

## nZEB in Cold/Continental climates

- Overview
- Key Outputs & Resources
- Workshops & Study Visits
- Case Studies
- Contact

## TaskForce Workshops & Study Visits

### Study Visit in Brussels - 25 March 2015

Following the success of the Study Visit held in January 2015, USH - l'Union Sociale pour l'Habitat (the French Federation of Social Housing Providers), upon the request of its members, organised a second visit in Brussels to four nearly-Zero Energy projects.

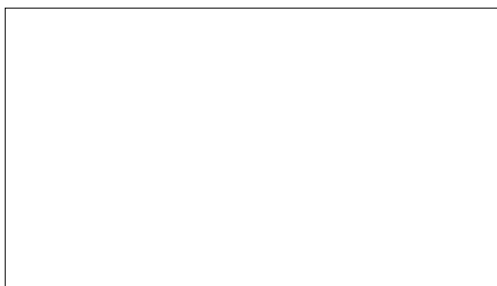
During the day, beside “L’Espoir” and “Rue de la Brasserie”, which were already the object of a previous visit organised in June 2012, participants had the opportunity to visit also the following two sites and hear directly from the architects the technical aspects related to the projects:



Rue Cygnes-Digue, 1050 Ixelles

On a block located between the Rue de la Digue and the Rue des Cygnes, whose geometry is more than a little complicated, the municipality of Ixelles wanted to build a community centre as well as social dwellings with high energy efficiency levels. A consortium of architects won the contract, mainly due to their participative approach to the project.

The design team wanted to submit the proposed project to dialogue and local dynamics as well as to the creative inspiration that results from collective thinking. This attitude opens the doors to benefitting from the energy, enthusiasm and expertise of those present in the neighbourhood, who have already been met and of others whose opinion need to be heard during the rest of the process. In this context, numerous activities have been organized to meet the different actors and to get them to take part in presentations of the initiative, especially local resident debate-meetings, information sessions, workshops and “lounge-pavement” meetings, principally in an endeavour to make the project easier to understand.



Quai de l'Industrie, 1080 Molenbeek-Saint-Jean

The Quai de l'Industrie project is a combination of multiple facilities: 16 public housing units, an extra-curricular facility and an office for the port of Brussels. Thanks to its location in a pedestrianized area, the open architecture of the building, the semi-public garden and the diverse activities of the neighbourhood office, it offers the

residents unique possibilities for socialising each other.

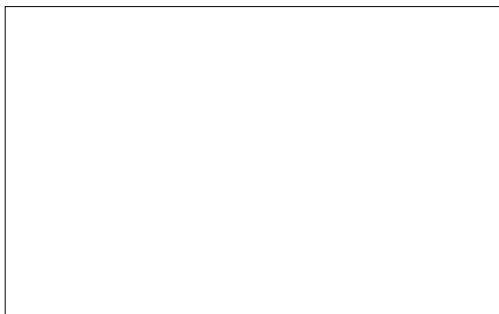
The energy consumption of the building was brought down to a minimum, resulting in a series of economic and ecological advantages. This rationalisation is favoured especially by an excellent insulation of the walls in addition to the technologies dedicated to sustainable development such as cogeneration and solar panels. The subsidies obtained were invested in optimising the use of renewable energies or in HVAC installations that are even more cost-effective.

For further information on sustainable buildings in the Brussels region, please do not hesitate to visit: <http://www.sustainablecity.be/themas/sustainable-building>.

## Study Visit in Soesterberg and Heerhugowaard - 22-23 January 2015

### Flash is required!

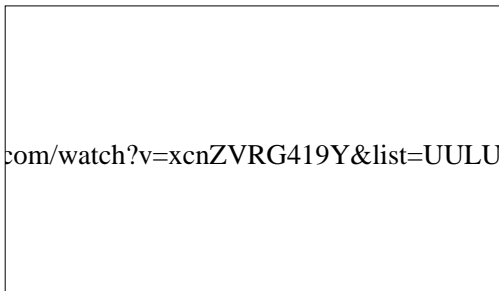
NHF - The English National Housing Federation, organised in collaboration with Platform 31 an interesting study visit dedicated to NHF's members to two EnergieSprong refurbishments projects at neighbourhood level in Soesterberg and Heerhugowaard, the Netherlands. The scope of this study trip was to meet housing associations that are implementing EnergieSprong and discuss their approach to energy efficiency improvements embedded in strategic asset management and explore the viability of the model for UK housing associations.



### What is Energiesprong?

EnergieSprong ('Energy jump') is a new high-value construction and investment model for creating energy-neutral homes and regenerating neighbourhoods through a whole house 'envelope' retro-fitting package. The Dutch-designed system blends innovative off-site factory construction with a financial model to eradicate heating bills and generate a 5.25% financial return (IRR)

over a 30-year term, against up-front capital investment. In effect, the housing association buys a 30-year performance and maintenance guarantee, using a fixed monthly payment by the resident which is lower than their savings on the average bill as the long-term funding mechanism. The contractor delivers, maintains and guarantees the renovation against agreed energy performance targets for the 30-year term - although the Housing Association can break the maintenance contract at 10 year intervals. In a renovation lasting less than 2 weeks - in which residents can continue to occupy their home - homes with poor energy efficiency are transformed into zero carbon housing and estates regenerated with homes that look brand new.



### What has been done so far in the Netherlands?

The Dutch social housing sector has committed to delivering 111,000 EnergieSprong homes; the Dutch Government kick-started this initiative by funding the EnergieSprong market development team (Platform 31) for 4 years as an enabling consultancy to drive what is in effect a market-led proposition. Four

contractors and six housing association have formed a partnership in the Netherlands to deliver the prototypes and first 10,000 homes of the renovation programme. To date some 100 homes have been completed; costs have already started to reduce - although the next significant cost step change is planned when scale of 10,000 homes is reached. A huge amount of learning and improvements have inevitably been accommodated but EnergieSprong is now coming out of pilot phase and entering early maturity with capital

costs of 85,000 € against annual maintenance costs of 800 € and monthly resident contributions of 160 € established as a working and viable model. Resident feedback is good, with niggles and issues now being ironed out as the learning is adopted and the model adapted.

To find out more, please watch the video showing the EnergieSprong concept!

## Study Visit in Brussels - 13 January 2015

USH - l'Union Sociale pour l'Habitat (the French Federation of Social Housing Providers) organised in collaboration with Bruxelles Environment (an initiative of the Brussels Capital Region) a study visit to two exemplary multi-family buildings located in the Brussels Capital Region.

During the day, participants had the opportunity to visit the following two sites and hear directly from the architects the technical aspects related to the projects:



Rue Pierre Strauwen, 1020 Laeken

The project concerns the renovation of an empty building, built in the 30s, consisting in 16 social apartments. Initially, the idea was to create 12 residential units meeting the energy performance of buildings regulation; however, it soon transpired that “very low-energy” units could be created at reasonable additional cost. Indeed, this renovation will be the starting point to renovate the complete island; not just the apartments, but also the common

areas, so as to foster social exchanges and biodiversity.

Once the first building has been renovated, the Contracting Authority intends to develop a collective system to heat all the buildings. This centralization will generate enough of a heating capacity to choose alternative energy-production systems, such as co-generation. A feasibility study has confirmed the potential interest of this system, subject to legislation allowing tenants to sell excess electricity to the supply board, and even though the need to sell excess electricity back to the grid is a common requirement, especially in the case of photovoltaic collective appliances, a suitable legal framework does not yet exist. Therefore, the excess electricity could at least supply the local communities, and entitle the project to green certificates.

The same idea has come forward with the installation of a centralized earth heat exchanger providing all the buildings; the purpose of this network is to first, preheat ventilation new air in winter, so as to reduce the risk of frost forming in the ventilation unit, and second, cool down new air in summer, so as to minimize the risk of overheating. According to the engineers, the complete network will recover about 5000 kWh per year for a heat dissipation of 2900 kWh per year.



Rue de Bonne, 1080 Molenbeek-Saint-Jean

The project has two distinct facilities, both achieving the passive level: a volume comprising 13 houses and a school (kindergarten and elementary). The implemented cooling system facilitates high thermal inertia, reduces internal loads of the school, reacts with the solar gains through fixed shading devices for the school and sliding

and fixed perforated blinds for the housing units and uses the building shade between them. A centralised management system acts locally and in a manner that is adapted to the specific needs of each room. The

user can operate the system and manually regulate the heating, ventilation, solar shadings and artificial lighting. Concerning water management, the use of water is reduced by overcoming wastage: pressure limiter, time-delay taps with limited flow, infrared taps for the kindergarten, etc. The rainwater is collected in two 20m<sup>3</sup> concrete tanks and it is used for sanitary facilities, maintenance, domestic washing machines and watering.

A user guide is provided to the school and tenants. In addition, the user is provided with data sheets indicating the choices made and the reasons behind making them. This guide provides a series of instructions and keys to understanding that not only helps the user save energy but also prolong the life of the building and its installations, which represents an even greater amount of energy saved in the long term.

For further information on sustainable buildings in the Brussels region, please do not hesitate to visit:  
<http://www.sustainablecity.be/themas/sustainable-building>.

## **Workshop and Study Visit in Wiesbaden - 4-5 December 2013**

### **Flash is required!**

On 4th & 5th December 2013, the members of the nearly-Zero Energy Challenge Cold/Continental Climates TaskForce met in Wiesbaden (Germany) to discuss cost-optimal levels of energy efficiency investments, which means basically the appropriate ratio between energy savings and investment costs. A key challenge is indeed to be able to compare the actual energy consumptions of various buildings typologies against actual investment costs in order to guide the decisions of project promoters about what kind of measures they have to undertake, but also to influence the future national energy standards that will have to be put in place as a requirement of the Energy Performance of Building Directive (EPBD). Participants had also the opportunity to enjoy the presentations of two IEE running projects - EnerPHit and ENTRANZE - and to explore potential synergies with them (download here the presentations made during the Workshop).

The meeting was followed by a study visit to a project site where both nearly-Zero Energy and Passive House standard blocks were under construction. The comparison of 4 strictly identical buildings, 2 built under the German national energy performance standard (EnEV) and 2 built at the passive house standard came to the conclusion that even in including the extra energy savings made by the passive house standards, the cost of passive house is around 10% higher than nearly zero energy buildings. This extra cost needs to be compensated by either the increase of the rent (not always possible for regulatory reasons) or increase of the invested capital. According to this project of the Wiesbaden Housing Company GWW, the most cost efficient way to use financial resources would be to design low energy buildings, but not zero energy buildings, and to strike the carbon balance with on-site production of energy. Those results confirm the relevance of Housing Europe position regarding the 2030 Energy and Climate Policies which emphasises the key role of finance and decentralised energy production.

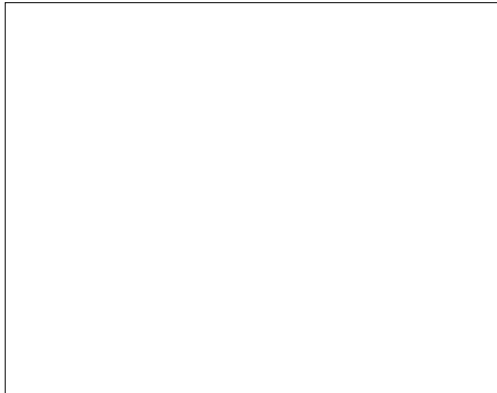
To find out more, please watch the video of the Workshop and Study Visits!

## **Study Visit in Brussels - 19 September 2013**

An interesting study visit to two exemplary multi-family buildings took place on 19 September 2013 in the Brussels Capital Region in the framework of the POWER HOUSE nearly-Zero Energy Challenge! project.

The visit, organised by Housing Europe in collaboration with Bruxelles Environment (an initiative of the Brussels Capital Region), was dedicated to the Energy Experts working for the National/Regional Federations represented by Housing Europe.

During the day, participants had the opportunity to visit the following two sites and hear directly from the architects the technical aspects related to the projects:



Rue d'Ostende, 1080 Molenbeek-Saint-Jean

The project is part of a contract of the Rives Ouest area of Molenbeek- Saint-Jean municipality. It is set at the corner of the Ostende and Vanderdussen streets, in a densely populated area. It has eight apartments of varied configurations, from one to four bedrooms, in simplex or duplex. These houses are designed to be managed by the Municipal Administration so as to offer low cost housing. The building complies with the “passive building” standard, thanks to thick layers of insulating material. The construction materials are chosen by taking into account their

environmental balance, their origin and their low embedded energy.

According to the principles of bioclimatic design, the architecture of the envelope of the building and the organisation of the plan in accord with the orientation contribute to reducing energy requirements. In this project, the poor orientation of the plot of land led to the design of bow-windows that are better oriented towards and designed to soak in plenty of sunlight. The living rooms are spread out, especially with respect to the best orientation that the plot of land offers. In the North on the other hand, the drilling work is limited and the premises requiring little heating are set up here, such as the shared premises (bicycle station and pushchair station), the entrance hall and the stairwell. Furthermore, all the apartments are accessible to persons with reduced mobility with corridors that allow wheel chairs to move and rotate easily. The doors are not only sufficiently wide, but also allow a good grasp of the handle and provide proper clearance of the door. It is necessary to use a lift to access the floors.



Rue Locquenghien 20-28, 1000 Brussels

This project consists in a new passive building with 12 apartments, and in the construction and renovation of a passive building (and low-energy for the existing part) with a day care centre for children, plus 5 apartments. The project is located 20/28 rue Locquenghien.

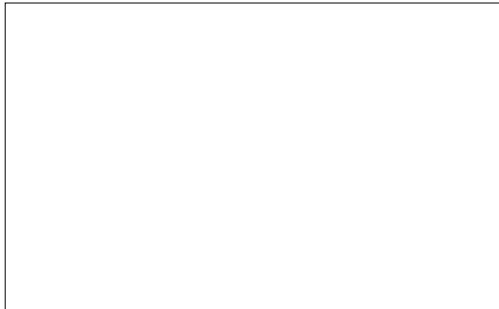
The building will be designed (budget, layout, exterior obligations) to satisfy the energy performance standards specific to the initial situation (new build or renovation). Particularly, passive standards will be used for the new part, and low-energy standards for the renovation work. A number of factors combine (highly effective envelope; high level of airtightness; high performance heat exchanger; thermal bridges minimized through design] to reduce the building's heating requirements to practically zero. Cooling strategies (such as reduced external loads, and sunscreens on all facades facing West) will guarantee summer comfort. Likewise, energy-efficient equipment will be chosen, which will reduce internal loads, whilst remaining loads are dissipated (amongst other means) by a manually opening the windows at night. In this way, energy requirements will be lower. Remaining requirements will be satisfied, to the greatest extent possible, by renewable energy (solar thermal panels).

For further information on sustainable buildings in the Brussels region, please do not hesitate to visit:  
<http://www.sustainablecity.be/themas/sustainable-building>.

## Workshop and Study Visit in Vienna - 27-28 February 2013

The first Study Visit of the Cold/Continental climates TaskForce took place in Vienna on 28 February 2013 to complement the Workshop that took place on the eve (download here the presentations made during the Workshop). The visit was organised by the TaskForce Coordinator Gbv, the Austrian Federation of Limited Profit Housing Associations, with the support of two local housing companies (BUWOG and BWS Bau) operating in the Vienna's area.

During the day, participants had the opportunity to visit the following two sites and hear directly from the architects the technical aspects related to the projects:



### **Vorgartenstraße 116,116A, 118, 118A and Rabensburgerstraße 20, 1020 Vienna**

The residential house "Nordbahnhof" (Housing company: BUWOG - Bauen und Wohnen GesmbH) is located north of the Viennese city center in short distance to the Danube and its park areas. The housing complex includes two individual houses which are connected by a basement garage. Both are designed to serve living space especially for young people with limited income. The houses

have a great amount of small flats and bountiful- common areas like self-service laundry, cooking areas or a winter garden for general use. Completed in early summer 2013, the building offers 210 tenements and 4 salesrooms. With a calculated heat demand of around 13kWh/m<sup>2</sup> per year, the residential houses represent passive house standard. According to the high energy standards, operation costs for the tenants are expected to be at a low level.



### **Zirkusgasse 47, 1020 Vienna**

This multifamily housing project (Housing company: BWS Bau-, Wohn- und Sanierungsgesellschaft mbH) was built in the early 1950s and is located in the 2nd district of Vienna between Prater and Augarten with widespread park areas and a well connection to public services. The general refurbishment of the building covers measures to reduce heat energy demand (thermal insulation and change of all windows) as well as necessary renovation of the

building structure with a focus of barrier- free living spaces. Therefore, new staircases and elevators were constructed as well as new balconies or loggias orientated to courtyard. In addition to the general refurbishment of the building new living space was created due to attic conversion. An appreciable note is that more than half of the totally over 200 residents was inhabited during the comprehensive refurbishment.

## Study Visit in Brussels - 19 June 2012

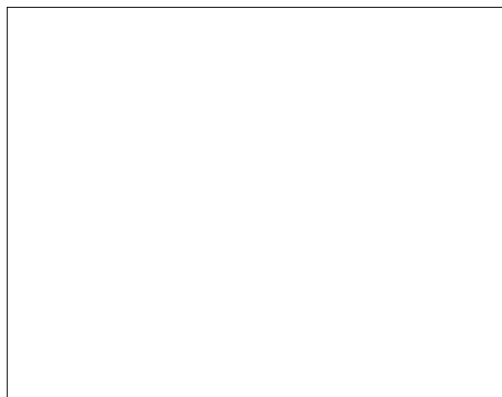
### **Flash is required!**

Sharing best practices is key! In order to boost the shift toward a low-carbon environment, it is crucial to learn from each other's experience, whether it is in the field or via recognised online platforms. As such, technical, administrative and financing barriers could be overcome and European targets reached.

For this reason, in the framework of the EU Sustainable Energy Week 2012, Housing Europe (Coordinator of

the POWER HOUSE nearly-Zero Energy Challenge initiative), the BUILD UP platform and Bruxelles Environment joined forces to organise a study visit to two housing projects. The featured buildings were winners of the Brussels' call for projects of the 'Exemplary Buildings' programme (started in 2007). In total, Brussels now boasts 156 exemplary buildings, which earn this status not just for their energy efficiency, but by adhering to an entire range of ecological standards from construction through use. Brussels' Exemplary Buildings (known as 'Batex' in French) have demonstrated that the passive standard is fully accessible and does not significantly increase costs for residential buildings, schools or offices. The 'Batex' are part of the Brussels-Capital Region's policy for more Nearly Zero Energy Buildings.

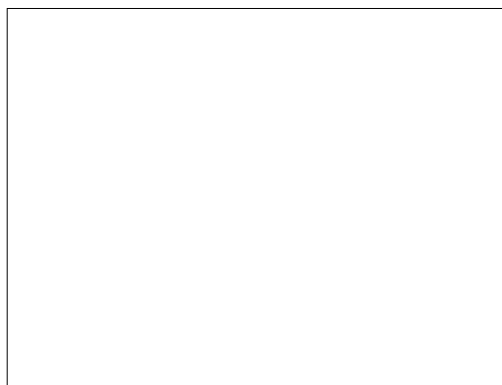
During the day, participants had the opportunity to visit the following two sites and hear directly from the architects the technical aspects related to the projects (To find out more, please watch the video of the Study Visits!):



**L'Espoir - Rue Fin 3-13, 1080 Molenbeek-Saint-Jean**

In 2004, the non-profit-making association "Maison de quartier Bonnevie" developed a cooperation project with another association of the same type "Coordination et Initiatives pour et avec les Réfugiés et Etrangers" (CIRE) and the Brussels-Capital Regional Housing Fund. Its purpose was to enable 14 low-income, poorly housed families from Molenbeek to acquire a home at an extremely moderate building cost. The selected families united together in an association called "l'Espoir" - or "Hope" - under the patronage of the CIRE. The families met at three workshops, after

which a programme emerged for the future designers (an energy efficient building using materials with low environmental impact). The building sale took place within the framework of part II of the contract for the "Fonderie-Pierron" neighbourhood. The fund acquired the land as the developer-contracting authority and the mortgagee. The future homes were to be sold at cost-price to the members of the de facto association "l'Espoir".



**Rue de la Brasserie 21 - 23, 1050 Ixelles**

The project consists of the construction of a block of 12 social housing units in rue de la Brasserie in Ixelles under the Malibran contract. From the start, the project has been based on the concept of passive construction. To achieve this, an advanced technical focus has been a constant feature in the development of the project in order to highlight each detail and guarantee energy efficiency and eco-construction. In addition to this point, the parameters for urban integration, which are closely linked to

eco-construction, have been largely developed as part of the global concept of sustainable development. The energy performance rating for each product that will be implemented has been analysed and the appropriateness of the product for the project has been studied in great detail in accordance, firstly, with the building parameter and, secondly, with the architectural, usage and operating parameters.

For further information on sustainable buildings in the Brussels region, please do not hesitate to visit:  
<http://www.sustainablecity.be/themas/sustainable-building>.

Source:

[http://www.powerhouseeurope.eu/nearly\\_zero\\_taskforces/nzeb\\_in\\_coldcontinental\\_climates/workshops\\_study\\_visits/](http://www.powerhouseeurope.eu/nearly_zero_taskforces/nzeb_in_coldcontinental_climates/workshops_study_visits/)