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Passive House technology equips building sector for the future

Overview of the 2014 International Passive House Conference in Aachen

Aachen, Germany. Energy efficient construction is not only decisive for climate protection, it is also a question of economic sense. This fact was confirmed by experts from all over the world at the International Passive House Conference, which took place on 25 and 26 April 2014 in Aachen, Germany. Over 1,000 visitors from almost 50 countries seized the opportunity to make new contacts, initiate new projects, and generally bring themselves up to speed on the latest developments in the Passive House field. Among the conference highlights this year were two awards, one given for outstanding Passive House architecture and the other for particularly energy efficient Passive House windows.



Dr. Wolfgang Feist announces the winners of the Component Award during his opening address. Photo: Passive House Institute

The results of the Component Award for windows were of particular interest for buildings owners. Manufacturers offered their products at retail prices including installation for an example building. "Spread over the service life of the winning products, overall cost savings of more than 25 percent are possible. This makes the energy revolution not only affordable, but even profitable," explains Dr. Wolfgang Feist, Director of the Passive House Institute.

M Sora, Pfeffer and Freisinger-Optiwin took the prize in the Wood category, while the window manufacturer Hilzinger won in the PVC category. Pural and Raico came out on top in the Aluminium category, and the winners in the Wood/Aluminium category were Lorber / pro Passivhausfenster, Bieber-Optiwin and Freisinger-Optiwin. Special prizes went to German producers Passivhaus Transfer (dHPT), Wiegand Fensterbau, and Pazen Fenster + Technik. "Energy efficient, high quality components are an essential building block for

the success of Passive House. It is important that these products provide not only convenience and comfort, but also economic advantages. We have proved this with this Award," says Dr. Benjamin Krick, Head of Component Certification at the Passive House Institute.

The profitability of energy efficient construction and retrofitting was also a key theme in many of the lectures at the International Conference, almost 100 in total. Passive Houses' significance for climate protection was also emphasised. During the opening plenary session, Johannes Remmel, Environment Minister of the German State of North Rhine-Westphalia, underlined how Passive House was leading the way in this respect. The Minister explained that Passive House already fulfilled the stipulations of the 2020 European Buildings Directive while leaving occupants are barely affected by fluctuations in energy prices.

The importance of Passive House in terms of climate protection was made clear by Dr. Diana Ürge-Vorsatz, the expert responsible for issues relating to energy efficiency in the building sector in the latest report of the Intergovernmental Panel on Climate Change (IPCC). In her plenary speech, she explained that one danger that had to be avoided was the "lock-in effect" – once completed, a building often remains unaltered for decades. In the long term, high energy consumption gets built-in when mediocre standards are applied.



Johannes Remmel, Environment Minister of the German State of North Rhine-Westphalia, during his address. Photo: Passive House Institute



Dr. Diana Ürge-Vorsatz speaking about the latest IPCC Report. Photo: Passive House Institute

The fact that architecture itself also benefits from the Passive House concept was documented in Aachen with the conferral of another prize. At the opening of the conference, six buildings and one region were recognised with the Passive House Award: an apartment block in Berlin (Germany), a New York retrofit (USA), a seminar building in Goesan (South Korea), an art museum in Ravensburg (Germany), a complex of single family homes in Espoo (Finland), a terraced house in Philadelphia (USA), and an entire Passive House district in Heidelberg (Germany). "The prize winners

clearly prove that buildings of excellent design are being executed to the Passive House Standard the world over", declared Feist.

As Sigmar Gabriel, German Federal Minister of Economic Affairs and Energy and patron of the Passive House Award, remarked in the official award press release, "The Passive House Standard serves as a global benchmark for energy efficient construction and refurbishment. I am especially pleased to see that the Standard is now having an impact not just for individual buildings, but is also serving as the basis for building complexes and even entire neighbourhoods". The prizes were presented by Deputy Assistant Minister Dr. Frank Heidrich during the opening plenary.



Six buildings and one region were recognised with the Passive House Award in Aachen, Germany. Photo: Passive House Institute

The 2014 Passive House Award was awarded within the framework of the EU sponsored project, PassREg, which is being coordinated by the Passive House Institute. The conference programme also focused on this international project, concerned with the potential offered by the Passive House Standard in combination with renewable energies in entire regions. The City of Aachen, local host of the Conference, is leading by example in this respect. "Standards far exceeding the legal requirements apply for all new builds in Aachen", explained Gisela Nacken, Departmental Head of Planning and Environment of the City of Aachen.

The choice of the venue for this year's International Passive House Conference was no coincidence, said Lothar Schneider, Director of the EnergyAgency.NRW. North Rhine-Westphalia has become a region with model character for modern, sustainable construction and living. Many exciting construction projects in the region were also viewed within the framework of the Conference. Excursions were made to a refurbished Passive House school as well as a church which had been retrofitted with Passive House components.



A school in Baesweiler, Germany, which was refurbished to the Passive House Standard was the destination of one excursion. Photo: Passive House Institute



A church in Heinsberg retrofitted to the EnerPHit Standard using Passive House components. Photo: Passive House Institute

Examples such as these clearly show the increasing importance of refurbishment and experts predict that this will be the main focus of construction sector in the coming decades. In this area, too, it is necessary to opt for high levels of energy efficiency. Attaining the Passive House Standard in existing buildings can prove difficult, however, and it is in such cases that the EnerPHit-Standard can be applied. As individual building components typically exhibit different life spans, it may be most sensible to implement refurbishment measures in a step by step manner. This approach is the subject of the EU project, EuroPHit, which also played a role in various conference lectures as well as framework events such as the “Components across the globe workshop”, attended by some 70 interested stakeholders prior to the Conference. A wealth of information on the critical subject of components for Passive House and high performance building was also available at the exhibition that accompanied the Conference, where members of the public could learn about the latest developments in the field.



Manufacturers presented the latest product developments at the accompanying exhibition. Photo: Passive House Institute

The conference presentations, spread out over two days with four parallel sessions each, covered a wide range of topics including a Passive House social housing project in Mexico, experience gained with the construction of a Passive House near the Arctic Circle in Sweden, a baseline study for implementation of the Passive House concept in hospitals, and measurement data from the first Passive House indoor swimming pools. An impressive personal account was presented by Pat Cox, a former President of the European Parliament, about his own Passive House in Ireland. Many of the lectures in Aachen made reference to the EU Buildings Directive, which stipulates that all new builds in Europe be designed as “Nearly Zero Energy Buildings” as of 2021. This level can be

achieved most effectively through a combination of the Passive House Standard with renewable energies.

The Passive House Institute is preparing for this development with the introduction of new certification categories. In the future, not only the energy demand, but also energy generation on or near the building site, for example, by means of photovoltaic systems, will be taken into consideration. In his concluding address, Dr. Feist unveiled a new method for the overall evaluation of energy demand in buildings: a future-proof scenario in which the exclusive use of renewable energies connected via the power grid reigns serves as the reference. In the classification, particular attention will be paid to energy use during the winter months, as supplying the energy needed during this part of the year via renewables requires particularly complex seasonal storage strategies; bridging short-term energy gaps, on the other hand, for example, when the sun is shining, isn't a problem in Passive House buildings.

Over a third of the total energy consumed in industrialised countries results from the operation of buildings, and most of this goes towards heating. This consumption can be reduced by up to 90 percent using Passive House technology. "The energy revolution isn't just about the expansion of renewable energies", explained Dr. Heinrich Bottermann, Secretary General of the German Environmental Foundation (DBU), at the Passive House Conference. In terms of climate protection, Bottermann called the efficient use of energy critical.



View of the first Passive House in Darmstadt, Germany, created using the designPH tool. Graphic: Passive House Institute

Of course, buildings that use energy efficiently can require appropriate planning. In this regard, the launch of designPH, the new 3D design tool, was met with great enthusiasm, especially by the designers and architects amongst the conference participants. The software, based on SketchUp, allows 3D input of energy relevant design data; the building envelope and shading data is read automatically and can be optimised as needed. The result can then be exported into the internationally established Passive House planning tool PHPP with just a few clicks.

The International Passive House Conference, organised by the Passive House Institute, has been taking place at changing venues since 1997. This year's conference was organised in cooperation with the City of Aachen and the EnergyAgency.NRW. A lively exhibition featuring manufacturers of energy efficient building components and other important industry stakeholders took place in parallel to the expert lectures. Further

workshops and seminars were offered within the conference framework programme, which was rounded off with excursions to built Passive Houses in the region. The next International Passive House Conference will take place from 17 - 18 April 2015 in Leipzig, Germany.

18TH INTERNATIONAL PASSIVE HOUSE CONFERENCE 2014

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Further information can be found online at www.passivehouse.com / www.passivehouse-award.org

The seven winners of the 2014 Passive House Award



Zero-emissions house in Boyenstrasse (Berlin, Germany). Photo: Deimel Oelschläger Architekten



Oravarinne Passive Houses (Espoo, Finland). Photo: Kimmo Lylykangas Architects



Seminar building and hostel (Goesan, South Korea). Photo: AN news, Woocheol Jeong



Passive House district "Bahnstadt" in Heidelberg, Germany. Photo: Passive House Institute



Belfield Homes (Philadelphia, USA).
Photo: Sam Oberter Photography



The art museum in Ravensburg, Germany.
Photo: Roland Halbe, Stuttgart

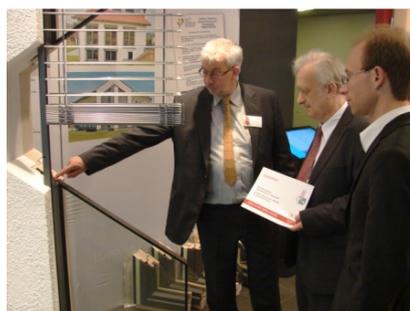


Tighthouse / Brooklyn (Retrofit in New York, USA). Photo: Hai Zhang

Presentation of the Component Award at the exhibition stands of the winners in the accompanying specialists' exhibition



M Sora
Natura Optimo XLT (wood)



Wiegand Fensterbau
DW-plus (innovative glazing)



Raico Bautechnik
Frame 90 WI (aluminium)



Lorber / pro Passivhausfenster
Smartwin Compact (wood/aluminium)



Pazen; ENERsign arctis (lowest
heat losses)



Hilzinger
VADB-Plus 550 (Kunststoff)



Optiwin Freisinger/Bieber; Holz-2-Holz,
Alu-2-Holz, Futura (wood-aluminium)



Pural
Pural eco 90 (aluminium)



Deutsche Passivhaus Transfer
(dPHt); Delta Plus Cold Climate
(wood/fibreglass synthetic
material)