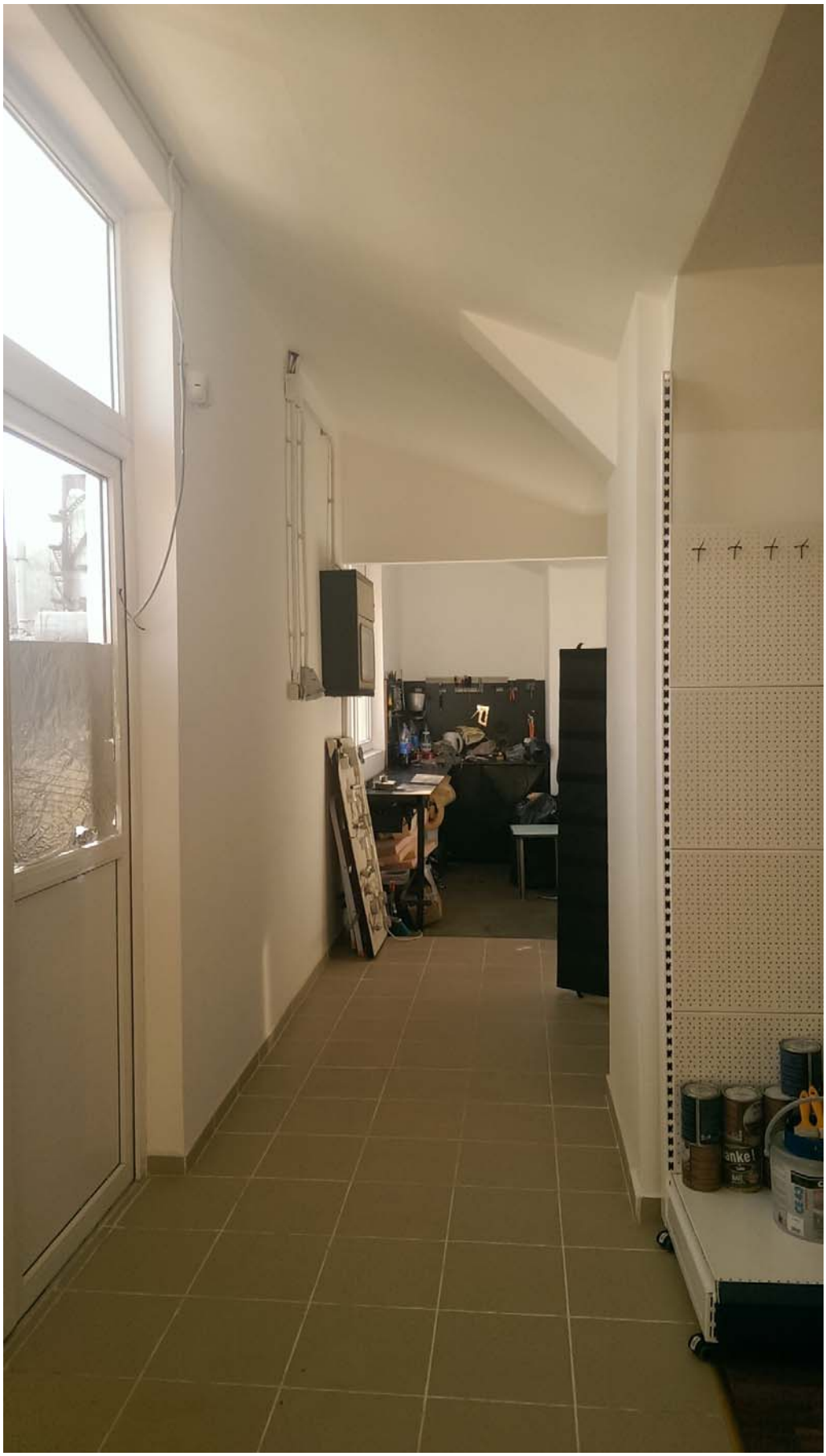
Ancillary Services

Toilet facilities	Yes
Tea/coffee area	No
Canteen	No
Security	Yes

Additional information

The address of the administration area differs from the address of the TC. Here are provided 2 classrooms, each designed for 18 trainees. There is a computer and a projector provided.





SURVEY FOR CZECH REPUBLIC

Required Information:

Please complete the following where applicable. The more information that you can provide will further improve the quality and success of the BKHs. The drop down require you to click on the arrows for possible choices.

Partner details

	Name of BKH partner	**Foundation for the development of Architecture and Civil Engineering (ABF)**
	Address of BKH partner	
	Address 1	
	Address2	
	Street	**Václavské náměstí 833/31**
	City	**Prague**
	Country	**Czech Republic**
	Telephone number	**+420 224 228 910**
	Mobile number	
	Website	**http://abf-nadace.cz**
Coordinator	Last name / family name	**Fibiger**
	First name	**Jan**
	Job title	**Chairman of the Board**
	Telephone number	**+ 420 224 225 001**

	Mobile number	
	Skype contact	
Contact person 1	Last name / family name	**Podlešáková**
	First name	**Eva**
	Job title	**Director**
	Telephone number	**+420 224 228 910**
	Mobile number	
	Skype contact	
Contact person 2	Last name / family name	
	First name	
	Job title	
	Telephone number	
	Mobile number	
	Skype contact	

Training Centre (TC) details:

Ownership of TC

Public / Private	**Private**
Limited / Unlimited Company	**Foundation**
Company name	**Foundation for the development of Architecture and Civil**

		Engineering
	Article of Association or Company constitution	**Yes**
	Number of employees	**about 10**
Address	Line 1	
	Street	**Václavské náměstí 833/31**
	City	**Prague**
	Country	**Czech Republic**
	Post/ZIP code	**110 00**

Management of TC

	Public / Private	**Private**
	Limited / Unlimited Company	**Foundation**
	Company name	**Foundation for the development of Architecture and Civil Engineering**
	Article of Association or Company constitution	**Yes**
	Number of employees	**about 10**
Address	Line 1	
if different from above	Line 2	
	Street	
	City	
	Country	

	Post/ZIP code	
Manager 1	Last name, First name	**Podlešáková Eva**
Manager 2		
Company secretary		**Jakšová Renata**
Other 1		
Maintenance	Facility Manager	**No**
	Maintenance Manager	**No**
	Cleaning Staff	**Yes**

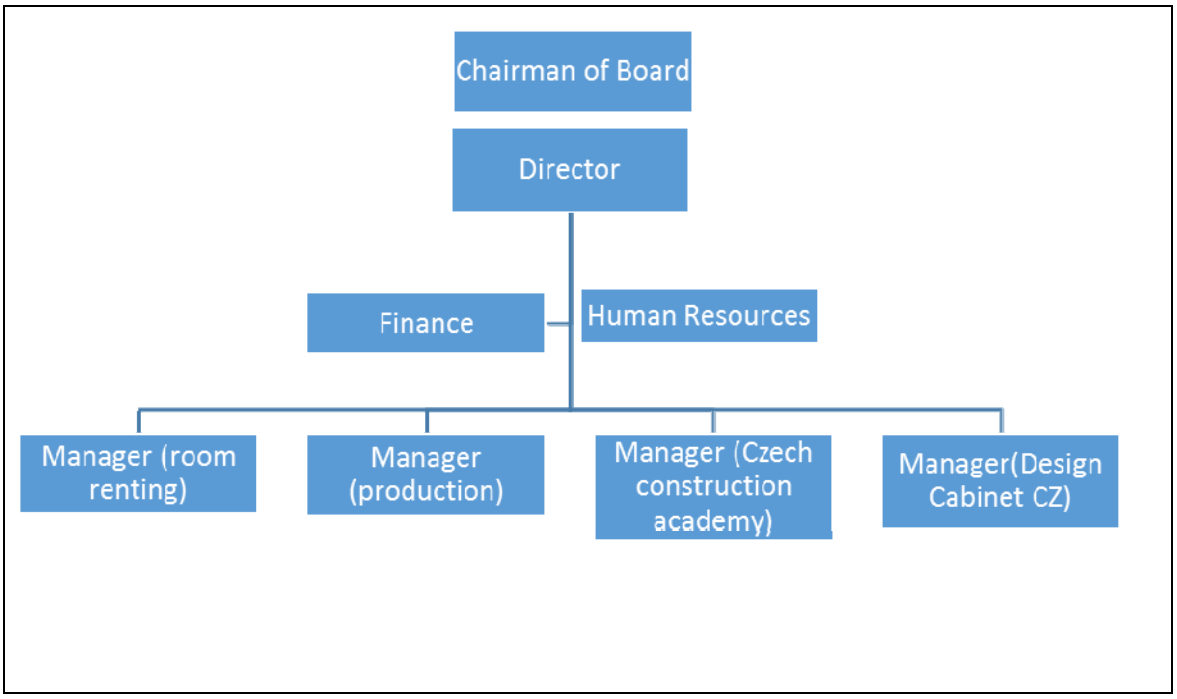
Additional information

Foundation for the development of Architecture and Civil Engineering is the user and the operator of educational center of the Czech Construction Academy, it operates as well a library, a club and a bookstore. The centre offers the facilities for professional meetings, academic, educational, scientific, social and other events, exhibitions, for presentations or business meetings. The halls are equipped with exhibition and audio visual equipment. The center is amply used by individuals and professional associations, chambers, unions, businessmen from the construction field for the presentation of innovations, new legislation or for social purposes.

*** Please indicate below the proposed Management Structure for the BKHs.**

Management Structure

Please insert the relevant hierarchy for the management of the organisation who will be running and maintaining the BKHs.



Training Centre details:

Training Centre (TC)

Address

Is the location of TC different from above location	No
Building name / name of TC	
Line 1	
Street	
City	
Country	
Post/ZIP code	

Opening hours	8.00 – 17.00

***Demonstration space**

Size of demonstration area (m^2)	
Layout	Rectangular
Free wall space (m)	
Height to ceiling (m)	
Number of power outlets	
Operating Voltage/current	220 V
Number of overhead lights	
Total wattage	
Height from floor (m)	
Lux at 1m	
Natural daylight	Yes
Number of fire exits	

* Please provide floor plans and photographs if available. Indicate location of lights, sockets, windows, exits and fixed objects on these drawings.

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	Yes
Security	No

Models and Cut-aways

* **Model 1** (Brief description)

* **Model 2** (Brief description)

* **Model 3** (Brief description)

* **Practice wall 1** (Brief description)

* **Practice wall 2** (Brief description)

* Please provide photographs for each model

* If you have more models than the form allows please supply on another sheet.

Specialist equipment available

Thermal imaging camera	No
*	
Blower door fan **with** manometer	No
*	
Blower door fan **without** manometer	No
*	
Smoke gun	No
*	
Hot wire anemometer	No
*	
Air-tight room	No
*	

* If 'Yes' please provide details

**Non-specialist equipment

Craft knife	No

Measurement tape	No
Hand saw	No
Power saw	No
Hammer	No
Spirit level	No
Power drill	No
Cutting bench	No
Other **state**	

** 4-6 pieces of equipment required depending on number of practice walls

Additional information

Air-tight room (if present)

Area (m^2)	
Height (m)	
Attic	No
Skylight	No
Number of windows	
Number of doors	
Ventilation system	No
MVHR	No
Heating system	No
Service Cavity	No
Lighting	No
Service intrusions	No

Additional information

Renewable energy systems

Wind turbine	No
*	
Solar PV	No
*	
Charge controller	No
*	
Inverter	No
*	
Solar thermal (vacuum tube)	No
*	

Solar thermal (flat plate)	No
*	
Solar tank/storage	No
*	

Building systems

Air Handling Unit (AHU)	No
*	
Mechanical ventilation **with** heat recovery (MVHR)	No
*	
Condensing boiler	No
*	

* Please provide details

Additional information

Classroom details

Size of classroom (m^2)	344 (104.8+157.5+81.6)
Seating capacity	40+110+80
No. of power sockets	
Number of desks	115
Desk arrangement	Moveable
Number of chairs	230
Number of fire exits	

Resources in classroom

Overhead projector	Yes
Interactive whiteboard	Yes
Computer(s) for instructor(s)	Yes
Computers for trainees	Bring own
Other	

Ancillary Services

Toilet facilities	Same as above
Tea/coffee area	Yes
Canteen	Yes
Security	Same as above

Additional information

Consultation room

Size of room (m^2)	
Seating capacity	
No. of power sockets	
Number of desks	
Desk arrangement	Static
Number of chairs	
Number of fire exits	
Connected to demonstration area	Yes

Resources in consultation room

Overhead projector	No
Interactive whiteboard	No
Computer(s) for consultant(s)	No

Other	

Ancillary Services

Toilet facilities	Same as above
Tea/coffee area	Yes
Canteen	No
Security	Same as above

Additional information

Administration area (for support staff)

Size of administration area (m^2)	
Seating capacity	
Number of desks	
Computers available for BKH administration purposes	

Ancillary Services

Toilet facilities	Same as above
Tea/coffee area	Yes
Canteen	No
Security	Same as above

Additional information

SURVEY FOR TURKEY

Required Information:

Please complete the following where applicable. The more information that you can provide will further improve the quality and success of the BKHs.

The drop down tabs require you to click on the arrows to view the possible choices.

Partner details

	Name of BKH partner	EGE UNIVERSITESI (Turkey)
	Address of BKH partner	Ege Üniversitesi Kampüsü
	Address 1	Insaat Mühendisligi Bolumu
	Address2	35100 - Bornova
	Street	
	City	Izmir
	Country	Turkey
	Telephone number	+90 232 388 60 26
	Mobile number	
	Website	http://insaat.ege.edu.tr/
Coordinator	Last name / family name	Goksal Ozbalta
	First name	Turkan
	Job title	Prof.Dr.
	Telephone number	+90 232 388 5185
	Mobile number	+90 532 307 5150
	Skype contact	
Contact person 1	Last name / family name	Sezer
	First name	Alper
	Job title	Assoc. Prof. Dr.
	Telephone number	+90 232 388 60 26
	Mobile number	
	Skype contact	
Contact person 2	Last name / family name	Yildiz
	First name	Yusuf
	Job title	Asst. Prof. Dr.
	Telephone number	
	Mobile number	+90 505 269 3228
	Skype contact	

Proposed Training Centre (TC) details:

Ownership of TC

	Public / Private	Public
	Limited / Unlimited Company	-
	Company name	Ege University
	Article of Association or Company constitution	No
	Number of employees	6000
Address	Line 1	Ege Üniversitesi Kampüsü,
	Line 2	Insaat Mühendisligi Bolumu, Bornova
	Street	
	City	Izmir
	Country	Turkey
	Post/ZIP code	35100

Management of TC

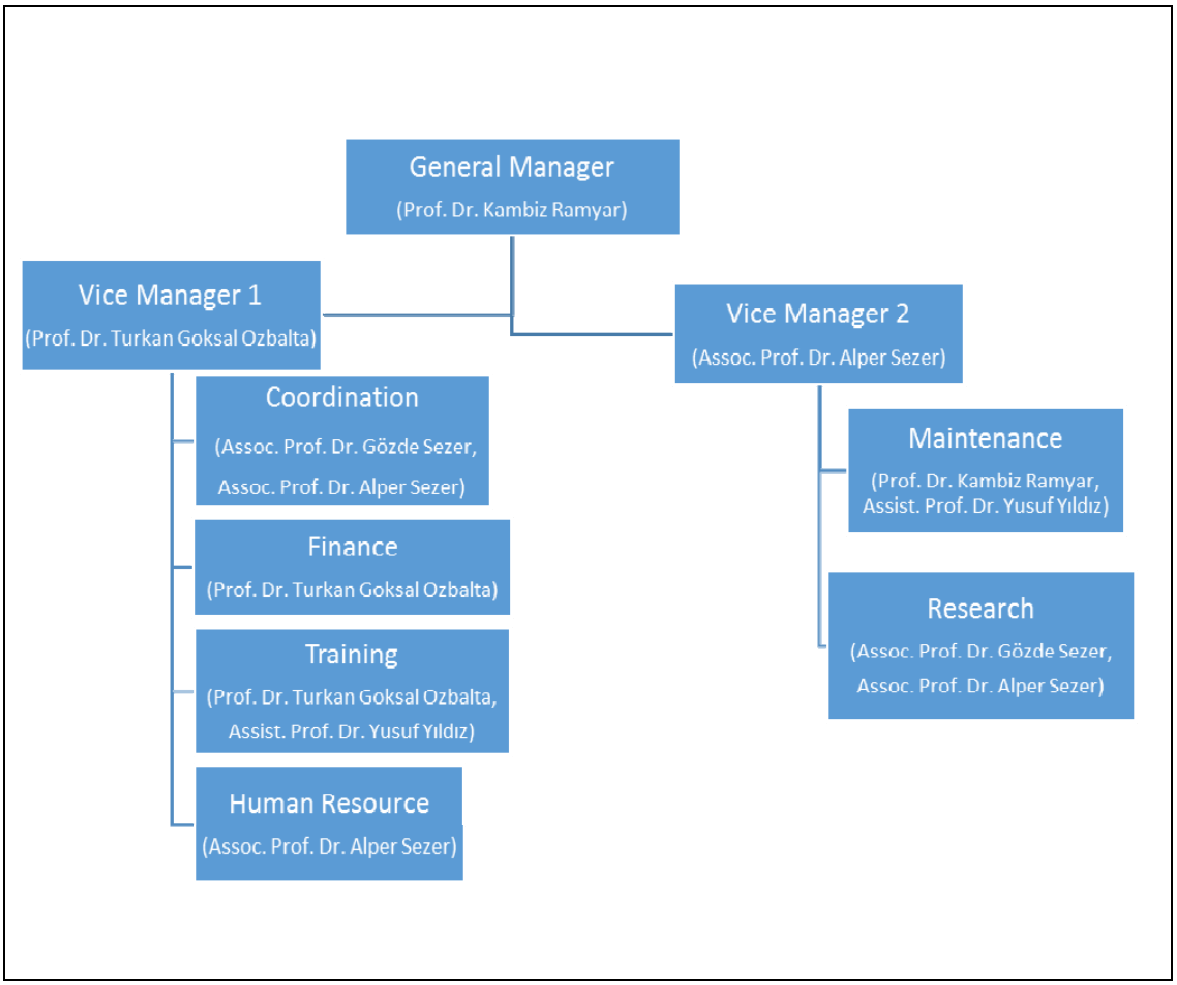
	Public / Private	Public
	Limited / Unlimited Company	-
	Company name	Ege University
	Article of Association or Company constitution	No
	Number of employees	3
Address if different from above	Line 1	
	Line 2	
	Street	
	City	
	Country	
	Post/ZIP code	
Manager 1	Last name, First name	Goksal Ozbalta, Turkan
Manager 2		Sezer, Alper
Company secretary		Sezer, Gozde
Other 1		Yildiz, Yusuf
Maintenance	Facility Manager	Yes
	Maintenance Manager	Yes
	Cleaning Staff	Yes

Additional information

***Please indicate below the proposed Organisation Structure for the BKHs.**

Organisation Structure

Please insert the relevant hierarchy for the management of the organisation and who will be running and maintaining the BKHs (both training and consultation centres)



Training Centre Details:

Training Centre (TC)

Address

Is the location of TC different from above location	No
Building name / name of TC	
Line 1	Ege Üniversitesi Kampüsü,
Line 2	Insaat Mühendisligi Bolumu, Bornova
Street	
City	Izmir
Country	Turkey
Post/ZIP code	35100
Opening hours	8:30pm to 17:00pm

***Demonstration space**

Size of demonstration area (m^2)	40
Layout	Rectangular
Free wall space (m)	0.75
Height to ceiling (m)	3.85 m
Number of power outlets	1
Operating Voltage/current	220 V
Number of overhead lights	4
Total wattage	Variable
Height from floor (m)	1 m
Lux at 1m	300
Natural daylight	Yes
Number of fire exits	1

* Please provide floor plans and photographs if available. Indicate location of lights, sockets, windows, exits and fixed objects on these drawings.

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	Yes
Security	Yes

Models and Cut-aways

* **Model 1** (Brief description)

Roof, wall, floor models will be constructed based on Turkish standards.

* **Model 2** (Brief description)

Roof, wall, floor models will be constructed based on Turkish standards.

* **Model 3** (Brief description)

Roof, wall, floor models will be constructed based on

Turkish standards.

* **Practice wall 1** (Brief description)

Wall with rock wool

* **Practice wall 2** (Brief description)

Wall with glass wool

* Please provide photographs for each model
* If you have more models than the form allows please supply on another sheet.

Specialist equipment available

Thermal imaging camera	No	
*		
Blower door fan **with** manometer	No	
*		
Blower door fan **without** manometer	No	
*		
Smoke gun	No	
*		
Hot wire anemometer	No	
*		
Air-tight room	No	
*		

* If 'Yes' please provide details

**Non-specialist equipment

Craft knife	No
Measurement tape	No
Hand saw	Yes
Power saw	No
Hammer	Yes
Spirit level	No
Power drill	No
Cutting bench	No
Other **state**	

**4-6 pieces of equipment required depending on number of practice walls

Additional information

Thermal camera, blower door unit, hot-box for U value, globe thermeometer, data loggers for measurement of temperature, relative humidity, air velocity, light, CO_2 will be purchased in the scope of the project.

Air-tight room (if present)

Area (m^2)	
Height (m)	
Attic	No
Skylight	No
Number of windows	
Number of doors	
Ventilation system	Yes
MVHR	No
Heating system	Yes
Service Cavity	No
Lighting	Yes
Service intrusions	No

Additional information

Airtight room is not present in Turkish BKH, however, a space is provided for construction. Please see details in attached plans.

Renewable energy systems

Wind turbine	No	
		*
Solar PV	No	
		*
Charge controller	No	
		*
Inverter	No	
		*
Solar thermal (vacuum tube)	No	
		*
Solar thermal (flat plate)	No	
		*
Solar tank/storage	No	
		*

Building systems

Air Handling Unit (AHU)	No	
		*
Mechanical ventilation **with** heat recovery (MVHR)	No	
		*
Condensing boiler	No	
		*

* Please provide details

Additional information

An installation system concerning renewable energy systems is currently not available in Turkish BKH. It is considered to purchase a system using the current project's budget.

Classroom details

Size of classroom (m^2)	47.05
Seating capacity	16
No. of power sockets	2
Number of desks	4
Desk arrangement	Static
Number of chairs	16
Number of fire exits	1

Resources in classroom

Overhead projector	/No
Interactive whiteboard	Yes
Computer(s) for instructor(s)	Yes
Computers for trainees	Bring own
Other	

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	Yes
Security	No

Additional information

It is considered to purchase a computer and overhead projector for this office.

Consultation room

Size of room (m^2)	13
Seating capacity	2~3
No. of power sockets	1
Number of desks	1
Desk arrangement	Moveable
Number of chairs	3
Number of fire exits	1
Connected to demonstration area	No

Resources in consultation room

Overhead projector	No
Interactive whiteboard	No
Computer(s) for consultant(s)	Yes
Other	

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	Yes
Security	Yes/No

Additional information

Administration area (for support staff)

Size of administration area (m^2)	
Seating capacity	
Number of desks	
Computers available for BKH administration purposes	

Ancillary Services

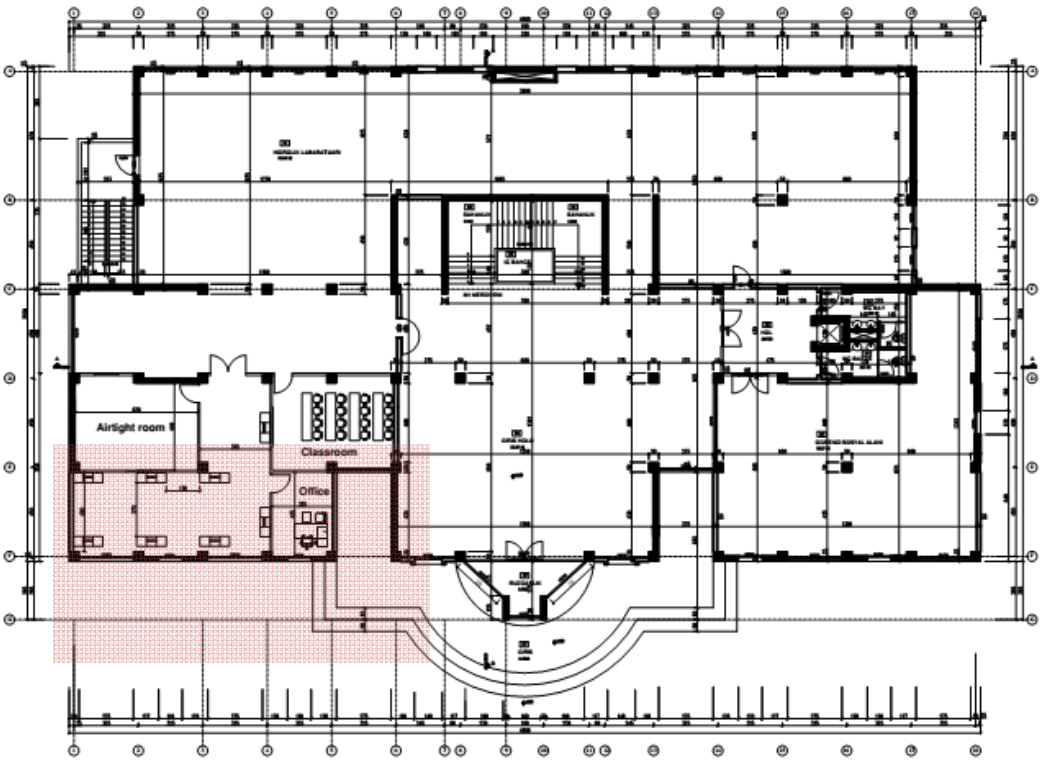
Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	Yes
Security	Yes

Additional information

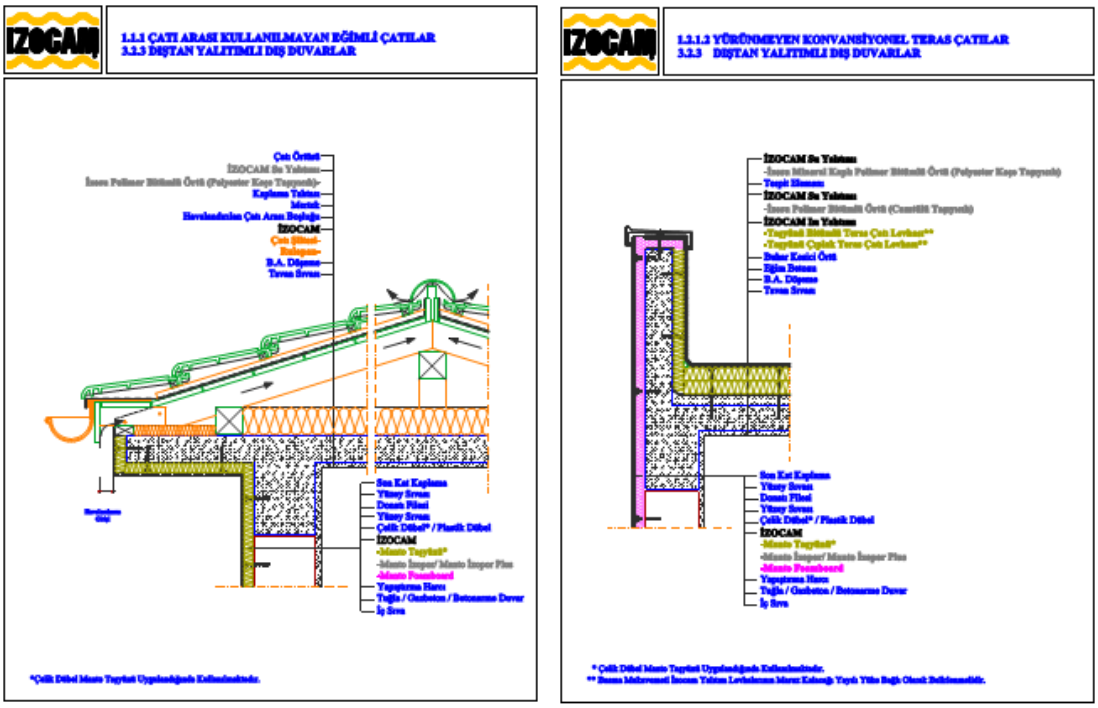
Because the space provided for us is limited, it was considered to assign a single room for administrative and consultation issues. However, if needed, we can negotiate for additional space in upper floors.

Additional Information

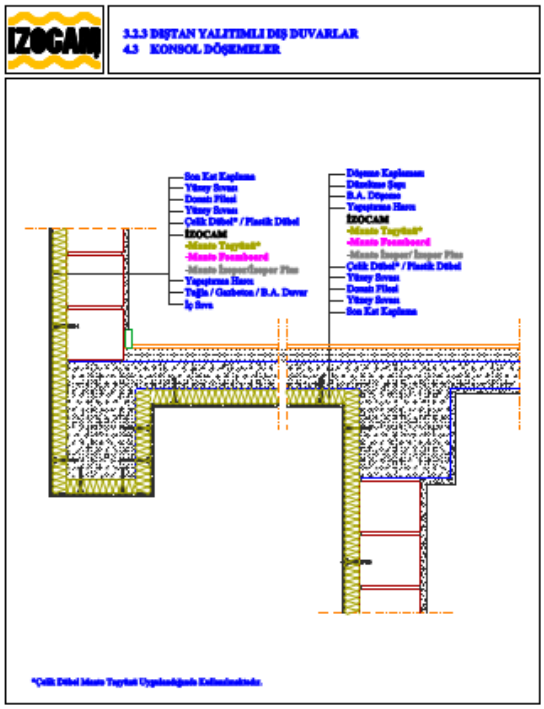
Proposed plan



Generic Supplementary Material



Supplementary graphic drawing illustrating roof insulation



Supplementary graphic drawing illustrating wall insulation

Supplementary graphic material illustrating thermal comfort glazing

SURVEY FOR UKRAINE

Required Information:

Please complete the following where applicable. The more information that you can provide will further improve the quality and success of the BKHs.

The drop down tabs require you to click on the arrows to view the possible choices.

Partner details

	Name of BKH partner	Kyiv National University of Construction and Architecture (KNUCA)
	Address of BKH partner	31,Povitroflotsky Av.,
	Address 1	
	Address2	
	Street	
	City	Kyiv
	Country	Ukraine
	Telephone number	+380 44 241 5580
	Mobile number	+380 50 469 3114
	Website	http://www.knuba.edu.ua/
Coordinator	Last name / family name	Skochko
	First name	Volodymyr
	Job title	PhD, Associate Professor, International Relations Coordinator – Energy Efficiency, Kyiv National University of Construction and Architecture
	Telephone number	
	Mobile number	+380 50 9478503
	Skype contact	
Contact person 1	Last name / family name	Ploskyi
	First name	Vitalii
	Job title	PhD, Professor, Vice-Rector for Science and International Relations, Kyiv National University of Construction and Architecture
	Telephone number	
	Mobile number	+380 50 469 3114

	Skype contact	
Contact person 2	Last name / family name	Tormosov
	First name	Ruslan
	Job title	Executive Director, MDI
	Telephone number	+380 44 428 7610
	Mobile number	+380 63 057 7010
	Skype contact	

Proposed Training Centre (TC) details:

Ownership of TC

	Public / Private	Public
	Limited / Unlimited Company	-
	Company name	All-Ukrainian Charitable Organization "Municipal Development Institute"
	Article of Association or Company constitution	No
	Number of employees	51
Address	Line 1	14a Ihorivska Str.
	Line 2	
	Street	
	City	Kyiv
	Country	Ukraine
	Post/ZIP code	04655

Management of TC

	Public / Private	Public
	Limited / Unlimited Company	-
	Company name	All-Ukrainian Charitable Organization "Municipal Development Institute"
	Article of Association or Company constitution	No
	Number of employees	2
Address if different from above	Line 1	
	Line 2	
	Street	
	City	
	Country	
	Post/ZIP code	
Manager 1	Last name, First name	Tormosov Ruslan
Manager 2		Skochko Volodymyr

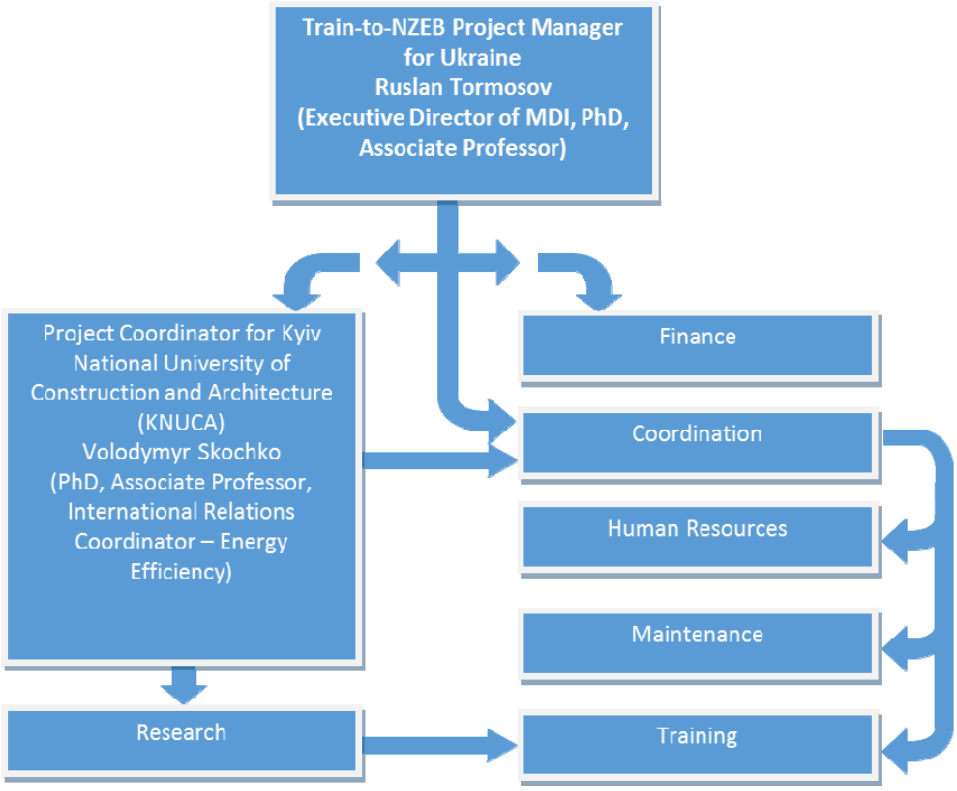
Company secretary		Mykolenko Olena
Other 1		
Maintenance	Facility Manager	Yes
	Maintenance Manager	Yes
	Cleaning Staff	Yes

Additional information

***Please indicate below the proposed Organisation Structure for the BKHs.**

Organisation Structure

Please insert the relevant hierarchy for the management of the organisation and who will be running and maintaining the BKHs (both training and consultation centres)



Training Centre details:

Training Centre (TC)

Address

Is the location of TC different from above location	Yes
Building name / name of TC	Institute of Innovative Postgraduate Studies of the Kyiv National University of Construction and Architecture (KNUCA)
Line 1	
Line 2	
Street	4 Prosvity Str.
City	Kyiv
Country	Ukraine
Post/ZIP code	04655
Opening hours	9:30 am - 5:00 pm

***Demonstration space**

Size of demonstration area (m^2)	81.9
Layout	Rectangular
Free wall space (m)	0.75
Height to ceiling (m)	3.25
Number of power outlets	Variable
Operating Voltage/current	220
Number of overhead lights	4
Total wattage	Variable
Height from floor (m)	0.8
Lux at 1m	300
Natural daylight	Yes
Number of fire exits	1

* Please provide floor plans and photographs if available. Indicate location of lights, sockets, windows, exits and fixed objects on these drawings.

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	Yes

Models and Cut-aways

*** Model 1** (Brief description)

Wall cut (window; roof; etc.) to demonstrate the structure and composition of heat insulation, heat insulating material, wall structures, etc.
It is anticipated that the KNUCA specialists will contribute to the design of the model 1 and local manufacturers of the construction and insulation materials will be mobilized at the production stage.

*** Model 2** (Brief description)

Wall cut (window; roof; etc.) to demonstrate the structure and composition of heat insulation, heat insulating material, wall structures, etc.
It is anticipated that the KNUCA specialists will contribute to the design of the model 1 and local manufacturers of the construction and insulation materials will be mobilized at the production stage.

*** Model 3** (Brief description)

Wall cut (window; roof; etc.) to demonstrate the structure and composition of heat insulation, heat insulating material, wall structures, etc.
It is anticipated that the KNUCA specialists will contribute to the design of the model 1 and local manufacturers of the construction and insulation materials will be mobilized at the production stage.

*** Practice wall 1** (Brief description)

Rock wool.
The KNUCA specialists and stakeholders will participate in the preparation of the practice wall 1 and local manufacturers of the construction and insulation materials will be mobilized at the production stage.

*** Practice wall 2** (Brief description)

Wall with polystyrene
The KNUCA specialists and stakeholders will participate in the preparation of the practice wall 2 and local manufacturers of the construction and insulation materials will be mobilized at the production stage.

* Please provide photographs for each model
* If you have more models than the form allows please supply on another sheet.

Specialist equipment available

Thermal imaging camera	No
*	
Blower door fan **with** manometer	No
*	
Blower door fan **without** manometer	No
*	
Smoke gun	No
*	
Hot wire anemometer	No
*	
Air-tight room	No
*	

* If 'Yes' please provide details

**Non-specialist equipment

Craft knife	No
Measurement tape	Yes
Hand saw	Yes
Power saw	No
Hammer	Yes
Spirit level	No
Power drill	No
Cutting bench	Yes
Other **state**	

**4-6 pieces of equipment required depending on number of practice walls

Additional information

It is anticipated that in the course of the implementation of the project the following equipment will be obtained with assistance of stakeholders (including KNUCA) during the project lifespan: a thermal imaging camera (TESTO 881-2), a pyrometer, a hot wire anemometer (DT 619) with the required number of probes, a power quality analyzer, current tongs and mega ohmmeter, a portable flow meter (to detect heat energy and water leaks), a lohmmeter (DT 8809A), gas analyzer (it is mandatory to measure the

temperature and concentrations of carbon dioxide and carbon monoxide), a differential pressure gauge, a portable device for measuring the velocity of probes (possibly industrial), a portable device for measuring pressure in ventilation ducts and gas ducts, a multifunctional measuring device-logger for identifying and converting analog signals to measurable physical values (temperature, pressure, humidity, etc.) and data saving option and data transfer to a computer, thickness gage. The equipment will placed in the demonstration space (see the floor plan attached).

Air-tight room (if present)

Area (m^2)	
Height (m)	
Attic	No
Skylight	No
Number of windows	
Number of doors	
Ventilation system	Yes
MVHR	No
Heating system	Yes
Service Cavity	No
Lighting	Yes
Service intrusions	No

Additional information

It is not anticipated to have the airtight room in the consultation and training center in Ukraine given some space limits, lack of necessary equipment and engineering networks.

Renewable energy systems

Wind turbine	No
*	
Solar PV	No
*	
Charge controller	No
*	
Inverter	No
*	
Solar thermal (vacuum tube)	No
*	
Solar thermal (flat plate)	No
*	
Solar tank/storage	No
*	

Building systems

Air Handling Unit (AHU)	No
*	
Mechanical ventilation **with** heat recovery (MVHR)	No
*	
Condensing boiler	No
*	

* Please provide details

Additional information

It is not anticipated to have the renewable energy systems in the training and consultation center in Ukraine given budget limitations. However, it is planned to mobilize stakeholders (investors) to arrange the demonstration area and to have helio-collectors, solar cells and heat pump, etc. there.

Classroom details

Size of classroom (m^2)	47.05
Seating capacity	30~31
No. of power sockets	6
Number of desks	1
Desk arrangement	Static
Number of chairs	31~32
Number of fire exits	1

Resources in classroom

Overhead projector	Yes
Interactive whiteboard	Yes
Computer(s) for instructor(s)	Yes
Computers for trainees	Bring own

Other	

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	No

Additional information

It is planned to use dividers to have two zones in the classroom::
1) a lecture room (capacity: 30 persons);
2) a conference room .
There will be two demonstration displays and a projector installed in the lecture room.
See the floor plan attached.

Consultation room

Size of room (m^2)	31.9
Seating capacity	7~9
No. of power sockets	~6
Number of desks	4
Desk arrangement	Moveable
Number of chairs	9
Number of fire exits	1
Connected to demonstration area	Yes

Resources in consultation room

Overhead projector	No
Interactive whiteboard	No
Computer(s) for consultant(s)	Yes
Other	Printers and information stands with information materials on the specialized software.

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	Yes

Additional information

This room will be used for the educational and information activities and center administration, including maintenance of the specialized web site.

Administration area (for support staff)

Size of administration area (m^2)	-
Seating capacity	-
Number of desks	-
Computers available for BKH administration purposes	-

Ancillary Services

Toilet facilities	Yes
Tea/coffee area	Yes
Canteen	No
Security	Yes

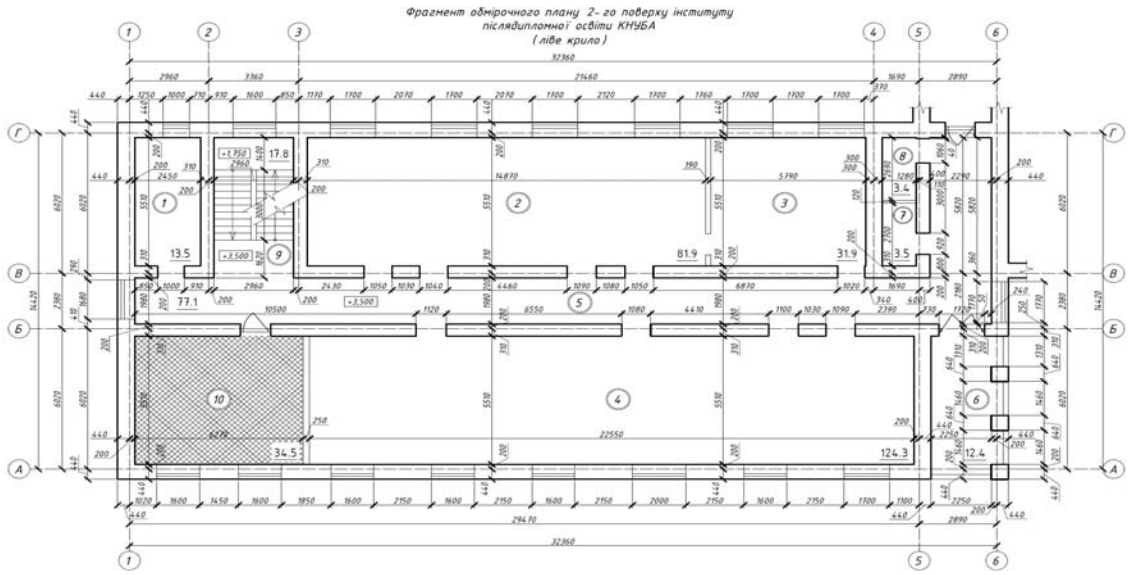
Additional information

For space considerations, no separate room will be allocated for administrative staff. However, if needed, allocation of the additional room may be negotiated with KNUCA management. See the floor plan attached.

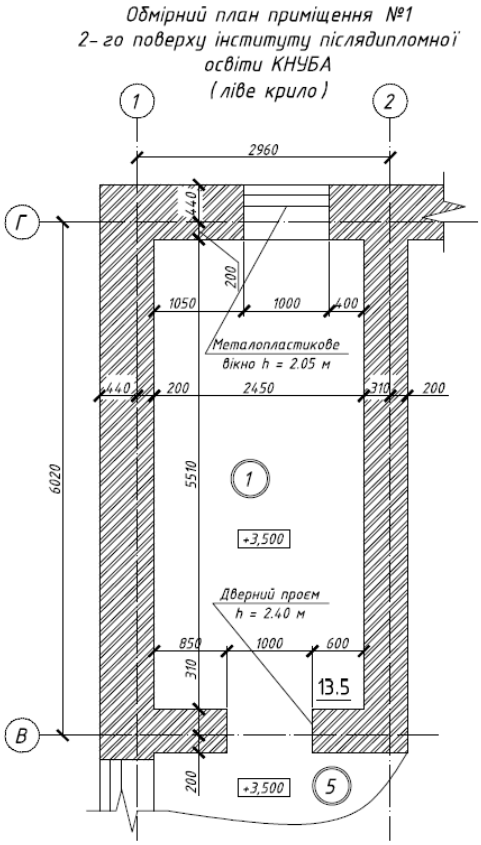
Additional Information

The heliocollector may be placed on the balcony next to the lecture room (#6 on the attached floor plan).

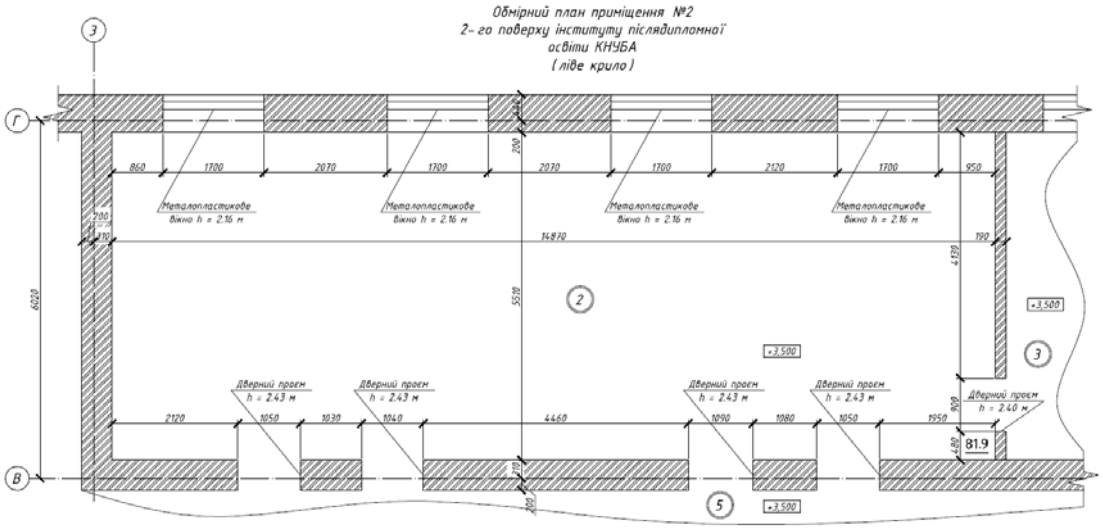
Annex 1. Existing floor plan



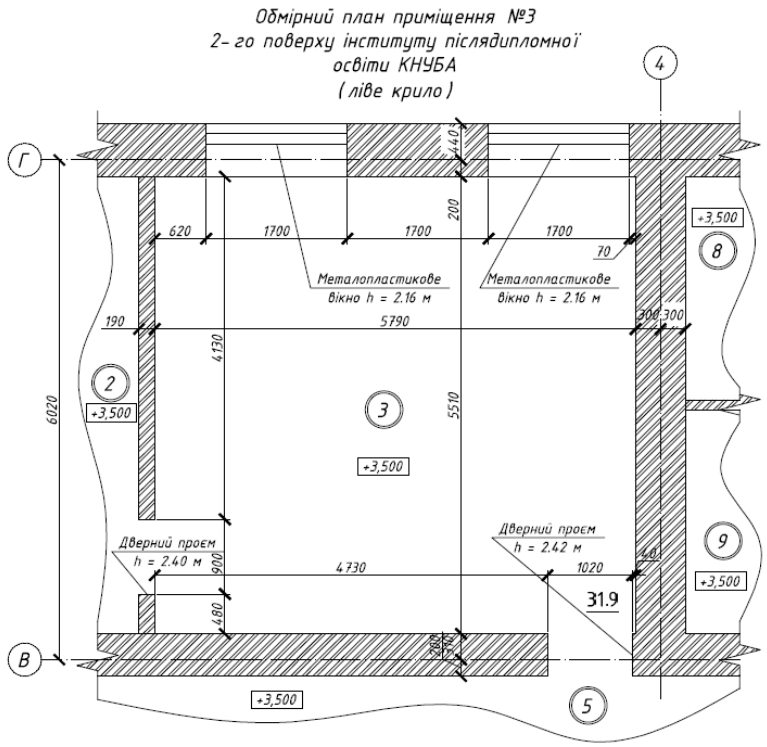
Room #1 Plan



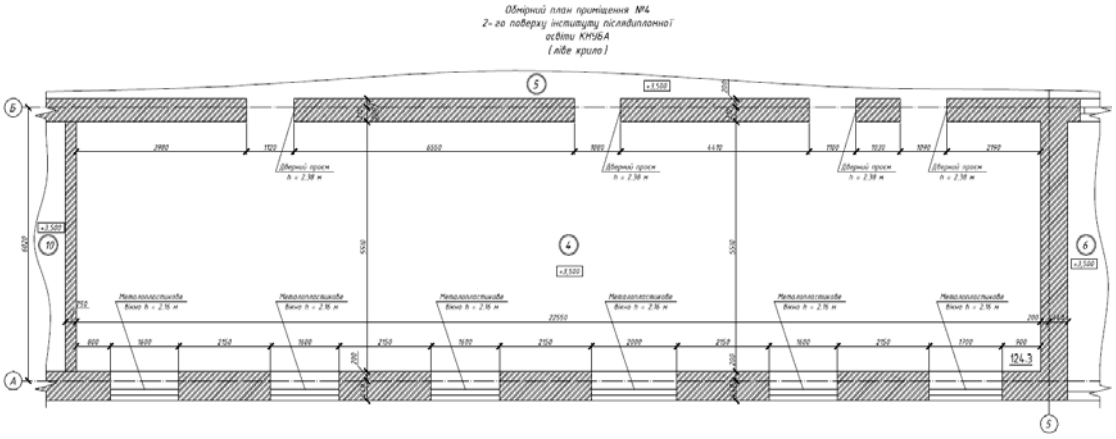
Room #2 Plan



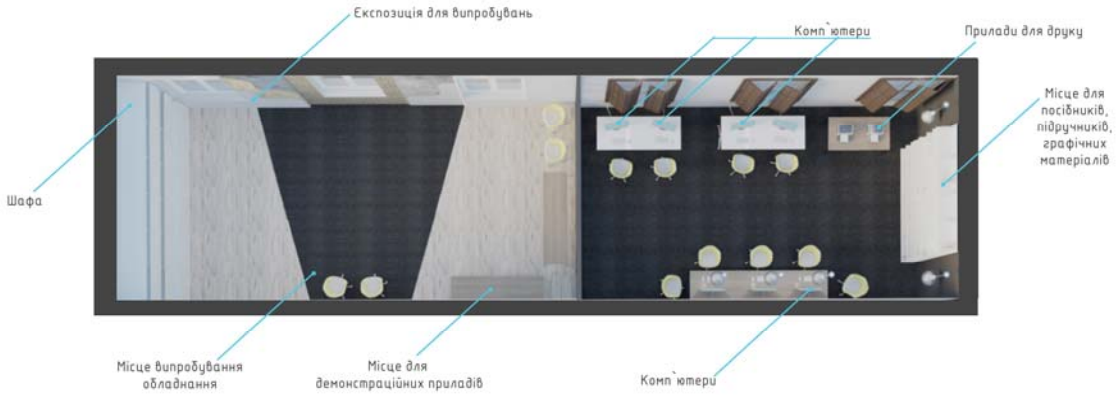
Room #3 Plan



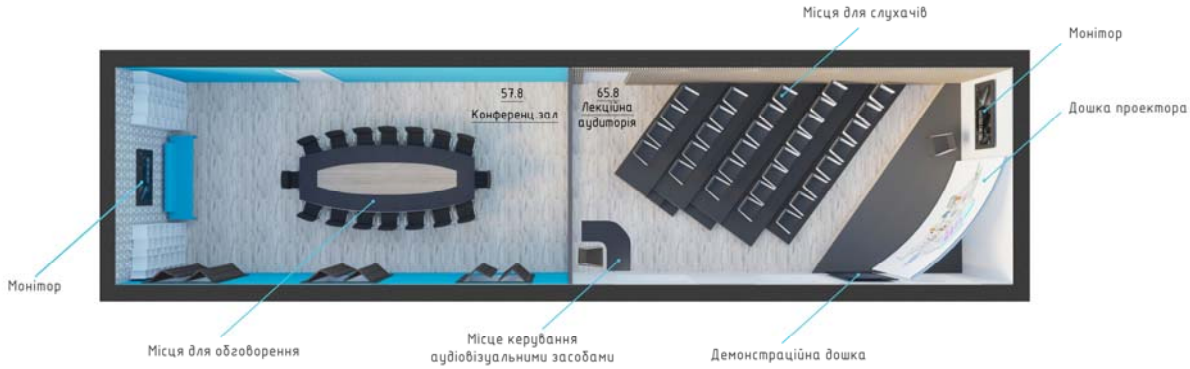
Room #4 Plan



Design of the training and consultation centre space



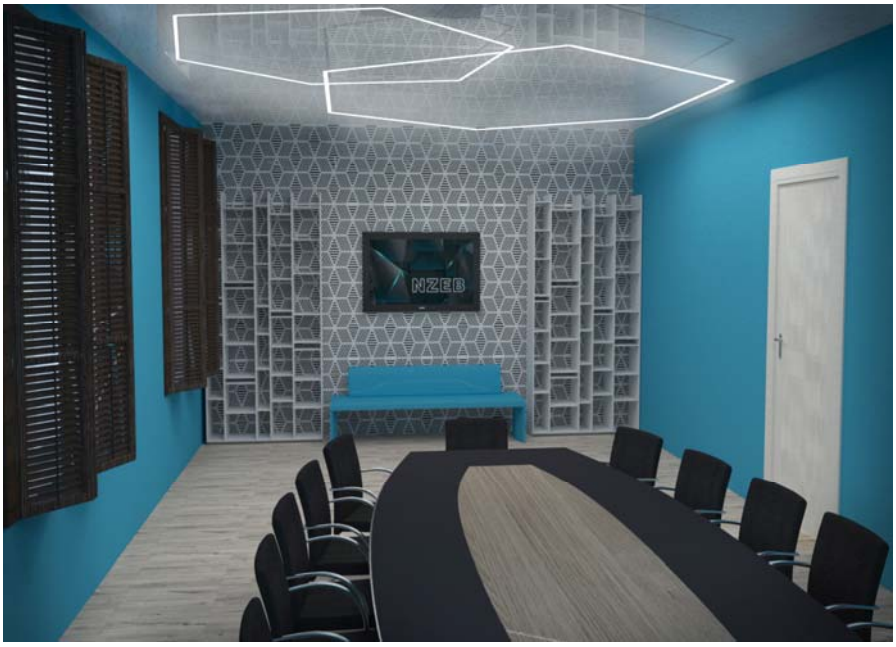
Conference room and lecture room



Conference room and demonstration space

Information and training room

Conference room



Corridor

Lecture room

Additional information

It is planned that for the arrangement of the demonstration space KNUCA will join efforts with local manufacturers and international EE technologies and equipment producers operating in Ukraine through the representative offices.