Part C

Description of the Project

High Quality and Cost Effective Wooden Passiv Building Constructions

Acronym: HighQualityPassivHouse

Technical and scientific description of the Project

Construction represents an important part of the consummate energy and the production of the greenhouse gas. Almost 50 % of energy in Europe is used for heating and cooling buildings. Today it is possible to design buildings, without or very little energy consumption. This corresponds to a strong opportunity for the building sector to be the best sector for sustainable development.

One of the most innovative possibilties to realize that is the passive house concept. The majority of the passive houses, builded up until today, are timber based constructions.

'Integrated wood construction' as an exemplary development of a wooden construction such as timber frame constructions which covers all details of connections including the placement of windows. Main topic of the project is the high thermal insulation effect of all the construction types and well suited detailed junctions of all components that are (almost) free of thermal bridge effects.

Intergrated wood construction would cover **new construction as well as renovation of existing buildings** including adding storeys to existing buildings. Renovation includes the **development of facade elements** that are needed for mixed concrete and wood constructions and concrete-'skeleton'-construction method.

Passive houses as wooden constructions are meanwhile realized by many companies who use various construction systems. An important milestone for that was the volume "das Passivhaus – Energie-Effizientes Bauen" of "holzbau handbuch" [1]. The main conceptions and junction details are there documented as an example. Meanwhile many wooden Passive Houses have been realized in all countries who take part in the actual cornet project. Several construction systems have been used but the basic principles of passive house design have been adopted from there.

In practice for the realization of buildings with respect to pre-fabrication and the implementation on the building site, it would be very helpful for architects and planers – especially those who come newly to the passive house conception – to have access to

planning tools and tools for realization and last but not least for the quality assessment and quality assurance. Such a bundle of tools should help the architect and planers during design of a building as well as the construction companies who realize the building when they cut, compose and errect the elements which all should be suitable for passive buildings.

Connecting the different information layers and time steps of a planning and building site by bundling the tools, the communication between the various actors – planers and construction companies – can get much more efficient because much easier than often today.

One aim of the project is the **compact presentation of basic knowledge** to newcomers in the field of high thermal insulation, that is for example U-value calculation. Many people that are in touch with building constructions are not familiar with those basics. This could be collected in a kind of glossary to the publications. There could as well material qualities such as lambda values be provided.

Up to now each company and each architect and planer has to develop and elaborate newly their own solutions. This needs much time and effort and is in effect a reasonable threshold for the spreading out of an energy efficient and cost effective building design. The bundle of tools will help to reduce this threshold by helping the actors developing their solutions.

Scheme of Planning Process: The red line for planning a passive building
Detailed junctions: Significant simplifications and higher working effectivity during the planning process will be possible in the future, when the main detailed junctions will be available as completed drawings (CAD and printed). For these details all necessary numbers will be provided such as U-values, thermal bridge coefficients, vapor diffusion coefficients, and surface temperatures. The air tight layer will be illustrated and described in detailed drawing.
Air tight construction: A general planning guide for air tight construction in general will be provided to describe the needs for and the qualities of an air tight construction.
Integration of windows: Concerning the special component 'window' there is first of all **the junction of the window to the wall** or the placement of the window respectively. These must be air tight and free of thermal bridge effects. Besides this for doors to balconies, there must not be barriers at the threshold for handicapped people.
Criteria for windows suitable for passive houses will be described in general. The integration of windows for all the above indicated wooden constructions will be described in detail by text and drawings (CAD and printed).
All necessary numbers for windows and window integration will be provided such as U-values, thermal bridge coefficients, vapor diffusion coefficients, and surface temperatures. The air tight layer will be illustrated in all detailed drawings and described by text.
Temporarily shadings need to be integrated as well. So the detailed junctions should cover optional space for the addition of shading elements.
Development of special components like windows is not subject to the project, but the integration of those components to the 'large-scale' construction elements are subjetc to the project.
Ventilation system: General qualities for a ventilation system with efficient heat recovery unit will be discussed in general. Examples for planning of paths for all air ducts (short and with low pressure losses) will be presented together with checklists for quality. For all the above indicated wooden constructions the possible position of the central ventilation unit will be discussed and described in detail by text and drawings.

Different temperatures in neighbouring rooms: In passive houses with wooden construction internal walls are normally good (thermally) insulated because noise reduction can be provided by a thermal and at the same time also acoustic insulation layers. Therefore neighbouring rooms in wooden passive houses tend to stay on different temperatures because e.g. heat originating from an actual sunshine into a south oriented room cannot be transfered easily to the next room via the internal wall.

The project will check for new design parameters for internal walls that will provide good noise reduction but better thermal transmittance. This could for example been provided by sand or gravel in between the panelling instead of the actual insulating meterials, but this has to be checked carefully on practical effects. Thermal Simulations and building practice must therefore be checked and new concepts have to be worked out.

Noise reduction of highly thermal insulated walls and roofs as well fire will be an additional topic in the project.

All construction details will be proved and **optimized fire protection** will be achieved.

All research partners are experts in their fields.

Technical and Scientific quality/ Methodology

A state of the art analysis will be made by collecting information about solutions and problems of already realized passive houses. **Standards and national building codes** have to be studied in the framework of the project, so that project results will not come into conflict with that already existing standards. If conflicts are realized, these need to be discussed, so that new construction methods possibly in conflict with the standards are well substantiated.

In an ongoing project in Austria [Ambrozy, project Number 810613/10096 – GLE/BLC] a quality assurance tool for passive houses that is to be used on the building site is actually developed. This project is focussed on a "**criteria catalogue for quality assurance in the construction of passive houses built in wood**". The actually proposal of our project has a more general approach and will deal not only with the quality assurance on building site but first of all with the planning process from the beginning. So developing a bundle of design tools will affect and support the whole planning of passive buildings from the planning to the realization. The results from [Ambrozy] will be revised and adopted to workpackage 2.5 of our project and will be a basis for our work.

Concerning quality assurance, the actual project will provide general information as well as detailed checklists. In this context air tightness, thermal bridge effects, ventilation systems, etc. will be subject to a detailed fault analysis. In a former Project, see [2], Passivhaus Institut has produced a booklet in german language dealing with quality assurance measures for all passive house constructions, massive not only wooden. This work will be taken as an additional basis in the actual project. The aspects of wooden construction will be especially elaborated.

A bundle of tools for design and construction of wooden passive houses is to be developed in this project. The bundle will provide modern working tools and detailed information to support and optimize the planning and realization process. All tools will be provided for common software systems and will be available in addition as printed matter. A special task will be to provide tools for a universal use throughout the whole planning and realization process, that is starting from the drawing (e.g. CAD software systems) up to the cutting of materials (CNC roboter) and composition of elements.

The main interest of the project is to implement in all tools the design criteria of passive house construction, that is espcially:

- good thermal insulation,
- junction details without thermal bridges,
- long lasting air tightness,
- optimized integration of windows,
- simple and optimized planning of the ventilation system (paths of air ducts)

Four commonly used wooden construction systems will be included in the work, a selection has to be defined at the beginning of the project. A preliminary suggestion is:

- lightweight wooden beam (**I**-beam) for a single layer construction (insulation between beams)
- full wooden beam as main static layer with additional thermal insulation layer outside
- the same as variant with additional internal layer for installation
- massive wooden construction with thermal insulation layer outside.
- New lightweight beam constructions will be included in the project e.g. the lignotrend U-psi 'ladder' and the Kaufmann PN-beam. Especially for these adopted thermal bridge investigations have to be carried out.

The protection of the wooden construction from humidity damage will be considered on all working topics in this project.

This transnational project has an european approach and is linked to the activities of the Forest based Sector Technology Platform (FTP), see www.forestplatform.org

The tasks of the Passivhouse project are meeting very well the goals and planned activities of the Strategic Research Agenda (SRA):

Research Areas with Activities and Research Approaches

1-5: Building with wood

- Advanced prefabrication systems for efficient rapid and flexible building.
- Efficient planning and IT-based logistics concepts for rapid industrialised building.
- Revision of timber building performance requirements, regulations and standards based on research results.
- Advanced concepts for perfection of acoustic, durability and strength aspects, as well as fire resistance and reliability aspects (standardisation, labelling, certification) of wood constructions.
- Smart services facilitating renovation, restoration and reinforcement of building structures.

2-5 New manufactoring technologies for wood products

Development of concepts for bonding, joining or connecting structural wood elements with other building materials.

Detailed work and time schedule

High Quality and Cost Effective Wooden Passiv Building Constructions

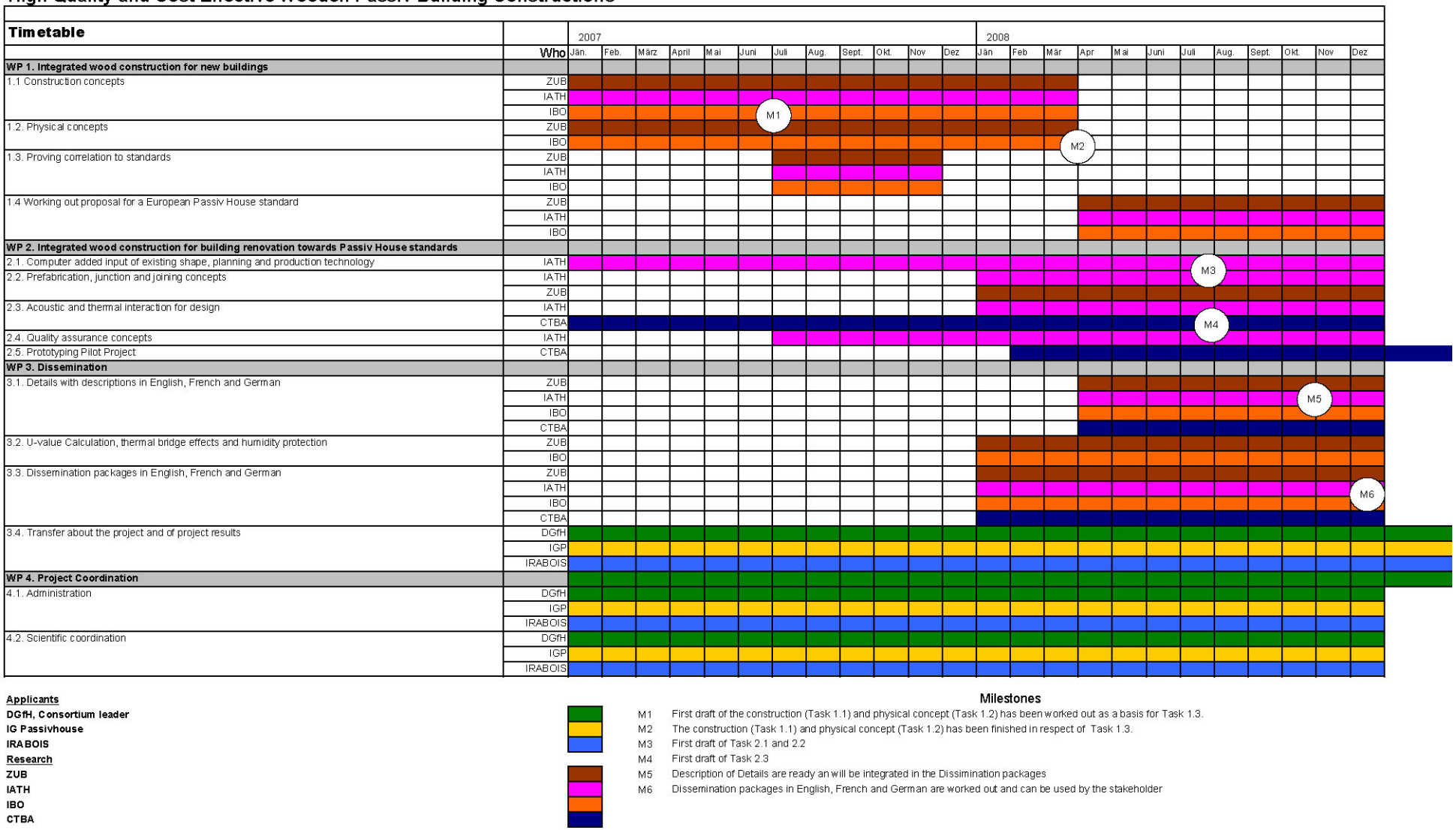


Figure: Chart with the time schedule of the project work packages and tasks.

1. Integrated wood construction for new buildings

The dramatic, yet expected increase in energy costs resulting from diminishing raw material resources has led to a growing interest in energy efficient buildings. Available fuels must be used sparingly in buildings of the future. The key to dealing with this issue is the development of a building concept which encompasses a minimal use of energy. Up until now, this has meant applying an individual planning process in the case of passive buildings. The goal of the research project is to create a planning tool for the design, execution, and quality assurance of passive buildings in order to eliminate obstacles.

In order to achieve this, optimal construction solutions for the building shell must be provided, which combine already gained individual experience with new constructive solutions for an extensive pre-fabrication. Component links, as well as the integration of windows into the building shell, are to be systematically examined using a thermal bridge programme, and thermal bridge effects are to be minimised. Lengthy experience with airtightness concepts is to be assessed using modern testing procedures, and recommendations will be discussed. Planners will be provided with valid solutions. The effects of new building constructions solutions will be demonstrated using thermal simulation calculations and thermal bridge calculations.

Concerning the special component “window” there is first of all the junction of the window to the wall or the placement of the window respectively. These must be air tight and free of the thermal bridge effects. Besides this for doors to balconies, there must not be barriers at the threshold for handicapped people.

Temporarily shadings need to be integrated as well. So the detailed junctions should cover optional space for the addition of shading elements.

The planning of the paths of pipes for air, electricity, water etc. is relevant topic with respect to quality assurance for the building envelope. Bad planned paths of pipes and ducts and cables and succeeding “improvisasion” at the building site by drilling and cutting may hurt the air tight layer of the building, add thermal bridges and therefore may destroy much work done before. So the planning of the work “following” the construction of the envelope has to be integral to all the planning.

1.1. Construction concepts

Integrated development of modules for walls, ceilings and roofs, based on wooden systems as frame timber and other area-measured constructions. The units content the junction of doors and windows. Also integrated are space, junction and assembly of temporarily shading elements as well as building service units for heating, ventilation and air-conditioning, considering important aspects in static, air tightness and thermal bridge effects. All planning and construction work has to consider basic and significant aspects of prefabrication in handcraft as well as industrial production.

1.1.1 Generation, regular refining and documentation of a building parts catalogue for wall-, ceiling- and roof-systems. Multidisciplinarity with the aspects thermal insulation including thermal bridge effects, noise reduction, fire protection, static, prefabrication and assembly.

1.1.2 Analysis and documentation preconditions, tasks and demands for production of integrated large scale construction elements inclusive handling and transportation.

1.1.3 Analysis and documentation preconditions, tasks and demands for assembly of integrated large scale construction elements inclusive handling on the site.

1.1.4 Analysis and documentation basic conditions in handcraft fabrication of integrated wooden modules.

1.1.5 Analysis and documentation basic conditions in industrial production of integrated wooden modules including existing numeric controlled prefabrication technologies.

1.1.6 Analysis and documentation existing CAD-based tools for the integrated 3D planning and construction of basic construction including windows, shading elements and building services

1.1.7 Development of a program study, implying 3D-based functions for planning and construction of integrated modules including windows, shading elements an building services. The work results of this study will be simulation, material lists and maintenance sequences in fabrication and assembly for general optimization processes during the project.

1.1.8 Development of a data-based software-system as a check-list. This system will include sequential lists with relevant tasks as assistance in projection, planning, manufacturing and assembly.

Excamples for details and technical solutions to work out:

- Integration of windows
- Connection details windows and doors to terraces, to balconies, loggias with special consideration of barrier-free design, moisture protection/suitability for Passiv House standard
- Integration of temporary shading elements into the facade, with special consideration of thermal bridges and air tightness
- Building climate technology
  - Integration of small heating/cooling elements into prefabricated walls and ceilings
  - Integration of ventilation lines into prefabricated walls and ceilings
  - Sanitary appliances and plumbing: sound insulation
- Terraces in lightweight construction: solutions optimized for sound insulation with special consideration to air tightness, connections, doors.

1.2. Physical concepts

One aim of the project should be the compact presentation of basic knowledge to newcomers in the field of high thermal insulation, that is for example U-value calculation. Many people that are in touch with building constructions are not familiar with those basics. This could be collected in a kind of glossary to the publications. There could as well material qualities such as lambda values be provided.

1.3. Proving correlation to European and national standards and building codes esp. in Austria, France and Germany

European Standards and national building codes have to be studied, so that project results will harmonize with already existing standards. If conflicts are realized, these need to be discussed, so that new construction methods are well substantiated. See for example [DIN-EN10077] for thermal bridge calculation of windows and the new standard [DIN1052:2004] for implementation of wooden constructions

1.4. Working out a proposal for a European Passiv house standard in wood based construction

Based on the results of 1.3 proved Passiv House constructions and detailed solutions will be sampled to a proposal of an European Passiv House Standard. The basic design parameters for Passive Houses are currently elaborated within an ongoing EU project within the EIE programme, see [PEP]. Special design schemes such as wooden constructions are not in the focus in that PEP-project. Wooden constructions and detailed design will be considered in more detail in the actual cornet project. The main focus will be on wooden constructions in Germany, Austria and France.

National standards and rules will be taken into consideration as well as acoustic insulation and fire security aspects.

2. Integrated wood construction for building renovation towards Passiv House standards

Integrated wood construction would cover new construction as well as renovation of existing buildings including adding storeys to existing buildings. Renovation includes the development of facade elements that are needed for mixed concrete and wood constructions and concrete-“skeleton”-construction method. The technology of integrated modules in existing shapes however can also mean additive facade-elements that are needed in new buildings with low insulation standard, for example made of concrete.

In the case of insulation measures already in place, protection against humidity is of special importance. By applying hygro-thermal simulation calculations with the WUFI programme of the Fraunhofer-Institute for Building Physics, it can be ensured that all construction solutions are able to withstand practical demands.

All the technology for additional storeys is identical to part 1.1 an will not be considered in this Working Package.

Examples for details and technical solutions to work out:

- Integration of skylights with special consideration to comfort aspects.
- Prefabrication of roof elements, connection details suitable for achieving Passivhaus standard.
- Connection details for terrace doors with special consideration of barrier-free design, moisture protection and suitability for achieving Passiv House standard.
- Enlargement of buildings with lightweight constructions. Special consideration on thermal bridge effects and air tightness.
- Building climate technology:
  - Integration von small heating/cooling elements into prefabricated walls and ceilings
  - Integration ventilation lines into prefabricated walls and ceilings
- Curtain-type facades.
- Balconies without thermal bridges.

2.1. Computer added input of existing shape, planning and production technology

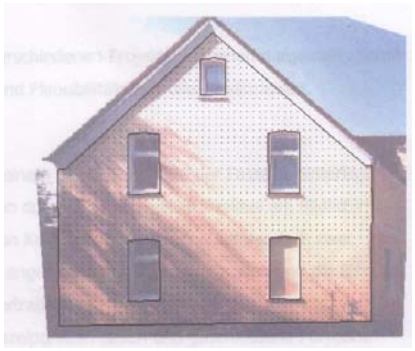
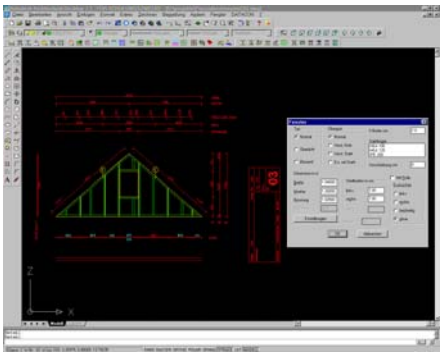
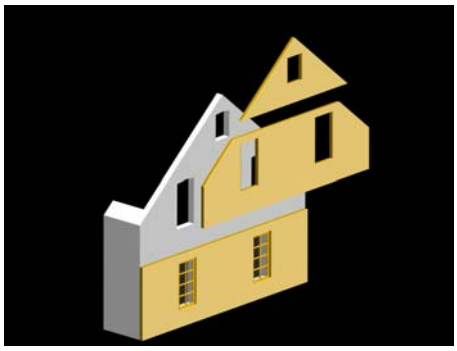
Aspects of computer aided technologies for recordation existing building shapes, planning and production technologies

2.1.1 Analysis and documentation existing technologies for recordation building shapes. Consideration of contact and non-contact processes. Consideration fundamental aspects of continuous joints between existing building shape and additive elements.

- Handcraft measurement

- Photogrammetry
- Laser technologies
- Recordation and documentation evenness of shape

2.1.2 Analysis, documentation and test applications essential process operations to convert the measurement data into digital vector information, used by 2 1/2 and 3D CAD-systems.

Examples for Computer added input of existing shape (picture 1), planning (picture 2) and virtual 3-D modelling (picture 3) (source IATH)

2.2. Prefabrication, junction and joining concepts

The main differences between integrated wood construction as stand-alone and additive are consideration building shapes, static and joining. One important task for this project will be technical preparations to use existing technology in standard wooden house production for new production processes towards additive modules with Passiv House standard.

2.2.1 Analysis and documentation preconditions, tasks and demands for production of additive integrated large scale construction elements inclusive handling and transportation.

2.2.2 Analysis and documentation preconditions, tasks and demands for assembly of additive integrated large scale construction elements inclusive handling and joining on the site. Inclusive considering demands for linear as well as punctiform points of fitting for technologies without using façade scaffolds.

2.2.3 Analysis and documentation basic conditions in handcraft fabrication of additive integrated wooden modules.

2.2.4 Analysis and documentation basic conditions in industrial production of additive integrated wooden modules including existing numeric controlled prefabrication technologies.

2.2.5 Adapting the program study task 1.1.7 including junction and joining aspects in prefabrication and assembly.

2.2.6 Upgrading data-based software-system (check-list) task 1.1.8. Including relevant tasks for projection, planning, manufacturing and assembly additive modules, including main demands on the site.

2.3. Acoustic and thermal interaction for design

In this task we suggest to bring a qualitative technical answer in acoustic and thermal field to establish the levels of performances of envelopes as well as the acoustic nuisances of energy devices. The evaluation will be made on physical parameters and also on the perception of these by the users.

2.3.1 Acoustic and thermal behaviour of existing timber framed systems.

Here we study the existing structures by establishing knowledge bases in acoustics and thermal in case of putting into correlation these two criteria.

- Work from the thermal characteristics data base of wood structures, U & Ψ calculated for " RT2000 " French project.
- Exploitation of the acoustic data base " Acoubase " developed by CTBA with the implementation of new data supplied by the construction manufacturers,
- List the points of interaction between the various building regulations (thermal, acoustics, ventilation);
- Obtain the acoustic and thermal interdependences of various systems or existing constructive principles (thick double wall, breathing wall).

2.3.2: Study of interaction between acoustic and thermal for Passiv House type of walls

We regroup a base of knowledge concerning the new technologies implementation for energy performances improvement and we are focus on their impacts on the acoustic comfort of the users.

The work concerns:

- the identification of the technological transfers,
- over-insulation,
- the creation of a new range of envelope walls,
- the use of PIV and PCM,
- the use to triple glazing,
- the use of energy devices.

Testing, analysis and calculation models to better qualify new type of building technology such as Passiv House envelopes. We will test few products of each type of structures:

- Two types of roof, the roof boxes and the doubled classic roofs.
- Three types of wall, walls in simple frame, walls in double frame, the massive walls.
- Two types of joineries, joineries with thick double glazing or triples glazing.
- Two typical walls integrating bio-climatic equipments.

Modeling will be done to better understand the acoustic behavior, and the structure will be calculated so the thermal characteristics will be given.

2.3.3: Study of the junctions in Passiv House

The air infiltrations contribute to the over consumption of energy and make houses uncomfortable both for thermal and acoustics point of view. Leaks are known to lead to a loss of acoustic performance.

The limitation of this source of alteration ends-up with the design of constructive systems including, for example, profiles of rubber bands or hermetic linear adaptations.

In this part, we will study the design of mechanical assemblies of structural junctions of walls, infrastructures, roofs and joineries, with integrated rubber joints. The created products will be characterized by the thermal point of view (by calculation) and acoustics (by tests) to validate the work.

2.4. Quality assurance concepts

Best practice in energy-efficient constructions and buildings demands highly technical as well as economical standards. Standards of quality and cost efficiency have to be maintained an negative performance is to be avoided to forward a positive image of passive house standard in the population. Existing systems of quality assurance mostly gear towards building materials, products an components, the latter especially for building services. Towards passive house standard in wooden constructions complete systems of quality assurance in planning, production and building site are not existing till now. The consequence in this task is the creation and documentation of a complete quality assurance system for complete passive house solutions in wooden construction an will be therefore a new selling proposition. The target groups are architects, planners, ingenieurs and common experts in construction and building. This new quality assurance system will establish criteria, solutions and recommendations, elaborated during this project, in the four most important instances

- planning
- construction
- prefabrication and
- building site.

This quality assurance system will consider the relevant technical parts in this project and will be created first in the form of check-lists, separated conform the upper instances. Additional there will be configured a database software tool as a shareware system for being used in concrete building projects.

2.5. Prototyping Pilot Project

Timber framed passive house project would permit to realize a monitored house at a full scale. The prototype will be studied during one year in order to establish the best methods to characterize wood passive constructions.

However, the study of the characteristics of this kind of wood buildings will help to quantify the needs and to develop solutions for builders.

The project will rise up new methods and new constructive systems which will be dedicated for south-west France climate. Moreover, this project clearly will define a ‘generic’ passive house using timber which can make the most of the south-west climate of France and fit the environmental requirements.

Furthermore, the monitored and occupied construction will let us notice the real needs of people in this type of building as well as the datas we got than the impressions of the people living there.

Finally, the analysis will lead us to clarify the habitability and the notion of comfort of such houses. Today in France, a few examples of low energy consummation buildings exist but the results on efficiency on energy consummation are not well known and not standardized. The method to quantify the efficiency of low consummation buildings is on its way to be unified.

In the present project, every partner will share his knowledge and work on a unified method of monitoring Passive Houses. In that way all experiences can be implemented all over Europe.

Objectives and means

The main objective in this part of the project is to show the feasibility using timber frame structures for Passive House adapted for south-west of France climate. And to study on a full scale the High Quality and Cost Effective Wooden Passive Building Constructions

- By rising up constructive systems suitable for local situation (a product range using maritime pine and taken in account the environmental aspect.
- By building a communal building monitored and inhabited
- By letting the architects, the engineers and the designers the ability of creating all kind of houses by-product : individual houses, semi-detached houses, leisure houses, secondary houses, building on two levels…
- By teaching all the professionals from the civil engineering at this new type of construction and by advertising and informing the consumers

The methodology will be :

- Demonstration on a inhabited small multistory building monitored, validation and comparison to the full scale measurements.
- Integration of requirements of the new thermal standards
- Insertion of components to use hygrothermal and inertia of walls : breathing walls, over-isolation, Phase Changing Materials,
- Settling constructive systems using timber,
- Communication with the FFB / IRABOIS to an audience as large as possible.

Approach scheme

2.5.1: Make up the building program with high quality as an objective at low-cost energy according to the thermal French regulation RT 2005. This sub-task will end up with a leaflet to demonstrate what can be done with wood in the Passive Building field.

2.5.2: To seek products and adjust others to forefeel the specification of Passive Building for south-west France.

2.5.3: To choose the best technical solutions in taking into account the efficiency of the products, the invest the quality of production and implementation,

2.5.4: To design the solution, with economical and technical validation

2.5.5: To build up a prototype of construction and to monitor it. The house will be built following the study specifications, only monitoring and the work for design is included. The price of the building will be supported by its owner.

2.5.6: To propose solutions and strategy able to develop this way of building

2.5.7: To communicate on the technological experience.

3. Dissemination

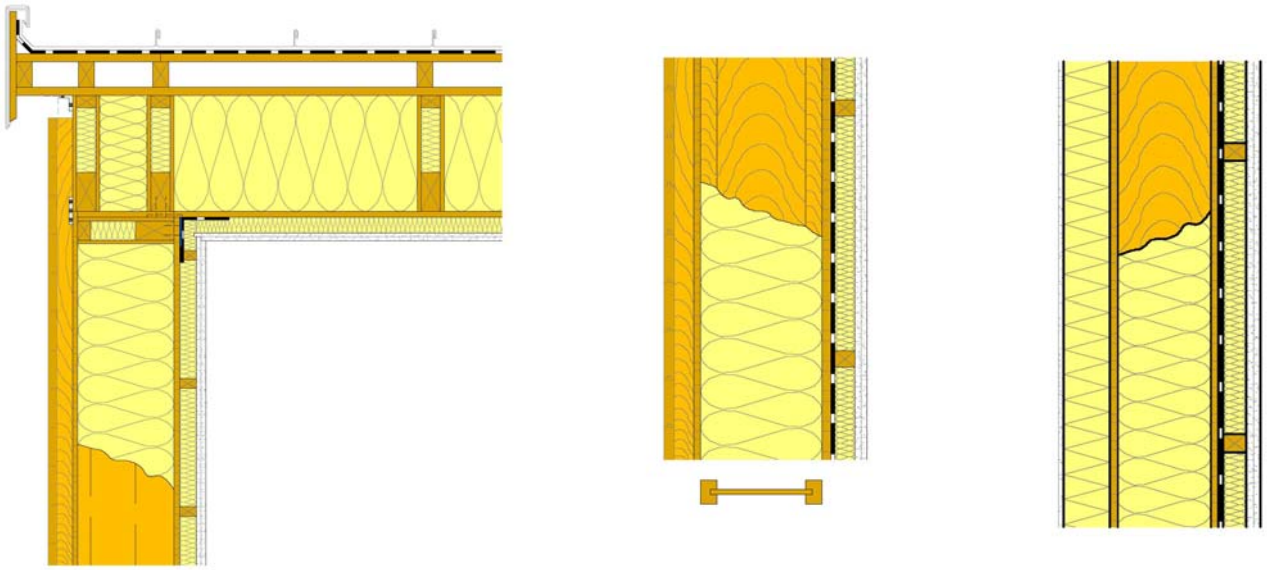
The results of the Work packages 1 and 2 will be used in an intensive dissemination phase.

All partners developed tools for knowledge-transfer like homepages, paper and e-mail newsletter. The proposing applicants are running networks with high SME-Membership.

These members will use first the developed tools described below. But all other interested groups will have success to the general results of the project too.

3.1. Details with descriptions in English, French and German

Detailed CAD based drawings for all important regular elements and junction details. will be available in English and the languages of the project partners German and French. In a pdf-Version the details are basis and part of the dissemination package 3.3.



Examples for Detailsolutions (source IBO)

3.2. U-value Calculation, thermal bridge effects and humidity protection

Using examples, the essential features of humidity protection, the criteria for the formation of mould, and the conditions for the planning of buildings will be explained. Measures which can be taken to prevent damages will be demonstrated.

3.2.1: To seek products and adjust others to forefeel the specification of Passive Building. To choose the best technical solutions in taking into account the efficiency of the products, the invest the quality of production and implementation,

3.2.2: To design the solution, with economical and technical validation

3.2.3: To propose solutions and strategy able to develop this way of building

3.2.4: Component links and effects of new building constructions are to be systematically examined using thermal simulation calculations and thermal bridge calculations

3.2.5: To collect a presentation of basic knowledge to newcomers in the field of high thermal insulation

3.2.6: To create a planning tool for the design, execution, and quality assurance of passive buildings.

3.3. Dissemination packages in English, French and German

The dissemination package includes a bundle of tools:

- scheme of planning process,
- A more exact method to estimate the wood fraction incorporated in the wall construction will be elaborated in the project.
- Planning guides for the air tight construction, including drawings
- Description, planning guides and drawings for the integration of windows (air tight and without thermal bridge effects)
- Description, planning guides and drawings for the ventilation system and the related network of air ducts will be elaborated.
- The quality assurance-concept will be available in a Data-based Version.
- Online Catalogue systems
- Distant learning course on basic building physics with special consideration of wood construction according to the Passiv House standard for carpenters, installers (plumbers, fitters), electricians and other interested groups.

3.4. Transfer about the project and of project results

3.4.1 Information work about the CORNET-project itself and the content.

3.4.2 Usage of the Dissemination packages by applicants through e.g. member information, homepage, newsletter, magazines, fair activities during and after the project.

4. Project Coordination

The thee proposing partners German Society for Wood Research (DGfH), IG Passiv House (IGP) and Institut de Recherches Appliquées au Bois (IRABOIS) will take over the Project Coordination.

The German Society for Wood Research will be the consortium leader. They organize all transnational communication and meetings.

All applicants coordinate on national level communication and meetings the scientific and administrative management, communication and meetings.

This work package contains following tasks in detail:

4.1. Administration

The applicants provide administration services to the subcontractors, the industry (SME´s) and involved experts.

They keep the contact both to each other and to the national agencies especially in respect to the financial inquiries.

4.2. Scientific coordination

Projects with several partners on an transnational level needs a stringent scientific coordination with know how on the business.

Subtasks are:

Organisation of meetings

During the run time of the project, several kind of meetings are necessary to live the transnational charakter in the project and achieve the goals with the monitoring of the consortium and the SME-user Committee.

Minutes of all kind of meetings will be worked out. The tasks for the next period will be defined in each meeting. The responsible applicant takes care, that the time schedule and planned tasks will be fulfilled.

Following kind of meetings are planned:

- Transnational meetings (minimum 3 during the project, including the kick-off-meeting at the project start.), organized by DGfH.
- National meetings, organized by the national applicant
- Group meetings to certain working packages, task or subtasks with the transnational interested participants, organized by the national applicant having the key role in the specific tasc.

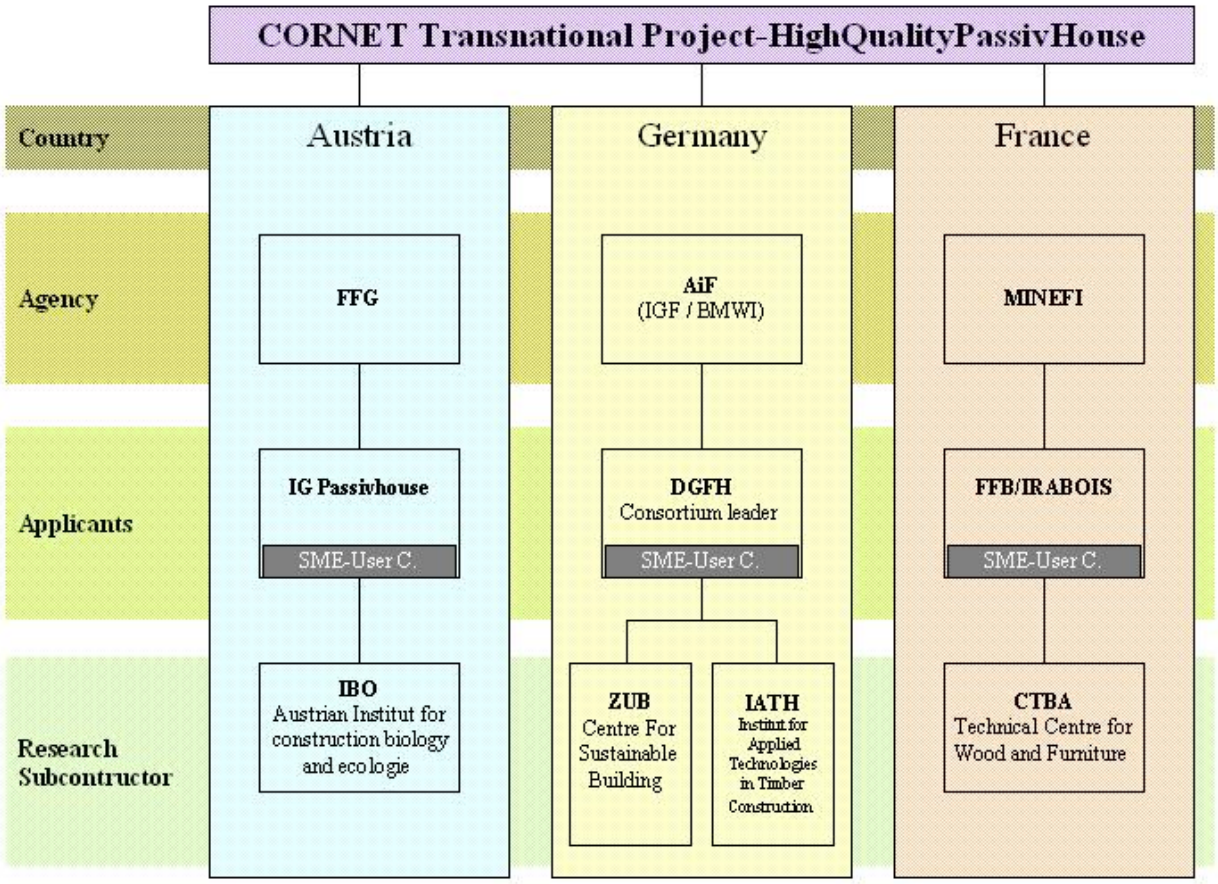
Reporting and Monitoring

The project coordinator will organise the reporting and Projectmonitoring according to the transnational level. To show the comparison between time schedule, deliverables and milestones is an important task in this respect.

All applicants have to secure that the the national monitoring procedures will be fulfill additionally.

The Project coordinators will inform the assigned agencies about planned Steering Committee meetings, Consortium/User Committee meetings. They will also organise the preparation for the yearly CORNET-monitoring meeting.

Consortium



Structure of the Consortium.
The Members of the SME-User Committee are Members of the applicants or linked over a Network.

The **Applicants** DGfH (the Consortium leader), IG Passivhouse and IRABOIS are the proposing partner. Their common goal ist, to developpe optimised Passivhouse constructions. The results will be used by their members and other interested stakeholder. The Members of the **SME-User Committee** are Members of the applicants or linked over a Network. Their Task is to monitor the plans and results of the **Research Subcontructors.**

The output of the research activities will be distributet and dissiminated through the applicants, like it is also described in the detailed Work and Time schedule work package 3.

After the runtime of the project the produced results and dissimination tools will be used by the stakeholder of the branche and actively distributed by the applicants. If the cooperation turns out as reliable, as it promised during the preparation of the project content, further activities are intended.

Implementation of the project results

Additional to the described dissemination activities during the project, the project partners will use their network and information channels to inform the target group about the

results. Praxis seminars for the member of associations in the building sector will be used as experienced tool as well like the new media internet and e-mail newsletter.

Integration of the results into standardisation activities on national and European level will be an important task after the project.

The proposing partners are engaged to support the passive house technology after the project for the implementation of the results on national and on European level like CEI-Bois and European Federation of Timber Construction.

Economic impact of the project

The energy costs for, heating and cooling buildings are already very high, but they will even increase in near future. One of the most effective ways to minimize this costs, is to use the passive house technology for new and the renovation of older buildings. Especially the small and medium sized companies in the wood construction sector are predestined to use the results of the projects and the benefit. The knowledge, worked out in the project, will help to assure the quality of construction and thermal insulation. It will support e.g. following developments:

- Acceleration of the acceptance of the Passiv House standard by building experts and society.
- More value added jobs in the fields of planning (architects and ingenieurs) as well for carpenters and house technical companies. The structure of Passive house building companies are typically SME dominated.
- The optimized indoor prefabrication methods permits a better quality control and working conditions for the carpenters.
- Poor People, living in Passiv House flats, need no extra support of the social security for the energy costs. An important aspect for communities with a limited budget for that.
- The higher comfort of the optimized Passive House Concept will be integral part in all day life, because the air quality and acoustic insulation is on a high level than in common concepts.

Relevance of the Project to the CORNET

Main characteristics of the CORNET-Programme are the collective and transnational aspects. The whole sector will have the benefit. In Austria and Germany, the passiv house concept became a remarkable market share in the last years. The most of the erected passive house buildings has been builded up in co-operation work of SME-companies. In France the technology remained very occasional in the past. To push the technology also in France a Pilot Project will be build up in the south-west France climate.

The main results will be provided in the dissemination part of the project in the three most important European languages English, French and German. This makes it easy to inform a high percentage of European building experts. The double column text of the details, English/German and English/French could be easily replaced by additional language combinations. This is helpful, to put through the worked out quality standard also in additional European countries in a second step after the applied project. The relevance to the goals of CORNET are highly given.

Describe the Part of the Project Partners and prove the Qualification of the Project Partners

The main tasks of the Applicants in the Project will be to take over the coordination on national an transnational level as well as the transfer of results during the project and afterwards. They keep also the contact to the national agencies.

Applicant 1, Coordinator: German Society for Wood Research

The German Society for Wood Research (Deutsche Gesellschaft für Holzforschung, DGfH;) is a non-profit-organisation. Since 1938 it is the joint research organisation of the German forest and wood industry. By its statutes, DGfH funds and co-ordinates pre-competitive science and research related to production, processing, finishing and utilisation of wood and wood-based materials and wood preservation. All results are widely published via print, internet and conferences. DGfH is financed by federal and state ministries, trade organisations, companies, and individuals. The DGfH does not have a research institute of its own, but co-operates with about 80 different scientific and research institutes.

The DGfH runs more than 30 committees in which the developments in the different research areas, ranging from timber grading and drying to furniture production are discussed. Members in the committees are representatives from industry, agencies, research and education. Most committees deal with building related topics and are lead and dominated by members delegated from the industry. In these committee meetings, new ideas are generated, discussed and ranked in order to set a priority for the staff of the DGfH-office, which projects should be financed first. These committees also act as a platform for scientists and researchers to show their results to the industry in order to get a feedback on how to carry on.

A very important grouping within DGfH is EGH (Entwicklungsgemeinschaft Holzbau) which combines German expertise in timber engineering and takes care of dissemination of research results in form of widely known brochures, workshops and conferences.

Due to their project co-ordination work DGfH has close contacts to the German and European woodworking industry and to national research funding organisations.

DGfH was the co-ordinator of the European ERA-WOOD-Project, aiming with their goals to a Technology Platform, and the first step towards the Forest Based Sector Technology Platform. In 2006 DGfH took over the management of the Wood Sector in the German National Support Group.

The DGfH as leader of the consortium, will organise the Kickoff-Meeting and all Meetings where the partners of all applying countries are invited. It will organise also the preparation for the monitoring activities in CORNET-Programme.

On national level the German Society for Wood research will distribute the project results in co-operation with the stakeholder like the BDZ, Federation of Timber Construction.

Applicant 2: IG Passivhaus, Austria

IG Passivhaus Austria is the umbrella organisation of all regional Austrian IG Passivhaus associations. The regional IG Passivhaus associations are represented in the umbrella organisation by their managing board. In the regional IG Passivhaus organisations the single member companies and institutions, who intensively work on the topic passive house, are represented.

IG Passivhaus Österreich has according to its 200 member companies spread throughout Austria in all construction fields related to the passive house the highest and most comprehensive competence and professional qualification. Below there are listed examples and publications in the frame of “Haus der Zukunft” (House for the future) from the Ministry of Innovation and Technology for the professional qualification of passive house standard, where member of the IG Passivhaus Austria participated in.

As it is not possible to document the professional qualification of each single member company, there are listed below some projects of the undersigned.

Auszug von Forschungs- und Demonstrationsprojekten von der IG Passivhaus Österreich bzw. jeweils von mehrerer ihrer Mitglieder durchgeführt worden – wobei die genannten Projekte alles Passivhäuser in Holzstandard umfassen (look under www.hausderzukunft.at):

- Fachliche Qualifikation bei „Haus der Zukunft“-Projekten:
  - Projektleitung Passivhaus Objektdatenbank „1000 Passivhäuser in Österreich“,
  - Projektpartner und –koordinator Forschungsprojekt „Erste Passivhaus Schulsanierung“
  - Projektpartner und –koordinator Demonstrationsprojekt „Erste Passivhaus Schulsanierung“
- First holistic general rehabilitation project of a public building to reach passive-house standard (General Secondary School II + Polytec at Schwanenstadt, Upper Austria)
  - Projektleiter Demonstrationsprojekt 1. Einfamilien Passivhaus im Altbau, BV Schwarz in Pettenbach
- The very first reconstruction in Austria of a one-unit house to passive house standard (Model project in Pettenbach/Upper Austria)
  - Projektpartner und Planer Demonstrationsprojekt 1. Mehrfamilien Passivhaus im Altbau, BV Makartstr. In Linz
- PASSIVe house renovation, Makartstrasse, Linz
  - Planer Demonstrationsprojekt Klima.Komfort.Haus, 1220 Wien
  - Projektpartner Demonstrationsprojekt Sozialer Wohnbau, Holz- Passivhaus Mühlweg, 1210 Wien
  - Projektpartner Demonstrationsprojekt Neubau Ökologisches Gemeindezentrum Ludesch
  - New Communal Centre Ludesch
  - Projektpartner Demonstrationsprojekt Passivhauskindergarten Ziersdorf
  - Projektpartner Demonstrationsprojekt Alpiner Stützpunkt - Schiestlhaus am Hochschwab
  - Projektpartner Demonstrationsprojekt ChristophorusHaus
- Fachliche Qualifikation bei „MHC Möbel- und Holzbau Cluster“-Projekten
  - Externer Dienstleister bei Kooperationsprojekt Passivhaus „Best in Class“
  - Externer Dienstleister bei Kooperationsprojekt „Vergleichende Analyse energieeffizienten Wohnens“

Applicant 3: IRABOIS, France

The missions of FFB CMP :

The “Fédération Françasie du Bâtiment Charpente Menuiserie Parquet” ‘s aim is to define the general strategies of the profession and to develop actions in every field connected with economy, promotion, research and technical assistance, regulation, initial and in-service training, professional qualification, working conditions…

The action fields of the FFB CMP

- Political actions of representation and protection of the profession
- Development of the offer, strategic reflection
- Evolution of the professions
- Training, careers advising
- Working conditions
- Technical evolution
- Management and coordination of the “Bureau de Normalisation des Techniques de Construction et Equipement de la Construction dans le Bâtiment » (BNTEC) section Timber framework

IRABOIS Institut de Recherches Appliquées au Bois

The « Institut de Recherches Appliquées au Bois » is an association which offers support to the Wood Construction profession by helping directly the firms, developing techniques for the employment in Wood construction and its markets, undertaking all researches and studies in accordance with the industry partners, assisting the professional organizations in the technical and regulations fields.

Studies and Research

Developing programs of studies and applied research in partnership with the firms, the industrials, the authorities and the laboratories

- Listening to the needs and suggesting programs of research in the strategic, technical, organization fields
- Activity of research engineering : partners research, management, coordination and following through projects, formalizing and releasing the results
- Boosting the researches and developing the profession

Standardization

Achieving and following through standardization projects

- Management of the French Commissions “Structure Bois” P21A
- Taking part to the standardization works of products and components of wood structures, panels, stairs, joinery
- Taking part to the standardization works of the other trade associations of Construction

Working out if necessary of professional rules

Technical assistance to the industries

- Phone answers
- Assistance on building sites
- Organization of information and training days
- Drawing up application texts in the normative and regulation fields

Describe the Part of the Subcontractors and prove the Qualification of the Subcontractors

The RTD-Subcontractors will take over mainly the research tasks on behalf of the applicants. All subcontractors are acknowledged experts in their fields.

The Centre For Sustainable Building (ZUB)

Dr. F. Otto is an expert in building physics.

Since 1990: Research Associate in the engineering office for Building Physics of Univ.-Prof. Dr. Engineer Gerd Hauser & partner, Baunatal.

1985-1990: Research Associate in the field of Building Physics, Faculty of Architecture, University of Kassel.

1985 to 1995 with Prof. Dr. Gerd Hauser in Kassel. Topic of doctoral thesis: The influence of sorption processes on interior air humidity. The development of identification values for describing the hygric behaviour of rooms.

References

Hauser, G. und Otto, F: Niedrigenergiehäuser – auphysikalischeGrundlagen. Informationsdienst Holz, Holzbau handbuch, Reihe 1, Teil 3, Folge 2, (August 1994)

Hauser, G. und Otto, F: Niedrigenergiehäuser - Planungs- und Ausführungsempfehlungen. Informationsdienst Holz, holzbau handbuch, Reihe 1, Teil 3, Folge 3, (März 1995)

Hauser, G.; Otto, F. und Stiegel, H.: Porenbetonbericht 15 - Einfluß von Baustoff und Baukonstruktion auf den Wärmeschutz von Gebäuden. BVP Porenbetoninformations-GmbH (1995)

Otto, F.: Einfluß von Sorptionsvorgängen auf die Raumluftfeuchte - Entwicklung von Kenngrößen zur Beschreibung des hygrischen Verhaltens von Räumen. Dissertation Universität Kassel 1995

Hauser, G. und Otto, F.: Auswirkungen eines erhöhten Wärmeschutzes auf die Behaglichkeit im Sommer. Bauphysik 19 (1997), Heft 6, S. 169-176

Hauser, G. und Otto, F.: Bestehende WSVO wird Energieverhalten von Bürogebäuden nicht gerecht -Differenzierte Betrachtung einzelner Gebäudetypen unumgänglich -. Bauphysik 19 (1997), H. 6, S. 169-176

Hauser, G. und Otto, F.: Wärmespeicherfähigkeit und Jahresheizwärmebedarf. mikado (1997), H. 4, S. 18-22

Hauser, G. und Otto, F.: Feuchteschäden durch Tauwasserbildung an der Dach konstruktion des Kurfürstenbades Amberg. bauen mit holz (1998), H. 7, S. 37-38

Hauser, G. und Otto, F.: Holzspäne: Dämmstoff mit hoher Wärmespeicherfähigkeit für den sommerlichen Wärmeschutz. bauen mit holz (1999), H. 8, S. 34-40

Hauser, G. und Otto, F.: Gewinne und Verluste - Einfluß der Wärmespeicherfähigkeit auf Heizwärmebedarf und sommerliches Wärmeverhalten. db (2000), H. 4, S. 113-118

Otto, F.: Sorptionsfähigkeit von Bauteilen und Elementen der Raumausstattung. DBZ 48 (2000), H. 10, S. 106-110

Otto, F.; Hauser, G.; Maas, A.; Ringeler, M.: Holzbau und Energieeinsparverordnung. Informationsdienst Holz, holzbau handbuch, Reihe 1, Teil 3, Folge 3, (März 2001)

Lißner, K.; Rug, W.; Winter, S.; Schmidt, D.; Holtz, F.; Hessinger, J.; Hauser, G.; Otto, F.: Modernisierung von Altbauten. Informationsdienst Holz, holzbau handbuch, Reihe 1, Teil 14, Folge 1, (Dezember 2001)

Nebgen, N.; Otto, F.; Ringeler, M. und Winter, S.: Funktionsschichten und Anschlüsse für den Holzhausbau. Informationsdienst Holz, holzbau handbuch, Reihe 1, Teil 1, Folge 10, (2004)

Egle, J. und Otto, F.: Fassadenelemente in Holzbauweise zur Erhaltung und energetischen Verbesserung der Bausubstanz. Informationsdienst Holz, holzbau handbuch, Reihe 1, Teil 14, Folge 4, (2005)

Institute for applied Technologies in Timber Construction (IATH)

The institute has great experience in planning, CAD-construction, prefabrication and assembling of wooden-based components for walls, ceilings and roofs. In this tasks central and import attention are turned to quality assurance and cost efficiency.

References

Egle J.: „Internet-Datenbank für den Holzbau“, research project DGfH / Bayerisches Staatsministerium für Wirtschaft, Verkehr und Technologie, final report 2003-06

Egle J., Hauser G.:“Rationalisierung der Wärmebedarfsermittlung von Gebäuden nach der Energieeinsparverordnung 2000 durch eine standardisierte Schnittstelle“, research project DGfH / AiF, final report 2002-10

Egle J., „Rationalisierung der Planung und Fertigung durch einheitliche EDV-Datenbeschreibung“, research project DGfH / Bundesministerium für Raumordnung, Bauwesen und Städtebau, final report 1999-05

Egle J., „Standardisierung von Anschlüssen im Holzhausbau - Verknüpfung der Ergebnisse mit abgeschlossenen und laufenden Vorhaben“, research project DGfH / Bayerisches Staatsministerium für Landwirtschaft und Forsten, final report 2003-11

Egle J., „Dauerhafte Holzbauten bei chemisch-aggressiver Beanspruchung“, Informationsdienst Holz, holzbau handbuch Reihe 1, Teil 8, Folge 2, 2002-12

Egle J., „Fassadenelemente für den Gebäudebestand“, Informationsdienst Holz, holzbau handbuch Reihe 1, Teil 10, Folge 5, 2005-05

Egle J., „Die fünf häufigsten Ausführungsmängel in Holzbau und Holzhausbau (1)“, Fachschriftenverlag D-Fellbach, Holzbits, 2002-05

Egle J., „Die fünf häufigsten Ausführungsmängel in Holzbau und Holzhausbau (2)“, Fachschriftenverlag D-Fellbach, Holzbits, 2002-07

Wood and Furniture Technical Centre (CTBA)

The Wood and Furniture Technical Centre (Centre Technique du Bois et de l'Ameublement) was created in 1952 for and at the instigation of professionals. CTBA offers support for wood, furniture and timber construction industries working in the field of Research and Development, as well as in the fields of information, technical support, training, standardisation and certification. From the outset CTBA operated with the aim of promoting technical progress, being involved in the improvement of productivity, and ensuring quality within the industry.
It has the status of a Technical Industrial Centre and is part of the CTI network (Technical Industrial Centres). A Board of Directors manages it.

Publications concerning the field of research

Kouyoumji J.-L. verbal communication about innovation in the wood construction and passive house, 6th edition of the ‘wood week’ in Champagne- Ardenne, Chalon, may the 10th, 2006. [French]

Kouyoumji J.-L. Sound Transmission loss prediction and vibro-acoustic SEA analysis of a wood framed floor proc.33rd Internoise, Prague, Czech Republic, 2004

Foulon, X., Optimization of thermal of wood constructions, insulation and air tightness. Conference on the building frame, march the 11th 2004 [French]

Paradis T., Deloison R., Marechaux F., Monnier C., The wood used for building, French Forest journal, 2004, [French]

Leneve S., Guinard D., Wood used for civil engineering, French Forest journal n°56, 2004, [French].

Kouyoumji J.-L., Borello G., Vibroacoustic analysis of sound transmission in double-glass timber windows. 34th Internoise, Rio, Brazil, 2005

Kouyoumji J.-L., Guigou-Carter C.,, Villot M., Analytical and experimental study of wood floorings, 34th Internoise, Rio, Brazil, 2005

Previous projects :
Parieto-dynamic wall, air solar devices integrated in a double leaf timber framed wall, used for winter and summer regulation of a building. Research program N° SU 03 000268 Building Misistery – PUCA. CTBA.

RT2000-2005 «Thermal calculation of timber framed construction for RT2005». Research program N° 02.04.143, ADEME. CTBA.

Active Wall, «design and characterisation of a timber framed wall using PCM». Research program N°04.04.C0061, ADEME. CTBA.

Breathing wall, «design and characterisation of a breathing timber framed wall, study of energy and hydrothermal behaviour using calculation and full scale testing». Research program N° 20050405, Région Aquitaine. CTBA, TREFLE.

«Innovative facade using glued glazing on a wood frame for renovation». Research program N° Y0318, Ministère de l’Equipement – PUCA. CTBA.

Bois Climatique, air solar hypocaust systems integrated to wood building, Research program CTBA

EnvHy, Hybrid Envelope, Research program CSTB, CTBA,

Renokit, « insulation using the box in the box system for renovation », Research program CTBA, CSTB.

Acoustics of wood construction : Panels, floorings, envelopes, walls, floors. Six Research programs, CTBA.

Monitoring of logged houses, FFB, IRABOIS, TREFLE.

Institut for building biology and ecology (IBO)

The Austrian Institut for building biology and ecology (IBO) is specialized on research of correlation between human beeings, buildings and environment.

Previos Experience, Publications, Projects

Mötzl H., Pokorny W., Torghele K., Waltjen T., Zelger T.: "Der ökologische Passivhauskatalog. Passivhauskonstruktionen bautechnisch, bauphysikalisch und ökologisch bewertet". Erscheint bei Springer WienNewYork ca. Jänner 2007

Schneider U., Brakhan F., Zelger T. et al.: "Grünes LICHT, Sanierung eines großvolumigen Wohnbaues zum Passivhaus". 2006 (Fachautor)

Haselsteiner, E., Havel M., Guschlbauer-Hronek K., Zelger T. et al: "Neue Standards für alte Häuser, Nachhaltige Sanierungskonzepte für Einfamilienhaus-Siedlungen der Zwischen- und Nachkriegszeit". 2005 (Fachautor Bauphysik, Bauökologie)

Schneider U., Brakhan F., Zelger T. et al.: "altes haus? altes haus! Entwicklung eines betreuten Stützpunktes für Senioren im städtischen Umfeld durch Restrukturierung eines Altbaues mit modernster ökoeffizienter Gebäudetechnologie". 2005 (Fachautor Wärmebrückenminimierung, Bauphysik)

Mötzl, H.: Ökologisches Baustofflexikon. C.F.Müller 2006 (gemeinsames Projekt mit Dr. Gerd Zwiener)

Lipp B., Mötzl H., Rohregger G., Zelger T., Schuster G., Holzer P., Ambrozy H. G., Deubner H., Berger M. (2005): Grossvolumiger Wohnbau in Niederösterreich: Wirtschaftliche und ökologische Kriterien für Niederösterreichische Landesregierung, Abt. F2-A,B Wohnbauforschung, BMWA, Abt. IX/8 F. 1389

Lipp B., Mötzl H., Rohregger G., Zelger T., Ambrozy H. G., Deubner H., Tappler P, Torghele K. (2004): Ökologische und wirtschaftliche Anforderungen an den großvolumigen Holzwohnbau. Forschungsbericht

IPR

The results of the collective research activities will be published and can be used by anyone.

The special knowledge and Property Rights of the participating companies to their products remains at these companies. These frame conditions will be pointed out in separate agreements.

References of in the project involved experts

[1] Kaufmann, B., Feist, W., John, M., Nagel, M., Das Passivhaus – Energie-Effizientes-Bauen, INFORMATIONSDIENST HOLZ, holzbau handbuch, Reihe 1, Teil 3, Folge 10, DGfH, München, Oktober 2002.

[2] Kaufmann, B., Feist, W., Pfluger, R,. John, M., Nagel, M., Passivhäuser erfolgreich planen und bauen, Ein Leitfaden zur Qualitätssicherung im Passivhaus, erstellt im Auftrag des Landesinstituts für Bauwesen (ILS), Aachen 2004

[Ambrozy], actual running project funded by the Austrian government. Number 810613/10096 – GLE/BLC

[Feist1997] Feist, W. (Hrsg) Haustechnik im Passivhaus, Protokolband Nr. 6, AKKP, Darmstadt 1997

[Feist1998] Feist, W. (Hrsg) Energiebilanzen mit dem PHPP, Protokolband Nr. 13, AKKP, Darmstadt 1998

[Feist 1998] Feist, W., Passivhaus Sommerklima Studie, Darmstadt 1998

[Feist1998a] Feist, W., (Hrsg.) Fenster für das Passivhaus, Arbeitskreis kostengünstige Passivhäuser, Protokollband Nr. 14, Passivhaus, Darmstadt, 1998

[Feist1999] Feist, W. (Hrsg.) Dimensionierung von Lüftungsanlagen, Protokolband Nr. 17, AKKP, Darmstadt 1999

[Feist 2000] Feist, W. (Hrsg) Passivhaus Versorgungstechnik, Protokolband Nr. 20, AKKP, Darmstadt 2000

[Feist2001] Feist, W., Peper, S., von Oesen, M., Klimaneutrale Passivhaus-Reihenhaussiedlung Hannover Krobsberg, CEPHEUS Projektinformation Nr. 18, Hrsg.: Stadtwerke Hannover AG, Hannover 2001

[Feist2001a] Feist, W. (Hrsg.), Wärmebrückenfreies Konstruieren, Passivhaus Institut, Darmstadt, Arbeitskreis kostengünstige Passivhäuser, Protokollband Nr. 16, 2. Auflage 2001

[Feist2002] Architekturbeispiele Wohngebäude, Protokollband Nr. 21, Arbeitskreis Kostengünstige Passivhäuser (AKKP), 1. Auflage, Darmstadt 2002

[Feist2004] Feist, W. (Hrsg.), Einsatz von Passivhauskomponenten für die Altbausanierung, Passivhaus Institut, Darmstadt, Arbeitskreis kostengünstige Passivhäuser, Protokollband Nr. 24, 1. Auflage 2004

[Feist2005] Feist, W. (Hrsg.), Faktor 4 auch bei sensiblen Altbauten, Passivhaus Institut, Darmstadt, Arbeitskreis kostengünstige Passivhäuser, Protokollband Nr. 32, 1. Auflage 2005

[Fingerling 2000] Fingerling, K.-H., Feist, W., Otte, J., Pfluger, R. 'Konstruktionshandbuch für Passivhäuser', Teil 1 des Forschungsberichts zum Projekt: 'Das kostengünstige mehrgeschossige Passivhaus in verdichteter Bauweise' gefördert mit Mitteln des Bundesamtes für Bauwesen und Raumordnung, Passivhaus Institut, Darmstadt, 2000.

[3Kaufmann/Feist2002] Kaufmann, B., Feist, W., John, M., Nagel, M., Das Passivhaus – Energie-Effizientes-Bauen, INFORMATIONSDIENST HOLZ, holzbau handbuch, Reihe 1, Teil 3, Folge 10, DGfH, München, Oktober 2002.

[Kaufmann2002] Kaufmann, B., Schnieders, J., Pfluger, R., Passivhaus-Fenster. Tagungsband zur 6. Europäischen Passivhaustagung, Seite 289, Basel 2002

[Kaufmann2002a] Kaufmann, B. , Feist W., Die Frischluftheizung hat sich bewährt. Tagungsband zur 6. Europäischen Passivhaustagung, Seite 129, Basel 2002.

[Kaufmann2003] Kaufmann, B., Feist, W., Pfluger, R., Technische Innovationstrends und Potenziale der Effizienzverbesserung im Bereich Raumwärme, Studie im Auftrag des Institut für Ökologische Wirtschaftsforschung (IÖW), Berlin, April 2003

[4Kaufmann2004] Kaufmann, B., Feist, W., Pfluger, R,. John, M., Nagel, M., Passivhäuser erfolgreich planen und bauen, Ein Leitfaden zur Qualitätssicherung im Passivhaus, erstellt im Auftrag des Landesinstituts für Bauwesen (ILS), Aachen 2004

[Michael2002] Michael, K., Passivhaus Kindertagesstätte in Münster, EB Energie Effizientes Bauen 2/2002,

[Peper1999] Peper, Søren; Feist, Wolfgang; Sariri, Vahid: Luftdichte Projektierung von Passivhäusern, Eine Planungshilfe. CEPHEUS-Projektinformation Nr. 7, Passivhaus Institut, Darmstadt 1999.

[Pfluger2001] Pfluger, R., Feist, W., Kostengünstiger Passivhaus-Geschoßwohnungsbau in Kassel Marbachshöhe, Messtechnische Untersuchung und Auswertung, CEPHEUS Projektinformation Nr. 15, Darmstadt, 2001

[Pfluger2001a] Pfluger, R. , Feist, W., Sommerliches Innenklima im Passivhaus-Geschoßwohnungsbau, Meßtechnische Untersuchung und Auswertung des sommerlichen thermischen Verhaltens eines Passivhaus-Geschoßwohnungsbaus in Kassel-Marbachshöhe, CEPHEUS-Projektinformation Nr. 42, Passivhaus Institut, Darmstadt, Oktober 2001.

[Pfluger2005] Pfluger, R., Schnieders, J., Kaufmann, B., Feist, W., Hochwärmedämmende Fenstersysteme: Untersuchung und Optimierung im eingebauten Zustand, Anhang zum Teilbericht A, Bauphysikalische Untersuchungen und Optimierung des Baukörperanschlusses, Teilbericht des Passivhaus Instituts im Rahmen des Forschungsprojekts HIWIN, gefördert durch das Bundesministerium für Wirtschaft u. Technologie, Förderkennzeichen 0327250A

[Schnieders2000] Schnieders, J., Passivhausfenster, 4. Passivhaustagung, Kassel, März 2000

[Schnieders2001] Schnieders, J., Feist, W., Pfluger, R., Kah, O., Endbericht CEPHEUS – Wissenschaftliche Begleitung und Auswertung, CEPHEUS Projektinformation Nr. 22, Darmstadt, 2001

[DIN-EN 10077] Wärmetechnisches Verhalten von Fenstern, Türen und Abschlüssen, Berechnung des Wärmeduchgangskoeffizienten, DIN EN ISO 10077-Teil 1:2000. Teilweise Ersatz für DIN V 4108-4:1998-10, Deutsches Institut für Normung e. V., Berlin 1998. Enthält insbesondere einen Algorithmus zur Berechnung des Rahmen U-Wertes Uf Ψund der Wärmebrücke am Glasrand Ψg.

[DIN1052:2004] wooden building construction [DIN 13829:2001] Bestimmung der Luftdurchlässigkeit von Gebäuden, Differenzdruckverfahren, DIN 13829, Deutsches Institut für Normung e. V., Berlin 2001

[PEP] Promoting of European Passive Houses (PEP) in the context of the Intelligent-Energy Europe Programme (EIE) Grant Agreement No EIE/04/030/S07.39990

Horn, Gerrit, „Vergleich energieeffizienter Holzbausysteme: Wärmebrücken, Luftdichtheitskonzepte, Kosten“ engl.: „Comparison of energy-efficiant systems of wood constructions: thermal bridges, concepts of airtightness, costs“, volume of the 3rd. Passivhaustagung 1999, Bregenz and Darmstadt 1999

Horn, Gerrit, „Wärmebrückenfreies Konstruieren“, engl.: „to construct without thermal bridges“, Protokollband Nr. 16, volume of the Arbeitskreis kostengünstige Passivhäuser, Darmstadt 1999
Horn, Gerrit, „Hohe Ansprüche – Herausforderungen für Zimmereien: Qualität im Holzhausbau“, engl. „ High requirements – challenges for the carpenteries: Quality of timber house construction“ Bauhandwerk/Bausanierung 3/2002, Bertelsmann Fachzeitschriften GmbH, Gütersloh , 2002

Horn, Gerrit, „Planung und Ausführung hochwertiger Holzhäuser“, engl.: „Planning and undertaking wooden houses“, Bauhandwerk/Bausanierung 5/2002, Bertelsmann Fachzeitschriften GmbH, Gütersloh, 2002

Horn, Gerrit „Wärmebrücken bei Holz-Stegträgern“ , engl.: „thermal bridges of wooden I-beams“, volume of the 7th. PH-Tagung 2003 in Hamburg, Herausgegeben von PHI Darmstadt, 2003

Horn, Gerrit „Wärmebrücken bei Holz-Stegträgern - Widersprüche zwischen Normung und Forschung“ engl.: „thermal bridges of wooden I-beams – contradiction between standardization and science“, in „die neue quadriga“ Nr. 6/2003

Horn, Gerrit, „Warme Wände – Passivhaus-Serie Teil 1: Außenwand Grundkonstruktionen“, engl.: „warm walls – passive house-series part 1: constructions of exterior wall“, Bauhandwerk/Bausanierung 7-8/2003, Bertelsmann Fachzeitschriften GmbH, Gütersloh, 2003

Horn, Gerrit, „Klare Trennung - Passivhaus-Serie Teil 2: Wärmeentkoppelte Fußpunkte“ , engl.: „Clear separation - passive house-series part 2: thermal separated bases“, , Bauhandwerk/Bausanierung 10/2003, Bertelsmann Fachzeitschriften GmbH, Gütersloh, 2003

Horn, Gerrit, „Luftdicht verkleben - Passivhaus-Serie Teil 3: Deckenanschlüsse bei Passivhäusern“ , engl.: „airtight gluing– passive house-series part 3: ceilings for passive houses“, , Bauhandwerk/Bausanierung 12/2003, Bertelsmann Fachzeitschriften GmbH, Gütersloh, 2003

Horn, Gerrit, „Trennung in Holz – Gebäude- und Wohnungstrennwände aius Holz“ , engl.: „wooden party walls“, , Bauhandwerk/Bausanierung 3/2004, Bertelsmann Fachzeitschriften GmbH, Gütersloh, 2004

Horn, Gerrit, Pazen; Günther „Lass die Sonne rein: Die Entwicklung des Passivhaus-Fensters“ , engl.: „Let the sunshine in: development of windowsfor passiv houses“, , Bauhandwerk/Bausanierung 5/2004, Bertelsmann Fachzeitschriften GmbH, Gütersloh, 2004

Horn, Gerrit, „Lass die Sonne draußen: Verschattungseinrichtungen für Passivhäuser“ , engl.: „Let the sun out: elements of shading for passive houses“, , Bauhandwerk/Bausanierung /2004, Bertelsmann Fachzeitschriften GmbH, Gütersloh, 2004

Horn, Gerrit „Also doch: Faktor 2,2 in Plattenebene bei Holzwerkstoffen ist richtig! – Was bedeutet das für die Praxis“ , engl.: „factor 2.2 layer of plate in derived timber products is correct – the meanig at practicing“, volume of the 9th. PH-Tagung 2005 in Ludwigshafen, Herausgegeben von PHI Darmstadt, 2005

Horn, Gerrit „Passivhaus aus Holz an einer Bahntrasse: Guter Wärmeschutz und guter Schallschutz unter einem Dach“ , engl.: „wooden passivhouse near a railway – excellent

thermal protection and excellent sound insulation “, volume of the 9th. PH-Tagung 2005 in Ludwigshafen, Herausgegeben von PHI Darmstadt, 2005