

ENERBUILD Result 8.1-4

The ALPINE WORLD of INNOVATION

June 2012



The ALPINE WORLD of INNOVATION

A collection of innovative examples in planning processes,
pilot initiatives and stimulation of innovation



Editor

Willy Küchler

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Introduction

Innovation is the creation of better or more effective products, processes, services, technologies, or ideas that are accepted by markets, governments, and society. Innovation differs from invention in that innovation refers to the use of a new idea or method, whereas invention refers more directly to the creation of the idea or method itself (Wikipedia).

In the innovation work package different options are illustrated as to how innovations can be made accessible to as many interested parties as possible, and how the regions involved cooperated.

On the occasion of the construction of the first Passive House for Canada, built by companies from the Vorarlberg and Tyrol regions and exhibited at the Olympic Games 2010 in Canada, Lead Partner "Regional Development Vorarlberg's" goal was to sustainably demonstrate the history of "the Passive House" technology as well as to provide a permanent "info-point" inside the house.

Additionally the Tyrolean Standortagentur played host to the international world of economics, focusing on energy efficiency and renewable energies. These two measures crucially influenced the Canadian interest in Passive House technology.

A similar approach was pursued by the University of Applied Sciences Rosenheim participating with a solar house at the worldwide Solar Decathlon 2010 in Europe. This solar house was advertised to a wide public at various exhibitions.

With these campaigns transfer of know-how was passed on in two ways. Firstly between the participating competency centres and the assigned companies, which developed and built these houses. Secondly a wide audience was offered a hands-on insight into the opportunities of new technologies.

Note on further results of ENERBUILD

Education

- Overview of education programs and vocational trainings for energy saving and producing buildings in the Alpine Space

Examination

- Summarizing survey on existing buildings on healthy living with new and advanced construction technology
- Killer arguments and opportunities for energy-efficient construction and the Passive House
- User habits, impact on energy consumption in Passive Houses - results of a comprehensive long-term measurement

Efficiency

- Certification of energy-efficient public buildings Summary of instruments in the Alpine Space
- Transnational comparison of instruments according to ecological evaluation of public buildings
- ENERBUILD Tool: Transnational Pilot Testing on 46 Buildings and Experiences on Advisory Services

E-Producing

- Synthesis on producing energy on buildings in the Alpine Space
- Green Electricity? - Yes, please! 100% local Green Electricity in combination with private funding for the development of power plants on buildings using the example of Vorarlberg
- Eco Power Stock Exchange – In-depth information for monitoring offices

Innovation

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The ALPINE WORLD of INNOVATION

A collection of innovative examples in planning processes,
pilot initiatives and stimulation of innovation

The approach of the regions of South Tyrol, Rhone Alps and Trento was to develop corresponding training courses. The methods varied.

In South Tyrol a summer training course was established where enterprises offered:

- contents (themes, literature), topics and hands-on training for students
- involvement in their education
- joint workshops

Rhone Alps offered conferences and innovation workshops where know-how prepared/processed by competency centres was then passed on to companies of cluster organisations.

In Trento know-how was passed on via innovation workshops to all participants of the production process to initiate novel innovation processes in the areas of new materials, planning methods and construction.

In some regions an overview of stakeholders, competency centres, companies, trade and specialists was missing. Therefore on-line directories were created or existing data-bases were optimised in the regions of Tyrol, Rhone Alps and Trento to facilitate the search for specialists. A supra-regional adoption of such a register was found as sub-optimal.

Slovenia's approach was to stimulate the topic "Passive House technology" by an architecture contest. The ambition to combine local architecture with low energy technology was met with huge interest. There are fantastic examples of the fusing of historic architectural styles and modern architecture and energy efficiency.

The Wood Innovation Centre in the Steiermark and the iHome Lab in Central Switzerland demonstrate beautifully that native know-how leads to a melting point of knowledge where enterprises, interested parties, students and scientists meet and exchange information.

Popular approaches to bring knowledge to the market are the so-called pilot initiatives.

Examples are:

- Five accompanied pilot schemes in the areas of ESAP buildings such as an academy in "the passive house" technology, low energy wooden houses and ECO constructions of a training centre in the Rohne Alp Region.
- Five pilot schemes which combine environmental sustainability, energy saving, water saving and attention to internal comforts in Trentino.
- A system concept for energy efficient living in a building complex in Central Switzerland.

Such pilot initiatives are a very efficient instrument to pass knowledge from the competency centres to the enterprises within the building trade.

A crucial factor which has been demonstrated impressively by all these applied methods is that all stakeholders both enterprises/trades and science can meet in an environment prevalent of practical relevance to accomplish a jointly defined objective.

A further valuable result of the project is the generating of cooperation between regions and partners.

- Thus Vorarlberg and Tyrol accomplished the project "Passive House" for the Olympic Winter Games in 2010 in Canada.
- Eurac and TIS developed the summer training courses.
- Rosenheim suggested to the University of Applied Science Luzern to apply for the next Solar Decathlon.
- Rohne Alp contemplates designing and building an innovation lab and is thereby supported and advised by various ENERBUILD/NENA partners.
- The architecture contest in Slovenia inspired initiators in Luzern to launch a similar campaign with old Luzern farmhouses.

Many of these ideas and impulses will outlive the project ENERBUILD. Therefore keeping in touch and cooperation opportunities via the NENA network are vitally important to strengthen and further the Alpine World of Innovation, true to the motto "just do it".

Willy Küchler
ITZ, Innovations Transfer Zentral Switzerland

Creation of an online directory

of SMEs, institutions and other important stakeholders in the field of energy

European Company Database - Rhonealps

This action was realized in close cooperation with the Eco Energies Cluster of the Rhône- Alpes region. The work done has led to different forms of know-how transfer and capitalization presented below.

In the Rhône-Alpes, the realization of the SMEs database was a good opportunity to contact SMEs and to see if they were interested in transnational cooperation.

The result was very positive with 169 SMEs who accepted to be in the Database and gave us authorizations and information to fill in the database.

These SMEs are representatives of a wide range of business areas : banks, insurance companies, planners, construction companies, designers, manufacturers and training centres.

The first work was to define the content of the database that should be easy to fill in by the partners and made possible the research to extract target type of SMEs.

RAEE and the Cluster Rhône-Alpes Eco Energies, with support of EURAC and ITZ, have elaborated a data base excel file with:

- one part about the contact (Name of the company, website, general phone number, one email address, address, zip code and country)
- and the other part about the description of the company activity

After long discussions, we decided to keep it as simple as possible

- Area of business with 26 suggestions in a list
- selection of approx. 50 key words (with checkboxes), to really specify the area of business

The structure is probably too simple but it was the best way to put it on the website and to involve most partners and companies

The second step was for each partner to fill in the base with two possibilities:

1. For the existing database at the beginning, the chosen way was to fill in an excel file for each in-volved partner with all the datas needed and the lead partners have integrated all excel files data-bases from partners to the online database. The excel sheet is a good tool that could be updated in a very easy way.
2. Since the database is online, we have only to add the new companies one by one and erase the dead ones. Only partners are authorised to put or erase companies.

Areas of business	
PLANNING - Promoter	BANKS
PLANNING - Town planner	INSURANCES COMPANIES
PLANNING - Surveyor	SELLING - Real estates agencies
STUDIES, ADVISORY, DESIGN - Engineering consulting	SELLING - Solicitors (notary)
STUDIES, ADVISORY, DESIGN - Control office	Associations
STUDIES, ADVISORY, DESIGN - Design,assistance	Local authority
MANUFACTURING, SUPPLY - Materials	Territorial authority
MANUFACTURING, SUPPLY - Structure&envelop	Training centre
MANUFACTURING, SUPPLY - Equipments	Technical centres of research
CONSTRUCTION, RENOVATION - Builder	Syndicate
CONSTRUCTION, RENOVATION - Main work	Professional organization
CONSTRUCTION, RENOVATION - Second finishings	Consular chamber
CONSTRUCTION, RENOVATION - Equipments	Statutory administration - Institutional structures
CONSTRUCTION, RENOVATION - Finishes	

In spring 2010, we decided to link the database on the ENERBUILD website with the name 'European Company Database'.

Three possible research criterias are available on the database :

- Country
- Area of business
- Full text (keywords)

This database was a success, more than 600 SMEs from 7 countries agreed to be in.

Nation	Total
Austria	178
France	167
Germany	1
Italy	178
Slovenia	85
Switzerland	10
Total	619

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Creation of an online directory

of SMEs, institutions and other important stakeholders in the field of energy

These SME's represents a large range of business areas :

Business fields	Total
Banks	13
Construction-Renovation	282
Manufacturing, Supply	121
Planning	9
Studies, Advisory	123
Other	10
Training center	13
Association	26
Local authority	15
Technical centers of research	7
Total	619

Capitalization

Unfortunately, the economic crisis and the difficulties in the building sector in 2010 and 2011 have led the SMEs to concentrate their work at the regional level and did not give them time and possibility to reach a transnational level. At this time, transnational market was not a real objective for them.

So, for the time being, we think that the database will not be used for its first objective until the end of the economic crisis or a change in the economic context.

Pending, the database can be used to disseminate information to SMEs at a transnational level. This will be the case for the Rhône-Alpes Cluster Eco Energies who will use the database to disseminate information when they will organise transnational events (trade fairs, conferences...).

Tyrolean SME-Index

Background/idea:

A global switch to renewable energies is the only climate compatible approach. Therefore an internationalisation of local SMEs engaged in the energy sector is seen a major challenge to encourage product innovation and market development. In Tyrol this sector already creates and secures a large number of future-oriented jobs. The Cluster Renewable Energies Tyrol pools the resources in the country. Whether it is photovoltaic, solar power, hydropower, wind energy, biomass or energy efficient building, the value chain is constantly extended. On the long run, good cooperation of the individual technologies will be decisive. Tyrol as location is very authentic in this respect and companies working in and with Tyrol are accepted on the international market. Together with universities, academies, research institutions and other specialised businesses, companies are in the position to advance their new developments. Cooperation is the core competence of innovation work and should not be limited to a specific region. Therefore the Tyrolean SME-Index provides for the first time an actual overview on companies and research institutions for interested cooperation partners. Detailed company profiles in German and English should encourage SME cooperation on an alpine-wide and international level.

Dissemination:

1.000 pieces of the Tyrolean SME index were printed. The main dissemination was done via international conferences and events (e.g. future buildings, international Passive House conference 2011) and international fairs (e.g. the Intersolar Munich 2011), where the SME-Index was presented and distributed to a broad interested number of companies. For electronic contact requests the distribution was also done as PDF via mail. Beginning of 2012 nearly all SME-Indices were distributed, a 2nd updated edition is planned to be finalised till mid of 2012.

Impact

Involved SMEs and research institutions got a professional edited brochure in German and English to promote their competences and products also on a more international market. The SME index facilitates establishing contacts between SMEs and research institutions and fosters international cooperation in the field of renewable energy.

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The SME-Index can be found at www.ENERBUILD.eu

Stimulating innovation by environmentally friendly technology transfer

through innovation workshops, installation of regional innovation labs, etc.

Innovation School

Towards low energy active buildings

Innovation school is an initiative where students can learn how made innovation jobs. First of all TIS and EURAC met local enterprises to collect demands of innovation and problems they would like to go over to strengthen their market position.

The innovation school can be considered as a think tank where SMEs, applied research and academy worlds could share ideas and problems in order to find solutions, through innovation activities. Some workshops with enterprises were carried out aimed at bottom-up collection of innovation demands and possible critical urgencies of the enterprises in the building sector in South Tyrol towards the new concept of net zero energy buildings (EU directive 2010/31/EU).

After the enterprises selection and an analysis of their demand of innovation EURAC and TIS launched a call for students would like to participate at the initiative. Students' profile foreseen a degree, expertise and skills in building energy efficiency sector and, also a small, job experience or as advisor or as researcher. The idea was to define working group made of practitioners of the building sector with technologies skills and young researchers with a knowledge on methodological approach and strong theoretical basis.

Every working group was coupled with an enterprise with two tutors: one from the enterprise itself and the other from the organizer (TIS and EURAC).

In the following the involved enterprises, contact people and tutors.

- Tecnospot - <http://www.tecnospot.eu/> (contact Hannes De Bortoli, tutor G. Faiella) for the subject: BIPV
- Frener&Reifer - <http://www.frener-reifer.com/> (contact Michael Reifer, tutor S. Prosseda) for the subject: technologic facade integrating energy production systems
- Lignoalp (= holz&co + balken) - <http://www.lignoalp.it/> (contacto Walter Capovilla, tutor H. Mahlkecht) for the subject: low environmental impact houses
- Obrist - <http://www.obrist.bz.it/it/> (contact Günther Obrist, tutor R. Lollini) for the subject: control systems for building energy flows

Five students were involved in each working group. They were able to understand the main building sector critical situations and to learn to develop innovative technical solutions, aimed at the energy efficiency and allowing to match the market needs.



The innovation school structure foresaw:

- Innovation workshops with the enterprises to collect demand of innovation, as mentioned above.
- Training modules with active workshops in which students were guided to the development of innovation idea.
- Job Training, an intensive week organized as follow: plenary introduction, activities planning and organization, stages with the involved SMEs with the aim to develop ideas for the resolution of the identified critical urgencies, plenary results presentation.

Following training module were carried out:

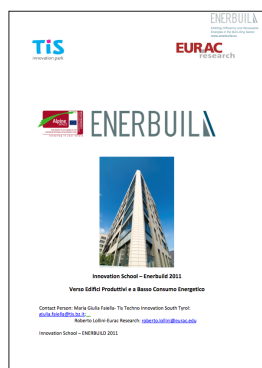
- Mega-trends in the building sector, Prof. Dominik Matt (Libera Università di Bolzano)
- ESAP – Energy Saving and Producing

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Stimulating innovation by environmentally friendly technology transfer

through innovation workshops, installation of regional innovation labs, etc.



More information can be found at www.ENERBUILD.eu

Building towards zero energy balance,
Ing. PhD Assunta Napolitano (EURAC)

- Integration of solar technologies in the building envelope, BIPV e BIST (Building Integrated Photovoltaics e Solar Thermal), Ing. PhD Francesco Frontini, Arch. PhD Isa Zanetti (SUPSI)
- Wooden building physics,
Ing. PhD Gaia Pasetto (CNR – IVALLSA)
- Costs/Benefits analysis for designing and realizing of net zero energy buildings,
Ing. Carlo Battisti (TIS)
- Industrial processes and logistics in the building sector,
Prof. Dominik Matt (Libera Università di Bolzano)
- Advanced façade for solar control,
Prof. Angelo Lucchini (Dipartimento BEST – Politecnico di Milano)

After an intensive and effective work four innovation ideas were developed as presented in the following sheets. Students and the enterprise representatives gave positive feedback during a fruitful discussion after the presentation of the idea in a plenary session at Eurac.

Keywords of the innovation ideas come out by the ENERBUILD innovation school 2011:

- Simplicity
- Adaptability
- Modularity
- Awareness

Innovation school started in June with the first contact with the enterprises and ended the last week of November (up to the 2nd of December).

Conferences and Workshops - Rhonealps

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Conferences and workshops

In this action we worked in close cooperation with the Cluster Rhône-Alpes Eco-energies but also with Tennerdis and Pôle Innovation Constructive which are umbrella organisation of enterprises in the fields of innovation in energy and building construction.

We have organised three innovation conferences with these partners to focus on innovation in different fields of energy and building construction:

- The first innovation workshop “Energy Solar Days” has been organized by the Cluster in cooperation with INES, Solar Institute (Chambery) in June 2010 to encourage European connections between French members, Belgian Cluster's Members and ENERBUILD's members. The program was including conferences, discussions, technical visits and exchanges between experts, researchers and companies. The subject was linked to the work to be done in WP7 on energy producing buildings. 53 participants attended the conference
- The second conference ‘From thermal regulation to energy producing buildings in 2020’ was organised with Tennerdis and held on 1st March 2012. In the morning, French government and Effinergie Label have presented the prospective for thermal regulation 2020 and some projects of NZEB or producing building have been presented. In the afternoon, the discussion has focused on policy and energy efficiency assessment of building to reach the 3x20 goal. The conference has ended with the visit of a NZEB in construction. This conference



Workshop 1 “Energy Solar Days”



Conference ‘From thermal regulation to energy producing buildings in 2020’

rence was linked to the work done in WP5 on energy labelling and WP8.3 pilot projects. 98 participants attended the conference.

- The third conference was held on March 27th 2012 with the Cluster Rhône Alpes Eco-Energies on embodied energy. In the morning, the concept of embodied energy was presented with a transnational vision and examples on calculations. The afternoon was more focused on regional experiences, tools and objectives. 95 participants attended the conference. This conference was strongly linked to the work done in WP6 on embodied energy calculation.

Innovation labs database

We have also elaborated a database of the innovation labs in the Rhône-Alpes region and a short description of their activities. These documents will be disseminated to the SMEs of the Rhône-Alpes region to show them the possibilities offered by the innovation labs and to facilitate the exchanges between labs.

Furthermore, we contact all the innovation labs of the Rhône-Alpes region (15 structures) and established a document to describe their activities and a database of contacts.

Innovation lab project in Rhône Alpes

The Innovation in Construction Pole has the project to set up in L'Isle d'Abeau (near Lyon) an innovation platform named ASTUSS. Cluster Rhône Alpes Eco Energie and RAEE has been involved in the steering committee. We have presented the experiences of the other ENERBUILD project partners to the steering committee and proposed to organise an exchange meeting with 4 partners of ENERBUILD who set up such platform in April 2012.

Transnational cooperation on EQB criteria and assessment

The work done in WP6 on Environmental Quality of Buildings assessment has led us to contact 5 other European projects working on the same subject and especially with French partners of these projects.

We have had different meetings with these partners to exchange on EQB assessment tools at regional and national level but also at transnational level with other ENERBUILD partners during:

- an international conference we organised in Lyon on February 16th 2011 "ENVIRONMENTAL QUALITY OF BUILDINGS. From Europe to territories: what possible convergence?"
- an international conference held by IRH MED in Brussels on November 15th, 2011

Know-how transfer and capitalization

The first impact of the conferences and workshops held is the know-how transfer between innovation labs, SMEs and the stakeholders of the building sector.

They gave us the opportunity to present and discuss innovations resulting from 8.3 pilot projects and WP6 for example on embodied energy or new technologies.

Especially, the work done on the subject of embodied energy and the conference held with transnational exchanges led us to set up a regional working group during 2012 to define the common way to evaluate embodied energy in the regional context and the possibility to use it in a regional Environmental Quality of Buildings assessment tool.

The innovation labs contacts have been used during the project to associate them to the regional and transnational conferences and it can be used by the Cluster Rhône-Alpes Eco Energies to involve them in innovation competition, inform them or organise common activities on the subject of innovation in the building sector in the future. The experiences of other partners in innovation labs have been interesting to define the regional Innovation Platform Form project.

The work done in WP8 with other European projects to exchange on methods and environmental Quality of Buildings assessment tools and criteria's has led to start an actual cooperation between 5 European projects and to set up the first draft of

- a French interregional EQB platform to be set up in 2012
- a European international EQB platform: a new transnational meeting on this subject is scheduled in April 2012.

Otherwise, as result of WP6 actions, the regional Council accepted to set up in 2012 a regional EQB platform linked with the national and international platforms.

Stimulating innovation by environmentally friendly technology transfer

through innovation workshops, installation of regional innovation labs, etc.

The Innovation Centre - Holzinnovationszentrum

The Holzinnovationszentrum, HIZ (Wood Innovation Centre) is the result of joined forces of 10 municipalities to create a common location of wood-related businesses, dedicated to innovation and regional sustainability. The EAO is the established regional service address for energy advice and consultancy services for RES, Energy Efficiency and Passive House building and moved into the newly founded HIZ in 2008. The EAO works in strong co-operation with the companies located there, and the Region Murtal. The best example is the biomass CHP plant on site that has been initiated by our agency and partners, and creates synergetic effects within the cluster. The HIZ is also the link to related regional initiatives such as the Holzcluster Steiermark (Wood Cluster Styria) and proholz, and to the initiative Kraft.das Murtal, a cooperation of 58 enterprises of the Murtal.



HIZ - Holz Innovation Zentrum (Wood Innovation Centre)

The Building

Our office is situated in the „Impulse Centre“ of the HIZ, a governmental approach on the promotion of technology and innovation. The house is connected to the district heating grid of the biomass CHP in the HIZ and was recently equipped with a pilot plant for solar cooling. Furthermore, the EAO plans in the course of the ENERBUILD project to implement together with a wood pellets producer in the HIZ a photovoltaic plant on site. At the HIZ, we have several thousand square meters of available rooftop surface, which are perfectly suited for a photovoltaic plant. Using an innovative customer-participation model as financial tool, the installation can be duplicated in large numbers within the region as well as beyond. With the successful realisation of various meetings and workshops since the EAO moved

in, we decided to establish the new home of our company as permanent facility for the exchange of experience and innovative approaches on energy efficient constructions among SMEs and municipalities.

The Events

In the framework of the ENERBUILD-Project, EAO, HIZ and HC launched a number of events for the promotion of renewable energy sources and energy efficiency in buildings. Because of its infrastructure and beneficial combination of enterprises on site, the HIZ has proven to be most suitable for the exchange of experiences and innovative approaches on ESAP buildings on regional level.

One example is a workshop of wood-related businesses for the development of new innovative wood modules and appropriate business models for market introduction, „Holzindustrie im 21. Jahrhundert“ (Wood Industry in the 21st Century). This included especially a prefabricated wooden facade-module of high thermal quality that can be applied in vertical lines with ventilation, window and photovoltaic elements already integrated.

An other was a „Solar Cooling Planer Workshop“ for the installers in our region in cooperation with the company Pink GmbH, who also constructed the solar cooling plant on the roof of the „Impulse Center“ of the HIZ. This way, the participants were able to learn about the new technology not only in theory, but also from an installation in practice.

Also a Passive House planer workshop was organised in the HIZ by the EAO partners „Holzcluster Steiermark“ and „proholz“. The workshop was conducted by the architect, Passive House planner and long-standing expert DI Erwin Kaltenegger. The target audience was house building constructors and professional planners of building companies.

After the great success of the first Passive House planer workshop, an educational course with several educational institutes in cooperation has been established at the HIZ on the topic of Passive House planning. The extra occupational workshop includes the certification of the successful participants as „Passive House planer“. In the winter semester 2012, the course will be already held for the second time, thus confirming the HIZ as venue for information exchange and regional innovation.



10 Years of wood cluster and opening of ECW



ECW-Engineering Centre Wood

The Innovations

The HIZ is a centre of pilot initiatives like the biomass CHP plant, the solar cooling device or the prefabricated wooden facade-module. These technologies have great potential for saving energy and increasing energy efficiency in buildings, such as ESAP houses. The experience gained in the implementation and use of these technologies is actively shared with public organizations and SMEs in the region. The information exchange is not limited to but emphasized by events like workshops, meetings and seminars held at the HIZ itself. In the framework of the ENERBUILD-Project, the HIZ has become a regional institution for the stimulation of environmentally friendly know-how transfer, demonstrating the feasibility of energy efficient technology in practice by running applications on site.

ECW - Engineering Centre Wood

With the establishment of the Engineering Centre Wood, the Wood Innovation Centre (HIZ) has succeeded to combine the theoretical expertise on product development with its practical implementation. The result enhances the business of the whole wood sector.

The ECW is most of all a prototyping-laboratory that is accessible and can be used by enterprises. Here, they can mechanically implement standardized first tests of potential new products without turning off capacities of the assembly line thus restricting the output of core business. The necessary auxiliary infrastructures such as office and conference rooms are also available at the ECW.

The Engineering Centre Wood is positioning itself as a complement in the R&D field and offers high-tech infrastructure, network and service packages for the whole wood sector, and has also access to research partners at universities and other R & D institutes.

The Capitalization

Our activities in the framework of the ENERBUILD-Project have increased the energy awareness in the region in general and the awareness about the application of Renewable Energy Sources (RES) and Rational Use of Energy (RUE) in buildings in particular. The examples of pilot engineering at the HIZ together with the lecturing events on site have succeeded in familiarising planners and installers with the possibilities of Passive House and ESAP building technologies. By introducing these technologies to local SMEs, we have enhanced the capacity of the region for innovative building solutions and strengthened value-added chains of the regional building sector and building-related industry.

The display of our current and coming applications of RES and RUE technologies in the HIZ will continue to encourage builders, planners and installers to look for innovative solutions in building and renovation projects. Also the courses held in the HIZ are designed to have a sustainable effect on the individual participants and the building sector as a whole. The best example is the training for „certified Passive House planners“ that has the HIZ as one of the venues in Styria. All these measures ensure a prolonged improvement of the awareness and application of innovative Passive House and ESAP building technologies in our region.

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For further information:
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www.holzcluster-steiermark.at
http://kraft.dasmurtal.at

Stimulating innovation by environmentally friendly technology transfer

through innovation workshops, installation of regional innovation labs, etc.

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Habitech Innovation Workshops

The innovation work package is also designed to promote training events suitable for dissemination and promotion of energy saving in buildings construction by using new methodologies (processes and production systems) and innovative materials. This work package has a direct role to stimulate and promote innovation processes in construction related at building system. All training events were dedicated to spread information to designers, builders but also people interested in using new materials, methods of design and construction aimed at saving energy.

With the eleven events organized by the Province of Trento and the Habitech Network 509 people

could be trained. Habitech, founded in 2006 is an Energy and Environment Cluster: a reality of excellence, comprised of over 300 companies, research organizations and public agencies, for a total of 8.000 employees. Habitech develops projects, offers services for innovation, technical and commercial support for enterprise in the field of Green Building | Energy | Sustainable Mobility. It has the expertise and experience to organize and work within the enterprise networks stimulating cooperation among different businesses and the development of innovative projects. The events were organized in different places, not only in the area of Trento.

Qualitatia Controllo Tecnico of Milano and Haworth Roma srl

Place	Milano and Rome
Title	Energy savings in buildings. The implications of LEED certification in the realization of the work cycle
Date	1 day course - 30 September 2010 (8 hours)
Program	<p>Energy savings in buildings and energy efficiency systems;</p> <ul style="list-style-type: none"> • LEED certification as part of protocols and sustainability • Definition of protocol (criteria for applying the Italian protocol) • The definition of objectives and to obtain credits • The design and management of the LEED credits <ul style="list-style-type: none"> - The role of the client - The involvement of the study design - The role of LEED AP at design - The energy modeling - Presentation of case studies
Participants	48 experts (Milano) 79 experts (Rome)

Program	<ul style="list-style-type: none"> • Basic training, energy efficiency in buildings, materials, processes and systems design. The principles of LEED ® in the Italian, European, world market; • LEED® applied to new buildings and existing buildings; • LEED ® projects - sustainable procurement, waste management, indoor environmental quality; • LEED ® construction site - policy and procedures, compliance products and materials
Participants	9 participants

Coster S.P.A. Milano

Place	Milano
Title	Training course in Energy Efficiency in Building and LEED certification protocol
Date	5 day course - November 2010 (40 hours)
Program	<ul style="list-style-type: none"> • 1 Day: „General Introduction to the system of energy saving in buildings (new construction and renovation)“ • 2 Days: „Analytical approach and study on the LEED certification system.“ • 2 Days: „The Commissioning and LEED energy modeling.“
Participants	9 participants

Tecnoparco del Lago Maggiore (Milano)

Place	Verbania (Milano)
Title	Training course in Energy Efficiency in Building and LEED certification protocol
Date	4 day course - November 2010 (32 hours)

Board of Industrial experts of Trento Province

Place	Trento
Title	Training course in Energy Efficiency in Building and LEED certification protocol
Date	5 day course - November/Dezember 2010 (36 hours)
Program	<ul style="list-style-type: none"> • 3 Days: „General Introduction to the energy saving and energy efficiency in buildings, and LEED certification protocol with the aim to introduce participants to issues related to energy saving in buildings and LEED certification, the main concepts and new professionals who offer this certification as an opportunity to the system of energy saving in buildings (new construction and renovation)“ • 2 Days: “Leed in practice: in-depth course of the technical issues of how LEED fits in operations „
Participants	24 industrial experts

PVB Group di Trento

Place	Trento
Title	Training course in Energy Efficiency in Building and LEED certification protocol
Date	4 day course - December 2010 (40 hours)
Program	<ul style="list-style-type: none"> • Energy efficiency in buildings and structure of the LEED certification process. • Basic concepts of sustainability and objectives associated with LEED. • Roles and key figures: LEED AP, Commissioning Authority. • The integrated design as a methodology to optimize construction costs and improve environmental performance and energy building. • Detailed analysis of prerequisites and credits. • The checklist: a tool for feasibility analysis and project management. • Presentation of best practices and concrete examples.
Participants	75 experts

Ordine Ingegneri di Trento

Place	Trento
Title	Energy Efficiency in Building and LEED certification protocol
Date	2 hours mini course - 13 December 2010
Program	<ul style="list-style-type: none"> • Energy efficiency in buildings and structure of the LEED certification process. • Basic concepts of sustainability and objectives associated with LEED.
Participants	45 engineers

Haworth di Milano

Place	Milano
Title	Energy saving and energy efficiency in buildings. The implications of LEED certification in the building construction
Date	1 day course - 14 April 2011 (8 hours)
Program	<p>Energy savings in buildings and energy efficiency systems;</p> <ul style="list-style-type: none"> • LEED certification as part of protocols and sustainability • Definition of protocol (criteria for applying the Italian protocol) • The definition of objectives and to obtain credits • The design and management of the LEED credits <ul style="list-style-type: none"> - The role of the client - The involvement of the study design - The role of LEED AP at design - The energy modeling - Presentation of case studies
Participants	150 experts have joined the course

Trento c/o Ordine degli ingegneri della Provincia di Trento

Place	Trento
Title	Sustainability in Building Construction and LEED: the develop of a Project
Date	5 day course - October/November 2011 (40 hours)

Stimulating innovation by environmentally friendly technology transfer

through innovation workshops, installation of regional innovation labs, etc.

Program	<p>The training program was carried out for the local Association of Engineers and intended to:</p> <ul style="list-style-type: none"> • deepening the concept of SUSTAINABILITY in building construction to the whole process, including maintenance • focusing on the advantages of integrated design and of market transformation • presenting LEED rating system as a tool to measure sustainability, its principles and credits, particularly referring to new constructions and existing building • making participant experiment on the process of integrated design developing a project through all LEED topics (workshop) and putting into practice sustainability principles • analyzing and commenting participants' outputs and learning.
Participants	13 engineers have joined the course

Program	<ul style="list-style-type: none"> • Energy savings in buildings and the LEED system as part of protocols and sustainability certification • Definition of protocol (criteria for applying the Italian protocol) • Definition of objectives and to obtain credits • The energy modeling • Case studies • The criticality of the LEED Administration • LEED Certification according to the Italian protocol • The document management in the certification path • Case Studies
Participants	58 experts have joined the course

DELTATECH di Pisa srl

Place	Pisa
Title	Energy saving and energy efficiency in buildings. The implications of LEED certification in the building construction
Date	1 day course - 20 December 2012 (8 hours)
Program	<p>Energy savings in buildings and energy efficiency systems;</p> <ul style="list-style-type: none"> • LEED certification as part of protocols and sustainability • Definition of protocol (criteria for applying the Italian protocol) • The definition of objectives and to obtain credits • The design and management of the LEED credits <ul style="list-style-type: none"> - The role of the client - The involvement of the study design - The role of LEED AP at design - The energy modeling - Presentation of case studies
Participants	8 experts have joined the course

<p>Sustainability: principles and applications</p> <p>LEED: a tool to measure sustainability. New constructions and existing buildings</p> <p>Market Opportunities</p>	Site Water Energy	Materials Indoor Quality	Commissioning Process	Analysis
	How to design with LEED. The integrated Design Process put into practice by participants (workshop)			
	Criteria parameter, credits, tools check list	Criteria parameter, credits, tools, check list	The Energy Modeling Process	Projects

Graph of Training Outline

Qualitalia Controllo Tecnico srl

Place	Padova
Title	Energy saving and energy efficiency in buildings. The implications of LEED certification in the building construction
Date	1 day course - 01 December 2012 (8 hours)

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The Austria House at the Olympic Winter Games 2010 in Vancouver, Vorarlberg, Tyrol

With the Austria House, Austria was at the forefront for the 2010 Olympic Winter Games in Canada. Three companies from Vorarlberg and two Tyrolean companies have built the first Austria House using the Passive House building technique. In brief summary this means: extremely good thermal insulation, no thermal bridges between the inside and outside, windows with insulating disc glazing, solid construction that is air- and windproof, controlled ventilation in the living space and heat recovery, as well as use of solar radiation and geothermal energy for heating the living space and for hot water generation.

The building envelope of this two-storey house and the outdoor installations were fabricated by the timber construction company Sohm Holzbautechnik from Alberschwende and constructed at Whistler in collaboration with Canadian construction company Dürfeld Log Construction. The windows are from the Tyrolean window manufacturer Optiwin, and the building environment equipment -including the aerosmart x² - is from Drexel and Weiss – energieeffiziente Haustechniksysteme at Wolfurt. The architect for this house was Treberspurg & Partner in Vienna.

The Austria House is located in the centre of Whistler, just a three-minute walk from the site where the medal ceremonies will take place.



Austria House at the Olympic Winter Games 2010, Vancouver

Both during the Olympic (12th to 28th February 2010) and Paralympic (12th to 21st March 2010) Games and afterwards, the Austria House was playing host to the international worlds of politics, economics and sport and therefore was also be an effective advertising medium for Austrian tourism and hospitality. This has been the first time that the Austria House won't be disassembled at the end of the Olympic Winter Games but stayed on the site. Actually the building is used as tourist office in Whistler.

Info-Point – Interactive information on the Passive House Principles, Vorarlberg

The goals of the ENERBUILD project are to accelerate energy-efficient construction, to make the Passive House technology known and to familiarize the teaching and crafts with the Passive House standard. An important part is public relations. The Austria House at the Olympic Games



Info-Point in the Austria House, Whistler Canada

provided an excellent platform to transport the topic of Passive Houses, especially since it is the first Passive House registered in Canada and represented an international meeting place of the media during the Games.

Vision, innovative spirit and love of nature, promoted the five companies in the project „a Passive House for Canada.“

Following the successful and eventful Olympic and Paralympic Winter Games in Vancouver and Whistler, the Olympic Austria House was handed over to the Municipality of Whistler. In the spirit of sustainability, this particular house is still in use by the Whistler Off Road Cycling Association (WORCA) and the Whistler Nordics ski club.

The Passive House is therefore still a showcase for innovative, ecological and highly-efficient construction. The bilingual Info-Point in the Aus-

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tria Passive House informs visitors about the details of the ecological Passive House. With the Passive House technology a decisive step has been taken to improve the quality of human life, protect ecologically sustainable economies and the environment.

The quality of the Austria House was confirmed by more than one certificate.

- CLIMATE: ACTIVE Ministry of Life Award for Passive Houses
- DGNB. International Sustainable Building. First building with certification by the Austrian Green Building Council (ÖGNI Austrian Society for Sustainable Real Estate)
- Passivhaus Institut Darmstadt: Passive House Certificate
- Most innovative wood building in British Columbia

Goal of the Info-Point

The Info-Point should encourage visitors to energy-efficient construction, disseminate information to the Passive House in general and the House in Whistler in particular and should develop knowledge. Specifically the Info-Point supports the expertise export from the Alpine Area and at the same time the performance of companies in the Alpine region in the field of energy-efficient construction via global media. Thereby this creates positive PR work at the local level.



Info-Point Startscreen

The sizing column, equipped with a large touch screen, has a comfortable navigation through the contents. By reading, seeing and hearing, the visitor can experience the topic of energy efficient building, the Alps and the Passive House

itself and its technology. Short introductory texts alternate with thematic videos and statements on graphics.

Contents of the Info-Point

History of the Austria House

This area shows the planning process through to completion and includes constructional details, special features of the site and building physical design solutions. The specifics of the Austria House are highlighted here.

Whistler 2020 Programm

In the cooperation of content development the Municipality of Whistler illustrated their energy efficiency goals and considerations for the usage of renewable energy.

Energy-efficient construction in the Alpine Space

Best Practice buildings in Austria on energy efficient construction are presented in this section with pictures and data. Energy Statistics simply explained show the energy consumption, living trends and natural resources worldwide.

Ökologische Herausforderungen für unsere Welt und unsere Bodenschätze

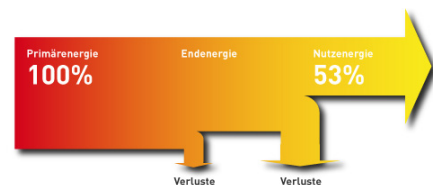


Quelle: Prof. Dr. Schmidt-Bleek, Wuppertal-Institut, von Arch. W. Ritsch
Helmut Krappeier: Zukunft Passivhaus - Epilog



Energiezukunft? Nicht so!

Das heutige System ist unglaublich ineffizient
Von der Primärenergie bis zur Nutzenergie gehen in Summe 47% verloren

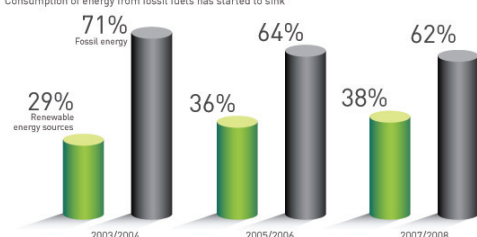


Helmut Krappeier: Zukunft Passivhaus - Epilog



Use of energy sources in Austrian households

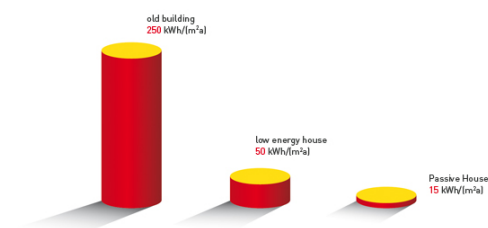
Consumption of energy from fossil fuels has started to sink



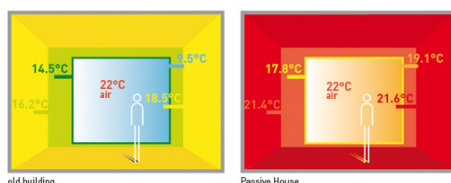
Source: STATISTIK AUSTRIA, Energiestatistik: MZ Energieeinsatz der Haushalte 2007/2008, grafische Bearbeitung: Telesis

Definition Passive House

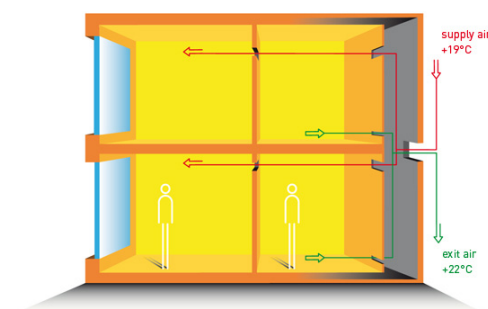
What is a Passive House? This question is answered here. In an easy understandable way topics and killer arguments against Passive Houses, Convenience and Comfort, costs, Shell and Windows, Comfort Heating and Ventilation are explained and resolved



A Passive House dwelling measuring 120 m² can be heated with 40 tea light candles. A standard building would need around 400. Why? Because a Passive House loses so little energy through its well insulated walls and modern glass technology that it hardly needs any energy from outside sources!



Why it is so comfortable in a Passive House? At -10° C a normal window emits about 9.5° C in the middle of the pane. A modern Passive House window emits 19° C. The effect is clearly noticeable. It is consistently comfortably warm on all spots on the house!



Why do Passive Houses have automatic ventilation systems? A real energy saving system! Air that is, for example 0° C is warmed to 16° C practically free of charge. The residual heat can be brought to the desired room temperature by minimal heating.



Austria/Vorarlberg Kindergarten Bizau



Object Description
Specialties: holistic and consistent contribution to the issue of regionality, environmental sustainability and ecology, to range from the building to the furniture, which was built by local carpenters. The interior was made entirely of wood in an exciting mix from domestic fire and ash.
The objective of the work was to provide a manifold and unique world for children. The result is a house that is characterized by an aura of great relaxation. The spirit of the place should be compiled in the most "livable" architecture.

Fact sheet
Treated Floor Area: 720 m²
Completion Date: 2009
Building owner: Gemeinde Bizau
Architect/Planner: Arch. Di Bernardo Bader

Energy standard: [PHPP]
Air-tightness: In50-value) 0.33 1/h
Building type: Wood construction
Ventilation: Central ventilation system
Heating: existing heating system of the old kindergarten, which will be replaced by a biomass heating system in the next step

Photo credits: Adolf Beyerle



Austria/Tirol Residential Building Lodenarea Innsbruck



Object Description
NEUE HEIMAT TIROL has built 354 rental flats in form of a passive house project, which is certified by the Passivhaus Institut in Darmstadt, Germany. The main aim of the developer is to minimize long term energy costs and rents for his customers, by applying modern architecture and a challenging technical management, as well as enhancing the public awareness of current energy issues and achieving a leading role in the sector of sustainable housing.

The utilization of groundwater heat, a wood pellet based heating system and solar collectors the building is actively contributing to climate protection. In comparison to a low energy housing project the passive house project "Lodenarea" achieves to reduce the yearly production of CO₂ by 680 tons.

Fact sheet
Treated Floor Area: 354 rental flats: 28,000 m²
Completion date: 2009
Building owner: NHT Gemeinn. Wohnungs GmbH / Innsbruck
Architect/Planner: Architekturwerkstatt: din a4 and team k2 architects
Energy standard: [PHPP]
Air-tightness: In50-value) 0.20 1/h
Building type: massive construction
U-values: Exterior wall 0.13 W/m²K, Roof 0.11 W/m²K, Basement floor / 0.12 W/m²K
Windows: average 0.85 W/m²K
Ventilation: Por stop one central ventilation system
Heating: Pellets heating system + 1.000 m² solar

Photo credits: NHT/Christof Lackner

Examples for innovative Passive House Projects in the Alpine Space

Project ENERBUILD and the Alpine Space

This menu point presents the Alpine Space and the Project ENERBUILD from where this pilot action came up.

Sustainable Effects

Besides the use of the content for the Info-Point in the Austrian Passive House in Whistler the developed contents of energy-efficient building in the Alpine Space are also available as interactive presentations in two languages for education and training for apprentices and interested people.

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ENERBUILD Initiative Tyrol. A green technology power house

Austria's region of Tyrol demonstrates the best of world-leading energy efficiency and alternative energy technologies at their ultra energy-efficient „Passive House” in Whistler, BC

On the 15th February 2010 a specific business event („Tiroler Wirtschaftstag”), with focus on energy efficient buildings and renewable energy technologies in the frame of the Olympic winter games 2010 in Vancouver was organized within the ENERBUILD project. The event was designed to facilitate knowledge transfer in field of alpine energy efficient housing technologies integrating local SMEs as well as the University of Innsbruck into the event. The ENERBUILD project, the consortium and best practice examples provided by ENERBUILD partners were presented to more than 100 interested SME's and public authorities at Austrian Passive House in Whistler.



Corporate presentations from and exchange with Tyrolean energy companies were:

- **Leitwind by Leitner Technologies (Mr. Anton Seeber, president)** The Leitner Technologies group stands for high performance technology of ropeways and snow roomers since 1888. Leitwind's impressive wind turbine supplies the Grouse Mountain resort with energy.
- **GE Jenbacher (Mr. Thomas Elsenbruch)** GE's Jenbacher gas engine division is one of the worlds leading manufacturers of gas-fueled reciprocating engines, packaged generator sets and cogeneration units for power generation.
- **Optiwin (Dr. Guido Wimmers, CEO Optiwin Canada)** Optiwin offers windows, doors and glazing facades for low-energy and Passive Houses. Optiwin has provided Austria Nation Passive House in Whistler with its high-tech windows.
- **Baumstark (Mr. Josef Schafleitner)** Baumstark is a group of nine Tyrolean companies of Master Craftsman who translate the language

of wood into high quality design compositions; they have fashioned the interior trim of the Austria-House.



- **Business Cluster Renewable Energies Tirol and ENERBUILD project (DI Norbert Gleirscher)** The ENERBUILD project is a European initiative of alpine regions on energy efficient buildings supported in the frame of the EU Alpine Space program. The business cluster represents a network of more than 60 innovative companies and notable research institutions, such as the University of Innsbruck.
- **Technical tour through the Austria House** Reception for guests with Tyrolean companies, University Innsbruck, Austrian officials and members of Austria's team in Canada.

In the frame of the event representatives from



Austria's Tirol region welcomed Canadian researchers, and green energy, construction and design businesses at a reception and commercial trade show highlighting renewable energy and energy efficiency technologies.

Innovation in rhônalpin building

The energy efficiency challenge is revolutionising the construction industry at each step in the chain, professionals transform their practices to achieve low power objectives. Today innovation is available on all fronts: design, professional practices, collaboration methods, material user awareness, construction principles...

Our goal with the pilot projects was to illustrate different aspects of innovation in Passive House building construction and to show that innovation is needed and possible not only on technical aspects but also on organisation, public procurement, user awareness and normalisation of local materials.

As part of the European ENERBUILD project, Rhônealpiénergie Environnement and the Cluster Rhône Alpes Eco-Energies supported 5 innovative energy efficient building projects.

During the project, discussions, meetings and exchanges have been held with the companies and building owners of each project to assist them as much as possible in their projects (especially on innovation aspects) and make a feedback of these experiences. RAEE have worked directly on 3 of the projects and Cluster Rhône-Alpes Eco Energies on two others.

The 5 projects enable visualising and understanding of the many facets of innovation in rhônalpin building. From the project owner to the user, each one participates in preparing tomorrow's environmentally friendly building:

- The pursuit of performance changes working

methods. Accordingly, the Rhône Alpes region clearly integrates the energy goals in its order and educates users in adapting their behaviour to the requirements of efficient buildings. This applies for example to the Ferdinand Buisson boarding school in Voiron.

- For its part, the developer Urbiparc has upgraded its approach towards strong partnerships with all of its interlocutors (communities, consultants, investors...). The concept of networking with numerous experts' progresses.
- In the Drôme, the INEED project 3, led by INEED in Valence is based on the evolution of techniques (thermoactive floors and natural dual-flow ventilation) to meet the passive level.
- Natural materials and new technologies are needed in many projects as evidenced by the building „Habiter et Travailler“ („Live and Work“) built from local wood in Albertville by Guillaume Sevessand Immobilier.
- Apart from setting an example, projects favouring local resources can help structure a sector. The Rhône-Alpes region has accordingly launched a call for projects (Propaille), in collaboration with the French Network of Straw Construction (Réseau Français de Construction Paille, RFCP). This program aims to study the sustainability of straw insulated buildings in order to obtain a certification synonymous with the guarantee and normalisation of straw bale construction.

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Project 1: Organisational innovation to ensure energy efficiency and a „users group“. The dormitory building in the Ferdinand Buisson School in Voiron (38)

In 2008, the Rhône-Alpes region decided to build a new dormitory at the Lycée Ferdinand Buisson in Voiron (38) with a goal of „passive“ building, an ambitious and innovative goal for this type of building.

To achieve the expected performance, a different and innovative organisation in the procedure was necessary. This organisation required numerous exchanges between the Contracting Authority, contracting authority assistant, the operators and the users. These exchanges took place mainly in the „user group“.

The Rhône-Alpes region wants the actual performance to be in conformity with forecasts made during the design. Accordingly it has defined an additional mission for the ACA after reception, to verify that the energy performance has been achieved with:



Delivery of the dormitory building is scheduled for April 2012

- the establishment of maintenance service contracts upon reception
- regular monitoring during the 3 years after reception

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- a “user group” meeting to involve users in the follow-up.

The integration of monitoring in contracting authority missions and the ACA and the esta-

blishment of associated “user groups” as early as possible, are new approaches that will enable achievement of energy performance goals. We must move toward making this commitment.

Project 2: A promoter appropriates low energy consumption: Urbiparc

Michael Ferrier, Urbiparc Chairman introduced the Miniparc® concept to France in the 80's. Now located in fifteen towns, these business parks promote and facilitate links and collaboration between firms located in concentrated economic areas. Since 2006, the developer has decided to implement only low energy programs in offices. Convinced that it has an action on greenhouse gas emissions, they also wish to influence behaviour by “educating” the users of its high-performance buildings and commits to doing so.

Having embarked on the “sustainable development” adventure with a head start now enables Urbiparc to benefit from feedback. Its profession has evolved: Program management now involves contacts with a lot more people; numerous engineers from specialised consultancy firms who bring their eco-building design expertise... Its teams are constantly updated on new processes or solutions developing in the market.

A strong partnership has been established between Urbiparc and local communities. Long-term relationships have also developed, companies and consulting firms who have been with Urbiparc since the beginning of the adventure, have



The Emeraud, a positive-energy building for Cegelec in Grenoble

capitalised on the experience. Accordingly partner companies have raised their qualification level on the specific problems of managing air tightness in buildings, on the choice of energy efficient equipment and the choice of eco-friendly materials. In-depth training work was also carried out with the client and investors.

In addition to the setting, the energy restraint and the impact on users health are new requirements that will soon be essential for decision makers.

Project 3: The new training techniques: INEED 3 in Rovaltain (26)

The INEED 3 project is part of the Rovaltain technology park, near Valence TGV station and the A7/A9 motor-ways. The existing buildings are designed according to criteria of high environmental quality and come with a sturdy and quality architecture. Both buildings of the INEED 3 project present real innovation in eco-building and energy-performance, in-line with the existing buildings and location (cross-flow, wind speed). Two buildings will be built:

- a building called “tertiary” grouping training activities (Neopolis*) and a business incubator (2187m²).
- a building called “workshops” grouping renewable energy teaching plateaus, wood construction and energy performance of the envelope (1607m²).

The Neopolis training centre was incorporated into the design process with the project ma-

nagement teams. Specific performance indicators have been pre-defined in the pre-program. Technical choices were accordingly orientated towards eco-construction.

The experience should be the subject of a rigorous and accordingly scientific evaluation. The introduction of measuring devices is an integral part of the operation. The experiment will constitute de facto a new educational and research tool. The success of the experiment will be the best tool to promote Neopolis training.

Experimentation / innovation:

For heating and cooling: use of thermo-active floors. This mode of transmission ensures high inertia and comfort for the occupants (no airflow or radiation exchange).

Controlled natural dual-flow ventilation.

Consisting of ventilation using wind pressure to renew air in the building. A study of wind on the INEED site was carried out and the system design was developed in collaboration with the CEA and the INES. It is a first ever. Never before performed in tertiary building.

Measurement of actual performance

The performance measurement will be carried out in real time, so as to correct building management according to the user's wishes.

The building will be a "research / training / business building" the three levers of the green economy.



Project 4: Local wood in a passive building of mixed-usage : The "live and work" building in Albertville (73)



This operation is located in the heart of the Savoy, on the outskirts of the city centre of Albertville. It aims to be exemplary in its environmentally responsible architectural approach and its 'passive' purpose.

Wood is the ultra-dominant material. The wood used in the manufacture of the frame is local, sawn and dried at a sawmill just 5km from the

construction site and the laminated wood comes from a factory in the department.

The calculation of grey energy and the impact on climate change gives a very good result.

This innovative construction is efficient

- Precast retaining walls.
- Technopieux auger installed pile foundations.
- A thermocycle WRG system of grey water energy recovery.
- Home automation focused on energy management.

The construction of such a passive building is currently relatively difficult due to the lack of qualified firms aware of these techniques. The small local mill has a fleet of machines of low quality and precision and the carpenter has to work with occasionally bent wood with significant dimensional variations.

Project 5: Towards the recognition of straw bale building : The Rhône-Alpes Region and the French Straw Construction Network (RFCP) are working towards the recognition of straw bale building.

One of the obstacles to the development of straw bale building is the lack of official recognition of this material. The implementation of straw as an insulator in buildings poses a dual problem with respect to:

- insurance construction (10-year guarantee)
- BBC Effinergie labelling.

To remedy this, the French Straw Construction Network, the EFFINERGIE association, the certification bodies of buildings (CEQUAMI, CERQUAL, CERTIVEA and PROMOTELEC) have



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come together to establish a certification process for straw insulated buildings.

This work has resulted in the establishment of a specific straw procedure to obtain the BBC Effinergie label or another energy-efficient label. The BBC-Effinergie certification of straw bale building marks an important mile-stone in the recognition and normalisation of straw as construction material and should help develop the straw sector.

Know-how transfer and capitalization

A brochure presenting the results of the 5 pilot projects (24 pages in French) and a summary in English have been written.

It will be disseminated to many building sector stakeholders in Rhône-Alpes (mailing list from RAEE = 300 stakeholders) and to the Cluster members: 150 SMEs.

In addition, the five pilot projects have led to different results.

- The work done with the secondary school has modified the tender documents of the regional Council. Now, all the new projects of the regional Council will integrate a dimension of monitoring after the build-ing reception and a user group.
- The work done to certify straw material led to recognition of this material in the construction sector also by banks and insurances. After the success of this initiative, the regional Council is now planning to start the same work on earth construction, which was traditional in Rhône-Alpes 100 years ago but was abandoned despite a regional knowledge.
- The work done with INEED, Urbiparc and Sevessand on technical and commercial innovation will be disseminated through the brochure and we can expect that interested SMEs will contact directly SMEs involved especially on the subject of heat recovering natural ventilation (INEED), the usage of local wood and heat recovering from waste water (Sevessand) and ESAP office building commercial offer.



The publication can be found at www.ENERBUILD.eu

Solar Decathlon Europe - Rosenheim

The Solar Decathlon is an interdisciplinary competition where student teams from all over the world design, plan and build innovative residential buildings. Its energy requirements are to be covered by solar energy alone. Ten disciplines will be assessed – a solar decathlon. In the course of the competition the teams have to perform daily measurements and do house tours and convince the relevant expert juries of their concepts.

The 10 disciplines are:

1. Architecture
2. Engineering & Construction
3. Energy Efficiency
4. Electrical Energy Balance
5. Comfort Conditions
6. House Functioning
7. Communication and Social Awareness
8. Industrialization & Market Viability
9. Innovation
10. Sustainability

The SDE is an offshoot of the American Solar Decathlon, which is being held in Washington since 2002. 2010 it took place in Madrid for the first time, where among 17 other international teams also the University of Applied Sciences Rosenheim as Team IKAROS Bavaria participated with its solar house. The Spanish Government in cooperation with the Spanish Government Department for Construction and the Technical University Madrid invited to this competition. More than 190.000 visitors made it a complete success, even here in Europe. It is the goal of the competition to strengthen the awareness for energy-efficient and sustainable construction, to promote research and development in this area and to train young people in an interdisciplinary way.

The participation in the competition in Madrid in June 2010 marked the end of an almost two-year process. Upon the application in summer 2008 and the positive performance in the pre-qualification in autumn 2008 the race against time started, the formation of a team and the struggle for the „best solution“ among the large number of different requirements. 107 participants had registered, 20 had been selected and in the end 17 teams had succeeded in presenting their house in Madrid in June 2010 after almost two years. „You are all winners“ – this sentence of the Spanish organizers to the teams, which was often cited, has its origin here.



Rosenheim Solar House at the Villa Solar in Madrid.
<http://solar-decathlon.fh-rosenheim.de/>

In the overall qualification the University of Applied Sciences Rosenheim was able to reach a fantastic 2nd place as world vice champion and European champion as the best German team. In the disciplines Comfort, Energy Balance and Electrical Appliances as well as in the special price Light Concept the IKAROS team, as the participants from Rosenheim called themselves, succeeded in reaching the first place and in the end they were with 810 points only 0.9 points behind the winning team of the Virginia Polytechnic Institute (USA). The other German teams performed also very well with a 3rd place for FH Stuttgart, place 6 for BU Wuppertal and place 10 for the team of the three Berlin universities. In 2012 the competition is to take place in Madrid again.

<http://www.sdeurope.org/>

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83024 Rosenheim
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info@fh-rosenheim.de
www.fh-rosenheim.de

Solar House of Rosenheim

With a gross ground area of 74 square meters (maximum allowance) a Plus Energy residential house for two persons has been designed which uses the available space in an optimum way. Floor-to-ceiling glazings in the south make the living room appear larger and establish the contact between the indoor and outdoor space. The special design of the outer shell is based on the idea to develop a solar protection for the glass surfaces, which changes during the day. As the sun takes different positions in the course of the day and year, light and shadow play on the façade and constantly give it another appearance. During the day this results in fascinating light effects inside the building. Due to the trans-

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parency of the rhombic apertures between the „lobes“, you are not completely sealed off from the outside world: daylight enters the inside of the house through them and a view to the outside is possible. Around midday, when the solar burdens are highest, the sun protection system parked in the floor can be moved upwards and thus provides an excellent protection.

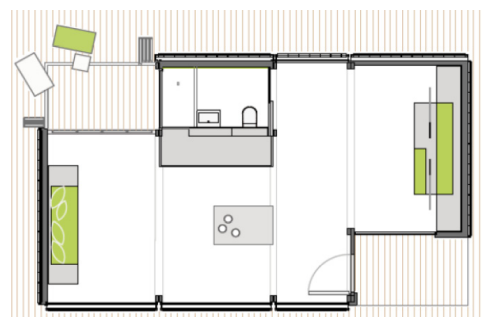


Rosenheim Solar House at the Villa Solar in Madrid.
<http://solar-decathlon.fh-rosenheim.de/>

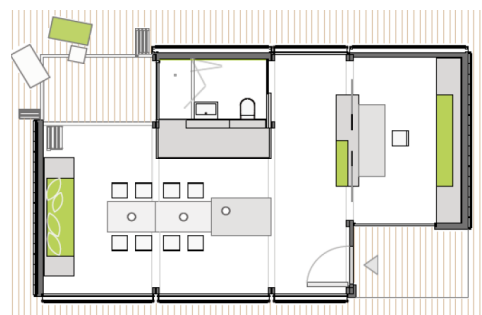
Optimum space utilization, flexibility and multivalency of the furniture are in the foreground of the interior works. Room functions which do not happen at the same time in the course of the day will be located in a common area and may be used alternately: in the sleeping and working area a double bed which is folded out of a cabinet serves as a sleeping place at night and may be hidden during the day. A workplace can be folded out of a mobile cabinet wall and a built-in computer with a large display can be used. The movable cabinet wall can be shifted completely to the side of the room, if neither sleeping nor working use is required, thus making the living room to a large „all-purpose room“. This is made possible by fixing the cabinet on the ceiling. A special lightweight construction system was used for the movable cabinet in order to reduce the weight to a minimum, without having to accept a loss in stability. Within the scope of this project and an associated thesis, the possibilities of connection techniques of appropriate companies were brought in line with the high requirements of the extremely complex lightweight furniture design.

Layout versions of the flexible interior space

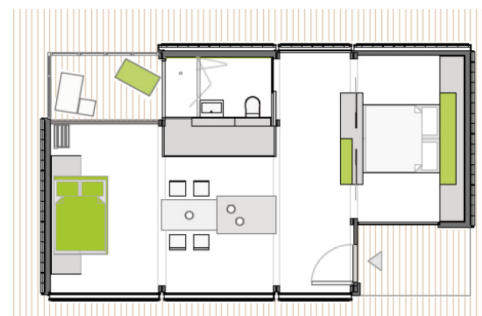
When designing the energetic concept the energy-efficient building types known in German industry and research have been used for orientation purposes. For the requirements of the competition well-established concepts have been developed further to a forward-looking, trend-setting Plus Energy House. One of the most important aspects of the concept was to ensure a living comfort as high as possible and maximum energy saving at the same time. This also includes the careful integration of energy-recovering and energy-saving systems into the high-quality ambient design. At the Madrid location the house creates four times more energy than it consumes.



Version 1: Living, terrace open to the north – kitchen block as monolith – cabinet technique „all-purpose room“



Version 2: Living, terrace open to the north – dining table for 8 persons- workplace



Version 3: Guest bed, terrace to the north closed – dining table for 4 persons – sleeping area



Working and sleeping area with bed (LCD-Glass)



Mobile cabinet wall - room enlargement



Light effects on the south facade



Living and dining area

From the very beginning the selection of building and construction material closely followed the sustainability criteria of the DGNB (German Sustainable Building Council) quality seal. In total 70 % of the building and its terraces consist of renewable building materials (spruce, oak, larch, wood wool, kenaf, flax and hemp). A life cycle analysis (LCA), performed with LEGEP software analyzed the weighting of all building materials in detail.

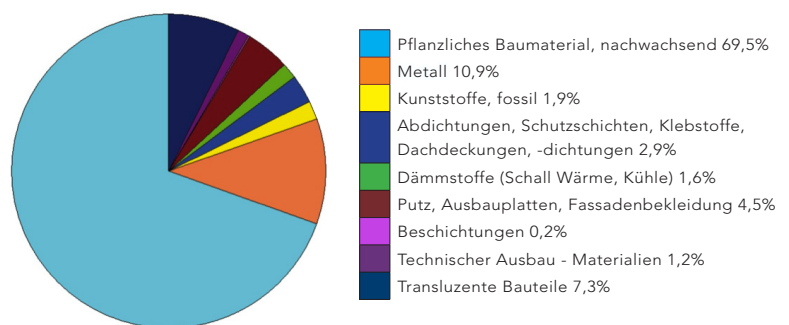
Follow-up Use

Since April 2011 the house has found its place on the project area of the „Zero Energy City“ in Bad Aibling. This is an Eneff:City pilot project on the former barracks grounds. For the next 15 years interested people may rent and become familiar with the built piece of the future as guest-house of the B&O Parkhotel. The innovative technical concept of the solar house has been adapted to the German climate, optimized and integrated into the energetic supply of the zero energy city.

www.bo-parkhotel.de
www.eneff-stadt.info

In the course of several years of monitoring by the University of Applied Sciences Rosenheim the longterm performance of the house will also be checked and optimized.

Percentage use of building materials for the Rosenheim Solar House



Living space	65 m ²	Percentage of window surface	13%
Gross volume	250 m ³	Surface area-to-volume ratio	1,04
Envelope surface	260 m ²		
Construction type	Timber frame construction with vacuum insulating panels U-coefficient = 0,098 W/m ² K		
Fixed glazing	Triple glazing with sun protection coating U-coefficient = 0,56 W/m ² K; g-value = 0,35		
PV system	13 kWp, 40 modules, PV yield in Madrid = 16.000 kWh/a PV yield in Rosenheim = 11.000 kWh/a		
Heat pump	5.5 kW heating capacity; brine/water; COP 5		
Cooling ceiling	Net area 53m ² ; performance at 10K = 54 W/m ²		
Ventilation	max. 120 m ³ /h; CO ₂ - and room temperature control		
PCM channel In-house development for forced air cooling during the competition phase	Dimensions:	5,0m x 1,1m x 0,4m	
	PCM Dörken:	Delta Cool 24	
	Melting temperature:	22-28°C	
	Melting energy:	44Wh/kg	
	Storable energy:	approx. 14kWh	
	Cooling capacity:	at 600m ³ /h and ΔT=10°C: approx. 2,5kW	

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Passive Houses in harmony with the architectural heritage - Slovenia

A Passive House is a technological answer to the needs of our time, but the widest acceptance is needed for the sustainable aspect, which also includes the landscape component. The image of the Alpine landscape is very diverse and this diversity is also one of the key advantages of maintaining an attractive landscape for both locals and visitors. Participants of the Public architectural competition had to answer the question of the challenge of adapting the concept of Passive Houses to the local features. Three different types of single-family houses were chosen, which were representing architectural heritage on a small but diverse geographical area. 24 of the submitted projects were placed under the microscope by the commission, which was composed of wide range of experts. The aesthetic value

of each solution was not always in accordance with the functionality, or the elements of cultural heritage. Based on expert assessments, the commission selected the best solutions, which are presented below. The idea of competition was not in finding the best solution to offer to the public, but a display of feasibility of placing Passive Houses in a very specific area. Construction was always associated with energy efficiency in history, and this is why the elements of architectural heritage in accordance with this idea are added value and not a disturbance. Precisely the display of consideration of individual elements of heritage is the result, which will bring quality products during further development of building the typical local Passive Houses.

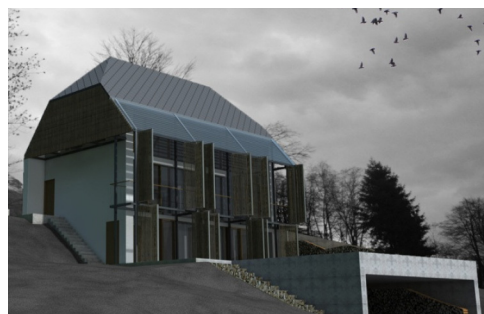
Summary of Commission Explanations

BOVEC1



Competition proposal convinces us in the first place with its simple design concept, which hides inside the richness and complexity of the architecture of Bovec. Geographical location is based on the principle that the house is in any case placed in parallel with the contour lines, and the back wall is more or less entrenched, thus following the tradition of the „on-top-of-stable „house. This is followed by a basic floor layout, where the living quarters face the free facade, and the service quarters face the entrenched part. Altitude leveling is skillfully crafted with a series of „attics“, circulation is minimized, and living quarters open to a quality-oriented and form suitable external surfaces. In addition to convincing placement in space, the proposal also features an attractive interpretation of Bovec „wooden balcony“, proportional compliance with the traditional design, simple but effective sun protection, modularity of design, etc. The project solution represents an upgrade of the Bovec house. The typical external communication update is convincing – staircases with wooden balcony which moves it into the interior of the building.

BOVEC2



Due to proximity of a noisy road, the house is located on the upper half of the land. The height difference between the road level and the ground floor of a single-family house is solved by creating a larger green terrace, under which the garage is organized. Sleeping quarters are located on ground floor, while the living quarters are located on the first floor. The authors of the competition task justify such organization with the organizational chart of traditional homes, and at the same time, the elevated residential living quarters also have better views on the surrounding natural landscape. Exit to a wooden balcony is made possible from the residential floor, which is located on the south facade, as well as to the open terrace, which lies on the northern part of the house.

BOVEC3



The building is, unlike most of the competition proposals, placed relatively high on the plot, which gives a high-quality open space to the south. Transport is placed boldly, and without undue exaggeration. However, conceptual and modular design of the house is based on the size of homogenous components, and so the final application of the system upgrades the idea and significantly improves it. This, of course, causes the loss of persuasiveness of standard and modular applicability, and the final solution definitely shows a better and richer floor organization. Perpendicular composition of the entry and internal staircase creates a sophisticated tension, and diagonal opening spatial dynamics.

KOBARID TOLMIN1



The house is designed as a single volume of elongated relationship with living quarters on the ground floor and bedroom on the first floor. The floor plan is clearly segmented into two zones: the northern zone - service areas and the southern zone - living quarters. The solution offers a reasonable interpretation of the modern external staircase with a wooden balcony into the internal usable area, socializing space, playground etc., which also allows the transition between floors. The external image of the house is determined by the stucco facades plastered with small holes; just the south facade is designed as transparent membrane, where the use of glass and wood summarizes the primary idea of a wooden balcony with a fence.

KOBARID TOLMIN2



The house is designed as a single volume of elongated relationship with the entrance on the north facade. Despite the skillful link of sleeping and living quarters with the outer garden, the commission expresses concern over the allocation of sleeping rooms on ground floor and living quarters upstairs. The layout of the house is clearly divided into northern service zone and southern residential zone. The design of the house allows for various locations of individual modular units and also allows for growth in the horizontal and vertical directions, and the matrix unit also provides an easy adaptation to various boundary conditions. The project solution in terms of cultural heritage is one of the best architectural solutions. It summarizes in the modern way the traditional typology of Kobarid-Tolmin house. It seeks solutions with new approaches in terms of volume, design and materials. There are just too many wooden elements on the south facade.

KOBARID TOLMIN3



The house is beautifully linked to the exterior in its functional organization. The whole south ground floor is shadowed by a wooden balcony or green pergola, and bedroom on the first floor with roof canopy. The house floor is designed so that shorter façade sides have windows or not, depending on the integration of houses into a series or an expansion of new modules. In designing the volume of house, the authors use typologies of Tolmin Kobarid-type houses and traditional local building, which carries certain softness. Therefore, they propose the as-

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sembly of various units of houses into irregular rows. They designed the basic house module as a slightly broken rectangle, which gives the impression of two composite objects. The emphasis is on the elements of softness with the elements of wooden balconies and pergolas. Within such a volume, they ensure a pleasant stay and creativeness with an appropriate functional arrangement. The design can be adapted to the needs of users. It can grow and develop.

ŠKOFJALOKA CERKNO1



The house is placed into the location in such a way that it respects all boundary conditions and also the significant configuration of the terrain and the proximity of the existing farmhouse with outbuildings. The ground floor plan house is impressive, simple and functional without major problems. Exterior building design refers to the elements of traditional architecture, but the facade, however, is adapted to the demands of modern lifestyle. Modern and sustainable building materials are used. The project solution from the perspective of the architectural heritage is the most convincing architectural solution. It takes into account the architectural typology that characterizes this cultural landscape. The house is built with a modern interpretation in such a way as to develop a modern pattern of a Passive House. It fits perfectly into the existing farmhouse ambience with both the volume and materials that fit the adjacent buildings on the farm. But it is also possible to build a house as a model to another location in the selected typological area.

ŠKOFJALOKA CERKNO2



Modular design is based on additions of equal parts, which is in the final ground plan somewhat blurred. The design seeks the patterns in traditional forms, upgrades them in form and technologically, which is commendable, but their uncritical application is questionable. The project solution in terms of cultural heritage summarizes in a modern way the traditional typology of the area. It gives solutions with the new approach regarding volume, design and materials.

ŠKOFJALOKA CERKNO3



The south facade of the plateau above the hill fully covers the sun during winter. The rack on the west side of the plot keeps the hot summer rays away. The house retains a significant ascetic image of Trnovo building type. The window order is used skillfully and functionally. The front white facades are emphasized. Cleverly designed main entrance offset. The wooden texture of the longitudinal facades is justified by the new design language. All the conditions for a Passive House are taken into account. Spaces for living, sleeping and service are functionally designed and utilized with the gallery all the way to the ridge. Putting single-handrail staircase in allows for the growth of the house above the garage, which offers a comfortable sunny terrace with its flat roof.



The publication can be found at www.ENERBUILD.eu

Passive House Hotel „Golf Kaiser Kössen, Tyrol“

The conceptual design and the construction of energy efficient hotels is seen a high potential segment in the field of innovative building technologies. Especially in alpine regions energy efficient and environmental friendly forms of tourism are meeting consumer expectations and therefore show steadily growth within the last decade.

Actual both the solution of specific technical problems as well as economic construction materials are identified as key success factors relating the growth of this relatively new business sector. Besides questions regarding the monitoring and certification of such buildings (e.g. according PHPP standards) are not clearly defined till now.

Therefore the project “Passive House Hotel Golf Kaiser Kössen” acted as a pilot project in Tyrol aiming to bring together an expert group for the planning and realization of a hotel project. The project is following an integrative approach involving experts from different branches already in an early planning phase. The project “Passive House Hotel Golf Kaiser Kössen” is seen a alpine wide showcase for new and environmental friendly forms of tourism.

Within the ENERBUILD Project, under the lead of the Arcus Bau GMBH a cooperation of the University of Innsbruck, Arch DI Raimund Rainer, the Redserve GmbH, Ing. Stefan Wörgötter and other design professionals an expert planning team for the Passive House hotel project was established. Within the University of Innsbruck Professor Michael Flach (expert on wood construction), Professor Wolfgang Streicher (expert on energy efficiency), and Professor Wolfgang Feist (expert on Passive House construction) were involved in the planning process.

Measures undertaken in the project:

A team led by Professor Michael Flach has conducted a substantial study on the optimization of materials and the possibility of optimal use of the building material research in wood building. Additionally a study on fire protection of wood constructions used within the hotel project was conducted.

Ing. Stefan Wörgötter together with the architect has optimized the technical equipment and facilities of the project

In cooperation with the architect Raimund Rainer a team led by Professor Wolfgang Feist has taken over together the project planning and the issue of certified Passive House Hotel.

In addition to the technical problems also some questions regarding the real estate concept was developed with the team of the Redserve GMBH.



3D visualisation of the Passive House Hotel „Golf Kaiser Kössen” in Tyrol

Actual status quo of the project:



Standortagentur Tirol
Ing.-Eitzel-Straße 17
6020 Innsbruck
+43 512 576262
marketing@standort-tirol.at
www.standort-tirol.at

Within a fruitful cooperation of all stakeholders the planning of the hotel could be finalized. The actual project planning fulfills the requirements for the certification as a Passive House hotel.

Specific problems regarding construction materials (concrete /wood or mixed) have been solved with a study carried out by specialists of the university of Innsbruck. The study showed the principal suitability of wood construction elements for the building, but only realizable with extra expenses.

Fire protection of wood constructions is a key issue for the building permission progress. In this regard a complex study has been carried out by the University of Innsbruck.

An image brochure of the hotel project was developed by Arcus Bau GMBH

The building permission process has already been started and is likely to be granted beginning of 2012.



The brochure can be found at www.ENERBUILD.eu

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Innovative solutions applicable to low-energy buildings - Trento

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www.provincia.tn.it

To meet the aim to find innovative solutions applicable to low-energy buildings it was necessary to identify a number of demonstrative buildings that lend themselves to the aims of the program, and follow the process of design and / or restructuring. This procedure was necessary as it is the only way to analyze and verify the efficiency of the design choices made. The standard for the choice of the buildings has not been easy. The buildings selected for the project ENERBUILD each represent an example of a building oriented to environmental sustainability practices, energy saving, water saving and attention to the internal comforts. Moreover, the choice to use these buildings originated from the belief that their peculiar characteristics make them unique

in their respective territories and therefore may represent a model for the citizenship, and a reference for the development of the culture of sustainability. Furthermore, another aim of the project and the methodology of choice of the buildings, was that these design experiences, which have given the expected results, may serve as an example and can be replicated in other areas or areas with similar characteristics. The role of DTTN was not just limited to the research and choice of pilot buildings but also to assist designers and contractors in identifying optimal solutions aimed at the pursuit of environmental sustainability certifications in our knowledge and our expertise.

Enlargement Itc Floriani



Location: Riva del Garda (Trento)
Commitment: Provincia Autonoma di Trento
Area: 30.000 SqFt
LEED Certification: School 2.0 Gold
Certification Year: 2009

The first School in Europe certified according to the criteria of LEED sustainable buildings, the enlargement of the Technical Sales „Floriani“ has obtained the highest possible score in the category in question (48 points out of 48). Among the four possible LEED certifications (Certified, Silver, Gold, Platinum) Riva's school was classified as „Gold“, winning therefore another record; it is the first Italian building ever to have reached the highest level of certification. The certification was issued on November 28th, 2009 by U.S. Green Building Council.

The project expansion concerns the creation ex novo of a building composed of 10 new classrooms distributed over two floors and a storage room in the basement.

The original project was subject of a total revision aimed at achieving high standards of sustainability while keeping the same volume and architecture of the existing building, all rooms have been redesigned according to the parameters defined by the LEED standards.

Main features of enlargement work done:

- green roof covered with plants to improve insulation
- rainwater tank to be used for irrigation and for draining the toilets
- external surfaces pavement with a high coefficient of solar reflection in order to avoid the effect of „heat island“
- system for the reduction in consumption of water, such as low flow taps, areas of collection, areas on the various floors of the building
- a higher proportion of green areas within the project site, the use of rapidly renewable materials and wood from certified forests
- management of thermal comfort in various classrooms, thanks to individual thermostats present in the control panel on the hallway of each floor
- acoustic insulation inside the classrooms, thanks to doors and windows with double glazing and an in depth study on the stratigraphy of the walls
- management of the building site during the phase of construction: the disposal of construction materials in special and appropriate recycling centers
- final testing of all systems made by a Commissioning Authority

The school building itself will provide a teaching tool of good practices of sustainable building for the future.

College Mayer



Location: Trento
Commitment: Opera Universitaria Provincia di Trento
Purpose of Certification: LEED NC2.2 Gold
Certification State: In progress
State of Certification: 2009

The project aims to offer a new university residence for the urban area of Trento, includes rooms and mini apartments, a gym, some common areas, and areas open to the public such as the auditorium and the library.

The building with “at court” morphology opens towards the south and has two major objectives within the settlement:

- Create a point of „contact“ between the residence and the city
- To ensure optimal exposure for both the aspects of climate and sunshine, and for sound insulation, due to its proximity to the railroad.

The building achieved a LEED score in all categories, revealing a well-balanced project in all aspects of sustainability.

Main interventions:

- wooden structure with glued cross-laminated (X-Lam) panels, ventilated facades finished in fiber-reinforced cement panels, natural material of extraordinary durability; insulation with 14 cm of wood wool in all external walls, windows and doors aluminum and wood and low-emissivity glass with three layers, which are necessary to ensure an optimal home comfort
- green roof that provides good insulation
- use of renewable energy through use of geothermal heat pump with solar energy for heat generation and for the „solar cooling“, a solar thermal plant, a photovoltaic system
- high internal comfort guaranteed by a forced ventilation system complete with high efficiency for the control of the air quality and humidity of summer environments
- external furniture shielding for the control of solar gain in summer

- sensors and automatic controls for a reduction in the consumption of electricity
- saving in the use of drinking water through the use of rainwater for non-drinkable water use and irrigation

New school Complex Romarzollo



Location: Comune di Arco (Trento)
Commitment: Comune di Arco (Trento)
Purpose of Certification: LEED NC2.2 Gold
Certification State: In progress
State of Certification: 2008

The design of the new school complex Romarzollo has provided, in summary, 14 functional classes and two sections that allow a series of levers made from primary school and secondary school degree, consisting of introductory and three subsequent two-year annuity.

The final design of the work, drawn by a mixed group of professionals, coordinated by the architect. Beny Meir of Villach (Austria) was approved by resolution of the City Council No 28 dd. 14.02.2005.

The configuration of the lot intended to accommodate the school has imposed to the Municipality of the City of Arco to the execution of some expropriation, for a total area of 7593,35 square meters.

A brief history:

On 28 August 2007, the Municipal Council of Arco with deliberation no. 138 approved the preliminary documentation to obtain LEED certification. From this moment on starts the procedure which led to the current state of progress towards the achievement of LEED certification for Schools. In September 2007 the project was registered with USGBC and the work of the Project Team begins, which was gradually integrated by various people responsible for different competences. During the year 2008 all the required documentation for assessment by USGBC DESIGN REVIEW was edited and submitted with LEED online. In the early months of 2009 USGBC completed the DESIGN REVIEW conforming acquisition of 34 of the 39 required credits of DESIGN and moved the certification procedure to the phase of construction application.

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Main features:

- integration of the building in the established context
- green Roof with 51% waterproof surface
- facilitation of alternative mobility parking for vehicles with low emission of toxic gases and minibuses, bicycle parking areas, attention to the public transport system
- system for the collection of rainwater for irrigation, thus reducing use of drinking water
- optimization of energy performance
- use of rapidly renewable building materials,
- regional materials, recycled materials
- focus on acoustic performance
- monitoring indoor air quality
- manage the control of lighting systems
- training course that illustrates and explains to users about the applied operations

- use of regional materials
- use of renewable energies such as photovoltaic and heating boiler with pellets
- high internal environmental comfort assured by a system of forced ventilation with heat recovery
- automatic controls for reducing electricity consumption

School of Art G. Soraperra



Location: Pozza di Fassa (Trento)
 Commitment: Provincia Autonoma di Trento
 Area: 8.800m²
 Purpose of Certification: LEED NC2.2 Silver
 Certification State: In progress
 State of Certification: 2009

The Autonomous Province of Trento has prepared plans for the new headquarters of the Art „G. Soraperra“.

The current building will be completely demolished and replaced on the same airbase, with a new volume to respond effectively to the existing regulations, the expected increase in the number of students and educational needs, will also be the first example of Green Building LEED certification of the Val di Fassa.

The commission has decided to raise the overall quality of the work, aiming at a closer proximity to the traditional architecture of Val di Fassa Ladin and the use of the USGBC LEED certification system. The goal became to create a sustainable building and Green.

Specifications:

- excellent energy saving performance
- use available light
- offer maximum visibility outside the classrooms and laboratories
- use the site first and then the school building as a teaching tool for students and professors of the School
- underfloor heating system places on the floor of regulation on the production of thermal energy from the type of climate with external temperature probe

Town Hall and Pastor's Home - Vigo Rendena



Location: Vigo Rendena (Trento)
 Commitment: Comune di Vigo Rendena (Trento)
 Area: 8.000 SqFt
 Purpose of Certification: LEED NC2.2 Silver
 Certification State: In progress
 State of Certification: 2009

The City Council has promoted an innovative project of prefabricated wooden art from the standpoint of environmental and energy.

Symbols are as the church's social re-organization around the Town Hall, which becomes a new urban center linked closely to the context and which communicates with the other elements of society through the new paths that pass through public spaces and not covered.

The architectural innovation is linked with the role of the building by combining traditional building materials-stone, wood, plaster - modern design in a dictionary.

Main features:

- concrete structure on the ground floor, while the remaining two-story wooden structure

iHomeLab – Lucerne University of applied Sciences and Arts and the system concept Wilen

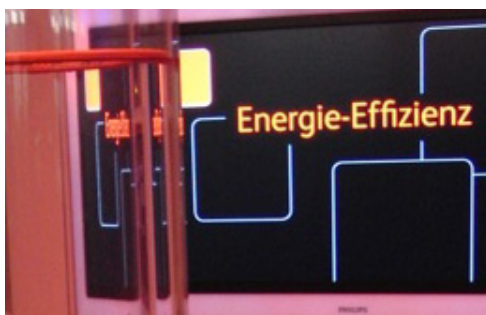
The iHomeLab of the Lucerne University of applied Sciences and Arts is the Swiss expertise platform for intelligent living and intelligent building technology. Together with 15 scientists and over 70 partners we work on researching improvements in energy efficiency, safety and security of commercial and residential buildings.

The iHomeLab is the Swiss think tank and research laboratory for building intelligence. Energy efficiency, comfort and safety are the key aspects. Special attention is given to the issue of ambient assisted living. Our core competencies are applications of automation networks that are user friendly, appropriate for the masses and efficient in terms of cost-benefit ratio.

The perceptive and intelligent building adapts to the requirements and habits of its users. The main requirement is available connectivity infrastructure. It can be air-conditioning or multimedia-devices – based on connectivity the devices are able to communicate and can be remotely controlled and monitored.

The iHomeLab is a network platform with national and international impact, where the latest results of our joint venture research projects are presented and discussed. With a program for publications and events we provide a basis for the consumer acceptance on intelligent living.

The iHomeLab provides our partners with an attractive showcase for presenting the results of joint-venture research projects. As a platform for interdisciplinary networking, this is where innovative scenarios are discussed and tested. It hosts numerous events, workshops and publications to promote our specialty in the concept of intelligent living.



The iHomeLab makes a contribution to the interdisciplinary guiding theme "Buildings as Systems" of the Lucerne School of Engineering and Architecture and sensitises experts and the public for intelligent living.



iHomeLab - Lucerne University of applied Sciences and Arts
www.ihomelab.ch

Yearly, almost more than 2.500 visitors from all over Europe visit the iHomeLab and participate in our workshops.

Aspects of Intelligent Living

Energy Efficiency - Comfort - Safety

With the support of our partners, our research in the iHomeLab concentrates on the following topics:

- Advanced Metering Infrastructures, Smart Metering, Load management
- Human Machine Interfacing
- Ambient Awareness, Ambient Assisted Living (AAL)
- Home Network Technologies: KNX, ZigBee, digitalSTROM

Lucerne University of Applied Sciences and Arts on behalf of ZVDK
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technik-architektur@hslu.ch

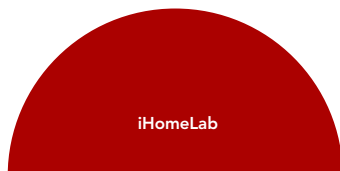
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iHomeLab

The Partnership and Operating Model

Lucerne University of Applied Sciences and Arts
Technik & Architecture
Economy
Design & Art
Social Work
Music



Partner
Companies
Experts
Associations
Media

Research Partner
National / International
Research Institutes

Intelligent living starts here.

The topics:

Energy-Efficiency	Load Management
Security & Reliability	Ambient Assisted Living (AAL)
Comfort & Lifestyle	Infotainment, Edutainment Home Office, Teleworking
Human Machine Interface	Content Management
Network Technologies	Logistics
Ambient Awareness	Domotics

iHomeLab

The Partner-Model

	Usage for Partner							Services of Partner	
	University of Applied sciences and arts	Usage	Visibility	Access to Informations				Benefits in kind	Cash unique performance [KCHF]
	Expansion financing Provide the object Commissioning iHomeLab Maintenance iHomeLab Exclusivity to the department	Exhibits in the Lab Free hours of use	Internet Print media Entrance iHomeLab Presentations & Visits Joint Technical Papers	Network-events Test reports Visitor information Prospects / potential customers Market research Feasibility studies Preliminary research results				Benefits in kind	Annual operating cash performance [KCHF] Cash unique performance [KCHF]
System partner	• • • • •	80	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •	• 25	
Components partner	• • • • •	45	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •	• 15	
Usage partner	• • • • •	30	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •	• 10	
Impulse partner	• • • • •	xx	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •		

Intelligent living starts here.

- Web Enabled Devices, Internet of Things, Embedded Plug&Play
- Infotainment, Edutainment, Home Office, Teleworking
- Multimedia Content Management, Information Retrieval & Artificial Intelligence

The concept:

- Think tank for innovative Living-Scenarios
- Joint Venture-Research platform
- Usability- & Acceptance-Tests
- Interdisciplinary Network
- Sensitisation of the public

Our Partner Categories:

System partner

- Takes on the exclusive design of a complete system in the iHomeLab.
- May work alone or within a consortium.

Component partner

- Integrates components in one or more iHomeLab systems.

Application partner

- Uses the iHomeLab for a dedicated application.

Operating partner

- Supports the operation of the iHomeLab.

Impulse partner

- Supports the iHomeLab exclusively during assembly and/or dismantling.

Research partner

- Enters the partnership primarily for the purpose of joint research.

Partner Benefits:

Presentation platform for your expertise.

1. Representation of research competence
2. Image transfer through partnership with University of Lucerne
3. Credible and neutral environment for presentations
4. Exclusive cooperation with University Technology & Architecture
5. Door opener for cooperation with other universities
6. Support when recruiting specialists
7. Enhanced networking and integration
8. Platform for Events and Presentations
9. Presence in the Media for experts and public
10. Access to expertise

The Wilen Project

Wilen, a picturesque little village at the shore of the lake Sarnen, offers the perfect location for new condominiums.

In cooperation with the Lucerne University of applied Sciences solutions in the area of intelligent building connectivity and control system were found. These allow for maximum energy efficient building.

Combining intelligent living know-how of the CEESAR-iHomeLab with the experience of the research institute when building and putting the iHomeLab into operation various approaches were worked out. In the documentation „System concept for energy efficient living“ these approaches are specified and ways of putting them into reality are shown.





ENERBUILD Project Partner:

Regionalentwicklung Vorarlberg <http://www.leader-vlbg.at>

TIS Techno Innovation South Tyrol <http://www.tis.bz.it>

Rhônealpiénergie-Environnement <http://www.raee.org>

Regione Piemonte <http://www.regione.piemonte.it>

Fachhochschule Rosenheim <http://www.fh-rosenheim.de>

Posoški razvojni center <http://www.prc.si>

Energieagentur Obersteiermark <http://www.eao.st>

Standortagentur Tirol <http://www.standort-tirol.at>

Autonomous Province of Trento <http://www.provincia.tn.it>

Province of Alessandria <http://www.provincia.alessandria.it>

Accademia Europea Bolzano <http://www.eurac.edu>

NENA Network Enterprise Alps <http://www.nena-network.eu>

Zentralschweizer Volkswirtschaftsdirektorenkonferenz <http://www.itz.ch>

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