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PROF-TRAC D.4.1 Overview and structure of available material

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DCE Technical Report No. 218

PROF-TRAC

D4.1 Overview and structure of available material

by

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April 2016

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1. SUMMARY

This report introduces available educational and training material from the recent IEE projects adapted in the PROF/TRAC repository. An explanation to the categorisation principle of the material in the repository is the key part of this report. The categorisation schema for educational material in the repository is developed using the skills and qualifications structure, developed in WP 2 of PROF/TRAC project. In this way the continuity of the work is well established and the achievements from between the work packages are harmonised.

2. Introduction

The objective of the work package 4 of PROF/TRAC project is the organisation of a European, central Train-the-Trainers (TtT) program. The goal is to come to a direct and swift implementation of this work package by an efficient use, adaptation and implementation of existing training and educational material from other directly relevant EU-projects.

Significant number of relevant to PROF/TRAC scope projects was discovered and can be directly implemented by the trainers. However, a large number of projects correspond to a substantial number of publications, which are difficult to navigate in, if no structure is available.

One of the objectives of WP4.1 is to gather the material in a PROF/TRAC repository and to classify it according to needed skills and qualifications.

The objective of this report is:

- To provide an overview of the projects included in the PROF/TRAC repository and their overall objectives
- To introduce and explain the categorisation principle in the PROF/TRAC repository

This report must be considered together with PROF/TRAC repository in the Excel or web format (see chapter 4). Additionally, it must be mentioned that the repository will remain being a working document with the possibility to include material from other projects or publications.

3. Overview of projects in the repository

Selected projects

Relevant to PROF/TRAC projects are selected from a wide range of European projects. The criteria for selection was set by two main constrains:

- selected project is within the scope of PROF/TRAC
- selected project reports, educational material, guidelines, etc. are publicly available

The list of projects selected for the PROF/TRAC repository is given in Table 1.

| Project abbreviation | Project name | Webpage |
|----------------------|---|--|
| IDES-EDU | IDES-EDU | http://www.ides-edu.eu |
| POWERHOUSE | POWERHOUSE | http://www.powerhouseeurope.eu/ |
| TRAINREBUILD | Training for rebuilding Europe | http://www.trainrebuild.eu |
| SHELTER | Social Housing organisations and European professionals Linked and acting together for Testing and promoting professionals coordination in Energy Renovations | http://www.shelterproject-iee.eu https://ec.europa.eu/energy/intelligent/projects/en/projects/shelter |
| EDUCATE | Environmental Design in University Curricula and Architectural Training in Europe | http://www.educate-sustainability.eu |
| MaTriD | Market Transformation Towards Nearly Zero Energy Buildings | http://www.integrateddesign.eu |
| ZEB | Strategic research Centre for Zero Energy Buildings | http://www.zeb.aau.dk |
| IEE INTEND | Integrated Energy Design in Public Buildings | http://intendesign.com |
| AFTERPROJECT.EU | Cost Optimum and Standard Solutions for Maintenance and Management of the Social Housing Stock | http://afterproject.eu |
| COHERENO | Collaboration for Housing nZEB renovation | http://www.cohereno.eu |
| neZEH | Nearly Zero Energy Hotels | http://www.nezeh.eu |
| STREAMER | Semantics-driven Design through Geo and Building Information Modelling for Energy-efficient Buildings Integrated in Mixed-use Healthcare Districts | http://www.streamer-project.eu |

Table 1. Projects in the PROF/TRAC repository.

Content overview of selected projects

Following section offers an overall content overview of the projects in the PROF/TRAC repository. The information provided is collected from the webpages of corresponding projects.

TRAINREBUILD

| | |
|-------------------------|--|
| Project period | 10 December 2010 – 10 December 2012 |
| Project objectives | The project aims to create a “value chain partnership” with property owners at the core. Training opportunities are targeted specifically at those interested in “buying” retrofits for their buildings (for private or public property) as well as “sellers” – those companies and professionals involved in the provision of products and services for supply chain retrofits. |
| Key action | Training property owners and local authorities on the process for retrofitting buildings. |
| Project benefits | Upgrading capacity and knowledge transfer to public and private building owners with the aim to improve the energy performance of the existing EU building stock. |
| Target groups | Staff of national associations of property owners and individual property owners Officials from local authorities responsible for the retrofit of buildings in some Covenant of Mayors (CoM) cities- |
| Approach | The project promotes an integrated approach based on training by technicians and professionals whose daily work has an impact on the design, selection, approval, installation, operation, maintenance, sales and marketing of sustainable building. |
| PROF/TRAC relevance | Two Toolkits have been produced (one for property owners associations and one for local authorities) for the trainings in the priority countries. One final service package is designed for easy customization within the context of local conditions to ensure the widest possible deployment to individual property owners throughout Europe. |
| Participating countries | Experts of property owners associations in UK, FR, IT, DE, ES, GR, BE Local authorities (officials) in charge with the retrofit of buildings in HU, BG, RO, PT, FR |

SHELTER

| | |
|-------------------------|--|
| Project period | 31/05/2010 - 30/05/2013 |
| Project objectives | <p>The aim of the SHELTER project is to promote and facilitate the use of new models of cooperation, inspired by integrated design, for the energy renovation of social housing.</p> <p>Developing long term gains in costs and time for professionals and social housing organizations in energy renovation</p> <p>Contributing to the structuring of the economic sector dedicated to energy renovation in the European Union by establishing links with existing networks such as PowerHouse and BuildUp platforms.</p> |
| Key action | <p>Development of guidelines: SHELTER Guide to Renovate. The guidelines include information of the use of alternative contractual models.</p> <p>Operational application of the new models of cooperation in pilot sites by the 6 social housing organizations.</p> <p>Recommendations to public authorities for improving the legislative framework and the financial incentives system at European level, adapted at national and local level for the countries participating to the Shelter project.</p> |
| Project benefits | <p>- 537 dwellings refurbished. - 238 toe energy savings (5 578 MWh saved). - Between 300.000 and 500.000 EUR savings per year. - Time savings – 20% at tendering, 50% design and 30% works.</p> |
| Target groups | <p>Staff of Social Housing Organisations (SHO)</p> <p>Members of the construction team (e.g. architect, building services engineer, main contractor, sub-contractors, etc.).</p> |
| Approach | <p>The integrated design approach is applied, thus changing the way different professions work together along the supply chain. In SHELTER this approach is analysed in the frame of the renovation programmes of social housing operators in 5 countries and applied in practice.</p> |
| PROF/TRAC relevance | <p>SHELTER Guide to integrate</p> <p>SHELTER Recommendations to public authorities</p> |
| Participating countries | IT, BE, BG, FR, UK |

AFTERPROJECT.EU

| | |
|-------------------------|---|
| Project period | May 2011 – May 2014 |
| Project objectives | AFTER Project has implemented for 3 years actions dedicated to improve the contribution of the maintenance and management of the social housing organizations to energy savings policies. |
| Key action | 18 Partners of the project have performed a retrospective analysis of the actual efficiency of energy savings measures implemented during the years 2006-2011. |
| Project benefits | AFTER asserted the importance of establishing energy efficiency as a major goal, even after construction of the building. The project promoted measures adapted to a variety of investments and situations. A special emphasis was placed on the important contributions of operation maintenance and management in the energy performance of buildings. |
| Approach | <p>The project implemented a step-by-step integrated process that can be broken down as follows :</p> <ul style="list-style-type: none"> • Performance assessment of technical solutions experimented over the last five years (performance, cost-optimal effectiveness, tenants' opinion, etc...). • Definition of new optimum economic, technical and social standards and measures focusing on the management and maintenance of buildings as well as the eco-empowerment of tenants. <p>Testing and final assessment of new energy saving measures on sites focusing on their future generalization</p> |
| PROF/TRAC relevance | <p>AFTER Scientific methodological tools (HANDBOOK)</p> <p>Overview of 84 best practices concerning the management and maintenance of the European housing stock</p> <p>From the AFTER Pilot Sites to running routines for the European SHOs</p> |
| Participating countries | <p>SHOs in Czech Republic, Denmark, France, Germany, Italy, and Slovenia</p> <p>National Housing Associations, Scientific Committee and National Tenants in corresponding countries</p> |

POWERHOUSE

| | |
|-------------------------|--|
| Project period | 11/04/2012 to 10/04/2015 |
| Project objectives | Through the consolidation of existing analysis and the compilation of cost and consumption data in selected pilots, four Inter-EU Taskforces will build capacity and confidence among Europe's social, cooperative and public housing providers ahead of NZEB obligations. |
| Key action | POWER HOUSE project provided a platform for a pan-EU knowledge exchange among public, cooperative and social housing practitioners to learn from each other about the practical implications and costs of ambitious energy performance codes and to inform policy makers of the outcomes of this exchange. |
| Project benefits | <p>Barriers and Ideal conditions for optimal nZEB development have been identified. Recommendations for social housing providers on the path to nearly Zero Buildings are prepared.</p> <p>In total, 30 pilot projects are monitored and uploaded to the on-line energy tracker.</p> <p>Findings from the financial needs analysis are used to feed high-level consultation from the European Commission and the European Investment Bank.</p> |
| Approach | Improving the energy efficiency of people's homes is only one aspect of future housing provision, while others relate to demographics (an ageing population), social inclusion (increasing migration levels), and social trends (an increased demand for single person accommodation), health care and employment creation. Such an integrated approach is definitely the recommended approach. |
| PROF/TRAC relevance | <p>Published Guidelines and Recommendations for National nZEB 2020 Road Maps for cold and for warm climates</p> <p>HIVE database for tracking real energy consumption in 30 buildings across the Europe</p> <p>Plug-in to POWER HOUSE, as database of other projects publications within the topic</p> |
| Participating countries | BE, BG, IT, UK, ES, EE, AU, DE, FR, AT, SE |

EDUCATE

| | |
|-------------------------|---|
| Project period | 01/06/2009 to 31/05/2012 |
| Project objectives | EDUCATE seeks to foster competence in sustainable environmental design at all levels of architectural education and practice aiming to achieve comfort, well-being and energy efficiency in new and existing buildings. |
| Key action | To propose the harmonisation of architectural curricula and qualification requirements in Europe, enhancing the establishment of a comparable, compatible and coherent European Higher Education Area clarifying the level of knowledge, skills and competence of sustainable environmental design and energy efficiency expected of graduates qualifying as architects in Europe |
| Project benefits | <p>Sharing experiences and transferring know-how from countries that have sustainable environmental design and energy efficiency embedded in their curriculum to countries that have not.</p> <p>Definition of a framework for curriculum development that allows incorporation of sustainable environmental design at different levels and stages of architectural education to meet current professional demands and expectations.</p> <p>Opening an intelligent Portal on sustainable environmental design and energy efficiency in architecture</p> |
| Target groups | Students of Architecture, Academics, Professional Bodies, Architects |
| PROF/TRAC relevance | <p>There are two reports that build a comprehensive picture, in terms of integration of environmental design and energy efficiency in architectural practice prior to EDUCATE project.</p> <p>There is a knowledge base that organises principles, tools and case studies for sustainable building.</p> |
| Participating countries | UK, DE, HU, IT, ES, BE |

MaTriD

| | |
|-------------------------|--|
| Project period | 19/06/2012 to 18/12/2014 |
| Project objectives | The project aims to support the implementation of the Directive on the Energy Performance of Buildings, using an Integrated Design approach |
| Key action | An improved know-how basis on IED (Integrated Energy Design) |
| Project benefits | <p>General acknowledgement of IED beyond the limits of the participating countries and project period.</p> <p>The practical implementation of IED on a large scale, thus, setting best practice examples across Europe, which can be easily copied and multiplied.</p> |
| Approach | Integrated Design approach |
| PROF/TRAC relevance | <p>European Integrated Design Tool-Kit is developed. The tool-kit consists of</p> <ul style="list-style-type: none"> • ID Process Guide • Clients Summary • Tenants Summary <p>Module on Scope of services and remuneration models.</p> |
| Participating countries | <ul style="list-style-type: none"> • AT, GR, IT, LV, PT, SE, UK, SL, SK, PO, NO |

ZEB

| | |
|-------------------------|---|
| Project period | 2009-2014 |
| Project objectives | Strategic Research for energy-neutral construction (ZEB) is to develop integrated, intelligent technologies for buildings, which ensures significant energy savings and optimal use of renewable energy. The center will work with the industry to deliver the necessary basis for long-term sustainable development in construction. |
| Key action | Development of energy-neutral building concepts for new and existing buildings was in finding optimal balance between energy saving and renewable energy production in construction in interaction with the energy system so that the total resources used to best effect. |
| Approach | Integrated Design approach |
| PROF/TRAC relevance | <p>Three booklets, providing:</p> <ul style="list-style-type: none"> • Definitions of ZEB • Design principles and built examples of ZEB • Technical solutions for ZEB |
| Participating countries | DK |

IEE INTEND

| | |
|-------------------------|---|
| Project period | 01/01/2007 to 31/12/2009 |
| Project objectives | The objective of the project was to develop Integrated Energy Design (IED) as a standard European practice of building design and to set a new standard, which is substantially beyond the anticipated level of the Directive of Energy Performance of Buildings. |
| Key action | Development of guidelines in which there is focus on the whole building rather than on single technologies. |
| Project benefits | Broad dissemination of IED principles to target groups Developed a wiki internet database of low energy buildings |
| Target groups | Public Buildings: building designers, owners and consultants |
| PROF/TRAC relevance | IED guidelines Available PPT- presentations in PDF and case-studies Online database www.ecoarchwiki.net |
| Participating countries | NO, AT, DK, GR, PO, UK |

IDES-EDU

| | |
|-------------------------|---|
| Project period | 03/06/2010 to 02/06/2013 |
| Project objectives | IDES-EDU project is aimed to educate, train and deliver specialists, both students and professionals, in Integral Sustainable Energy Design of the Built Environment |
| Key action | IDES-EDU improved existing curricula and training programs, promoted exchanges between students and professionals, accelerated the certification and accreditation of the courses at national level, as well as provided a framework for European certification. The project delivered a multimedia teaching portal to make the educational packages available to graduate students and building professionals in Europe. |
| Project benefits | IDES-EDU contributed for the setting up of knowledge alliances, and demonstrated that the collaboration of universities and the building sector is crucial for achieving well-trained professionals. Universities inside and outside the consortium as training providers are starting to use IDES-EDU course materials. |
| PROF/TRAC relevance | The project covers an extensive list of topics within the integrated approach. All educational packages are available as PPT- documents |
| Participating countries | NL, AT, FR, GR, IT, PO, SL, SE, NO, HU, CZ, CR, PT, LT |

neZEH

| | |
|-------------------------|---|
| Project period | 01/05/2013 to 30/04/2016 |
| Project objectives | <p>neZEH addresses the EU's priority of accelerating the rate of refurbishment of existing buildings into Nearly Zero Energy Buildings, by:</p> <ul style="list-style-type: none"> • providing technical advice to committed hotel owners • demonstrating the profitability and sustainability of investments towards NZE through pilot projects • undertaking training and capacity building activities • promoting front runners at national and EU level to increase their market visibility |
| Key action | <p>neZEH works to increase the nZEBs' number and tackles the main barriers that prevent hotel owners from investing in major refurbishment projects towards NZE consumption levels.</p> <p>neZEH links relevant actors and key stakeholders in the building sector to the hospitality industry to bridge the gap between supply and demand side.</p> |
| Project benefits | <p>The neZEH will raise awareness and knowledge of the nZEB concept at regional, national and European level and will promote the endorsement of nZEB policies. This way it will contribute to:</p> <ul style="list-style-type: none"> • sensitise national authorities to put in practice policies that support SMEs in undertaking refurbishments to become nZEB • investments in sustainable energy • new green jobs creation • reduction of GHG emissions |
| Target groups | <p>Hotel renovation Hoteliers and building professionals</p> |
| PROF/TRAC relevance | Flip books in PPT format, with training material for different target groups |
| Participating countries | GR, NL, CR, RO, SE, BE, IT, SE, FR |


COHERENO

| | |
|-------------------------|--|
| Project period | 01/04/2013 to 31/03/2016 |
| Project objectives | The EU project "Collaboration for housing nearly zero energyrenovation", abbreviated to COHERENO will develop proposals and concepts for cross-sector and company business models for high efficiency refurbishment of single-family houses to nearly zero-energy housing. |
| Project benefits | COHERENO will improve the quality of the construction measures by providing specific support to all stakeholders, thus increasing customer confidence. With these two key aspects, nearly zero-energy houses can gain credibility and acceptance, and win a higher market share. |
| Target groups | All stakeholders involved in refurbishment (Small and medium enterprises /contractors/, consultants, policy makers and financiers) |
| PROF/TRAC relevance | Single-family houses for renovation Concepts for renovation |
| Participating countries | AT, BE, NO, DE |

STREAMER

| | |
|-------------------------|---|
| Project period | September 2013 – July 2017 |
| Project objectives | STREAMER is an industry-driven collaborative research project on Energy-efficient Buildings (EeB) with cases of mixed-use healthcare districts that aims to reduce the energy use and carbon emission of new and retrofitted buildings in healthcare districts in the EU by 50% in the next 10 years. |
| Key action | Once completed, STREAMER, will enable designers, contractors, clients and end-users to integrate EeB innovations for: <ul style="list-style-type: none"> • Building envelope and space layout • Medical and HVAC systems • Building and neighbourhood energy grids. |
| Project benefits | <p>STREAMER introduces knowledge-based modelling of integrated EeB technologies and measures, optimally integrating these EeB design solutions, and validating the whole lifecycle energy performance during the design stage..</p> <p>STREAMER provides the multidisciplinary design teams with advanced design tools by improving the open interoperability between Building Information Modelling (BIM) and Geographical Information System (GIS) in a Semantic Web (SW) environment, and by enabling model-based analysis of the energy performance.</p> <p>STREAMER brings management of information flow, knowledge integration, communication and decision-making to the principles of Integrated Project Delivery (IPD)</p> |
| Approach | Considering the complexity of EeB design, both holistic and systematic approaches are crucial in order to achieve the project's goal. STREAMER will resolve this by optimising Semantics-driven Design methodologies with interoperable tools for Building and Geo Information Modelling (Semantic BIM and GIS) to validate the energy performance during the design stage. |
| Target groups | Designers, contractors, clients and end-users |
| PROF/TRAC relevance | This project introduces a separate building category, as well as a separate topic within Building Energy efficiency |
| Participating countries | NL, IT, UK, DE, FR, SE, PL |

4. Categorisation of the material

Categorization of project material is prepared based on superficial study of the above named projects, where the overall content of the material is analyzed, meanwhile particular details are omitted. Categorization structures are chosen as following:

- Categorization of material according to building phases
- Categorization of material according to professions/qualifications involved
- Categorization according to keyword structure

Categorization according to building phases

In the first place, the categorization of the material according to the building phases was developed upon the main phases of building existence mentioned in the above projects. In process of literature review, a resemblance between suggested categorization schema and the one used within the POWERHOUSE project was discovered. Suggested categorization schema was as following:

Schema 1

- Strategy development phase
- Pre-design phase
- IED phase
- Construction phase
- Use phase
- Maintenance and repair phase

Following is the schema from the POWERHOUSE project, with highlighted resemblance-phases to Schema 1:

Schema 2

- National/regional strategy development
- Organizational strategy development
- Pre- design phase (appraisal and strategic briefing)
- Design phase (project briefing)
- Call for tender phase
- Construction phase (construction briefing)
- Commissioning phase
- Use phase (occupancy briefing)
- Maintenance and repair phase
- Asset management
- User involvement process

The authors purposed to use the originally suggested categorization schema 1, as it has better correspondence with the material available in the PROF/TRAC repository. The results of such categorization can be seen in Table 2.

| | Strategy development phase | Pre-design phase | IED phase | Construction phase | Use phase | Maintenance and repair phase |
|----------------------|-------------------------------|------------------|-----------|--------------------|-----------|------------------------------|
| EDUCATE | | | EDUCATE | | | |
| MaTriD | | MaTriD | MaTriD | | | |
| ZEB | | ZEB | ZEB | | | |
| INTEND | | INTEND | INTEND | INTEND | | |
| IDES-EDU | [IDES-EDU- financial schemas] | IDES-EDU | IDES-EDU | IDES-EDU | | |
| TRB | TRB | | | | | |
| SHELTER | [SHELTER- financial schemas] | | | | | |
| POWER HOUSE | PH | PH | PH | PH | | PH |
| AFTER PROJECT | | | (AFTER) | (AFTER) | AFTER | AFTER |
| neZEH | | | neZEH | (neZEH) | | |
| COHERENO | COHERENO | COHERENO | | | | |
| STREAMER | | | STREAMER | | | |

Table 2. Categorisation of the material according to building phases.

Categorization of material according to professions/qualifications involved

Categorization of material according to professions/qualifications relies on review of the reports from the projects considered. In many cases, the reports are targeting particular countries, where the national specifics of building design and realization are being considered. In view of that the terminology used in the projects is not necessarily the same as the terminology used in this report. To overcome this terminology limitation and to establish common understanding of the topic, a short explanation to every profession/qualification used in the categorization schema can be obtained from the deliverables of WP2 of PROF/TRAC project.

Following Table 3 provides a visualisation of how different professions/qualifications are involved in the projects adapted in the PROF/TRAC repository.

| Project | Building type | User awareness | | | Authority awareness/Predesign | Financial manager | IED | | | | Construction | Use and maintenance | |
|---------------|--------------------------|----------------|-------------------|----------|-------------------------------|-------------------|-------|-----------|----------|----------|--------------|---------------------|---|
| | | Building owner | Owner Association | SH owner | Local authority responsible | | Owner | Architect | Engineer | Procurer | Procurer | Building manager | |
| EDUCATE | All | | | | [X] | | | X | | | | | |
| MaTriD | New | | | | | | X | X | X | | | | |
| ZEB | New | | | | | | | X | X | | | | |
| INTEND | New | | | | | | X | X | X | X | | | |
| IDES-EDU | New | | | | | X | X | X | X | X | | | |
| TRB | Renovation residential | X | X | X | X | | | | | | | | |
| SHELTER | Renovation SH | | | X | X | X | X | | | | | | |
| POWER HOUSE | SH | X | X | X | X | X | X | X | X | X | X | X | X |
| AFTER PROJECT | SH | | | | | | [X] | [X] | [X] | [X] | [X] | | X |
| neZEH | Hotels/renovation | | | | | X | X | X | X | X | | | |
| COHERENO | Single-family renovation | X | | | X | X | | [X] | [X] | | | | |
| Streamer | Hospitals | | | | | | | X | X | | | | |

Table 3. Categorisation of the material according to professions/qualifications.

Categorization of material according to keyword structure

Navigation in the substantial number of reports from various projects appeared to be difficult using the above mentioned *building phase* or *professions/qualifications* categorization structure. As a solution to that more comprehensive schema was developed by PROF/TRAC consortium partners and named as the *keyword structure*.

The idea behind this structure is to identify all relevant to PROF/TRAC publications and to prescribe them certain keywords that describe the content/relevance of that particular publication to PROF/TRAC project. The keywords list is fixed and it is directly linked to:

- A list of relevant building and installation technologies (from WP2 of PROF/TRAC project)
- A list of interdisciplinary skills (from WP2 of PROF/TRAC project)

Correspondingly, WP2 provides the list of required skills/qualifications for nZEB construction and retrofitting. Meanwhile, the material repository in WP4 allows to search for the educational material using the same list of skills and qualifications. Thereby it allows to match the lacking skills/qualifications with the educational material available in the repository in order to upgrade these skills.

The keywords list from the WP2 is given by Table 4, with corresponding codes used in the excel version of repository (PROF-TRAC WP4.1_2016-02-03.xlsx).

Besides the above mentioned keywords, the repository includes keywords lists that target the type of project (construction or renovation), the type of building use, the type of educational material and the language it is available in. All of these keywords are summarised in the following Table 5.

| | |
|-----------|---|
| EM | ENERGY MANAGEMENT |
| EM1 | Smart grid systems |
| EM2 | Domotic systems |
| EM3 | Building management systems |
| EP | ENERGY PRODUCTION (on-site and nearby renewable energy production and off-site renewable energy) |
| EP1 | Geothermal energy |
| EP2 | Biomass |
| EP3 | Biogas |
| EP4 | District heating and cooling |
| EP5 | Heatpumps |
| EP6 | Solar power systems for electricity generation |
| EP7 | Solar thermal systems for cooling generation |
| EP8 | Solar thermal systems for domestic hot water and/or heating generation) |
| EP9 | Mini wind power |
| EP10 | Combined Heat and Power (CHP) |
| ER | ENERGY REDUCTION |
| ER1 | Insulation |
| ER2 | Air tightness building |
| ER3 | Micro climates |
| ER4 | Envelope systems |
| ER5 | Hot water systems |
| ER6 | Window and/or glazing systems |
| ER7 | Heating and cooling emission systems |
| ER8 | Electric heating systems |
| ER9 | Artificial lighting systems |
| ER10 | Ventilation systems |
| IS | INTERDISCIPLINARY SKILLS |
| IS1 | Communication |
| IS2 | Information management |
| IS3 | Collaboration (teamwork & facilitation) |
| IS4 | Quality assurance |
| IS5 | Sustainable architectural design |
| IS6 | Integrated design |
| IS7 | Sustainable building materials |
| IS8 | Sustainable installation materials |
| IS9 | Environmental (indoor) quality |
| IS10 | Economics |
| IS11 | Procurement |

Table 4. The keywords list from the outcomes of WP2,PROF/TRAC




| TYPE OF PROJECT | |
|------------------|--------------------------------|
| E1 | New construction |
| E2 | Renovation |
| BUILDING USE | |
| B1 | Office buildings |
| B2 | Apartment houses |
| B3 | Single-family houses |
| B4 | Educational buildings |
| B5 | Other |
| B6 | Hospitals |
| B7 | Wholesale and retail buildings |
| B8 | Sport facilities |
| TYPE OF MATERIAL | |
| M1 | PPT |
| M2 | Lecture notes |
| M3 | Reports/publications |
| M4 | Video tutorials |
| M5 | Workshops |
| M6 | Guidelines/Toolkits |
| M7 | Software |
| M8 | Case studies |
| M9 | Databases/resources |
| M10 | MOOCs |
| LANGUAGE | |
| L1 | Danish |
| L2 | Dutch |
| L3 | English |
| L4 | French |
| L5 | German |
| L6 | Italian |
| L7 | Spanish |
| L8 | Bulgarian |
| L9 | Croatian |
| L10 | Czech |
| L11 | Estonian |
| L12 | Finnish |
| L13 | German |
| L14 | Greek |
| L15 | Hungarian |
| L16 | Irish |
| L17 | Latvian |
| L18 | Lithuanian |
| L19 | Maltese |
| L20 | Polish |
| L21 | Portuguese |
| L22 | Romanian |
| L23 | Serbian |
| L24 | Slovak |
| L25 | Slovenian |

| | |
|-----|---------|
| L26 | Spanish |
| L27 | Swedish |
| L28 | Turkish |

Table 5. The keywords list for the type of project, building use, type of material and language.

The PROF/TRAC repository is available at following web address <http://proftrac.eu/index.php?id=254> and a graphical example is seen in Figure 1. A search function for different groups of keywords is seen on the left-hand side and the search result is on the right.

FIND RELEVANT PROJECTS



On this page you can find all relevant projects of PROF / TRAC. Use the filter form on the left to narrow the results.

Topic
Select topic ▼

Type of project
Select one... ▼

Building use
Select one... ▼

Type of material
Select one... ▼

Language
Select one... ▼

Filter result >>








| Relevant report | Topic | Project | |
|--|--------------------------------|---------|------------------------------|
|  The Comfort Houses: Measurements And Analysis Of The Indoor Environment And Energy Consumption In 8 Passive Houses 2008-2011 | Energy reduction | ZEB | More details |
|  Energineutralt Byggeri – Definition og fremtidig rolle i samfundet | Energy management | ZEB | More details |
|  Energineutralt Byggeri – Designprincipper og byggede eksempler for enfamiliehuse | Energy management | ZEB | More details |
|  Energineutralt Byggeri – Tekniske løsninger | Energy management | ZEB | More details |
|  Zero Energy Buildings - DESIGN PRINCIPLES AND BUILT EXAMPLES | Energy management | ZEB | More details |
|  Survey Findings Report | Awareness of energy efficiency | TRB | More details |
|  Final conclusions report | Awareness of energy efficiency | TRB | More details |

Figure 1. An example of the repository on PROF/TRAC webpage.



5. Summary

This report introduces available educational and training material from the recent IEE projects adapted in the PROF/TRAC repository. An explanation to the categorisation principle of the material in the repository is the key part of this report. The categorisation schema for educational material in the repository is developed using the skills and qualifications structure, developed in WP 2 of PROF/TRAC project. In this way the continuity of the work is well established and the achievements from between the work packages are harmonised.

