Index and Programme

Friday 19th April 2013

Plenary Session 09:15 - 11:15  Saal: Harmonie

09:15  Opening and Greeting

Prof. Dr. Wolfgang Feist
University of Innsbruck and scientific director of the Passive House Institute

Lucia Puttrich
Minister of the Environment, Energy, Agriculture and Consumer Protection for the State of Hesse

Olaf Cunitz
Mayor of the City of Frankfurt

Dr. Thomas Schäfer
Minister of Finance for the State of Hesse

Dipl.-Ing. Barbara Ettinger-Brinckmann
President of the Chamber of Architects and Urban Planners Hessen

Dr. Christof Riess
Chamber of Trades Frankfurt-Rhein-Main

10:00  Junker, Frank
Experience from more than 1,600 Passive House apartments

10:45  Feist, Wolfgang
Passive House efficiency makes the energy revolution affordable

The cost optimum in terms of insulation currently lies at approximately 0.15 W/(m²K) while investments in electricity saving technologies have “savings costs” that lie between 0 and 13 cents/kWh. The Passive House Standard represents the absolute economic optimum for new builds. For Governments then, energy-efficiency technology actually makes the energy revolution a profitable endeavour.
Session I: Passive House Capital Frankfurt

13:00 Neumann, Werner
Frankfurt am Main, Passive House Capital - how can the success story continue?
Plus Energy building suppliers are criticizing Passive House construction, which has been especially successful in Frankfurt am Main. But the underlying principles are to minimize energy demand and ensure efficient supply. Generating energy on the building must not be a reason for needlessly increasing demand.

13:30 Mathes, Harald; Hasper, Wolfgang
Passive House for the Hesse State administration
The German State of Hesse will make all of its new administration buildings efficient / Passive House structures. The first pilot project serves as an example of these activities and provides an opportunity to discuss state construction officials' experience with this construction standard.

14:00 Fiebig, Wiebke; Hufer, Peter
Energy retrofit of a Wilhelminian building with Passive House components
A renovation project in Frankfurt shows that a turn-of-the-century façade can be retained even as requirements for comfort and climate protection are fulfilled. The showcase project focused on interior insulation and distributed ventilation units.

14:30 Naß, Winfried; Frydrychowski-Horvatin, Janka
The first Passive House hospital in Germany – a challenge that the City of Frankfurt is pleased to take on
The Frankfurt Höchst Clinic, which covers the full range of services, is largely housed in buildings from 1965/1985 today. A new build is to be planned and built in compliance with the Passive House Standard in accordance with the City of Frankfurt's guidelines. This paper presents experience from the planning process.
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<tr>
<td>13:00</td>
<td><strong>Cunz, Thilo; Michelin, Nicolas; Mege, Jean Denis; Meyer-Hoffmann, Henrik</strong></td>
<td>Building Together (Build-Tog) - Europe-wide adaption of an apartment building design</td>
<td>BuildTog is a Passive House project with ten housing companies from five European countries who adapt a common type of multifamily housing in the same way on different places and ensure the quality of energy performance, economy and architectural design.</td>
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<td>13:30</td>
<td><strong>Tribus, Michael; Holzner, Christoph</strong></td>
<td>Cost comparison through variations in design based on three completed multi-family Passive Houses</td>
<td>This paper presents a comparative cost analysis based on three certified Passive Houses. It shows the share of costs in architecturally functional &quot;building gestures&quot; and how it can be successively reduced to save costs that are greater than the expense of an excellent building envelope.</td>
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<td>14:00</td>
<td><strong>Klinski, Michael; Frogner Berg, Torer</strong></td>
<td>The Norwegian Passive House experience</td>
<td>The building research institute SINTEF Byggforsk has analyzed experiences with Passive House buildings, including interviews with residents, builders, and contractors. It was found that the Passive House concept tends to work in Norway and can be put into practice by ambitious stakeholders.</td>
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<td>14:30</td>
<td><strong>Cho, Yoon-Boum; Cho, Jong-Sun; Vallentin, Rena</strong></td>
<td>International cooperation between Korea and Germany continues: a new seminar and youth center in Goesan</td>
<td>A team consisting of a PH architect, a PH building services specialist, and PHI is recommended to share German expertise with a country like Korea that has little experience in Passive House planning. &quot;Guiding details&quot; are very important for the architect's construction design.</td>
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</table>
13:00  **Troi, Alexandra**  
Solutions & tools for the conservation compatible energy retrofit of historic buildings

With a multidisciplinary approach, energy demand can decrease consistently also in historic buildings, respecting their heritage value. Instead of offering “standard solutions” 3ENCULT provides a pool of measures and tools and guidelines for energy efficiency solutions targeted to the single case.

13:30  **Pfluger, Rainer**  
Active overflow ventilation for refurbishing of school buildings

A new type of ventilation systems for historic school buildings is analysed via measurements on prototypes and by dynamic simulation. A heat recovery system vents fresh air into the staircase and the corridors whereas active overflow fans blow it via textile diffusers into the class rooms.

14:00  **Fallon, Ann-Marie; Little, Joseph**  
Retrofitting Ireland’s first EnerPHit building - Issues, challenges and solutions

How much to strip-away, how to ensure quality, how much should embodied carbon be allowed rise, what building types and locations allow lower cost EnerPHit retrofit work? Wufi Plus now contains an add-on feature Wufi-Passive: it allows the integration of hygrothermal and Passive evaluation.

14:30  **Bradshaw, Frances; Croxford, Ben**  
Detailing for Passivhaus retrofit in London; terrace houses, solid walls, timber floors and internal insulation

The paper describes a fabric first approach, to retain as much as possible of the existing structure and finishes, and to use insulation materials which in relation to moisture perform hygroscopically, with monitoring results.

15:00  **Vanaga, Ruta; Krauklis, Ervins; Kamenders, Agris; Blumberga, Andra**  
Reaching EnerPHit standard using holistic approach
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<tr>
<td>13:00</td>
<td>Kursisa, Anda</td>
<td>Passive House method for industrial buildings</td>
<td>An evident energy savings in the refurbishment of industrial plants could be reached by combining PHPP as the Passive House design and calculation method and full energy assessment method - especially for calculations of building envelope and windows, and ventilation systems.</td>
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<td>13:30</td>
<td>Siddall, Mark; Trinick, John; Johnston, David</td>
<td>Testing the real heat loss of a Passivhaus building: Can the UK’s energy performance gap be bridged?</td>
<td>This paper considers: do Passivhaus buildings have the same actual fabric heat loss as the calculated value and is thermal bypass a cause of performance failure? A coheating test gives the opportunity to address this question. This paper also highlights some of the practicalities, challenges and possible solutions for those wishing to conduct coheating tests.</td>
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<td>14:00</td>
<td>Langmans, Jelle; Roels, Straf; Klein, Ralf</td>
<td>Quantitative study on the hygric response of timber frame walls with exterior air barriers</td>
<td>This article examines the hygrothermal performance of timber frame walls with exterior air barrier systems. The simulation results demonstrate that mineral wool insulated elements in combination with exterior air barriers result in moisture problems, related to natural convection.</td>
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<td>14:30</td>
<td>Sibille, Elisabeth; Pfluger, Rainer</td>
<td>Optimization of dwelling floor-plan configuration for cascade ventilation</td>
<td>This study points out for which floor-plan configurations, cascade ventilation (no supply air in the living-room) is recommended. All configurations of a 3-room floor-plan were simulated to watch the influence of the supply air rate in the living-room and of further parameters on the user's comfort.</td>
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15:00  Anwyl, James Scott; Mader, Nina
Life Cycle Assessment results of PH buildings with different construction methods

15:05  Ochs, Fabian; Dermentzis, Georgois; Feist, Wolfgang
Energetic and Economic Optimization of the Renewable Energy Yield of Multi-Storey PHs
Session V: Future-proof renovation

15:45 **Herkel, Sebastian; Kagerer, Florian; Bräu, Renate**
Renovating a high-rise to fulfill the Passive House Standard – a year of operational experience

At Buggingerstrasse 50 in Freiburg, the first residential high-rise from the 1960s was retrofitted in compliance with the Passive House Standard. Measurements taken in the first year of usage show that the targets were met and the building concept was successfully implemented.

16:15 **Lichtblau, Florian**
Multi-story residential complex 1958, timbered model renovation

A post-war complex from 1958 in western Munich was in need of renovating. It was first investigated as part of a university project and then as a planning model before becoming a showcase project for holistic timbered retrofits. Retaining the load-bearing structure, restructuring the floor plan, providing greater urban density, a Passive House envelope in prefabricated timber, a timeless design, and a renewable energy supply were decisive for the exemplary lifecycle balance and holistic affordability.

16:45 **Großklos, Marc; Schaede, Margrit; Hacke, Ulrike**
Results from the retrofit of seven multi-family units to the Passive House Standard

The retrofit of seven multi-family buildings showed that heating energy consumption could be reduced by 70% even with higher temperatures. The equipment used needs to be improved, however. The rent+heat model does not seem to have affected consumption much.

17:15 **Wörndle, Barbara; Stuffer, Oscar**
Taylor-made solutions for a historical residential building in the center of Bolzano (I)

A 17th century, protected historic building in the center of Bolzano was renovated. Carefully targeted energy retrofitting reduced heating energy demand by 85%. 
17:45  Bräunlich, Kristin; Kaufmann, Berthold  
Measuring moisture buildup in timbered beam ends for renovation with interior insulation

An historical building with wooden beams in the ceilings had interior insulation added to it during a retrofit. The buildup of moisture in the beam ends (which were in the cold zone after interior insulation had been added) was then monitored.

18:15  Bastian, Zeno  
Factors that influence the energy balance and affordability of non-residential EnerPHit projects
Session VI: Energy-efficient building services

15:45  Bräunlich, Kristin; Kah, Oliver
Ventilation in commercial kitchens
A large part of the total energy used in commercial kitchens is devoted to ventilation. A reduction in demand for extract air probably reduces energy consumption the most.

16:15  Kah, Oliver
Energy efficiency in cafeterias and commercial kitchens
Typical kitchen applications consume a lot of energy and also produce a lot of heat and moisture that sufficiently dimensioned kitchen ventilation systems have to draw out of the kitchen. This article presents the basic interrelations and efficiency potential using a few examples of kitchen appliances.

16:45  Voß, Tjado; Voss, Karsten
The effect of façade-integrated fresh air elements on energy demand and indoor temperatures in the summer
How do micro-climatic effects on façades in combination with urban and meteorological weather data affect indoor temperatures and energy demand in offices during the summer when façade-integrated fresh air valves are used? Planning recommendations are derived from the answers to this question.

17:15  Riha, Jan; Lawrence, Tyson; Roth, Kurt W.
Highly diffusive overhead lights - heat loss versus energy conservation
A feasibility study on skylights found that diffuse domes can reduce the electricity needed for artificial lighting by 35 to 5%. Only 3 to 5% of the ceiling needs to consist of skylights for the workplace to be provided with around 700 lux. An important consideration is that light controls allow lighting to be adjusted in stages.

17:45  Werner, Matthias; Pfluger, Rainer
Influence of retrofitting on daylighting
In addition to psychological and physiological effects, optimized daylighting also offers energy benefits. But retrofit projects (reveals or multi-pane glazing etc) can adversely affect daylighting. This presentation demonstrates its impact and potential improvements.

18:15  Riis Dietz, Søren
LED Light in Passive Houses
15:45  **Fujara, Marianne**  
PassREg –  
Supporting Politicians to create model structures for Passive House with Renewable Energies

The PassREg project supports municipalities in their role as examples and promoters of Passive House Standard supplied by Renewable Energies as the solution for Nearly Zero Energy Buildings which are required by the recast of the European EBPD as a “bottom-up” approach to create regional and local commitment and acceptance of the new building standard.

16:15  **Genchev, Zdravko; Tzanev, Dragomir**  

Experiences in promoting ‘passive house’ standard in three pilot (‘front runner’) EU regions are compared to communicate both achievements and failures on the road to success. A Success Guide will be drawn for widespread use in EU to encourage and assist other regions and municipalities to follow.

16:45  **Sapienza, Carmelo**  
Smart NZEB in the Passive House Standard in Sicily

Progetto Botticelli – a Passive House building where home automation improves energy efficiency, inside condition and living comfort. A new approach to integrate design of building and technological systems. KNX – an easy open standard protocol for building and home automation to achieve energy efficiency, living and climatic comfort and energy management.

17:15  **Maerckx, Anne-Laure**  
Aeropolis II & Elia: passive buildings showing the (r)evolution of eco-construction in Brussels

Aéropolis II and Elia: two passive office buildings awarded as Exemplary Buildings between 2007 and 2011. They show the fast evolution of eco-construction in Brussels over the last 5 years: learning from the experience of Aéropolis II, Elia went further in energy concepts and environmental approach.
17:45  **Pagliano, Lorenzo; Paolo, Zangheri**

nZEB coupled with an Earth to Air Heat Exchanger: development of an analytic model and validation against a monitored case study

We analysed the Passivhaus of Cherasco, where, in summer, an EAHE is used to deliver comfort conditions with very low energy consumption. Based on this analysis a simplified model is developed to provide an estimation of the behaviour of the coupled system building envelope – EAHE, from the point of view of energy and comfort.

18:15  **Gerin, Anne**

Successful PH skyscrapers

18:20  **O'Donnell, Archie**

A very Irish Solution – adapting local techniques for Passivhaus
15:45  **Leardini, Paola; Iliffe, Jonathan; Gronert, Renelle**  
Building Passive Houses in subtropical climates? A lesson learnt from New Zealand

New Zealand faces resource depletion and increased energy consumption, exacerbating its endemic housing problems. This paper explores whether the PH standard could be a solution applicable to NZ’s ‘unique’ climatic, social and market conditions and traces the brief but rapid PH evolution in the country.

16:15  **Reinberg, Georg W.; Mauring, Tõnu; Hallik, Jaanus**  
First certified Passive House in Estonia

Prototype architecture in Estonia demonstrates that even in a cold northern climate is possible to build energy productive houses: a progressive architectural concept based on the Passivhouse-idea, ecological materials, using the energy of the ground and of the sun (thermal active, passive and PV).

16:45  **Szekér, László**  
Passive Houses in Hungary

The presentation deals with the last five years experience with passive houses in Hungary. Local climatic, economic conditions and cultural traditions uniquely shape the universal principles of the top international concept of energy efficient construction.

17:15  **Marcelino, João; Gavião, João**  
The Passive House in Portugal: how to spread it in South West Europe

Homegrid concluded the first Passive Houses in Portugal and there are four new Passive Houses to start in short-term. The Passivhaus Portugal Association was created and became the 13th iPHA affiliate. This shows that it is possible to spread the Passive House standards in moderate climates.

17:45  **Guo, Ling**  
Current Development on Passive Houses in China

Energy-efficiency revolution in China is crucial for a sustainable future for all. Though far behind its peers, China has started making its unprecedented improvements in entrepreneurship, public awareness, and government policy of PH. Despite challenges, PH in China poses an opportunity for all.
18:15  **Redon, Natacha; Siddall, Mark**  
Lean PH: the key to affordable performance  

18:20  **Kim, Chang-Nam; Lee, Sung-Jin; Yoon, Yong-Sang; Engelmann, Peter**  
A study on building energy consumption of the first Passive House in Korea
Saturday 20th April 2013

Plenary Session 08:45 - 10:15

08:45  **Sutherland, Gordon**
Towards nearly zero-energy buildings: the European path till 2020

09:15  **Brew, James Scott**
Reinventing Fire: Passivhaus role in getting one nation completely off coal, oil and nuclear by 2050

Oil and coal have built our civilization, created our wealth, and enriched the lives of billions. Yet their rising costs to our security, economy, health, and environment are eroding and starting to outweigh their benefits. Grounded in practical experience and rigorous analysis, integrated across sectors and disciplines, emphasizing cutting-edge design and pragmatic strategy in a global context, Reinventing Fire powerfully shows how American ingenuity and enterprise, leveraging standards like Passivhaus, can make energy problems history. Whether you care most about profits and jobs, or national security, or environmental stewardship, climate, and health, Reinventing Fire + Passivhaus makes sense and makes money.

09:45  **Krapmeier, Helmut**
Austrian State Prize for Architecture and Sustainability

The Austrian State Award for Architecture and Sustainability is conferred under the auspices of klima:aktiv, the Austrian Ministry for Agriculture, Forestry, Environment and Water Management’s climate change initiative. The prize is significant because it provides definitive proof that architectural and aesthetic needs can be combined seamlessly with ecological, social and economic responsibility.

The special feature of this award is that a building is eligible only if it can show both excellent architecture and outstanding sustainable construction.

For more information, visit www.staatspreis.klimaaktiv.at www.klimaaktiv.net.
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<tr>
<td>10:30</td>
<td>Bermich, Ralf</td>
<td>Urban development with the Passive House Standard - Heidelberg's new Bahnstadt district grows dynamically</td>
<td>Bahnstadt, a neighborhood of 116 hectares, is Heidelberg's first district to be entirely constructed to the Passive House Standard. A total of 57,000 m² of treated floor area has been built since 2010, including residential buildings, day care centers, shops, and office and laboratory buildings, and another 102,000 m² is currently under construction.</td>
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<td>11:00</td>
<td>Persch, Robert</td>
<td>Quality management system for Heidelberg's Bahnstadt Passive House district</td>
<td>When Passive House targets are required for building permits and included in consultations and awareness-raising with all parties involved, the result is a successful quality assurance system for innovative urban development that other municipalities can adopt.</td>
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<td>11:30</td>
<td>Schulze Darup, Burkhard; Neumann, Werner</td>
<td>DomRömer Frankfurt - a historical monument as a new built</td>
<td>The inner-city DomRömer quarter combines heritage protection and passive house technology in the reconstruction of a prewar urban area. The new quarter will serve as a kind of built exhibition of forward-looking architecture presenting a luminous example of Passive House construction to an international audience.</td>
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<td>12:00</td>
<td>Stärz, Norbert</td>
<td>Mainzeile - professional planning in a difficult field</td>
<td>A new build is presented with 178 residential units directly on the Main River in Offenbach. The planning process is explained, as are the special features of the building services (heating, ventilation, and plumbing). One major decision was the switch from fresh air heating with fresh air lines within poured-concrete ceilings to a heat supply based on radiators.</td>
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<td>12:30</td>
<td><strong>Steiger, Jan</strong></td>
<td>PHPP 8 (2013) - worldwide applicability, added functions, improved user-friendliness and compatibility</td>
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<td>12:35</td>
<td><strong>Edwards, Dave; Feist, Dankrad; Malzer, Harald</strong></td>
<td>“designPH” plugin for Trimble Sketchup: A visual tool to export building geometry to PHPP and provide instant feedback on performance at pre-planning stage</td>
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### Session X: Sustainable solutions for multistory apartment complexes

**10:30**  
**Schaede, Margrit; Großklos, Marc**  
Multi-family Passive House units with energy gains

Multi-family dwellings can achieve energy surpluses by reducing energy demand in all areas and using renewable energy. A cogeneration unit run on biomethane improves the load match index for consumption and production, but use should be minimal because of the limited amount of biomass available.

**11:00**  
**Rongen, Ludwig**  
The Geilenkirchen-Waurichen, Walderych 27 Passive House residential complex

A complex consisting of a horse riding hall, an underground car park, and a residential building embedded in park-like greenery turned out to be a true plus-energy structure based on consumption measurements from the first year of use. Although it had some bugs at the beginning, the cleverly designed building services technology with an ice buffer performed excellently.

**11:30**  
**Rook, Stefanie; Rook, Hans-Dieter**  
Joint building ventures - getting more done together

Construction co-ops can play a special role in showing what future urban living can look like. With professional guidance, co-ops are a good way of getting citizens involved in environmental protection, and everyone benefits from their participation in a number of ways.

**12:00**  
**Zeller, Klaus**  
Multi-storey apartment complexes with single-shell brick walls - 17 units in Cologne

This construction project presents the basic prerequisites, planning details, and special considerations in the construction of multi-level residential buildings with single-shell exterior walls that do not require additional insulation.

**12:30**  
**Tribus, Michael; Noguera Bertran, Daniel**  
Different approaches in basement isolation in a Passivhaus condominium in relations to its overall energy efficiency
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<tr>
<td>10:30</td>
<td>Grove-Smith, Jessica; Schnieders, Jürgen</td>
<td>PHPP calculations in hot and humid climates</td>
<td>The PHPP is more frequently being used for planning buildings also in hot and/or humid climates. For better applicability, the algorithms for active cooling were reviewed, partially modified and additional features added. Comparisons of PHPP results with dynamic simulations confirm their accuracy.</td>
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<td>11:00</td>
<td>Theumer, Susanne; Rivero Arias, María del Carmen; Grove-Smith, Jessica; Schnieders, Jürgen</td>
<td>Mexico study: Passive Houses in tropical climates</td>
<td>Various studies and workshops illustrate design guidelines for Passive Houses in tropical climates. Suggestions for the implementation are developed using Mexican social housing building typologies.</td>
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<td>11:30</td>
<td>Gruner, Andreas</td>
<td>Towards a Sustainable Housing in Mexico</td>
<td>Two innovative Mexican approaches – the Green Housing Evaluation System SISEVIVE-Ecocasa and the NAMA for Sustainable Housing – are introducing a systematic methodology based on the “whole house approach” for warm climate zones towards more sustainable social housing.</td>
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<td>12:00</td>
<td>Parry, Clare</td>
<td>Multi-use in Passive House buildings in Humid &amp; Hot climates: Jakarta</td>
<td>Utilising the principles of Passive House, the project in Jakarta has achieved a Carbon Zero design in a hot and humid climate. Thermal mass and active concrete core conditioning are used, with stringent control of outside air quantities. High occupancy also results in increased internal heat loads.</td>
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12:30  **White, David**  
A Method for Peak Cooling Load Calculation for Low-Load Houses in Humid Climates

12:35  **Gilliland, Allen**  
Passive House Design produces First Certified Net Zero Energy Home in California

12:40  **Reddy, Rajesh; Kayal, Hamid**  
Performance evaluation of solar insulation materials in UAE conditions
10:30  O’Leary, Tomás  
Target to deliver 100,000 m² Passive House Projects in New York City by 2017

NYC is one of the front runner Passive House districts in the US and is experiencing a rapid uptake of projects. In just three years, the local Passive House community has put the necessary measures in place to provide a secure future for this world-beating energy standard.

11:00  Cohen, Adam J.  
Design & Construction of the Malcolm Rosenberg Center for Jewish Life at Virginia Polytechnic University, a mixed used assembly building in a mixed-humid climate

The Malcolm Rosenberg Center for Jewish Life in Virginia, USA, the first mixed use assembly building in the US, presented opportunities to design with a complex usage pattern and different zoning requirements. The design in a mixed humid climate is a compromise between simplicity, comfort and cost.

11:30  Moreno-Vacca, Sebastian  
Passivhaus + Breeam and green lease at no extra cost. A myth?

An interesting development has been unfolding since the “passivehouse” concept gained momentum in Brussels: the office and property sector is reacting faster than expected and is contributing to the diversification of the standard.

12:00  Mahlknecht, Hannes; Exner, Dagmar; Mennicken, Titus; Thaler, Eveline; Schrag, Tobias
User habits - impact on energy consumption in Passive Houses

Small deviation between measured and calculated energy consumptions were detected within an extensive monitoring campaign of passive houses in the alpine space. User habits have one of the biggest impacts. Investment on their awareness seems to be the cheapest way to affect consumptions and comfort.
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<td>12:30</td>
<td>Rossi, Sergio; Ziletti, Giovanni</td>
<td>Zero energy cooperative building in North Italy</td>
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<td>12:35</td>
<td>Langenkamp, Olav; Brandt, Martin</td>
<td>Challenging the possibilities</td>
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<td>14:15</td>
<td>Krause, Harald; Heep, Anna; Strapp, Merle</td>
<td>Passive House schools in the City of Offenbach</td>
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<td>As part of a public-private partnership project, multiple construction projects were completed at two school sites in Offenbach in 2012. This paper discusses the unique aspects of this PPP project and technical considerations in constructing the buildings.</td>
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<td>14:45</td>
<td>Steinmann, Bärbel; Stärz, Norbert</td>
<td>Day care centres - building services in timbered and solid construction</td>
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<td>Solutions are presented for ventilation, heating, and hot water at three daycare centers in the City of Frankfurt. The similarities and differences between the technical solutions resulting from different architecture, construction types, and building geometries are discussed, especially in terms of fire protection.</td>
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<td>15:15</td>
<td>Peper, Søren; Grove-Smith, Jessica</td>
<td>Monitoring the Lünen Passive House indoor pool</td>
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<td>The first two indoor pools built after basic research was done by PHI have been in operation for a year and a half. Comprehensive monitoring of the first measurement data and analyses of the pool in Lünen reveals that the savings potential in the Passive House concept can be tapped in this sector.</td>
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<td>15:45</td>
<td>Hörner, Michael; Schaede, Margrit</td>
<td>The IWU building: modernization with Passive House components - concept, costs and operational experience</td>
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<td>The new headquarters for the Institut Wohnen und Umwelt (IWU) is an administration building from the 1960s that was comprehensively retrofitted with Passive House components with a particular focus on energy. An attractive &quot;new&quot; building was thus built whose lifecycle has been extended by another 50 years. Special attention was paid to summertime thermal protection with passive elements. The concept can be used for many other buildings built around the same time.</td>
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Holistic sustainability schemes are part of the contemporary design process. The three labels, Passive House ECO, Passive House PLUS and Passive House ECOPLUS can extend the Passive House Standard to include sustainability criteria. Current projects present examples of these labels in practice.

Trends in energy-efficient building in Germany are discussed against the backdrop of past, present, and future legal requirements. Ways of assessing highly efficient buildings are then discussed, light is shed on the targets and intentions of the Energy Performance of Buildings Directive (EPBD), definitions are proposed, and the findings are visualized based on a reference building. In conclusion, Passive House is a solution for implementing the EPBD.

Passive House fulfills energy sustainability requirements to a large extent. The continued development of the Passive House concept should focus especially on supply concepts and their assessment. Passive House buildings heated with fossil fuels are only acceptable as a transitional measure.

A test program uses Passive House buildings for thermal storage and load management in grids. Power spikes created by renewable power generation capacity are to be used to heat buildings. This paper discusses the potential of using this approach based on the favorable thermal behavior of masonry and concrete Passive House buildings.
<table>
<thead>
<tr>
<th>Time</th>
<th>Authors</th>
<th>Title</th>
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<tbody>
<tr>
<td>16:15</td>
<td>Sørnes, Kari; Kristjansdottir, Torhildur</td>
<td>Energy efficient timber framed external walls: Energy and environmental assessment over the life cycle</td>
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<td>16:20</td>
<td>Miščevič, Ljubomir</td>
<td>Passive House and ECO-SANDWICH Eu Eco-innovation Project for Facade Panels</td>
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<td>Time</td>
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<td>14:15</td>
<td>Ørtoft, Lars; Nygaard Jensen, Lise</td>
<td>A Large Energy Efficient Renovation into Passive House</td>
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<td>Ørtoft A/S (<a href="http://www.oertoft.com">www.oertoft.com</a>) would like to contribute with knowledge and experiences</td>
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<td>obtained when implementing innovating solutions on a large renovation project into Passive</td>
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<td>House (15 kWh/(m²a)). The building is from 1938, with a heated floor area of 7,000 m² and</td>
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<td>consists of 6 floors.</td>
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<td>14:45</td>
<td>Simmons, Kristen</td>
<td>EnerPHit in Boston: Refurbishment of a timber frame two-family house</td>
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<td>Using the case study method, the design and execution of critical details,</td>
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<td>opportunities and challenges, and costs associated with the refurbishment of a traditional</td>
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<td>New England home are addressed. Design valus are also compared to other voluntary standards,</td>
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<td>the building code, and the HERS index.</td>
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<tr>
<td>15:15</td>
<td>Kammenders, Agris; Vanaga, Ruta; Krauklis, Ervins</td>
<td>Post-occupancy evaluation of dormitory building with aim of EnerPHit renovation</td>
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<td>Paper presents results from post-occupancy evaluation of dormitory building (hotel) with</td>
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<td>aim to achieve EnerPHit standard. The initial phase of construction is complete and the first</td>
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<td>students have moved into the building. In the paper suitable renovation solutions for Latvia</td>
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<td>cold climate to reach EnerPhit standard also are presented.</td>
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<tr>
<td>15:45</td>
<td>Loga, Tobias; Diefenbach, Nikolaus; Stein, Britta</td>
<td>TABULA - Residential Building Typologies in European Countries</td>
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<td>During the European project TABULA a common concept for residential building typologies has</td>
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<td>been developed and implemented in 12 countries. It consists of a systematics for the</td>
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<td>classification of national housing stocks, a database of exemplary buildings and a frame for</td>
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<td>housing stock statistics.</td>
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<tr>
<td>16:15</td>
<td>Little, Joseph; Arregi, Benat</td>
<td>Managing moisture - the key to healthy internal wall insulation retrofits of solid walls</td>
</tr>
</tbody>
</table>
14:15  **Leclerq, Virginie; Willem, Pierre**
Exemplary Buildings, a step towards nZEB (nearly Zero-Energy Buildings) in the energy policy of the Brussels Region

The “Exemplary Buildings” design contest is the flagship initiative of the Brussels Region for achieving the nZEB objective. Designers have responded in different ways (building envelope, ventilation, etc.), each with their own features, but all helping the sector move towards greater efficiency.

14:45  **Hienonen, Markku; Kauppinen, Timo; Montin, Anu**
What public authority can do to increase energy efficiency in new buildings

Based on experience during 12 years in Building Supervision of Oulu, it is possible to greatly influence the energy-efficiency of new buildings. Contacting each builder enables the Building Supervision to guide them making voluntarily more energy-efficient choices than regulations demand.

15:15  **Kovačič, Tadeja; Kovič, Silvija**
The effects of Eco Fund’s grants for energy efficiency in buildings: Slovenian experience

The case study of Eco Fund’s grants for energy efficiency and use of renewable energy sources in buildings in Slovenia points to the policy of green financial incentives as a good practice of a public policy through which environmental as well as economic and social goals can be pursued.

15:45  **McCormack, Art; McCarthy, Michael**
Groundbreaking Training for Passive House Tradespersons

Responding to the lack of tradespersons with the knowledge and skills needed for building to the Passive House Standard, the Passive House Academy in Ireland have produced the first Building Envelope and Building Services courses in the non-German-speaking world, including practical training.

16:15  **Zbasnik-Senegacnik, Martina; Kilar, Vojko; Koren, David**
Seismic safety of Passive Houses founded on thermal insulation

16:20  **Nikolov, Georgi**
Three approaches to the ground insulation in seismic hazardous regions

16:25  **Silkworth, Cramer; White, David**
A Mulit-Zone Manager for the PHPP
Of all the sustainable solutions available, those that prove economically attractive provide both for sufficient energy efficiency while integrating a variety of energy suppliers and the use of seasonal storage. If such projects are to be cost-effective, the energy efficiency of the buildings in question must at least be set to the level of Passive House, whereby the use of PV is a recommended component.